Title: Encyclopaedia Britannica, 11th Edition, "Evangelical Church Conference" to "Fairbairn, Sir William"

Author: Various

Release date: July 14, 2011 [EBook #36735]
Most recently updated: January 7, 2021

Language: English

Credits: Produced by Marius Masi, Don Kretz and the Online Distributed Proofreading Team at https://www.pgdp.net

Transcriber's note: A few typographical errors have been corrected. They appear in the text like this, and the explanation will appear when the mouse pointer is moved over the marked passage. Sections in Greek will yield a transliteration when the pointer is moved over them, and words using diacritic characters in the Latin Extended Additional block, which may not display in some fonts or browsers, will display an unaccented version.

Links to other EB articles: Links to articles residing in other EB volumes will be made available when the respective volumes are introduced online.

THE

ENCYCLOPÆDIA BRITANNICA

ELEVENTH EDITION

FIRST	edition,	published in	three	volumes,	1768-1771.
SECOND	”	”	ten	”	1777-1784.
THIRD	”	”	eighteen	”	1788-1797.
FOURTH	”	”	twenty	”	1801-1810.
FIFTH	”	”	twenty	”	1815-1817.
SIXTH	”	”	twenty	”	1823-1824.

SEVENTH	”	”	twenty-one	”	1830-1842.
EIGHTH	”	”	twenty-two	”	1853-1860.
NINTH	”	”	twenty-five	”	1875-1889.
TENTH	”	ninth edition and eleven supplementary volumes,			1902-1903.
ELEVENTH	”	published in twenty-nine volumes,			1910-1911.

THE

ENCYCLOPÆDIA BRITANNICA

A

DICTIONARY

OF

ARTS, SCIENCES, LITERATURE AND GENERAL INFORMATION

ELEVENTH EDITION

VOLUME X

EVANGELICAL CHURCH to FRANCIS JOSEPH

New York

Encyclopædia Britannica, Inc.

342 Madison Avenue

VOLUME X SLICE I

Evangelical Church Conference to Fairbairn, Sir William

Articles in This Slice

INITIALS USED IN VOLUME X. TO IDENTIFY INDIVIDUAL CONTRIBUTORS,[1] WITH THE HEADINGS OF THE ARTICLES IN THIS VOLUME SO SIGNED.

A. B. R.	Alfred Barton Rendle, M.A., D.Sc, F.R.S., F.L.S. Keeper, Department of Botany, British Museum. Author of *Text Book on Classification of Flowering Plants*; &c.	**Flower.**
A. D.	Austin Dobson, LL.D. See the biographical article: Dobson, H. Austin.	**Fielding, Henry.**
A. F. B.	Aldred Farrer Barker, M.Sc. Professor of Textile Industries at Bradford Technical College.	**Felt.**
A. F. P.	Albert Frederick Pollard, M.A., F.R.Hist.Soc. Professor of English History in the University of London. Fellow of All Souls' College, Oxford. Assistant Editor of the *Dictionary of National Biography*, 1893-1901. Lothian Prizeman, Oxford, 1892; Arnold Prizeman, 1898. Author of *England under Protector Somerset*; *Henry VIII.*; *Life of Thomas Cranmer*; &c.	**Ferrar, Bishop;** **Fox, Edward;** **Fox, Richard.**
A. G.	Major Arthur George Frederick Griffiths (d. 1908). H.M. Inspector of Prisons, 1878-1896. Author of *The Chronicles of Newgate*; *Secrets of the Prison House*; &c.	**Finger Prints.**
A. Go.*	Rev. Alexander Gordon, M.A. Lecturer on Church History in the University of Manchester.	**Faber, Basil, Jacobus and Johann;** **Familists; Farel, G.;** **Flacius.**
A. H.-S.	Sir A. Houtum-Schindler, C.I.E. General in the Persian Army. Author of *Eastern Persian Irak*.	**Fars;** **Firuzabad.**
A. L.	Andrew Lang. See the biographical article: Lang, Andrew.	**Fairy;** **Family.**
A. L. B.	Alfred Lys Baldry. Art Critic of the *Globe*, 1893-1908. Author of *Modern Mural Decoration* and biographies of Albert Moore, Sir H. von Herkomer, R.A., Sir J. E. Millais, P.R.A., Marcus Stone, R.A., and G. H. Boughton, R.A.	**Fortuny.**
A. N.	Alfred Newton, F.R.S. See the biographical article: Newton, Alfred.	**Falcon; Fieldfare; Finch;** **Flycatcher; Fowl.**
A. S.	Arthur Smithells, F.R.S. Professor of Chemistry in the University of Leeds. Author of Scientific Papers on Flame and Spectrum Analysis.	**Flame.**
A. M. C.	Agnes Mary Clerke. See the biographical article: Clerke, A. M.	**Flamsteed.**
A. W.	Arthur Watson. Secretary in the Academic Department, University of London.	**Examinations (*in part*).**
A. W. R.	Alexander Wood Renton, M.A., LL.B. Puisne Judge of the Supreme Court of Ceylon. Editor of *Encyclopaedia of the Laws of England*.	**Fixtures;** **Flat.**

A. W. W.	Adolphus William Ward, D.Litt., LL.D. See the biographical article: Ward, A. W.	**Foote, Samuel;** **Ford, John.**
C. El.	Sir Charles Norton Edgcumbe Eliot, K.C.M.G., C.B., M.A., LL.D., D.C.L. Vice-Chancellor of Sheffield University. Formerly Fellow of Trinity College, Oxford. H.M.'s Commissioner and Commander-in-Chief for the British East Africa Protectorate; Agent and Consul-General at Zanzibar; Consul-General for German East Africa, 1900-1904.	**Finno-Ugrian.**
C. F. B.	Charles Francis Bastable, M.A., LL.D. Regius Professor of Laws and Professor of Political Economy in the University of Dublin. Author of *Public Finance*; *Commerce of Nations*; *Theory of International Trade*; &c.	**Finance.**
C. F. C.	C. F. Cross, B.Sc. (Lond.), F.C.S. F.I.C. Analytical and Consulting Chemist.	**Fibres.**
C. F. R.	Charles Francis Richardson, A.M., Ph.D. Professor of English at Dartmouth College, Hanover, New Hampshire, U.S.A. Author of *A Story of English Rhyme*; *A History of American Literature*; &c.	**Fiske, John.**
C. H. T.*	Crawford Howell Toy, A.M. See the biographical article: Toy, Crawford Howell.	**Ezekiel.**
C. J.	Charles Johnson, M.A. Clerk in H.M. Public Record Office. Joint Editor of the *Domesday Survey* for the *Victoria County History: Norfolk*.	**Exchequer (*in part*).**
C. J. B. M.	Charles John Bruce Marriott, M.A. Clare College, Cambridge. Secretary of the Rugby Football Union.	**Football: Rugby (*in part*).**
C. J. N. F.	Charles James Nicol Fleming. H.M. Inspector of Schools, Scotch Education Department.	**Football: Rugby (*in part*).**
C. L. K.	Charles Lethbridge Kingsford, M.A., F.R.Hist.Soc., F.S.A. Assistant Secretary to the Board of Education. Author of *Life of Henry V.* Editor of *Chronicles of London* and Stow's *Survey of London*.	**Fabyan;** **Fastolf.**
C. P. I.	Sir Courtenay Peregrine Ilbert, K.C.B., K.C.S.I., C.I.E. Clerk of the House of Commons. Chairman of Statute Law Committee. Parliamentary Counsel to the Treasury, 1899-1901. Legal Member of Council of Governor-General of India, 1882-1886; President, 1886. Fellow of the British Academy. Formerly Fellow and Tutor of Balliol College, Oxford. Author of *The Government of India*; *Legislative Method and Forms*.	**Evidence.**
C. W. A.	Charles William Alcock. (d. 1907). Formerly Secretary of the Football Association, London.	**Football: Association (*in part*).**
D. H.	David Hannay. Formerly British Vice-Consul at Barcelona. Author of *Short History of the Royal Navy*; *Life of Emilio Castelar*; &c.	**First of June, Battle of the;** **Fox, Charles James.**
D. Mn.	Rev. Dugald Macfadyen, M.A. Minister of South Grove Congregational Church, Highgate. Director of the London Missionary Society.	**Excommunication.**
D. N. P.	Diarmid Noel Paton, M.D., F.R.C.P. (Edin.). Regius Professor of Physiology in the University of	

	Glasgow. Formerly Superintendent of Research Laboratory of Royal College of Physicians, Edinburgh. Biological Fellow of Edinburgh University, 1884. Author of *Essentials of Human Physiology*; &c.	**Fever.**
D. S. M.*	DAVID SAMUEL MARGOLIOUTH, M.A., D.LITT. Laudian Professor of Arabic, Oxford. Fellow of New College. Author of *Arabic Papyri of the Bodleian Library*; *Mohammed and the Rise of Islam*; *Cairo, Jerusalem and Damascus*.	**Fatimites.**
E. B.	EDWARD BRECK, M.A., PH.D. Formerly Foreign Correspondent of the *New York Herald* and the *New York Times*. Author of *Fencing*; *Wilderness Pets*; *Sporting in Nova Scotia*; &c.	**Foil-fencing;** **Football: American (*in part*).**
E. Ca.	EGERTON CASTLE, M.A., F.S.A. Trinity College, Cambridge. Author of *Schools and Masters of Fence*; &c.	**Fencing.**
Ed. C.*	THE HON. EDWARD EVAN CHARTERIS. Barrister-at-Law, Inner Temple.	**Fair (*in part*).**
E. C. B.	RT. REV. EDWARD CUTHBERT BUTLER, O.S.B., M.A., D.LITT. Abbot of Downside Abbey, Bath. Author of "The Lausiac History of Palladius," in *Cambridge Texts and Studies*, vol. vi.	**Fontevrault;** **Francis of Assisi, St;** **Francis of Paola, St.**
E. C. Q.	EDMUND CROSBY QUIGGIN, M.A. Fellow and Lecturer in Modern Languages and Monro Lecturer in Celtic, Gonville and Caius College, Cambridge.	**Finn mac Cool.**
E. D. R.	LIEUT.-COLONEL EMILIUS C. DELMÉ RADCLIFFE. Author of *Falconry: Notes on the Falconidae used in India in Falconry*.	**Falconry.**
E. E. A.	ERNEST E. AUSTEN. Assistant in Department of Zoology, Natural History Museum, South Kensington.	**Flea.**
E. E. H.	REV. EDWARD EVERETT HALE. See the biographical article: HALE, E. E.	**Everett, Edward.**
E. G.	EDMUND GOSSE, LL.D. See the biographical article: GOSSE, EDMUND.	**Ewald, Johannes;** **Fabliau;** **Fabre, Ferdinand;** **Feuillet;** **Finland: *Literature*;** **FitzGerald, Edward;** **Flaubert;** **Flemish Literature;** **Forssell.**
E. H. P.	EDWARD HENRY PALMER, M.A. See the biographical article: PALMER, E. H.	**Firdousi (*in part*).**
E. K.	EDMUND KNECHT, PH.D., M.SC.TECH. (Manchester), F.I.C. Professor of Technological Chemistry, Manchester University. Head of Chemical Department, Municipal School of Technology, Manchester. Examiner in Dyeing, City and Guilds of London Institute. Author of *A Manual of Dyeing*; &c. Editor of *Journal of the Society of Dyers and Colourists*.	**Finishing.**
E. M. Ha.	ERNEST MAES HARVEY. Partner in Messrs. Allen Harvey & Ross, Bullion Brokers, London.	**Exchange.**
E. O.*	EDMUND OWEN, M.B., F.R.C.S., LL.D., D.SC. Consulting Surgeon to St Mary's Hospital,	

	London, and to the Children's Hospital, Great Ormond Street, London. Chevalier of the Legion of Honour. Late Examiner in Surgery at the University of Cambridge, London and Durham. Author of *A Manual of Anatomy for Senior Students*.	**Fistula.**
E. O. S.	Edwin Otho Sachs, F.R.S. (Edin.), A.M.Inst.M.E. Chairman of the British Fire Prevention Committee. Vice-President, National Fire Brigades Union. Vice-President, International Fire Service Council. Author of *Fires and Public Entertainments*; &c.	**Fire and Fire Extinction.**
E. Pr.	Edgar Prestage. Special Lecturer in Portuguese Literature at the University of Manchester. Commendador, Portuguese Order of S. Thiago. Corresponding Member of Lisbon Royal Academy of Sciences and Lisbon Geographical Society.	**Falcao;** **Ferreira.**
E. Re.	Elisée Reclus. See the biographical article: Reclus, J. J. E.	**Fire.**
E. Tn.	Rev. Ethelred Leonard Taunton, (d. 1907). Author of *The English Black Monks of St Benedict*; *History of the Jesuits in England*.	**Feckenham;** **Fisher, John.**
E. W. H.	Ernest William Hobson, M.A., D.Sc., F.R.S., F.R.A.S. Fellow and Tutor in Mathematics, Christ's College, Cambridge. Stokes Lecturer in Mathematics in the University.	**Fourier's Series.**
F. C. C.	Frederick Cornwallis Conybeare, M.A., D.Th. (Giessen). Fellow of the British Academy. Formerly Fellow of University College, Oxford. Author of *The Ancient Armenian Texts of Aristotle*; *Myth, Magic and Morals*; &c.	**Extreme Unction.**
F. G. P.	Frederick Gymer Parsons, F.R.C.S., F.Z.S., F.R.Anthrop.Inst. Vice-President, Anatomical Society of Great Britain and Ireland. Lecturer on Anatomy at St Thomas's Hospital and the London School of Medicine for Women. Formerly Hunterian Professor at the Royal College of Surgeons.	**Eye: *Anatomy*.**
F. J. H.	Francis John Haverfield, M.A., LL.D., F.S.A. Camden Professor of Ancient History in the University of Oxford. Fellow of Brasenose College. Ford's Lecturer, 1906-1907. Fellow of the British Academy. Author of Monographs on Roman History, especially Roman Britain; &c.	**Fosse.**
F. J. W.	Frederick Joseph Wall, F.C.S. Secretary to the Football Association.	**Football: *Association* (*in part*).**
F. R. C.	Frank R. Cana. Author of *South Africa from the Great Trek to the Union*.	**France: *Colonies*.**
F. S.	Francis Storr, M.A. Editor of the *Journal of Education*, London. Officier d'Académie, Paris.	**Fable.**
G. A. B.	George A. Boulenger, D.Sc., Ph.D., F.R.S. In charge of the Collections of Reptiles and Fishes, Department of Zoology, British Museum. Vice-President of the Zoological Society of London.	**Flat-fish.**
G. A. Be.	George Andreas Berry, M.B., F.R.C.S., F.R.S. (Edin.). Hon. Surgeon Oculist to His Majesty in Scotland. Formerly Senior Ophthalmic Surgeon, Edinburgh Royal Infirmary, and Lecturer on	

	Ophthalmology in the University of Edinburgh. Vice-President, Ophthalmological Society. Author of *Diseases of the Eye*; *The Elements of Ophthalmoscopic Diagnosis*; *Subjective Symptoms in Eye Diseases*; &c.	**Eye: *Diseases*.**
G. B. A.	George Burton Adams, A.M., B.D., Ph.D., Litt.D. Professor of History, Yale University. Editor of *American Historical Review*. Author of *Civilization during the Middle Ages*; *Political History of England,* 1066-1216; &c.	**Feudalism.**
G. C. L.	George Collins Levey, C.M.G. Member of Board of Advice to Agent-General of Victoria. Formerly Editor and Proprietor of the *Melbourne Herald*. Secretary, Colonial Committee of Royal Commission to Paris Exhibition, 1900. Secretary, Adelaide Exhibition, 1887. Secretary, Royal Commission, Hobart Exhibition, 1894-1895. Secretary to Commissioners for Victoria at the Exhibitions in London, Paris, Vienna, Philadelphia and Melbourne, 1873, 1876, 1878, 1880-1881.	**Exhibition.**
G. E.	Rev. George Edmundson, M.A., F.R.Hist.S. Formerly Fellow and Tutor of Brasenose College, Oxford. Ford's Lecturer, 1909. Hon. Member, Dutch Historical Society, and Foreign Member, Netherlands Association of Literature.	**Flanders.**
G. F. Z.	George Frederick Zimmer, A.M.Inst.C.E. Author of *Mechanical Handling of Material*.	**Flour and Flour Manufacture.**
G. G. P.*	George Grenville Phillimore, M.A., B.C.L. Christ Church, Oxford. Barrister-at-Law, Middle Temple.	**Fishery, Law of.**
G. P.	Gifford Pinchot, A.M., D.Sc., LL.D. Professor of Forestry, Yale University. Formerly Chief Forester, U.S.A. President of the National Conservation Association. Member of the Society of American Foresters, Royal English Arboricultural Society, &c. Author of *The White Pine*; *A Primer of Forestry*; &c.	**Forests and Forestry: *United States*.**
G. W. T.	Rev. Griffiths Wheeler Thatcher, M.A., B.D. Warden of Camden College, Sydney, N.S.W. Formerly Tutor in Hebrew and Old Testament History at Mansfield College, Oxford.	**Fairūzābādī; Fakhr ud-Dīn Rāzi; Fārābī; Farazdaq.**
H. B. S.	Rev. Henry Barclay Swete, M.A., D.D., Litt.D. Regius Professor of Divinity, Cambridge University. Fellow of Gonville and Caius College, Cambridge. Fellow of King's College, London. Fellow of British Academy. Hon. Canon of Ely Cathedral. Author of *The Holy Spirit in the New Testament*; &c.	**Fathers of the Church.**
H. Ch.	Hugh Chisholm, M.A. Formerly Scholar of Corpus Christi College, Oxford. Editor of the 11th Edition of the *Encyclopaedia Britannica*; Co-Editor of the 10th edition.	**Forster.**
H. De.	Hippolyte Delehaye, S.J. Assistant in the compilation of the Bollandist publications: *Analecta Bollandiana* and *Acta Sanctorum*.	**Fiacre, Saint; Florian, Saint.**
H. F. G.	Hans Friedrich Gadow, F.R.S., Ph.D. Strickland Curator and Lecturer on Zoology in the University of Cambridge. Author of "Amphibia and Reptiles," in the *Cambridge Natural History*.	**Flamingo.**

H. L. S.	H. Lawrence Swinburne (d. 1909).	**Flag.**
H. St.	Henry Sturt, M.A. Author of *Idola Theatri*; *The Idea of a Free Church*; *Personal Idealism*.	**Fechner;** **Feuerbach, Ludwig A.**
H. W. C. D.	Henry William Carless Davis, M.A. Fellow and Tutor of Balliol College, Oxford. Fellow of All Souls' College, Oxford, 1895-1902. Author of *England under the Normans and Angevins*; *Charlemagne*.	**Fitz Neal;** **Fitz Peter, Geoffrey;** **Fitz Stephen, William;** **Fitz Thedmar; Flambard;** **Florence of Worcester.**
H. W. S.	H. Wickham Steed. Correspondent of *The Times* at Vienna. Correspondent of *The Times* at Rome, 1897-1902.	**Fabrizi.**
I. A.	Israel Abrahams, M.A. Reader in Talmudic and Rabbinic Literature, University of Cambridge. President, Jewish Historical Society of England. Author of *A Short History of Jewish Literature*; *Jewish Life in the Middle Ages*.	**Exilarch;** **Eybeschutz.**
J. A. C.	Sir Joseph Archer Crowe, K.C.M.G. See the biographical article: Crowe, Sir Joseph A.	**Eyck, Van.**
J. A. H.	John Allen Howe, B.Sc. Curator and Librarian of the Museum of Practical Geology, London. Author of *The Geology of Building Stones*.	**France: *Geology*.**
J. A. S.	John Addington Symonds, LL.D. See the biographical article: Symonds, John A.	**Ficino;** **Filelfo.**
J. B.*	Joseph Burton. Partner in Pilkington's Tile and Pottery Co., Clifton Junction, Manchester.	**Firebrick (*in part*).**
J. B. P.	James Bell Pettigrew, M.D., LL.D., F.R.S., F.R.C.P. (Edin.) (1834-1908). Chandos Professor of Medicine and Anatomy, University of St Andrews, 1875-1908. Author of *Animal Locomotion*; &c.	**Flight and Flying (*in part*).**
J. Bt.	James Bartlett. Lecturer on Construction, Architecture, Sanitation, Quantities, &c., at King's College, London. Member of Society of Architects. Member of Institute of Junior Engineers.	**Foundations.**
J. C. M.	James Clerk Maxwell, LL.D. See the biographical article: Maxwell, James Clerk.	**Faraday.**
J. E. C. B.	John Edward Courtenay Bodley, M.A. Balliol College, Oxford. Corresponding Member of the Institute of France. Author of *France*; *The Coronation of Edward VII.*; &c.	**France: *History*, 1870-1910.**
J. E. P. W.	John Edward Power Wallis, M.A. Puisne Judge, Madras. Vice-Chancellor of Madras University. Inns of Court Reader in Constitutional Law, 1892-1897. Formerly Editor of *State Trials*.	**Extradition.**
J. F. St.	John Frederick Stenning, M.A. Dean and Fellow of Wadham College, Oxford. University Lecturer in Aramaic. Lecturer in Divinity and Hebrew at Wadham College.	**Exodus, Book of.**
J. G. H.	Joseph G. Horner, A.M.I.Mech.E. Author of *Plating and Boiler Making*; *Practical Metal Turning*; &c.	**Forging;** **Founding.**

J. G. R.	John George Robertson, M.A., Ph.D. Professor of German at the University of London. Formerly Lecturer on the English Language, Strassburg University. Author of *History of German Literature*; &c.	**Fouqué, Baron.**
J. H. P.*	John Hungerford Pollen, M.A. (d. 1908). Formerly Professor of Fine Arts in Catholic University of Dublin. Fellow of Merton College, Oxford. Cantor Lecturer, Society of Arts, 1885. Author of *Ancient and Modern Furniture and Woodwork*; *Ancient and Modern Gold and Silversmith's Work*; *The Trajan Column*; &c.	**Fan.**
J. Hl. R.	John Holland Rose, M.A., Litt.D. Lecturer on Modern History to the Cambridge University Local Lectures Syndicate. Author of *Life of Napoleon I.*; *Napoleonic Studies*; *The Development of the European Nations*; *The Life of Pitt*; chapters in the *Cambridge Modern History*.	**Fouché.**
J. H. R.	John Horace Round, M.A., LL.D. (Edin.). Author of *Feudal England*; *Studies in Peerage and Family History*; *Peerage and Pedigree*; &c.	**Ferrers: *Family*;** **Fitzgerald: *Family*.**
J. I.	Jules Isaac. Professor of History at the Lycée of Lyons.	**Francis I. of France.**
J. K. L.	Sir John Knox Laughton, M.A., Litt.D. Professor of Modern History, King's College, London. Secretary of the Navy Records Society. Served in the Baltic, 1854-1855; in China, 1856-1859. Mathematical and Naval Instructor, Royal Naval College, Portsmouth, 1866-1873; Greenwich, 1873-1885. President, Royal Meteorological Society, 1882-1884. Honorary Fellow, Gonville and Caius College, Cambridge. Fellow, King's College, London. Author of *Physical Geography in its Relation to the Prevailing Winds and Currents*; *Studies in Naval History*; *Sea Fights and Adventures*; &c.	**Farragut;** **Fitzroy.**
J. L. B.	Julian Levett Baker, F.I.C. Analytical and Consulting Chemist. Examiner in Brewing to the City and Guilds of London Institute, Department of Technology. Hon. Secretary of the Institute of Brewing. Author of *The Brewing Industry*; &c.	**Fermentation.**
J. Ma.	John Macdonald.	**Fair (*in part*).**
J. M. S.	James Montgomery Stuart. Author of *The History of Free Trade in Tuscany*; *Reminiscences and Essays*.	**Foscolo.**
J. Pa.	James Paton, F.L.S. Superintendent of Museums and Art Galleries of Corporation of Glasgow. Assistant in Museum of Science and Art, Edinburgh, 1861-1876. President of Museums Association of United Kingdom, 1896. Editor and part-author of *Scottish National Memorials*, 1890.	**Feather (*in part*).**
J. P. E.	Jean Paul Hippolyte Emmanuel Adhémar Esmein. Professor of Law in the University of Paris. Officer of the Legion of Honour. Member of the Institute of France. Author of *Cours élémentaire d'histoire du droit français*; &c.	**France: *Law and Institutions*.**
J. R. C.	Joseph Rogerson Cotter, M.A. Assistant to the Professor of Natural and Experimental Philosophy, Trinity College, Dublin. Editor of 2nd edition of Preston's *Theory of Heat*.	**Fluorescence.**

J. R. F.*	Joseph R. Fisher. Editor of the *Northern Whig*, Belfast. Author of *Finland and the Tsars*; *Law of the Press*; &c.	**Finland.**
J. R. J. J.	Julian Robert John Jocelyn. Colonel, R.A. Formerly Commandant, Ordnance College; Member of Ordnance Committee; Commandant, Schools of Gunnery.	**Fireworks: *History*.**
J. S. Bl.	Rev. John Sutherland Black, M.A., LL.D. Assistant Editor, 9th edition, *Encyclopaedia Britannica*. Joint Editor of the *Encyclopaedia Biblica*. Translated Ritschl's *Critical History of the Christian Doctrine of Justification and Reconciliation*.	**Fasting;** **Feasts and Festivals.**
J. S. F.	John Smith Flett, D.Sc, F.G.S. Petrographer to the Geological Survey. Formerly Lecturer on Petrology in Edinburgh University. Neill Medallist of the Royal Society of Edinburgh. Bigsby Medallist of the Geological Society of London.	**Felsite;** **Flint.**
J. S. K.	John Scott Keltie, LL.D., F.S.S.. F.S.A. (Scot.). Secretary, Royal Geographical Society. Knight of Swedish Order of North Star. Commander of the Norwegian Order of St Olaf. Hon. Member, Geographical Societies of Paris, Berlin, Rome, &c. Editor of *Statesman's Year Book*. Editor of the *Geographical Journal*.	**Finland (*in part*);** **Flinders.**
J. T. Be.	John T. Bealby. Joint Author of Stanford's *Europe*. Formerly Editor of the *Scottish Geographical Magazine*. Translator of Sven Hedin's *Through Asia, Central Asia and Tibet*; &c.	**Fens;** **Ferghana (*in part*).**
K. S.	Kathleen Schlesinger. Author of *The Instruments of the Orchestra*.	**Fiddle; Fife; Flageolet;** **Flute (*in part*).**
L. D.*	Louis Duchesne. See the biographical article: Duchesne, L. M. O.	**Formosus.**
L. F. S.	Leslie Frederic Scott, M.A., K.C.C. Barrister-at-Law, Inner Temple.	**Factor.**
L. J.	Lieut.-Colonel Louis Charles Jackson, R.E., C.M.G. Assistant Director of Fortifications and Works, War Office. Formerly Instructor in Fortification, R.M.A., Woolwich. Instructor in Fortification and Military Engineering, School of Military Engineering, Chatham	**Fortification and Siegecraft.**
L. V.*	Luigi Villari. Italian Foreign Office (Emigration Dept.). Formerly Newspaper Correspondent in east of Europe. Italian Vice-Consul in New Orleans, 1906; Philadelphia, 1907; Boston, U.S.A., 1907-1910. Author of *Italian Life in Town and Country*; *Fire and Sword in the Caucasus*; &c.	**Faliero; Fanti, Manfredo;** **Farini, Luigi Carlo;** **Farnese: *Family*;** **Ferdinand I. and IV. of Naples;** **Ferdinand II. of the Two Sicilies;** **Fiesco; Filangieri, C.;** **Florence; Foscari;** **Fossombroni;** **Francis II. of the Two Sicilies;** **Francis IV. and V. of Modena.**
M. Ha.	Marcus Hartog, M.A., D.Sc, F.L.S. Professor of Zoology, University College, Cork. Author of ""Protozoa," in *Cambridge Natural History*; and papers for various scientific journals.	**Flagellate; Foraminifera.**

N. W. T.	NORTHCOTE WHITBRIDGE THOMAS, M.A. Government Anthropologist to Southern Nigeria. Corresponding Member of the Société d'Anthropologie de Paris. Author of *Thought Transference*; *Kinship and Marriage in Australia*; &c.	**Faith Healing; Fetishism; Folklore.**
O. H.*	OTTO HEHNER, F.I.C., F.C.S. Public Analyst. Formerly President of Society of Public Analysts. Vice-President of Institute of Chemistry of Great Britain and Ireland. Author of works on Butter Analysis; Alcohol Tables; &c.	**Food Preservation.**
O. M.	DAVID ORME MASSON, M.A., D.SC, F.R.S. Professor of Chemistry, Melbourne University. Author of papers on chemistry in the transactions of various learned societies.	**Fireworks: *Modern*.**
P. A.	PAUL DANIEL ALPHANDÉRY. Professor of the History of Dogma, École Pratique des Hautes Études, Sorbonne, Paris. Author of *Les Idées morales chez les hétérodoxes latines au début du XIII^e siècle*.	**Flagellants.**
P. A. K.	PRINCE PETER ALEXEIVITCH KROPOTKIN. See the biographical article: KROPOTKIN, P. A.	**Ferghana (*in part*); Finland (*in part*).**
P. C. Y.	PHILIP CHESNEY YORKE, M.A. Magdalen College, Oxford.	**Falkland; Fanshaw; Fawkes, Guy; Fell, John; Fortescue, Sir John.**
P. C. M.	PETER CHALMERS MITCHELL, F.R.S., F.Z.S., D.SC, LL.D. Secretary to the Zoological Society of London. University Demonstrator in Comparative Anatomy and Assistant to Linacre Professor at Oxford, 1881-1891. Examiner in Zoology to the University of London, 1903. Author of *Outlines of Biology*; &c.	**Evolution.**
P. G. K.	PAUL GEORGE KONODY. Art Critic of the *Observer* and the *Daily Mail*. Formerly Editor of *The Artist*. Author of *The Art of Walter Crane*; *Velasquez, Life and Work*; &c.	**Fiorenzo di Lorenzo; Fragonard.**
P. J. H.	PHILIP JOSEPH HARTOG, M.A., L. ÈS SC. (Paris). Academic Registrar of the University of London. Author of *The Writing of English*, and articles in the Special Reports on educational subjects of the Board of Education.	**Examinations (*in part*).**
P. W.	PAUL WIRIATH. Director of the École Supérieure Pratique de Commerce et d'Industrie, Paris.	**France: *History to* 1870.**
R. Ad.	ROBERT ADAMSON, LL.D. See the biographical article: ADAMSON, R.	**Fichte; Fourier, F. C. M.**
R. A. S. M.	ROBERT ALEXANDER STEWART MACALISTER, M.A., F.S.A. St John's College, Cambridge. Director of Excavations for the Palestine Exploration Fund.	**Font.**
R. H. C.	REV. ROBERT HENRY CHARLES, M.A., D.D., D.LITT. (Oxon.). Grinfield Lecturer and Lecturer in Biblical Studies, Oxford. Fellow of the British Academy. Formerly Senior Moderator of Trinity College, Dublin. Author and Editor of *Book of Enoch*; *Book of Jubilees*; *Apocalypse of Baruch*; *Assumption of Moses*; *Ascension of Isaiah*; *Testaments of the XII. Patriarchs*; &c.	**Ezra: *Third and Fourth Books of*.**
R. J. M.	RONALD JOHN MCNEILL, M.A. Christ Church, Oxford. Barrister-at-Law. Formerly Editor of the *St James's Gazette*,	**Fenians; Fitzgerald, Lord Edward; Flood, Henry.**

	London.	
R. L.*	Richard Lydekker, F.R.S., F.G.S., F.Z.S. Member of the Staff of the Geological Survey of India, 1874-1882. Author of *Catalogue of Fossil Mammals, Reptiles and Birds in British Museum*; *The Deer of all Lands*; *The Game Animals of Africa*; &c.	**Flying-Squirrel; Fox.**
R. N. B.	Robert Nisbet Bain (d. 1909). Assistant Librarian, British Museum, 1883-1909. Author of *Scandinavia: the Political History of Denmark, Norway and Sweden, 1513-1900*; *The First Romanovs, 1613-1725*; *Slavonic Europe: the Political History of Poland and Russia from 1469 to 1796*; &c.	**Fersen, Counts von.**
R. Po.	René Poupardin, D. ès L. Secretary of the École des Chartes. Honorary Librarian at the Bibliothèque Nationale, Paris. Author of *Le Royaume de Provence sous les Carolingiens*; *Recueil des chartes de Saint-Germain*; &c.	**Franche-Comté.**
R. P. S.	R. Phené Spiers, F.S.A., F.R.I.B.A. Formerly Master of the Architectural School, Royal Academy, London. Past President of Architectural Association. Associate and Fellow of King's College, London. Corresponding Member of the Institute of France. Editor of Fergusson's *History of Architecture*. Author of *Architecture: East and West*; &c.	**Flute: *Architecture*.**
R. S. C.	Robert Seymour Conway, M.A., D.Litt. (Cantab.). Professor of Latin and Indo-European Philology in the University of Manchester. Formerly Professor of Latin in University College, Cardiff; and Fellow of Gonville and Caius College, Cambridge. Author of *The Italic Dialects*.	**Falisci.**
R. Tr.	Roland Truslove, M.A. Formerly Scholar of Christ Church, Oxford. Fellow, Dean and Lecturer in Classics at Worcester College, Oxford.	**France: *Statistics*.**
S. A. C.	Stanley Arthur Cook, M.A. Editor for Palestine Exploration Fund. Lecturer in Hebrew and Syriac, and formerly Fellow, Gonville and Caius College, Cambridge. Examiner in Hebrew and Aramaic, London University, 1904-1908. Author of *Glossary of Aramaic Inscriptions*; *The Laws of Moses and the Code of Hammurabi*; *Critical Notes on Old Testament History*; *Religion of Ancient Palestine*; &c.	**Exodus, The;** **Ezra and Nehemiah, Books of.**
S. C.	Sidney Colvin, LL.D. See the biographical article: Colvin, S.	**Fine Arts; Finiguerra; Flaxman.**
St C.	Viscount St Cyres. See the biographical article: Iddesleigh, 1st Earl of	**Fénelon.**
S. E. B.	Hon. Simeon Eben Baldwin, M.A., LL.D. Professor of Constitutional and Private International Law in Yale University. Director of the Bureau of Comparative Law of the American Bar Association. Formerly Chief Justice of Connecticut. Author of *Modern Political Institutions*; *American Railroad Law*; &c.	**Extradition: U.S.A.**
S. E. S.-R.	Stephen Edward Spring-Rice, M.A., C.B. (1856-1902). Formerly Principal Clerk, H.M. Treasury, and	**Exchequer (*in part*).**

	Auditor of the Civil List. Fellow of Trinity College, Cambridge.	
T. A. I.	Thomas Allan Ingram, M.A., LL.D. Trinity College, Dublin.	**Explosives: *Law*.**
T. As.	Thomas Ashby, M.A., D.Litt. (Oxon.), F.S.A. Director of British School of Archaeology at Rome. Formerly Scholar of Christ Church, Oxford. Craven Fellow, 1897. Corresponding Member of the Imperial German Archaeological Institute. Author of the *Classical Topography of the Roman Campagna*; &c.	**Faesulae; Falerii; Falerio; Fanum Fortunae; Ferentino; Fermo; Flaminia Via; Florence: *Early History*; Fondi; Fonni; Forum Appii.**
T. Ba.	Sir Thomas Barclay, M.P. Member of the Institute of International Law. Member of the Supreme Council of the Congo Free State. Officer of the Legion of Honour. Author of *Problems of International Practice and Diplomacy*; &c. M.P. for Blackburn, 1910.	**Exterritoriality.**
T. H. H.*	Sir Thomas Hungerford Holdich, K.C.M.G., K.C.I.E., D.Sc., F.R.G.S. Colonel in the Royal Engineers. Superintendent, Frontier Surveys, India, 1892-1898. Gold Medallist, R.G.S., London, 1887. H.M. Commissioner for the Persia-Beluch Boundary, 1896. Author of *The Indian Borderland*; *The Gates of India*; &c.	**Everest, Mount.**
T. K. C.	Rev. Thomas Kelly Cheyne, D.D. See the biographical article: Cheyne, T. K.	**Eve (*in part*).**
T. Se.	Thomas Seccombe, M.A. Lecturer in History, East London and Birkbeck Colleges, University of London. Stanhope Prizeman, Oxford, 1887. Formerly Assistant Editor of *Dictionary of National Biography*, 1891-1901. Joint-author of *The Bookman History of English Literature*. Author of *The Age of Johnson*; &c.	**Fawcett, Henry.**
T. Wo.	Thomas Woodhouse. Head of Weaving and Textile Designing Department, Technical College, Dundee.	**Flax.**
V. M.	Victor Charles Mahillon. Principal of the Conservatoire Royal de Musique at Brussels. Chevalier of the Legion of Honour.	**Flute (*in part*).**
W. A. B. C.	Rev. William Augustus Brevoort Coolidge, M.A., F.R.G.S., Ph.D. (Bern). Fellow of Magdalen College, Oxford. Professor of English History, St David's College, Lampeter, 1880-1881. Author of *Guide to Switzerland*; *The Alps in Nature and in History*; &c. Editor of the *Alpine Journal*, 1880-1889.	**Feldkirch.**
W. A. P.	Walter Alison Phillips, M.A. Formerly Exhibitioner of Merton College and Senior Scholar of St John's College, Oxford. Author of *Modern Europe*; &c.	**Excellency; Faust; Febronianism.**
W. B.*	William Burton, M.A., F.C.S. Chairman, Joint Committee of Pottery Manufacturers of Great Britain. Author of *English Stoneware and Earthenware*; &c.	**Firebrick (*in part*).**
W. Ca.	Walter Camp, A.M. Member of Yale University Council. Author of *American Football*; *Football Facts and Figures*; &c.	**Football: *American* (*in part*).**

W. Ga.	WALTER GARSTANG, M.A., D.SC. Professor of Zoology at the University of Leeds. Scientific Adviser to H.M. Delegates on the International Council for the Exploration of the Sea, 1901-1907. Formerly Fellow of Lincoln College, Oxford. Author of *The Races and Migrations of the Mackerel*; *The Impoverishment of the Sea*; &c.	**Fisheries.**
W. He.	WALTER HEPWORTH. Formerly Commissioner of the Council of Education, Science and Art Department, South Kensington.	**Fool.**
W. M. R.	WILLIAM MICHAEL ROSSETTI. See the biographical article: ROSSETTI, DANTE G.	**Ferrari, Gaudenzio; Fielding, Copley; Franceschi, Piero; Francia.**
W. P. P.	WILLIAM PLANE PYCRAFT, F.Z.S. Assistant in the Zoological Department, British Museum. Formerly Assistant Linacre Professor of Comparative Anatomy, Oxford. Vice-President of the Selborne Society. Author of *A History of Birds*; &c.	**Feather (*in part*).**
W. N. S.	WILLIAM NAPIER SHAW, M.A., LL.D., D.SC, F.R.S. Director of the Meteorological Office. Reader in Meteorology in the University of London. President of Permanent International Meteorological Committee. Member of Meteorological Council, 1897-1905. Hon. Fellow of Emmanuel College, Cambridge. Fellow of Emmanuel College, 1877-1899; Senior Tutor, 1890-1899. Joint Author of *Text Book of Practical Physics*; &c.	**Fog.**
W. P. R.	HON. WILLIAM PEMBER REEVES. Director of London School of Economics. Agent-General and High Commissioner for New Zealand, 1896-1909. Minister of Education, Labour and Justice, New Zealand, 1891-1896. Author of *The Long White Cloud, a History of New Zealand*; &c.	**Fox, Sir William.**
W. R. S.	WILLIAM ROBERTSON SMITH, LL.D. See the biographical article: SMITH, W. R.	**Eve (*in part*).**
W. R. E. H.	WILLIAM RICHARD EATON HODGKINSON, PH.D., F.R.S. Professor of Chemistry and Physics, Ordnance College, Woolwich. Formerly Professor of Chemistry and Physics, R.M.A., Woolwich. Part Author of Valentin-Hodgkinson's *Practical Chemistry*; &c.	**Explosives.**
W. Sch.	SIR WILHELM SCHLICH, K.C.I.E., M.A., PH.D., F.R.S., F.L.S. Professor of Forestry at the University of Oxford. Hon. Fellow of St John's College. Author of *A Manual of Forestry*; *Forestry in the United Kingdom*; *The Outlook of the World's Timber Supply*; &c.	**Forests and Forestry.**
W. W. F.*	WILLIAM WARDE FOWLER, M.A. Fellow of Lincoln College, Oxford. Sub-rector, 1881-1904. Gifford Lecturer, Edinburgh University, 1908. Author of *The City-State of the Greeks and Romans*; *The Roman Festivals of the Republican Period*; &c.	**Fortuna.**
W. W. R.*	WILLIAM WALKER ROCKWELL, LIC. THEOL. Assistant Professor of Church History, Union Theological Seminary, New York. Author of *Die Doppelehe des Landgrafen Philipp von Hessen*.	**Ferrara-Florence, Council of.**

1 A complete list, showing all individual contributors, appears in the final volume.

PRINCIPAL UNSIGNED ARTICLES

EVANGELICAL CHURCH CONFERENCE, a convention of delegates from the different Protestant churches of Germany. The conference originated in 1848, when the general desire for political unity made itself felt in the ecclesiastical sphere as well. A preliminary meeting was held at Sandhof near Frankfort in June of that year, and on the 21st of September some five hundred delegates representing the Lutheran, the Reformed, the United and the Moravian churches assembled at Wittenberg. The gathering was known as *Kirchentag* (church diet), and, while leaving each denomination free in respect of constitution, ritual, doctrine and attitude towards the state, agreed to act unitedly in bearing witness against the non-evangelical churches and in defending the rights and liberties of the churches in the federation. The organization thus closely resembles that of the Free Church Federation in England. The movement exercised considerable influence during the middle of the 19th century. Though no *Kirchentag*, as such, has been convened since 1871, its place has been taken by the *Kongress für innere Mission*, which holds annual meetings in different towns. There is also a biennial conference of the evangelical churches held at Eisenach to discuss matters of general interest. Its decisions have no legislative force.

EVANGELICAL UNION, a religious denomination which originated in the suspension of the Rev. James Morison (1816-1893), minister of a United Secession congregation in Kilmarnock, Scotland, for certain views regarding faith, the work of the Holy Spirit in salvation, and the extent of the atonement, which were regarded by the supreme court of his church as anti-Calvinistic and heretical. Morison was suspended by the presbytery in 1841 and thereupon definitely withdrew from the Secession Church. His father, who was minister at Bathgate, and two other ministers, being deposed not long afterwards for similar opinions, the four met at Kilmarnock on the 16th of May 1843 (two days before the

“Disruption” of the Free Church), and, on the basis of certain doctrinal principles, formed themselves into an association under the name of the Evangelical Union, “for the purpose of countenancing, counselling and otherwise aiding one another, and also for the purpose of training up spiritual and devoted young men to carry forward the work and ‘pleasure of the Lord.’” The doctrinal views of the new denomination gradually assumed a more decidedly anti-Calvinistic form, and they began also to find many sympathizers among the Congregationalists of Scotland. Nine students were expelled from the Congregational Academy for holding “Morisonian” doctrines, and in 1845 eight churches were disjoined from the Congregational Union of Scotland and formed a connexion with the Evangelical Union. The Union exercised no jurisdiction over the individual churches connected with it, and in this respect adhered to the Independent or Congregational form of church government; but those congregations which originally were Presbyterian vested their government in a body of elders. In 1889 the denomination numbered 93 churches; and in 1896, after prolonged negotiation, the Evangelical Union was incorporated with the Congregational Union of Scotland.

See *The Evangelical Union Annual; History of the Evangelical Union*, by F. Ferguson (Glasgow, 1876); *The Worthies of the E. U.* (1883); W. Adamson, *Life of Dr James Morison* (1898).

EVANS, CHRISTMAS (1766-1838), Welsh Nonconformist divine, was born near the village of Llandyssul, Cardiganshire, on the 25th of December 1766. His father, a shoemaker, died early, and the boy grew up as an illiterate farm labourer. At the age of seventeen, becoming servant to a Presbyterian minister, David Davies, he was affected by a religious revival and learned to read and write in English and Welsh. The itinerant Calvinistic Methodist preachers and the members of the Baptist church at Llandyssul further influenced him, and he soon joined the latter denomination. In 1789 he went into North Wales as a preacher and settled for two years in the desolate peninsula of Lleyn, Carnarvonshire, whence he removed to Llangefni in Anglesey. Here, on a stipend of £17 a year, supplemented by a little tract-selling, he built up a strong Baptist community, modelling his organization to some extent on that of the Calvinistic Methodists. Many new chapels were built, the money being collected on preaching tours which Evans undertook in South Wales.

In 1826 Evans accepted an invitation to Caerphilly, where he remained for two years, removing in 1828 to Cardiff. In 1832, in response to urgent calls from the north, he settled in Carnarvon and again undertook the old work of building and collecting. He was taken ill on a tour in South Wales, and died at Swansea on the 19th of July 1838. In spite of his early disadvantages and personal disfigurement (he had lost an eye in a youthful brawl), Christmas Evans was a remarkably powerful preacher. To a natural aptitude for this calling he united a nimble mind and an inquiring spirit; his character was simple, his piety humble and his faith fervently evangelical. For a time he came under Sandemanian influence, and when the Wesleyans entered Wales he took the Calvinist side in the bitter controversies that were frequent from 1800 to 1810. His chief characteristic was a vivid and affluent imagination, which absorbed and controlled all his other powers, and earned for him the name of “the Bunyan of Wales.”

His works were edited by Owen Davies in 3 vols. (Carnarvon, 1895-1897). See the *Lives* by D.R. Stephens (1847) and Paxton Hood (1883).

EVANS, EVAN HERBER (1836-1896), Welsh Nonconformist divine, was born on the 5th of July 1836, at Pant yr Onen near Newcastle Emlyn, Cardiganshire. As a boy he saw something of the “Rebecca Riots,” and went to school at the neighbouring village of Llechryd. In 1853 he went into business, first at Pontypridd and then at Merthyr, but next year made his way to Liverpool. He decided to enter the ministry, and studied arts and theology respectively at the Normal College, Swansea, and the Memorial College, Brecon,

his convictions being deepened by the religious revival of 1858-1859. In 1862 he succeeded Thomas Jones as minister of the Congregational church at Morriston near Swansea. In 1865 he became pastor of Salem church, Carnarvon, a charge which he occupied for nearly thirty years despite many invitations to English pastorates. In 1894 he became principal of the Congregational college at Bangor. He died on the 30th of December 1896. He was chairman of the Welsh Congregational Union in 1886 and of the Congregational Union of England and Wales in 1892; and by his earnest ministry, his eloquence and his literary work, especially in the denominational paper *Y Dysgedydd*, he achieved a position of great influence in his country.

See *Life* by H. Elvet Lewis.

EVANS, SIR GEORGE DE LACY (1787-1870), British soldier, was born at Moig, Limerick, in 1787. He was educated at Woolwich Academy, and entered the army in 1806 as a volunteer, obtaining an ensigncy in the 22nd regiment in 1807. His early service was spent in India, but he exchanged into the 3rd Light Dragoons in order to take part in the Peninsular War, and was present in the retreat from Burgos in 1812. In 1813 he was at Vittoria, and was afterwards employed in making a military survey of the passes of the Pyrenees. He took part in the campaign of 1814, and was present at Pampeluna, the Nive and Toulouse; and later in the year he served with great distinction on the staff in General Ross's Bladensburg campaign, and took part in the capture of Washington and of Baltimore and the operations before New Orleans. He returned to England in the spring of 1815, in time to take part in the Waterloo campaign as assistant quartermaster-general on Sir T. Picton's staff. As a member of the staff of the duke of Wellington he accompanied the English army to Paris, and remained there during the occupation of the city by the allies. He was still a substantive captain in the 5th West India regiment, though a lieutenant-colonel by brevet, when he went on half-pay in 1818. In 1830 he was elected M.P. for Rye in the Liberal interest; but in the election of 1832 he was an unsuccessful candidate both for that borough and for Westminster. For the latter constituency he was, however, returned in 1833, and, except in the parliament of 1841-1846, he continued to represent it till 1865, when he retired from political life. His parliamentary duties did not, however, interfere with his career as a soldier. In 1835 he went out to Spain in command of the Spanish Legion, recruited in England, and 9600 strong, which served for two years in the Carlist War on the side of the queen of Spain. In spite of great difficulties the legion won great distinction on the battlefields of northern Spain, and Evans was able to say that no prisoners had been taken from it in action, that it had never lost a gun or an equipage, and that it had taken 27 guns and 1100 prisoners from the enemy. He received several Spanish orders, and on his return in 1839 was made a colonel and K.C.B. In 1846 he became major-general; and in 1854, on the breaking-out of the Crimean War, he was made lieutenant-general and appointed to command the 2nd division of the Army of the East. At the battle of the Alma, where he received a severe wound, his quick comprehension of the features of the combat largely contributed to the victory. On the 26th of October he defeated a large Russian force which attacked his position on Mount Inkerman. Illness and fatigue compelled him a few days after this to leave the command of his division in the hands of General Pennefather; but he rose from his sick-bed on the day of the battle of Inkerman, the 5th of November, and, declining to take the command of his division from Pennefather, aided him in the long-protracted struggle by his advice. On his return invalided to England in the following February, Evans received the thanks of the House of Commons. He was made a G.C.B., and the university of Oxford conferred on him the degree of D.C.L. In 1861 he was promoted to the full rank of general. He died in London on the 9th of January 1870.

EVANS, SIR JOHN (1823-1908), English archaeologist and geologist, son of the Rev. Dr A.B. Evans, head master of Market Bosworth grammar school, was born at Britwell Court, Bucks, on the 17th of November 1823. He was for many years head of the extensive paper manufactory of Messrs John Dickinson at Nash Mills, Hemel Hempstead, but was especially

distinguished as an antiquary and numismatist. He was the author of three books, standard in their respective departments: *The Coins of the Ancient Britons* (1864); *The Ancient Stone Implements, Weapons and Ornaments of Great Britain* (1872, 2nd ed. 1897); and *The Ancient Bronze Implements, Weapons and Ornaments of Great Britain and Ireland* (1881). He also wrote a number of separate papers on archaeological and geological subjects—notably the papers on "Flint Implements in the Drift" communicated in 1860 and 1862 to *Archaeologia*, the organ of the Society of Antiquaries. Of that society he was president from 1885 to 1892, and he was president of the Numismatic Society from 1874 to the time of his death. He also presided over the Geological Society, 1874-1876; the Anthropological Institute, 1877-1879; the Society of Chemical Industry, 1892-1893; the British Association, 1897-1898; and for twenty years (1878-1898) he was treasurer of the Royal Society. As president of the Society of Antiquaries he was an *ex officio* trustee of the British Museum, and subsequently he became a permanent trustee. His academic honours included honorary degrees from several universities, and he was a corresponding member of the Institut de France. He was created a K.C.B. in 1892. He died at Berkhamsted on the 31st of May 1908.

His eldest son, Arthur John Evans, born in 1851, was educated at Brasenose College, Oxford, and Göttingen. He became fellow of Brasenose and in 1884 keeper of the Ashmolean Museum at Oxford. He travelled in Finland and Lapland in 1873-1874, and in 1875 made a special study of archaeology and ethnology in the Balkan States. In 1893 he began his investigations in Crete, which have resulted in discoveries of the utmost importance concerning the early history of Greece and the eastern Mediterranean (see Aegean Civilization and Crete). He is a member of all the chief archaeological societies in Europe, holds honorary degrees at Oxford, Edinburgh and Dublin, and is a fellow of the Royal Society. His chief publications are: *Cretan Pictographs and Prae-Phoenician Script* (1896); *Further Discoveries of Cretan and Aegean Script* (1898); *The Mycenaean Tree and Pillar Cult* (1901); *Scripta Minoa* (1909 foll.); and reports on the excavations. He also edited with additions Freeman's *History of Sicily*, vol. iv.

EVANS, OLIVER (1755-1819), American mechanician, was born at Newport, Delaware, in 1755. He was apprenticed to a wheelwright, and at the age of twenty-two he invented a machine for making the card-teeth used in carding wool and cotton. In 1780 he became partner with his brothers, who were practical millers, and soon introduced various labour-saving appliances which both cheapened and improved the processes of flour-milling. Turning his attention to the steam engine, he employed steam at a relatively high pressure, and the plans of his invention which he sent over to England in 1787 and in 1794-1795 are said to have been seen by R. Trevithick, whom in that case he anticipated in the adoption of the high-pressure principle. He made use of his engine for driving mill machinery; and in 1803 he constructed a steam dredging machine, which also propelled itself on land. In 1819 a disastrous fire broke out in his factory at Pittsburg, and he did not long survive it, dying at New York on the 21st of April 1819.

EVANSON, EDWARD (1731-1805), English divine, was born on the 21st of April 1731 at Warrington, Lancashire. After graduating at Cambridge (Emmanuel College) and taking holy orders, he officiated for several years as curate at Mitcham. In 1768 he became vicar of South Mimms near Barnet; and in November 1769 he was presented to the rectory of Tewkesbury, with which he held also the vicarage of Longdon in Worcestershire. In the course of his studies he discovered what he thought important variance between the teaching of the Church of England and that of the Bible, and he did not conceal his convictions. In reading the service he altered or omitted phrases which seemed to him untrue, and in reading the Scriptures pointed out errors in the translation. A crisis was brought on by his sermon on the resurrection, preached at Easter 1771; and in November 1773 a prosecution was instituted against him in the consistory court of Gloucester. He was charged with "depraving the public worship of God contained in the liturgy of the Church of England, asserting the same to be superstitious and unchristian, preaching, writing and

conversing against the creeds and the divinity of our Saviour, and assuming to himself the power of making arbitrary alterations in his performance of the public worship." A protest was at once signed and published by a large number of his parishioners against the prosecution. The case was dismissed on technical grounds, but appeals were made to the court of arches and the court of delegates. Meanwhile Evanson had made his views generally known by several publications. In 1772 appeared anonymously his *Doctrines of a Trinity and the Incarnation of God, examined upon the Principles of Reason and Common Sense*. This was followed in 1777 by *A Letter to Dr Hurd, Bishop of Worcester, wherein the Importance of the Prophecies of the New Testament and the Nature of the Grand Apostasy predicted in them are particularly and impartially considered*. He also wrote some papers on the Sabbath, which brought him into controversy with Joseph Priestley, who published the whole discussion (1792). In the same year appeared Evanson's work entitled *The Dissonance of the four generally received Evangelists*, to which replies were published by Priestley and David Simpson (1793). Evanson rejected most of the books of the New Testament as forgeries, and of the four gospels he accepted only that of St Luke. In his later years he ministered to a Unitarian congregation at Lympston, Devonshire. In 1802 he published *Reflections upon the State of Religion in Christendom*, in which he attempted to explain and illustrate the mysterious foreshadowings of the Apocalypse. This he considered the most important of his writings. Shortly before his death at Colford, near Crediton, Devonshire, on the 25th of September 1805, he completed his *Second Thoughts on the Trinity*, in reply to a work of the bishop of Gloucester.

> His sermons (prefaced by a Life by G. Rogers) were published in two volumes in 1807, and were the occasion of T. Falconer's *Bampton Lectures* in 1811. A narrative of the circumstances which led to the prosecution of Evanson was published by N. Havard, the town-clerk of Tewkesbury, in 1778.

EVANSTON, a city of Cook county, Illinois, U.S.A., on the shore of Lake Michigan, 12 m. N. of Chicago. Pop. (1900) 19,259, of whom 4441 were foreign-born; (1910 U.S. census) 24,978. It is served by the Chicago & North-Western, and the Chicago, Milwaukee & St Paul railways, and by two electric lines. The city is an important residential suburb of Chicago. In 1908 the Evanston public library had 41,430 volumes. In the city are the College of Liberal Arts (1855), the Academy (1860), and the schools of music (1895) and engineering (1908) of Northwestern University, co-educational, chartered in 1851, opened in 1855, the largest school of the Methodist Episcopal Church in America. In 1909-1910 it had productive funds amounting to about $7,500,000, and, including all the allied schools, a faculty of 418 instructors and 4487 students; its schools of medicine (1869), law (1859), pharmacy (1886), commerce (1908) and dentistry (1887) are in Chicago. In 1909 its library had 114,869 volumes and 79,000 pamphlets (exclusive of the libraries of the professional schools in Chicago); and the Garrett Biblical Institute had a library of 25,671 volumes and 4500 pamphlets. The university maintains the Grand Prairie Seminary at Onarga, Iroquois county, and the Elgin Academy at Elgin, Kane county. Enjoying the privileges of the university, though actually independent of it, are the Garrett Biblical Institute (Evanston Theological Seminary), founded in 1855, situated on the university campus, and probably the best-endowed Methodist Episcopal theological seminary in the United States, and affiliated with the Institute, the Norwegian Danish Theological school; and the Swedish Theological Seminary, founded at Galesburg in 1870, removed to Evanston in 1882, and occupying buildings on the university campus until 1907, when it removed to Orrington Avenue and Noyes Street. The Cumnock School of Oratory, at Evanston, also co-operates with the university. By the charter of the university the sale of intoxicating liquors is forbidden within 4 m. of the university campus. The manufacturing importance of the city is slight, but is rapidly increasing. The principal manufactures are wrought iron and steel pipe, bakers' machinery and bricks. In 1905 the value of the factory products was $2,550,529, being an increase of 207.3% since 1900. In Evanston are the publishing offices of the National Woman's Christian Temperance Union. Evanston was incorporated as a town in 1863 and as a village in 1872, and was chartered as a city in 1892. The villages of North Evanston and South Evanston were annexed to Evanston in 1874 and 1892 respectively.

EVANSVILLE, a city and the county-seat of Vanderburg county, Indiana, U.S.A., and a port of entry, on the N. bank of the Ohio river, 200 m. below Louisville, Kentucky—measuring by the windings of the river, which double the direct distance. Pop. (1890) 50,756; (1900) 59,007; (1910 census) 69,647. Of the total population in 1900, 5518 were negroes, 5626 were foreign-born (including 4380 from Germany and 384 from England), and 17,419 were of foreign parentage (both parents foreign-born), and of these 13,910 were of German parentage. Evansville is served by the Evansville & Terre Haute, the Evansville & Indianapolis, the Illinois Central, the Louisville & Nashville, the Louisville, Henderson & St Louis, and the Southern railways, by several interurban electric lines, and by river steamboats. The city is situated on a plateau above the river, and has a number of fine business and public buildings, including the court house and city hall, the Southern Indiana hospital for the insane, the United States marine hospital, and the Willard library and art gallery, containing in 1908 about 30,000 volumes. The city's numerous railway connexions and its situation in a coal-producing region (there are five mines within the city limits) and on the Ohio river, which is navigable nearly all the year, combine to make it the principal commercial and manufacturing centre of Southern Indiana. It is in a tobacco-growing region, is one of the largest hardwood lumber markets in the country, and has an important shipping trade in pork, agricultural products, dried fruits, lime and limestone, flour and tobacco. Among its manufactures in 1905 were flour and grist mill products (value, $2,638,914), furniture ($1,655,246), lumber and timber products ($1,229,533), railway cars ($1,118,376), packed meats ($998,428), woollen and cotton goods, cigars and cigarettes, malt liquors, carriages and wagons, leather and canned goods. The value of the factory products increased from $12,167,524 in 1900 to $19,201,716 in 1905, or 57.8%, and in the latter year Evansville ranked third among the manufacturing cities in the state. The waterworks are owned and operated by the city. First settled about 1812, Evansville was laid out in 1817, and was named in honour of Robert Morgan Evans (1783-1844), one of its founders, who was an officer under General W.H. Harrison in the war of 1812. It soon became a thriving commercial town with an extensive river trade, was incorporated in 1819, and received a city charter in 1847. The completion of the Wabash & Erie Canal, in 1853, from Evansville to Toledo, Ohio, a distance of 400 m., greatly accelerated the city's growth.

EVARISTUS, fourth pope (*c.* 98-105), was the immediate successor of Clement.

EVARTS, WILLIAM MAXWELL (1818-1901), American lawyer, was born in Boston on the 6th of February 1818. He graduated at Yale in 1837, was admitted to the bar in New York in 1841, and soon took high rank in his profession. In 1860 he was chairman of the New York delegation to the Republican national convention. In 1861 he was an unsuccessful candidate for the United States senatorship from New York. He was chief counsel for President Johnson during the impeachment trial, and from July 1868 until March 1869 he was attorney-general of the United States. In 1872 he was counsel for the United States in the "Alabama" arbitration. During President Hayes's administration (1877-1881) he was secretary of state; and from 1885 to 1891 he was one of the senators from New York. As an orator Senator Evarts stood in the foremost rank, and some of his best speeches were published. He died in New York on the 28th of February 1901.

EVE, the English transcription, through Lat. *Eva* and Gr. Εὔα, of the Hebrew name חוה Ḥavvah, given by Adam to his wife because she was "mother of all living," or perhaps more strictly, "of every group of those connected by female kinship" (see W.R. Smith, *Kinship*, 2nd ed., p. 208), as if Eve were the personification of mother-kinship, just as Adam ("man") is the

personification of mankind.

[The abstract meaning "life" (LXX. Ζωή), once favoured by Robertson Smith, is at any rate unsuitable in a popular story. Wellhausen and Nöldeke would compare the Ar. *ḥayyatun*, "serpent," and the former remarks that, if this is right, the Israelites received their first ancestress from the Ḥivvites (Hivites), who were originally the serpent-tribe (*Composition des Hexateuchs*, p. 343; cf. *Reste arabischen Heidentums*, 2nd ed., p. 154). Cheyne, too, assumes a common origin for Ḥavvah and the Ḥivvites.]

Creation of Eve.

[The account of the origin of Eve (Gen. iii. 21-23) runs thus: "And Yahweh-Elohim caused a deep sleep to fall upon the man, and he slept. And he took one of his ribs, and closed up the flesh in its stead, and the rib which Yahweh-Elohim had taken from the man he built up into a woman, and he brought her to the man." Enchanted at the sight, the man now burst out into elevated, rhythmic speech: "This one," he said, "at length is bone of my bone and flesh of my flesh," &c. ; to which the narrator adds the comment, "Therefore doth a man forsake his father and his mother, and cleave to his wife, and they become one flesh (body)." Whether this comment implies the existence of the custom of *beena*, marriage (W.R. Smith, *Kinship*, 2nd ed., p. 208), seems doubtful. It is at least equally possible that the expression "his wife" simply reflects the fact that among ordinary Israelites circumstances had quite naturally brought about the prevalence of monogamy.[1] What the narrator gives is not a doctrine of marriage, much less a precept, but an explanation of a simple and natural phenomenon. How is it, he asks, that a man is so irresistibly drawn towards a woman? And he answers: Because the first woman was built up out of a rib of the first man. At the same time it is plain that the already existing tendency towards monogamy must have been powerfully assisted by this presentation of Eve's story as well as by the prophetic descriptions of Yahweh's relation to Israel under the figure of a monogamous union.]

New Testament application.

[The narrator is no rhetorician, and spares us a description of the ideal woman. But we know that, for Adam, his strangely produced wife was a "help (or helper) matching or corresponding to him"; or, as the Authorized Version puts it, "a help meet for him" (ii. 18b). This does not, of course, exclude subordination on the part of the woman; what is excluded is that exaggeration of natural subordination which the narrator may have found both in his own and in the neighbouring countries, and which he may have regarded as (together with the pains of parturition) the punishment of the woman's transgression (Gen. iii. 16). His own ideal of woman seems to have made its way in Palestine by slow degrees. An apocryphal book (Tobit viii. 6, 7) seems to contain the only reference to the section till we come to the time of Christ, to whom the comment in Gen. ii. 24 supplies the text for an authoritative prohibition of divorce, which presupposes and sanctifies monogamy (Matt. x. 7, 8; Matt. xix. 5). For other New Testament applications of the story of Eve see 1 Cor. xi. 8, 9 (especially); 2 Cor. xi. 3; 1 Tim. ii. 13, 14; and in general cf. Adam, and *Ency. Biblica*, "Adam and Eve."]

Imaginative or legendary developments.

[The seeming omissions in the Biblical narrative have been filled up by imaginative Jewish writers.] The earliest source which remains to us is the Book of Jubilees, or Leptogenesis, a Palestinian work (referred by R.H. Charles to the century immediately preceding the Christian era; see Apocalyptic Literature). In this book, which was largely used by Christian writers, we find a chronology of the lives of Adam and Eve and the names of their daughters—Avan and Azura.[2] The Targum of Jonathan informs us that Eve was created from the thirteenth rib of Adam's right side, thus taking the view that Adam had a rib more than his descendants. Some of the Jewish legends show clear marks of foreign influence. Thus the notion that the first man was a double being, afterwards separated into the two persons of Adam and Eve (*Berachot*, 61; *Erubin*, 18), may be traced back to Philo (*De mundi opif.* §53; cf. *Quaest. in Gen.* lib. i. §25), who borrows the idea, and almost the words, of the myth related by Aristophanes in the Platonic *Symposium* (189 D, 190 A), which, in extravagant form, explains the passion of love by the legend that male and female originally formed one body.

[A recent critic[3] (F. Schwally) even holds that this notion was originally expressed in the account of the creation of man in Gen. i. 27. This involves a textual emendation, and one must at least admit that the present text is not without difficulty, and that Berossus refers to the existence of primeval monstrous androgynous beings according to Babylonian mythology.] There is an analogous Iranian legend of the true man, which parted into man and woman in the Bundahish[4] (the Parsí Genesis), and an Indian legend, which, according to Spiegel, has presumably an Iranian source.[5]

[It has been remarked elsewhere (Adam, §16) that though the later Jews gathered material

for thought very widely, such guidance as they required in theological reflection was mainly derived from Greek culture. What, for instance, was to be made of such a story as that in Gen. ii.-iv.? To "minds trained under the influence of the Jewish Haggada, in which the whole Biblical history is freely intermixed with legendary and parabolic matter," the question as to the literal truth of that story could hardly be formulated. It is otherwise when the Greek leaven begins to work.]

Course of Jewish and Christian interpretation.

Josephus, in the prologue to his *Archaeology*, reserves the problem of the true meaning of the Mosaic narrative, but does not regard everything as strictly literal. Philo, the great representative of Alexandrian allegory, expressly argues that in the nature of things the trees of life and knowledge cannot be taken otherwise than symbolically. His interpretation of the creation of Eve is, as has been already observed, plainly suggested by a Platonic myth. The longing for reunion which love implants in the divided halves of the original dual man is the source of sensual pleasure (symbolized by the serpent), which in turn is the beginning of all transgression. Eve represents the sensuous or perceptive part of man's nature, Adam the reason. The serpent, therefore, does not venture to attack Adam directly. It is sense which yields to pleasure, and in turn enslaves the reason and destroys its immortal virtue. This exposition, in which the elements of the Bible narrative become mere symbols of the abstract notions of Greek philosophy, and are adapted to Greek conceptions of the origin of evil in the material and sensuous part of man, was adopted into Christian theology by Clement and Origen, notwithstanding its obvious inconsistency with the Pauline anthropology, and the difficulty which its supporters felt in reconciling it with the Christian doctrine of the excellence of the married state (Clemens Alex. *Stromata*, p. 174). These difficulties had more weight with the Western church, which, less devoted to speculative abstractions and more deeply influenced by the Pauline anthropology, refused, especially since Augustine, to reduce Paradise and the fall to the region of pure *intelligibilia*; though a spiritual sense was admitted along with the literal (Aug. *Civ. Dei*, xiii. 21).[6]

The history of Adam and Eve became the basis of anthropological discussions which acquired more than speculative importance from their connexion with the doctrine of original sin and the meaning of the sacrament of baptism. One or two points in Augustinian teaching may be here mentioned as having to do particularly with Eve. The question whether the soul of Eve was derived from Adam or directly infused by the Creator is raised as an element in the great problem of traducianism and creationism (*De Gen. ad lit.* lib. x.). And it is from Augustine that Milton derives the idea that Adam sinned, not from desire for the forbidden fruit, but because love forbade him to dissociate his fate from Eve's (*ibid.* lib. xi. *sub fin.*). Medieval discussion moved mainly in the lines laid down by Augustine. A sufficient sample of the way in which the subject was treated by the schoolmen may be found in the *Summa* of Thomas, pars i. qu. xcii. *De productione mulieris*.

The Reformers, always hostile to allegory, and in this matter especially influenced by the Augustinian anthropology, adhered strictly to the literal interpretation of the history of the Protoplasts, which has continued to be generally identified with Protestant orthodoxy. The disintegration of the confessional doctrine of sin in last century was naturally associated with new theories of the meaning of the biblical narrative; but neither renewed forms of the allegorical interpretation, in which everything is reduced to abstract ideas about reason and sensuality, nor the attempts of Eichhorn and others to extract a kernel of simple history by allowing largely for the influence of poetical form in so early a narrative, have found lasting acceptance. On the other hand, the strict historical interpretation is beset with difficulties which modern interpreters have felt with increasing force, and which there is a growing disposition to solve by adopting in one or other form what is called the *mythical* theory of the narrative. But interpretations pass under this now popular title which have no real claim to be so designated. What is common to the "mythical" interpretations is to find the real value of the narrative, not in the form of the story, but in the thoughts which it embodies. But the story cannot be called a myth in the strict sense of the word, unless we are prepared to place it on one line with the myths of heathenism, produced by the unconscious play of plastic fancy, giving shape to the impressions of natural phenomena on primitive observers. Such a theory does no justice to a narrative which embodies profound truths peculiar to the religion of revelation. Other forms of the so-called mythical interpretation are little more than abstract allegory in a new guise, ignoring the fact that the biblical story does not teach general truths which repeat themselves in every individual, but gives a view of the purpose of man's creation, and of the origin of sin, in connexion with the divine plan of redemption. Among his other services in refutation of the unhistorical rationalism of last century, Kant has the merit of having forcibly recalled attention to the fact that the narrative of Genesis, even if we do not take it literally, must be regarded as presenting a view of the beginnings of

the history of the human race (*Muthmasslicher Anfang der Menschengeschichte*, 1786) Those who recognize this fact ought not to call themselves or be called by others adherents of the mythical theory, although they also recognize that in the nature of things the divine truths brought out in the history of the creation and fall could not have been expressed either in the form of literal history or in the shape of abstract metaphysical doctrine; or even although they may hold—as is done by many who accept the narrative as a part of supernatural revelation—that the specific biblical truths which the narrative conveys are presented through the vehicle of a story which, at least in some of its parts, may possibly be shaped by the influence of legends common to the Hebrews with their heathen neighbours.

(W. R. S.; [T. K. C.])

---

1 That polygamy had not become morally objectionable is shown by the stories of Lamech, Abraham and Jacob.

2 See West's authoritative translation in *Pahlavi Texts* (Sacred Books of the East).

3 "Die bibl. Schöpfungsberichte" (*Archiv für Religionswissenschaft*, ix. 171 ff.).

4 Spiegel, *Erânische Alterthumskunde*, i. 511.

5 Muir, *Sanscrit Texts*, vol. i. p. 25; cf. Spiegel, vol. i. p. 458.

6 Thus in medieval theology Eve is a type of the church, and her formation from the rib has a mystic reason, inasmuch as blood and water (the sacraments of the church) flowed from the side of Christ on the cross (Thomas, *Summa*, par. i. qu. xcii.).

EVECTION (Latin for "carrying away"), in astronomy, the largest inequality produced by the action of the sun in the monthly revolution of the moon around the earth. The deviation expressed by it has a maximum amount of about 1° 15′ in either direction. It may be considered as arising from a semi-annual variation in the eccentricity of the moon's orbit and the position of its perigee. It was discovered by Ptolemy.

EVELETH, a city of St Louis county, Minnesota, U.S.A., about 71 m. N.N.W. of Duluth. Pop. (1900) 2752; (1905, state census) 5332, of whom 2975 were foreign-born (1145 Finns, 676 Austrians and 325 Swedes); (1910) 7036. Eveleth is served by the Duluth, Missabe & Northern and the Duluth & Iron Range railways. It lies in the midst of the great red and brown hematite iron-ore deposits of the Mesabi Range—the richest in the Lake Superior district—and the mining and shipping of this ore are its principal industries. The municipality owns and operates the water-works, the water being obtained from Lake Saint Mary, one of a chain of small lakes lying S. of the city. Eveleth was first chartered as a city in 1902.

EVELYN, JOHN (1620-1706), English diarist, was born at Wotton House, near Dorking, Surrey, on the 31st of October 1620. He was the younger son of Richard Evelyn, who owned large estates in the county, and was in 1633 high sheriff of Surrey and Sussex. When John Evelyn was five years old he went to live with his mother's parents at Cliffe, near Lewes. He refused to leave his "too indulgent" grandmother for Eton, and when on her husband's death she married again, the boy went with her to Southover, where he attended the free school of the place. He was admitted to the Middle Temple in February 1637, and in May he became a fellow commoner of Balliol College, Oxford. He left the university without taking a degree, and in 1640 was residing in the Middle Temple. In that year his father died, and in July 1641 he crossed to Holland. He was enrolled as a volunteer in Apsley's company, then encamped

before Genep on the Waal, but his commission was apparently complimentary, his military experience being limited to six days of camp life, during which, however, he took his turn at "trailing a pike." He returned in the autumn to find England on the verge of civil war. Evelyn's part in the conflict is best told in his own words:—

> "12th November was the battle of Brentford, surprisingly fought.... I came in with my horse and arms just at the retreat; but was not permitted to stay longer than the 15th by reason of the army marching to Gloucester; which would have left both me and my brothers exposed to ruin, without any advantage to his Majesty ... and on the 10th [December] returned to Wotton, nobody knowing of my having been in his Majesty's army."

At Wotton he employed himself in improving his brother's property, making a fishpond, an island and other alterations in the gardens. But he found it difficult to avoid taking a side; he was importuned to sign the Covenant, and "finding it impossible to evade doing very unhandsome things," he obtained leave in October 1643 from the king to travel abroad. From this date his *Diary* becomes full and interesting. He travelled in France and visited the cities of Italy, returning in the autumn of 1646 to Paris, where he became intimate with Sir Richard Browne, the English resident at the court of France. In June of the following year he married Browne's daughter and heiress, Mary, then a child of not more than twelve years of age. Leaving his wife in the care of her parents, he returned to England to settle his affairs. He visited Charles I. at Hampton Court in 1647, and during the next two years maintained a cipher correspondence with his father-in-law in the royal interest. In 1649 he obtained a pass to return to Paris, but in 1650 paid a short visit to England. The defeat of Charles II. at Worcester in 1651 convinced him that the royalist cause was hopeless, and he decided to return to England. He went in 1652 to Sayes Court at Deptford, a house which Sir Richard Browne had held on a lease from the crown. This had been seized by the parliament, but Evelyn was able to compound with the occupiers for £3500, and after the Restoration his possession was secured. Here his wife joined him, their eldest son, Richard, being born in August 1652. Under the Commonwealth Evelyn amused himself with his favourite occupation of gardening, and made many friends among the scientific inquirers of the time. He was one of the promoters of the scheme for the Royal Society, and in the king's charter in 1662 was nominated a member of its directing council. Meanwhile he had refused employment from the government of the Commonwealth, and had maintained a cipher correspondence with Charles. In 1659 he published an *Apology for the Royal Party*, and in December of that year he vainly tried to persuade Colonel Herbert Morley, then lieutenant of the Tower, to forestall General Monk by declaring for the king. From the Restoration onwards Evelyn enjoyed unbroken court favour till his death in 1706; but he never held any important political office, although he filled many useful and often laborious minor posts. He was commissioner for improving the streets and buildings of London, for examining into the affairs of charitable foundations, commissioner of the Mint, and of foreign plantations. In 1664 he accepted the responsibility for the care of the sick and wounded and the prisoners in the Dutch war. He stuck to his post throughout the plague year, contenting himself with sending his family away to Wotton. He found it impossible to secure sufficient money for the proper discharge of his functions, and in 1688 he was still petitioning for payment of his accounts in this business. Evelyn was secretary of the Royal Society in 1672, and as an enthusiastic promoter of its interests was twice (in 1682 and 1691) offered the presidency. Through his influence Henry Howard, duke of Norfolk, was induced to present the Arundel marbles to the university of Oxford (1667) and the valuable Arundel library to Gresham College (1678). In the reign of James II., during the earl of Clarendon's absence in Ireland, he acted as one of the commissioners of the privy seal. He was seriously alarmed by the king's attacks on the English Church, and refused on two occasions to license the illegal sale of Roman Catholic literature. He concurred in the revolution of 1688, in 1695 was entrusted with the office of treasurer of Greenwich hospital for old sailors, and laid the first stone of the new building on the 30th of June 1696. In 1694 he left Sayes Court to live at Wotton with his brother, whose heir he had become, and whom he actually succeeded in 1699. He spent the rest of his life there, dying on the 27th of February 1706. Evelyn's house at Sayes Court had been let to Captain, afterwards Admiral John Benbow, who was not a "polite" tenant. He sublet it to Peter the Great, who was then visiting the dockyard at Deptford. The tsar did great damage to Evelyn's beautiful gardens, and, it is said, made it one of his amusements to ride in a wheelbarrow along a thick holly hedge planted especially by the owner. The house was subsequently used as a workhouse, and is now alms-houses, the grounds having been converted into public gardens by Mr Evelyn in 1886.

It will be seen that Evelyn's politics were not of the heroic order. But he was honourable and consistent in his adherence to the monarchical principle throughout his life. With the court of Charles II. he could have had no sympathy, his dignified domestic life and his

serious attention to religion standing in the strongest contrast with the profligacy of the royal surroundings. His *Diary* is therefore a valuable chronicle of contemporary events from the standpoint of a moderate politician and a devout adherent of the Church of England. He had none of Pepys's love of gossip, and was devoid of his all-embracing curiosity, as of his diverting frankness of self-revelation. Both were admirable civil servants, and they had a mutual admiration for each other's sterling qualities. Evelyn's *Diary* covers more than half a century (1640-1706) crowded with remarkable events, while Pepys only deals with a few years of Charles II.'s reign.

Evelyn was a generous art patron, and Grinling Gibbons was introduced by him to the notice of Charles II. His domestic affections were very strong. He had six sons, of whom John (1655-1699), the author of some translations, alone reached manhood. He has left a pathetic account of the extraordinary accomplishments of his son Richard, who died before he was six years old, and of a daughter Mary, who lived to be twenty, and probably wrote most of her father's *Mundus muliebris* (1690). Of his two other daughters, Susannah, who married William Draper of Addiscombe, Surrey, survived him.

Evelyn's *Diary* remained in MS. until 1818. It is in a quarto volume containing 700 pages, covering the years between 1641 and 1697, and is continued in a smaller book which brings the narrative down to within three weeks of its author's death. A selection from this was edited by William Bray, with the permission of the Evelyn family, in 1818, under the title of *Memoirs illustrative of the Life and Writings of John Evelyn, comprising his Diary from 1641 to 1705/6, and a Selection of his Familiar Letters*. Other editions followed, the most notable being those of Mr H.B. Wheatley (1879) and Mr Austin Dobson (3 vols., 1906). Evelyn's active mind produced many other works, and although these have been overshadowed by the famous *Diary* they are of considerable interest. They include: *Of Liberty and Servitude* ... (1649), a translation from the French of Francois de la Mothe le Vayer, Evelyn's own copy of which contains a note that he was "like to be call'd in question by the Rebells for this booke"; *The State of France, as it stood in the IXth year of ... Louis XIII.* (1652); *An Essay on the First Book of T. Lucretius Carus de Rerum Natura. Interpreted and made English verse by J. Evelyn* (1656); *The Golden Book of St John Chrysostom, concerning the Education of Children. Translated out of the Greek by J.E.* (printed 1658, dated 1659); *The French Gardener: instructing how to cultivate all sorts of Fruit-trees* ... (1658), translated from the French of N. de Bonnefons; *A Character of England* ... (1659), describing the customs of the country as they would appear to a foreign observer, reprinted in *Somers' Tracts* (ed. Scott, 1812), and in the *Harleian Miscellany* (ed. Park, 1813); *The Late News from Brussels unmasked* ... (1660), in answer to a libellous pamphlet on Charles I. by Marchmont Needham; *Fumifugium, or the inconvenience of the Aer and Smoak of London dissipated* (1661), in which he suggested that sweet-smelling trees should be planted in London to purify the air; *Instructions concerning erecting of a Library* ... (1661), from the French of Gabriel Naudé; *Tyrannus or the Mode, in a Discourse of Sumptuary Laws* (1661); *Sculptura: or the History and Art of Chalcography and Engraving in Copper* ... (1662); *Sylva, or a Discourse of Forest Trees ... to which is annexed Pomona ... Also Kalendarium Hortense* ... (1664); *A Parallel of the Ancient Architecture with the Modern* ... (1664), from the French of Roland Fréart; *The History of the three late famous Imposters, viz. Padre Ottomano, Mahomed Bei, and Sabatei Sevi* ... (1669); *Navigation and Commerce ... in which his Majesties title to the Dominion of the Sea is asserted against the Novel and later Pretenders* (1674), which is a preface to a projected history of the Dutch wars undertaken at the request of Charles II., but countermanded on the conclusion of peace; *A Philosophical Discourse of Earth* ... (1676), a treatise on horticulture, better known by its later title of *Terra*; *The Compleat Gardener* ... (1693), from the French of J. de la Quintinie; *Numismata* ... (1697). Some of these were reprinted in *The Miscellaneous Writings of John Evelyn*, edited (1825) by William Upcott. Evelyn's friendship with Mary Blagge, afterwards Mrs Godolphin, is recorded in the diary, when he says he designed "to consecrate her worthy life to posterity." This he effectually did in a little masterpiece of religious biography which remained in MS. in the possession of the Harcourt family until it was edited by Samuel Wilberforce, bishop of Oxford, as the *Life of Mrs Godolphin* (1847), reprinted in the "King's Classics" (1904). The picture of Mistress Blagge's saintly life at court is heightened in interest when read in connexion with the scandalous memoirs of the comte de Gramont, or contemporary political satires on the court. Numerous other papers and letters of Evelyn on scientific subjects and matters of public interest are preserved, a collection of private and official letters and papers (1642-1712) by, or addressed to, Sir Richard Browne and his son-in-law being in the British Museum (*Add. MSS.* 15857 and 15858).

Next to the *Diary* Evelyn's most valuable work is *Sylva*. By the glass factories and iron furnaces the country was being rapidly depleted of wood, while no attempt was being made to replace the damage by planting. Evelyn put in a plea for afforestation, and besides producing a valuable work on arboriculture, he was able to assert in his preface to the king

that he had really induced landowners to plant many millions of trees.

EVERDINGEN, ALLART VAN (1621-?1675), Dutch painter and engraver, the son of a government clerk at Alkmaar, was born, it is said, in 1621, and educated, if we believe an old tradition, under Roeland Savery at Utrecht. He wandered in 1645 to Haarlem, where he studied under Peter de Molyn, and finally settled about 1657 at Amsterdam, where he remained till his death. It would be difficult to find a greater contrast than that which is presented by the works of Savery and Everdingen. Savery inherited the gaudy style of the Breughels, which he carried into the 17th century; whilst Everdingen realized the large and effective system of coloured and powerfully shaded landscape which marks the precursors of Rembrandt. It is not easy on this account to believe that Savery was Everdingen's master, while it is quite within the range of probability that he acquired the elements of landscape painting from de Molyn. Pieter de Molyn, by birth a Londoner, lived from 1624 till 1661 in Haarlem. He went periodically on visits to Norway, and his works, though scarce, exhibit a broad and sweeping mode of execution, differing but slightly from that transferred at the opening of the 17th century from Jan van Goyen to Solomon Ruysdael. His etchings have nearly the breadth and effect of those of Everdingen. It is still an open question when de Molyn wielded influence on his clever disciple. Alkmaar, a busy trading place near the Texel, had little of the picturesque for an artist except polders and downs or waves and sky. Accordingly we find Allart at first a painter of coast scenery. But on one of his expeditions he is said to have been cast ashore in Norway, and during the repairs of his ship he visited the inland valleys, and thus gave a new course to his art. In early pieces he cleverly represents the sea in motion under varied, but mostly clouded, aspects of sky. Their general intonation is strong and brown, and effects are rendered in a powerful key, but the execution is much more uniform than that of Jacob Ruysdael. A dark scud lowering on a rolling sea near the walls of Flushing characterizes Everdingen's "Mouth of the Schelde" in the Hermitage at St Petersburg. Storm is the marked feature of sea-pieces in the Staedel or Robartes collections; and a strand with wreckers at the foot of a cliff in the Munich Pinakothek may be a reminiscence of personal adventure in Norway. But the Norwegian coast was studied in calms as well as in gales; and a fine canvas at Munich shows fishermen on a still and sunny day taking herrings to a smoking hut at the foot of a Norwegian crag. The earliest of Everdingen's sea-pieces bears the date of 1640. After 1645 we meet with nothing but representations of inland scenery, and particularly of Norwegian valleys, remarkable alike for wildness and a decisive depth of tone. The master's favourite theme is a fall in a glen, with mournful fringes of pines interspersed with birch, and log-huts at the base of rocks and craggy slopes. The water tumbles over the foreground, so as to entitle the painter to the name of "inventor of cascades." It gives Everdingen his character as a precursor of Jacob Ruysdael in a certain form of landscape composition; but though very skilful in arrangement and clever in effects, Everdingen remains much more simple in execution; he is much less subtle in feeling or varied in touch than his great and incomparable countryman. Five of Everdingen's cascades are in the museum of Copenhagen alone: of these, one is dated 1647, another 1649. In the Hermitage at St Petersburg is a fine example of 1647; another in the Pinakothek at Munich was finished in 1656. English public galleries ignore Everdingen; but one of his best-known masterpieces is the Norwegian glen belonging to Lord Listowel. Of his etchings and drawings there are much larger and more numerous specimens in England than elsewhere. Being a collector as well as an engraver and painter, he brought together a large number of works of all kinds and masters; and the sale of these by his heirs at Amsterdam on the 11th of March 1676 gives an approximate clue to the date of the painter's death.

His two brothers, Jan and Caesar, were both painters. Caesar van Everdingen (1606-1679), mainly known as a portrait painter, enjoyed some vogue during his life, and many of his pictures are to be seen in the museums and private houses of Holland. They show a certain cleverness, but are far from entitling him to rank as a master.

EVEREST, SIR GEORGE (1790-1866), British surveyor and geographer, was the son of Tristram Everest of Gwerndale, Brecknockshire, and was born there on the 4th of July 1790. From school at Marlow he proceeded to the military academy at Woolwich, where he attracted the special notice of the mathematical master, and passed so well in his examinations that he was declared fit for a commission before attaining the necessary age. Having gone to India in 1806 as a cadet in the Bengal Artillery, he was selected by Sir Stamford Raffles to take part in the reconnaissance of Java (1814-1816); and after being employed in various engineering works throughout India, he was appointed in 1818 assistant to Colonel Lambton, the founder of the great trigonometrical survey of that country. In 1823, on Colonel Lambton's death, he succeeded to the post of superintendent of the survey; in 1830 he was appointed by the court of directors of the East India Company surveyor-general of India; and from that date till his retirement from the service in 1843 he continued to discharge the laborious duties of both offices. During the rest of his life he resided in England, where he became fellow of the Royal Society and an active member of several other scientific associations. In 1861 he was made a C.B. and received the honour of knighthood, and in 1862 he was chosen vice-president of the Royal Geographical Society. He died at Greenwich on the 1st of December 1866. The geodetical labours of Sir George Everest rank among the finest achievements of their kind; and more especially his measurement of the meridional arc of India, 11½° in length, is accounted as unrivalled in the annals of the science. In great part the Indian survey is what he made it.

His works are purely professional:—A paper in vol. i. of the *Memoirs of the Royal Astronomical Society*, pointing out a mistake in La Caille's measurement of an arc of the meridian which he had discovered during sick-leave at the Cape of Good Hope; *An account of the measurement of the arc of the meridian between the parallels of 18° 3′ and 24° 7′, being a continuation of the Grand Meridional Arc of India, as detailed by Lieut.-Col. Lambton in the volumes of the Asiatic Society of Calcutta* (London, 1830); *An account of the measurement of two sections of the Meridional Arc of India bounded by the parallels of 18° 3′ 15″, 24° 7′ 11″, and 20° 30′ 48″* (London, 1847).

EVEREST, MOUNT, the highest mountain in the world. It is a peak of the Himalayas situated in Nepal almost precisely on the intersection of the meridian 87 E. long. with the parallel 28 N. lat. Its elevation as at present determined by trigonometrical observation is 29,002 ft., but it is possible that further investigation into the value of refraction at such altitudes will result in placing the summit even higher. It has been confused with a peak to the west of it called Gaurisankar (by Schlagintweit), which is more than 5000 ft. lower; but the observations of Captain Wood from peaks near Khatmandu, in Nepal, and those of the same officer, and of Major Ryder, from the route between Lhasa and the sources of the Brahmaputra in 1904, have definitely fixed the relative position of the two mountain masses, and conclusively proved that there is no higher peak than Everest in the Himalayan system. The peak possesses no distinctive native name and has been called Everest after Sir George Everest (*q.v.*), who completed the trigonometrical survey of the Himalayas in 1841 and first fixed its position and altitude.

(T. H. H.*)

EVERETT, ALEXANDER HILL (1790-1847), American author and diplomatist, was born in Boston, Massachusetts, on the 19th of March 1790. He was the son of Rev. Oliver Everett (1753-1802), a Congregational minister in Boston, and the brother of Edward Everett. He graduated at Harvard in 1806, taking the highest honours of his year, though the youngest member of his class. He spent one year as a teacher in Phillips Academy, Exeter, New Hampshire, and then began the study of law in the office of John Quincy Adams. In 1809 Adams was appointed minister to Russia, and Everett accompanied him as his private secretary, remaining attached to the American legation in Russia until 1811. He was secretary of the American legation at The Hague in 1815-1816, and *chargé d'affaires* there from 1818 to 1824. From 1825 to 1829, during the presidency of John Quincy Adams, he was

the United States minister to Spain. At that time Spain recognized none of the governments established by her revolted colonies, and Everett became the medium of all communications between the Spanish government and the several nations of Spanish origin which had been established, by successful revolutions, on the other side of the ocean. Everett was a member of the Massachusetts legislature in 1830-1835, was president of Jefferson College in Louisiana in 1842-1844, and was appointed commissioner of the United States to China in 1845, but did not go to that country until the following year, and died on the 29th of May 1847 at Canton, China. Everett, however, is known rather as a man of letters than as a diplomat. In addition to numerous articles, published chiefly in the *North American Review*, of which he was the editor from 1829 to 1835, he wrote: *Europe, or a General Survey of the Political Situation of the Principal Powers, with Conjectures on their Future Prospects* (1822), which attracted considerable attention in Europe and was translated into German, French and Spanish; *New Ideas on Population* (1822); *America, or a General Survey of the Political Situation of the Several Powers of the Western Continent, with Conjectures on their Future Prospects* (1827), which was translated into several European languages; a volume of *Poems* (1845); and *Critical and Miscellaneous Essays* (first series, 1845; second series, 1847).

EVERETT, CHARLES CARROLL (1829-1900), American divine and philosopher, was born on the 19th of June 1829, at Brunswick, Maine. He studied at Bowdoin College, where he graduated in 1850, after which he proceeded to Berlin. Subsequently he took a degree in divinity at the Harvard Divinity School. From 1859 to 1869 he was pastor of the Independent Congregational (Unitarian) church at Bangor, Maine. This charge he resigned to take the Bussey professorship of theology at Harvard University, and, in 1878, became dean of the faculty of theology. Interested in a variety of subjects, he devoted himself chiefly to the philosophy of religion, and published *The Science of Thought* (Boston, 1869; revised 1891). He also wrote *Fichte's Science of Knowledge* (1884); *Poetry, Comedy and Duty* (1888); *Religions before Christianity* (1883); *Ethics for Young People* (1891); *The Gospel of Paul* (1892). He died at Cambridge on the 16th of October 1900.

EVERETT, EDWARD (1794-1865), American statesman and orator, was born in Dorchester, Massachusetts, on the 11th of April 1794. He was the son of Rev. Oliver Everett and the brother of Alexander Hill Everett (*q.v.*). His father died in 1802, and his mother removed to Boston with her family after her husband's death. At seventeen Edward Everett graduated from Harvard College, taking first honours in his class. While at college he was the chief editor of *The Lyceum*, the earliest in the series of college journals published at the American Cambridge. His earlier predilections were for the study of law, but the advice of Joseph Stevens Buckminster, a distinguished preacher in Boston, led him to prepare for the pulpit, and as a preacher he at once distinguished himself. He was called to the ministry of the Brattle Street church (Unitarian) in Boston before he was twenty years old. His sermons attracted wide attention in that community, and he gained a considerable reputation as a theologian and a controversialist by his publication in 1814 of a volume entitled *Defence of Christianity*, written in answer to a work, *The Grounds of Christianity Examined* (1813), by George Bethune English (1787-1828), an adventurer, who, born in Cambridge, Massachusetts, was in turn a student of law and of theology, an editor of a newspaper, and a soldier of fortune in Egypt. Everett's tastes, however, were then, as always, those of a scholar; and in 1815, after a service of little more than a year in the pulpit, he resigned his charge to accept a professorship of Greek literature in Harvard College.

After nearly five years spent in Europe in preparation, he entered with enthusiasm on his duties, and, for five years more, gave a vigorous impulse, not only to the study of Greek, but to all the work of the college. In January 1820 he assumed the charge of the *North American Review*, which now became a quarterly; and he was indefatigable during the four years of his editorship in contributing on a great variety of subjects. From 1825 to 1835 he was a member of the National House of Representatives, supporting generally the administration

of President J.Q. Adams and opposing that of Jackson, which succeeded it. He bore a part in almost every important debate, and was a member of the committee of foreign affairs during the whole time of his service in Congress. Everett was a member of nearly all the most important select committees, such as those on the Indian relations of the state of Georgia, the Apportionment Bill, and the Bank of the United States, and drew the report either of the majority or the minority. The report on the congress of Panama, the leading measure of the first session of the Nineteenth Congress, was drawn up by Everett, although he was the youngest member of the committee and had just entered Congress. He led the unsuccessful opposition to the Indian policy of General Jackson (the removal of the Cherokee and other Indians, without their consent, from lands guaranteed to them by treaty).

In 1835 he was elected governor of Massachusetts. He brought to the duties of the office the untiring diligence which was the characteristic of his public life. We can only allude to a few of the measures which received his efficient support, *e.g.* the establishment of the board of education (the first of such boards in the United States), the scientific surveys of the state (the first of such public surveys), the criminal law commission, and the preservation of a sound currency during the panic of 1837.

Everett filled the office of governor for four years, and was then defeated by a single vote, out of more than one hundred thousand. The election is of interest historically as being the first important American election where the issue turned on the question of the prohibition of the retail sale of intoxicating liquors. In the following spring he made a visit with his family to Europe. In 1841, while residing in Florence, he was named United States minister to Great Britain, and arrived in London to enter upon the duties of his mission at the close of that year. Great questions were at that time open between the two countries—the north-eastern boundary, the affair of M'Leod, the seizure of American vessels on the coast of Africa, in the course of a few months the affair of the "Creole," to which was soon added the Oregon question. His position was more difficult by reason of the frequent changes that took place in the department at home, which, in the course of four years, was occupied successively by Messrs Webster, Legaré, Upshur, Calhoun and Buchanan. From all these gentlemen Everett received marks of approbation and confidence.

By the institution of the special mission of Lord Ashburton, however, the direct negotiations between the two governments were, about the time of Everett's arrival in London, transferred to Washington, though much business was transacted at the American legation in London.

Immediately after the accession of Polk to the presidency Everett was recalled. From January 1846 to 1849, as the successor of Josiah Quincy, he was president of Harvard College. On the death, in October 1852, of his friend Daniel Webster, to whom he had always been closely attached, and of whom he was always a confidential adviser, he succeeded him as secretary of state, which post he held for the remaining months of Fillmore's administration, leaving it to go into the Senate in 1853, as one of the representatives of Massachusetts. Under the work of the long session of 1853-1854 his health gave way. In May 1854 he resigned his seat, on the orders of his physician, and retired to what was called private life.

But, as it proved, the remaining ten years of his life most widely established his reputation and influence throughout America. As early as 1820 he had established a reputation as an orator, such as few men in later days have enjoyed. He was frequently invited to deliver an "oration" on some topic of historical or other interest. With him these "orations," instead of being the ephemeral entertainments of an hour, became careful studies of some important theme. Eager to avert, if possible, the impending conflict of arms between the North and South, Everett prepared an "oration" on George Washington, which he delivered in every part of America. In this way, too, he raised more than one hundred thousand dollars, for the purchase of the old home of Washington at Mount Vernon. Everett also prepared for the *Encyclopaedia Britannica* a biographical sketch of Washington, which was published separately in 1860. In 1860 Everett was the candidate of the short-lived Constitutional-Union party for the vice-presidency, on the ticket with John Bell (*q.v.*), but received only 39 electoral votes. During the Civil War he zealously supported the national government and was called upon in every quarter to speak at public meetings. He delivered the last of his great orations at Gettysburg, after the battle, on the consecration of the national cemetery there. On the 9th of January 1865 he spoke at a public meeting in Boston to raise funds for the southern poor in Savannah. At that meeting he caught cold, and the immediate result was his death on the 15th of January 1865.

In Everett's life and career was a combination of the results of diligent training,

unflinching industry, delicate literary tastes and unequalled acquaintance with modern international politics. This combination made him in America an entirely exceptional person. He was never loved by the political managers; he was always enthusiastically received by assemblies of the people. He would have said himself that the most eager wish of his life had been for the higher education of his countrymen. His orations have been collected in four volumes (1850-1859). A work on international law, on which he was engaged at his death, was never finished. Allibone records 84 titles of his books and published addresses.

(E. E. H.)

EVERETT, a city of Middlesex county, Massachusetts, U.S.A., adjoining Chelsea and 3 m. N. of Boston, of which it is a residential suburb. Pop. (1880) 4159; (1890) 11,068; (1900) 24,336, of whom 6882 were foreign-born; (1910 census) 33,484. It covers an area of about 3 sq. m. and is served by the Boston & Maine railway and by interurban electric lines. Everett has the Frederick E. Parlin memorial library (1878), the Shute memorial library (1898), the Whidden memorial hospital and Woodlawn cemetery (176 acres). The principal manufactures are coke, chemicals and boots and shoes; among others are iron and structural steel. According to the U.S. Census of Manufactures (1905), “the coke industry in Everett is unique, inasmuch as illuminating gas is the primary product and coke really a by-product, while the coal used is brought from mines located in Nova Scotia.” The value of the city’s total factory product increased from $4,437,180 in 1900 to $6,135,650 in 1905 or 38.3%. Everett was first settled about 1630, remaining a part of Malden (and being known as South Malden) until 1870, when it was incorporated as a township. It was chartered as a city in 1892.

EVERETT, a city, a sub-port of entry, and the county-seat of Snohomish county, Washington, U.S.A., on Puget Sound, at the mouth of the Snohomish river, about 35 m. N. of Seattle. Pop. (1900) 7838; (1910 U.S. census) 24,814. The city is served by the Northern Pacific and the Great Northern railways, being the western terminus of the latter’s main transcontinental line, by interurban electric railway, and by several lines of Sound and coasting freight and passenger steamboats. Everett has a fine harbour with several large iron piers. Among its principal buildings are a Carnegie library, a Y.M.C.A. building and two hospitals. The buildings of the Pacific College were erected here by the United Norwegian Lutheran Church in 1908. The city is in a rich lumbering, gardening, farming, and copper-, gold- and silver-mining district. There is a U.S. assayer’s office here, and there are extensive shipyards, a large paper mill, iron works, and, just outside the city limits, the smelters of the American Smelters Securities Company, in connexion with which is one of the two plants in the United States for saving arsenic from smelter fumes. Lumber interests, however, are of most importance, and here are some of the largest lumber plants in the Pacific Northwest. Red-cedar shingles are an important product. Everett was settled in 1891 and was incorporated in 1893. Its rapid growth is due to its favourable situation as a commercial port, its transportation facilities, and its nearness to extensive forests whence the material for its chief industries is obtained.

EVERGLADES, an American lake, about 8000 sq. m. in area, in which are numerous half-submerged islands; situated in the southern part of Florida, U.S.A., in Lee, De Soto, Dade and St Lucie counties. West of it is the Big Cypress Swamp. The floor of the lake is a limestone basin, extending from Lake Okechobee in the N. to the extreme S. part of the state, and the lake varies in depth from 1 to 12 ft., its water being pure and clear. The surface is above tide level, and the lake is enclosed, probably on all sides, within an

outcropping limestone rim, averaging about 10 ft. above mean low tide, and approaching much nearer to the Atlantic on the E. than to the gulf on the W. There are several small outlets, such as the Miami river and the New river on the E. and the Shark river on the S.W., but no streams empty into the Everglades, and the water-supply is furnished by springs and precipitation. There is a general south-easterly movement of the water. The soil of the islands is very fertile and is subject to frequent inundations, but gradually the water area is being replaced by land. The vegetation is luxuriant, the live oak, wild lemon, wild orange, cucumber, papaw, custard apple and wild rubber trees being among the indigenous species; there are, besides, many varieties of wild flowers, the orchids being especially noteworthy. The fauna is also varied; the otter, alligator and crocodile are found, also the deer and panther, and among the native birds are the ibis, egret, heron and limpkin. There are two seasons, wet and dry, but the climate is equable.

Systematic exploration has been prevented by the dense growth of saw grass (*Cladium effusum*), a kind of sedge, with sharp, saw-toothed leaves, which grows everywhere on the muck-covered rock basin and extends several feet above the shallow water. The first white man to enter the region was Escalente de Fontenada, a Spanish captive of an Indian chief, who named the lake Laguno del Espiritu Santo and the islands Cayos del Espiritu Santo. Between 1841 and 1856 various United States military forces penetrated the Everglades for the purpose of attacking and driving out the Seminoles, who took refuge here. The most important explorations during the later years of the 19th century were those of Major Archie P. Williams in 1883, James E. Ingraham in 1892 and Hugh L. Willoughby in 1897. The Seminole Indians were in 1909 practically the only inhabitants. In 1850 under the “Arkansas Bill,” or Swamp and Overflow Act, practically all of the Everglades, which the state had been urging the federal government to drain and reclaim, were turned over to the state for that purpose, with the provision that all proceeds from such lands be applied to their reclamation. A board of trustees for the Internal Improvement Fund, created in 1855 and having as members *ex officio* the governor, comptroller, treasurer, attorney-general and commissioner-general, sold and allowed to railway companies much of the grant. Between 1881 and 1896 a private company owning 4,000,000 acres of the Everglades attempted to dig a canal from Lake Okechobee through Lake Hicpochee and along the Caloosahatchee river to the Gulf of Mexico; the canal was closed in 1902 by overflows. Six canals were begun under state control in 1905 from the lake to the Atlantic, the northernmost at Jensen, the southernmost at Ft. Lauderdale; the total cost, estimated at $1,035,000 for the reclamation of 12,500 sq. m., is raised by a drainage tax (not to exceed 10 cents per acre) levied by the trustees of the Internal Improvement Fund and Board of Drainage commissioners. The small area reclaimed prior to that year (1905) was found very fertile and particularly adapted to raising sugar-cane, oranges and garden truck.

See Hugh L. Willoughby’s *Across the Everglades* (Philadelphia, 1898), and especially an article “The Everglades of Florida” by Edwin A. Dix and John M. MacGonigle, in the *Century Magazine* for February 1905.

EVERGREEN, a general term applied to plants which are always in leaf, as contrasted with deciduous trees which are bare for some part of the year (see HORTICULTURE). In temperate or colder zones where a season favourable to vegetation is succeeded by an unfavourable or winter season, leaves of evergreens must be protected from the frost and cold drying winds, and are therefore tougher or more leathery in texture than those of deciduous trees, and frequently, as in pines, firs and other conifers, are needle-like, thus exposing a much smaller surface to the drying action of cold winds. The number of seasons for which the leaves last varies in different plants; every season some of the older leaves fall, while new ones are regularly produced. The common English bramble is practically evergreen, the leaves lasting through winter and until the new leaves are developed next spring. In privet also the leaves fall after the production of new ones in the next year. In other cases the leaves last several years, as in conifers, and may sometimes be found on eleven-year-old shoots.

EVERLASTING, or IMMORTELLE, a plant belonging to the division *Tubuliflorae* of the natural order Compositae, known botanically as *Helichrysum orientale*. It is a native of North Africa, Crete, and the parts of Asia bordering on the Mediterranean; and it is cultivated in many parts of Europe. It first became known in Europe about the year 1629, and has been cultivated since 1815. In common with several other plants of the same group, known as “everlastings,” the immortelle plant possesses a large involucre of dry scale-like or scarious bracts, which preserve their appearance when dried, provided the plant be gathered in proper condition. The chief supplies of *Helichrysum orientale* come from lower Provence, where it is cultivated in large quantities on the ground sloping to the Mediterranean, in positions well exposed to the sun, and usually in plots surrounded by dry stone walls. The finest flowers are grown on the slopes of Bandols and Ciotat, where the plant begins to flower in June. It requires a light sandy or stony soil, and is very readily injured by rain or heavy dews. It can be propagated in quantity by means of offsets from the older stems. The flowering stems are gathered in June, when the bracts are fully developed, all the fully-expanded and immature flowers being pulled off and rejected. A well-managed plantation is productive for eight or ten years. The plant is tufted in its growth, each plant producing 60 or 70 stems, while each stem produces an average of 20 flowers. About 400 such stems weigh a kilogramme. A hectare of ground will produce 40,000 plants, bearing from 2,400,000 to 2,800,000 stems, and weighing from 5½ to 6½ tons, or from 2 to 3 tons per acre. The colour of the bracts is a deep yellow. The natural flowers are commonly used for garlands for the dead, or plants dyed black are mixed with the yellow ones. The plant is also dyed green or orange-red, and thus employed for bouquets or other ornamental purposes.

Other species of *Helichrysum* and species of allied genera with scarious heads of flowers are also known as “everlastings.” One of the best known is the Australian species *H. bracteatum*, with several varieties, including double forms, of different colours; *H. vestitum* (Cape of Good Hope) has white satiny heads. Others are species of *Helipterum* (West Australia and South Africa), *Ammobium* and *Waitzia* (Australia) and *Xeranthemum* (south Europe). Several members of the natural order Amarantaceae have also “everlasting” flowers; such are *Gomphrena globosa*, with rounded or oval heads of white, orange, rose or violet, scarious bracts, and *Celosia pyramidalis*, with its elegant, loose, pyramidal inflorescences. Frequently these everlastings are mixed with bleached grasses, as *Lagurus ovatus*, *Briza maxima*, *Bromus brizaeformis*, or with the leaves of the Cape silver tree (*Leucadendron argenteum*), to form bouquets or ornamental groups.

EVERSLEY, CHARLES SHAW LEFEVRE, VISCOUNT (1794-1888), speaker of the British House of Commons, eldest son of Mr Charles Shaw (who assumed his wife’s name of Lefevre in addition to his own on his marriage), was born in London on the 22nd of February 1794, and educated at Winchester and at Trinity College, Cambridge. He was called to the bar in 1819, and though a diligent student was also a keen sportsman. Marrying a daughter of Mr Samuel Whitbread, whose wife was the sister of Earl Grey, afterwards premier, he thus became connected with two influential political families, and in 1830 he entered the House of Commons as member for Downton, in the Liberal interest. In 1831 he was returned, after a severe contest, as one of the county members for Hampshire, in which he resided; and after the passing of the Reform Act of 1832 he was elected for the Northern Division of the county. For some years Mr Shaw Lefevre was chairman of a committee on petitions for private bills. In 1835 he was chairman of a committee on agricultural distress, but as his report was not accepted by the House, he published it as a pamphlet addressed to his constituents. He acquired a high reputation in the House of Commons for his judicial fairness, combined with singular tact and courtesy, and when Mr James Abercromby retired in 1839, he was nominated as the Liberal candidate for the chair. The Conservatives put forward Henry Goulburn, but Mr Shaw Lefevre was elected by 317 votes to 299. The period was one of fierce party conflict, and the debates were frequently very acrimonious; but the dignity, temper and firmness of the new speaker were never at fault. In 1857 he had served longer than any of his predecessors, except the celebrated Arthur Onslow (1691-1768), who was speaker for more than 33 years in five successive parliaments. Retiring on a pension, he was raised to the peerage as Viscount Eversley of Heckfield, in the county of Southampton. His appearances in the House of Lords were very infrequent, but in his own county he was active in the public service. From 1859 he was an ecclesiastical commissioner, and he was

also appointed a trustee of the British Museum. He died on the 28th of December 1888, the viscountcy becoming extinct.

His younger brother, Sir John George Shaw Lefevre (1797-1879), who was senior wrangler at Cambridge in 1818, had a long and distinguished career as a public official. He was under-secretary for the colonies, and had much to do with the introduction of the new poor law in 1834, and with the foundation of the colony of South Australia; then having served on several important commissions he was made clerk of the parliaments in 1855, and in the same year became one of the first civil service commissioners. He helped to found the university of London, of which he was vice-chancellor for twenty years, and also the Athenaeum Club. He died on the 20th of August 1879.

The latter's son, George John Shaw Lefevre (b. 1832), was created Baron Eversley in 1906, in recognition of long and prominent services to the Liberal party. He had filled the following offices:—civil lord of the admiralty, 1856; secretary to the board of trade, 1869-1871; under-secretary, home office, 1871; secretary to the admiralty, 1871-1874; first commissioner of works, 1881-1883; postmaster-general, 1883-1884; first commissioner of works, 1892-1893; president of local government board, 1894-1895; chairman of royal commission on agriculture, 1893-1896.

EVESHAM, a market-town and municipal borough in the Evesham parliamentary division of Worcestershire, England, 107 m. W.N.W. of London by the Great Western railway, and 15 m. S.E. by E. of Worcester, with a station on the Redditch-Ashchurch branch of the Midland railway. Pop. (1901) 7101. It lies on the right (north) bank of the Avon, in the rich and beautiful Vale of Evesham. The district is devoted to market-gardening and orchards, and the trade of the town is mainly agricultural. Evesham is a place of considerable antiquity, a Benedictine house having been founded here by St Egwin in the 8th century. It became a wealthy abbey, but was almost wholly destroyed at the Dissolution. The churchyard, however, is entered by a Norman gateway, and there survives also a magnificent isolated bell-tower dating from 1533, of the best ornate Perpendicular workmanship. The abbey walls surround the churchyard, but almost the only other remnant is a single Decorated arch. Close to the bell-tower, however, are the two parish churches of St Lawrence and of All Saints, the former of the 16th century, the latter containing Early English work, and the ornate chapel of Abbot Lichfield, who erected the bell-tower. Other buildings include an Elizabethan town hall, the grammar school, founded by Abbot Lichfield, and the picturesque almonry. The borough includes the parish of Bengeworth St Peter, on the left bank of the river. Evesham is governed by a mayor, 4 aldermen and 12 councillors. Area, 2265 acres.

Evesham (*Homme*, *Ethomme*) grew up around the Benedictine abbey, and had evidently become of some importance as a trading centre in 1055, when Edward the Confessor gave it a market and the privileges of a commercial town. It is uncertain when the town first became a borough, but the Domesday statement that the men paid 20s. may indicate the existence of a more or less organized body of tradesmen. Before 1482 the burgesses were holding the town at a fee farm rent of twenty marks, but the abbot still had practical control of the town, and his steward presided over the court at which the bailiffs were chosen. After the Dissolution the manor with the markets and fairs and other privileges was granted to Sir Philip Hoby, who increased his power over the town by persuading the burgesses to agree that, after they had nominated six candidates for the office of bailiff, the steward of the court instructed by him should indicate the two to be chosen. This privilege was contested by Queen Elizabeth, but when the case was taken before the court of the exchequer it was decided in favour of Sir Philip's heir, Sir Edward Hoby. In 1604 James I. granted the burgesses their first charter, but in the following year, by a second charter, he incorporated Evesham with the village of Bengeworth, and granted that the borough should be governed by a mayor and seven aldermen, to whom he gave the power of holding markets and fairs and several other privileges which had formerly belonged to the lord of the manor. Evesham received two later charters, but in 1688 that of 1605 was restored and still remains the governing charter of the borough. Evesham returned two members to parliament in 1295 and again in 1337, after which date the privilege lapsed until 1604. Its two members were reduced to one by the act of 1867, and the borough was disfranchised in 1885.

Evesham gave its name to the famous battle, fought on the 4th of August 1265, between

the forces of Simon de Montfort, earl of Leicester, and the royalist army under Prince Edward. After a masterly campaign, in which the prince had succeeded in defeating Leicester in the valleys of the Severn and Usk, and had destroyed the forces of the younger Montfort at Kenilworth before he could effect a junction with the main body, the royalist forces approached Evesham in the morning of the 4th of August in time to intercept Leicester's march towards Kenilworth. Caught in the bend of the river Avon by the converging columns, and surrounded on all sides, the old earl attempted to cut his way out of the town to the northward. At first the fury of his assault forced back the superior numbers of the prince; but Simon's Welsh levies melted away and his enemies closed the last avenue of escape. The final struggle took place on Green Hill, a little to the north-west of the town, where the devoted friends of de Montfort formed a ring round their leader, and died with him. The spot is marked with an obelisk.

EVIDENCE (Lat. *evidentia*, *evideri*, to appear clearly), a term which may be defined briefly as denoting the facts presented to the mind of a person for the purpose of enabling him to decide a disputed question. Evidence in the widest sense includes all such facts, and reference may be made to the article Logic for the science or art of dealing with the proper way of drawing correct conclusions and the nature of proof. In a narrower sense, however, evidence includes in English law only such facts as are allowed to be so presented in the course of judicial proceedings. Thus we say that a fact is not evidence, meaning thereby that it is not admissible as evidence in accordance with the rules of English law. The law of legal evidence is part of the law of procedure. It determines the kinds of evidence which may be produced in judicial proceedings, and regulates the mode in which, and the conditions under which, evidence may be produced and tested.

History.

The English law of evidence is of comparatively modern growth. It enshrines certain maxims, some derived from Roman law, some invented by Coke, who, as J.B. Thayer says, "spawned Latin maxims freely." But for the most part it was built up by English judges in the course of the 18th century, and consists of this judge-made law, as modified by statutory enactments of the 19th century. Early Teutonic procedure knew nothing of evidence in the modern sense, just as it knew nothing of trials in the modern sense. What it knew was "proofs." There were two modes of proof, ordeals and oaths. Both were appeals to the supernatural. The judicial combat was a bilateral ordeal. Proof followed, instead of preceding, judgment. A judgment of the court, called by German writers the *Beweisurteil*, and by M.M. Bigelow the "medial judgment," awarded that one of the two litigants must prove his case, by his body in battle, or by a one-sided ordeal, or by an oath with oath-helpers, or by the oaths of witnesses. The court had no desire to hear or weigh conflicting testimony. To do so would have been to exercise critical faculties, which the court did not possess, and the exercise of which would have been foreign to the whole spirit of the age. The litigant upon whom the burden of furnishing proof was imposed had a certain task to perform. If he performed it, he won; if he failed, he lost. The number of oath-helpers varied in different cases, and was determined by the law or by the court. They were probably, at the outset, kinsmen, who would have had to take up the blood-feud. At a later stage they became witnesses to character. In the cases, comparatively rare, where the oaths of witnesses were admitted as proof, their oaths differed materially from the sworn testimony of modern courts. As a rule no one could testify to a fact unless, when the fact happened, he was solemnly "taken to witness." Then, when the witness was adduced, he came merely to swear to a set formula. He did not make a promissory oath to answer questions truly. He merely made an assertory oath in a prescribed form.

In the course of the 12th and 13th centuries the old formal accusatory procedure began to break down, and to be superseded by another form of procedure known as *inquisitio*, inquest, or *enquête*. Its decay was hastened by the decree of the fourth Lateran Council in 1215, which forbade ecclesiastics to take part in ordeals. The Norman administrative system introduced into England by the Conquest was familiar with a method of ascertaining and determining facts by means of a verdict, return or finding made on oath by a body of men drawn from the locality. The system may be traced to Carolingian, and even earlier, sources. Henry II., by instituting the grand assize and the four petty assizes, placed at the disposal of litigants in certain actions the opportunity of giving proof by the verdict of a sworn inquest of neighbours, proof "by the country." The system was gradually extended to other cases,

criminal as well as civil. The verdict given was that of persons having a general, but not necessarily a particular, acquaintance with the persons, places and facts to which the inquiry related. It was, in fact, a finding by local popular opinion. Had the finding of such an inquest been treated as final and conclusive in criminal cases, English criminal procedure might, like the continental inquisition, the French *enquête*, have taken the path which, in the forcible language of Fortescue (*De laudibus*, &c.) "leads to hell" (*semita ipsa est ad gehennam*). Fortunately English criminal procedure took a different course. The spirit of the old accusatory procedure was applied to the new procedure by inquest. In serious cases the words of the jurors, the accusing jurors, were treated not as testimony, but as accusation, the new indictment was treated as corresponding to the old appeal, and the preliminary finding by the accusing jury had to be supplemented by the verdict of another jury. In course of time the second jury were required to base their findings not on their own knowledge, but on evidence submitted to them. Thus the modern system of inquiry by grand jury and trial by petty jury was gradually developed.

A few words may here be said about the parallel development of criminal procedure on the continent of Europe. The tendency in the 12th and 13th centuries to abolish the old formal methods of procedure, and to give the new procedure the name of inquisition or inquest, was not peculiar to England. Elsewhere the old procedure was breaking down at the same time, and for similar reasons. It was the great pope Innocent III., the pope of the fourth Lateran Council, who introduced the new inquisitorial procedure into the canon law. The procedure was applied to cases of heresy, and, as so applied, especially by the Dominicans, speedily assumed the features which made it infamous. "Every safeguard of innocence was abolished or disregarded; torture was freely used. Everything seems to have been done to secure a conviction." Yet, in spite of its monstrous defects, the inquisitorial procedure of the ecclesiastical courts, secret in its methods, unfair to the accused, having torture as an integral element, gradually forced its way into the temporal courts, and may almost be said to have been adopted by the common law of western Europe. In connexion with this inquisitorial procedure continental jurists elaborated a theory of evidence, or judicial proofs, which formed the subject of an extensive literature. Under the rules thus evolved full proof (*plena probatio*) was essential for conviction, in the absence of confession, and the standard of full proof was fixed so high that it was in most cases unattainable. It therefore became material to obtain confession by some means or other. The most effective means was torture, and thus torture became an essential feature in criminal procedure. The rules of evidence attempted to graduate the weight to be attached to different kinds of testimony and almost to estimate that weight in numerical terms. "Le parlement de Toulouse," said Voltaire, "a un usage très singulier dans les preuves par témoins. On admet ailleurs des demi-preuves, ... mais à Toulouse on admet des quarts et des huitièmes de preuves." Modern continental procedure, as embodied in the most recent codes, has removed the worst features of inquisitorial procedure, and has shaken itself free from the trammels imposed by the old theory and technical rules of proof. But in this, as in other branches of law, France seems to have paid the penalty for having been first in the field with codification by lagging behind in material reforms. The French Code of Criminal Procedure was largely based on Colbert's Ordonnance of 1670, and though embodying some reforms, and since amended on certain points, still retains some of the features of the unreformed procedure which was condemned in the 18th century by Voltaire and the *philosophes*. Military procedure is in the rear of civil procedure, and the trial of Captain Dreyfus at Rennes in 1899 presented some interesting archaisms. Among these were the weight attached to the rank and position of witnesses as compared with the intrinsic character of their evidence, and the extraordinary importance attributed to confession even when made under suspicious circumstances and supported by flimsy evidence.

The history of criminal procedure in England has been traced by Sir James Stephen. The modern rules and practice as to evidence and witnesses in the common law courts, both in civil and in criminal cases, appear to have taken shape in the course of the 18th century. The first systematic treatise on the English law of evidence appears to have been written by Chief Baron Gilbert, who died in 1726, but whose *Law of Evidence* was not published until 1761. In writing it he is said to have been much influenced by Locke.[1] It is highly praised by Blackstone as "a work which it is impossible to abstract or abridge without losing some beauty and destroying the charm of the whole"; but Bentham, who rarely agrees with Blackstone, speaks of it as running throughout "in the same strain of anility, garrulity, narrow-mindedness, absurdity, perpetual misrepresentation and indefatigable self-contradiction." In any case it remained the standard authority on the law of evidence throughout the remainder of the 18th century. Bentham wrote his *Rationale of Judicial Evidence, specially applied to English Practice*, at various times between the years 1802 and

1812. By this time he had lost the nervous and simple style of his youth, and required an editor to make him readable. His great interpreter, Dumont, condensed his views on evidence into the *Traité des preuves judiciaires*, which was published in 1823. The manuscript of the *Rationale* was edited for English reading, and to a great extent rewritten, by J.S. Mill, and was published in five volumes in 1827. The book had a great effect both in England and on the continent. The English version, though crabbed and artificial in style, and unmeasured in its invective, is a storehouse of comments and criticisms on the principles of evidence and the practice of the courts, which are always shrewd and often profound. Bentham examined the practice of the courts by the light of practical utility. Starting from the principle that the object of judicial evidence is the discovery of truth, he condemned the rules which excluded some of the best sources of evidence. The most characteristic feature of the common-law rules of evidence was, as Bentham pointed out, and, indeed, still is, their exclusionary character. They excluded and prohibited the use of certain kinds of evidence which would be used in ordinary inquiries. In particular, they disqualified certain classes of witnesses on the ground of interest in the subject-matter of the inquiry, instead of treating the interest of the witness as a matter affecting his credibility. It was against this confusion between competency and credibility that Bentham directed his principal attack. He also attacked the system of paper evidence, evidence by means of affidavits instead of by oral testimony in court, which prevailed in the court of chancery, and in ecclesiastical courts. Subsequent legislation has endorsed his criticisms. The Judicature Acts have reduced the use of affidavits in chancery proceedings within reasonable limits. A series of acts of parliament have removed, step by step, almost all the disqualifications which formerly made certain witnesses incompetent to testify.

Before Bentham’s work appeared, an act of 1814 had removed the incompetency of ratepayers as witnesses in certain cases relating to parishes. The Civil Procedure Act 1833 enacted that a witness should not be objected to as incompetent, solely on the ground that the verdict or judgment would be admissible in evidence for or against him. An act of 1840 removed some doubts as to the competency of ratepayers to give evidence in matters relating to their parish. The Evidence Act 1843 enacted broadly that witnesses should not be excluded from giving evidence by reason of incapacity from crime or interest. The Evidence Act 1851 made parties to legal proceedings admissible witnesses subject to a proviso that “nothing herein contained shall render any person who in any criminal proceeding is charged with the commission of any indictable offence, or any offence punishable on summary conviction, competent or compellable to give evidence for or against himself or herself, or shall render any person compellable to answer any question tending to criminate himself or herself, or shall in any criminal proceeding render any husband competent or compellable to give evidence for or against his wife, or any wife competent or compellable to give evidence for or against her husband.” The Evidence (Scotland) Act 1853 made a similar provision for Scotland. The Evidence Amendment Act 1853 made the husbands and wives of parties admissible witnesses, except that husbands and wives could not give evidence for or against each other in criminal proceedings or in proceedings for adultery, and could not be compelled to disclose communications made to each other during marriage. Under the Matrimonial Causes Act 1857 the petitioner can be examined and cross-examined on oath at the hearing, but is not bound to answer any question tending to show that he or she has been guilty of adultery. Under the Matrimonial Causes Act 1859, on a wife’s petition for dissolution of marriage on the ground of adultery coupled with cruelty or desertion, husband and wife are competent and compellable to give evidence as to the cruelty or desertion. The Crown Suits &c. Act 1865 declared that revenue proceedings were not to be treated as criminal proceedings for the purposes of the acts of 1851 and 1853. The Evidence Further Amendment Act 1869 declared that parties to actions for breach of promise of marriage were competent to give evidence in the action, subject to a proviso that the plaintiff should not recover unless his or her testimony was corroborated by some other material evidence. It also made the parties to proceedings instituted in consequence of adultery, and their husbands and wives, competent to give evidence, but a witness in any such proceeding, whether a party or not, is not to be liable to be asked or bound to answer any question tending to show that he or she has been guilty of adultery, unless the witness has already given evidence in the same proceeding in disproof of the alleged adultery. There are similar provisions applying to Scotland in the Conjugal Rights (Scotland) Amendment Act 1861, and the Evidence Further Amendment (Scotland) Act 1874. The Evidence Act 1877 enacts that “on the trial of any indictment or other proceeding for the non-repair of any public highway or bridge, or for a nuisance to any public highway, river, or bridge, and of any other indictment or proceeding instituted for the purpose of trying or enforcing a civil right only, every defendant to such indictment or proceeding, and the wife or husband of any such defendant shall be admissible witnesses and compellable to give evidence.” From 1872

onwards numerous enactments were passed making persons charged with particular offences, and their husbands and wives, competent witnesses. The language and effect of these enactments were not always the same, but the insertion of some provision to this effect in an act creating a new offence, especially if it was punishable by summary proceedings, gradually became almost a common form in legislation. In the year 1874 a bill to generalize these particular provisions, and to make the evidence of persons charged with criminal offences admissible in all cases was introduced by Mr Gladstone's government, and was passed by the standing committee of the House of Commons. During the next fourteen years bills for the same purpose were repeatedly introduced, either by the government of the day, or by Lord Bramwell as an independent member of the House of Lords. Finally the Criminal Evidence Act 1898, introduced by Lord Halsbury, has enacted in general terms that "every person charged with an offence, and the wife or husband, as the case may be, of the person so charged, shall be a competent witness for the defence at every stage of the proceedings, whether the person so charged is charged solely or jointly with any other person." But this general enactment is qualified by some special restrictions, the nature of which will be noticed below. The act applies to Scotland but not to Ireland. It was not to apply to proceedings in courts-martial unless so applied by general orders or rules made under statutory authority. The provisions of the act have been applied by rules to military courts-martial, but have not yet been applied to naval courts-martial. The removal of disqualifications for want of religious belief is referred to below under the head of "Witnesses."

The act of 1898 finishes for the present the history of English legislation on evidence. For a view of the legal literature on the subject it is necessary to take a step backwards. Early in the 19th century Chief Baron Gilbert was superseded as an authority on the English law of evidence by the books of Phillips (1814) and Starkie (1824), who were followed by Roscoe (*Nisi Prius*, 1827; Criminal Cases, 1835), Greenleaf (American, 1842), Taylor (based on Greenleaf, 1848), and Best (1849). In 1876 Sir James FitzJames Stephen brought out his *Digest of the Law of Evidence*, based upon the Indian Evidence Act 1872, which he had prepared and passed as law member of the council of the governor-general of India. This Digest obtained a rapid and well-deserved success, and has materially influenced the form of subsequent writings on the English law of evidence. It sifted out what Stephen conceived to be the main rules of evidence from the mass of extraneous matter in which they had been embedded. Roscoe's Digests told the lawyer what things must be proved in order to sustain particular actions or criminal charges, and related as much to pleadings and to substantive law as to evidence proper. Taylor's two large volumes were a vast storehouse of useful information, but his book was one to consult, not to master. Stephen eliminated much of this extraneous matter, and summed up his rules in a series of succinct propositions, supplemented by apt illustrations, and couched in such a form that they could be easily read and remembered. Hence the English Digest, like the Indian Act, has been of much educational value. Its most original feature, but unfortunately also its weakest point, is its theory of relevancy. Pondering the multitude of "exclusionary" rules which had been laid down by the English courts, Stephen thought that he had discovered the general principle on which those rules reposed, and could devise a formula by which the principle could be expressed. "My study of the subject," he says, "both practically and in books has convinced me that the doctrine that all facts in issue and relevant to the issue, and no others, may be proved, is the unexpressed principle which forms the centre of and gives unity to all the express negative rules which form the great mass of the law." The result was the chapter on the relevancy of facts in the Indian Evidence Act, and the definition of relevancy in s. 7 of that act. This definition was based on the view that a distinction could be drawn between things which were and things which were not causally connected with each other, and that relevancy depended on causal connexion. Subsequent criticism convinced Stephen that his definition was in some respects too narrow and in others too wide, and eventually he adopted a definition out of which all reference to causality was dropped. But even in their amended form the provisions about relevancy are open to serious criticism. The doctrine of relevancy, *i.e.* of the probative effect of facts, is a branch of logic, not of law, and is out of place both in an enactment of the legislature and in a compendium of legal rules. The necessity under which Stephen found himself of extending the range of relevant facts by making it include facts "deemed to be relevant," and then narrowing it by enabling the judge to exclude evidence of facts which are relevant, illustrates the difference between the rules of logic and the rules of law. Relevancy is one thing; admissibility is another; and the confusion between them, which is much older than Stephen, is to be regretted. Rightly or wrongly English judges have, on practical grounds, declared inadmissible evidence of facts, which are relevant in the ordinary sense of the term, and which are so treated in non-judicial inquiries. Under these circumstances the attempt so to define relevancy as to make it conterminous with admissibility is misleading, and most readers of Stephen's Act and Digest would find them more intelligible and more useful if

Literature.

"admissible" were substituted for "relevant" throughout. Indeed it is hardly too much to say that Stephen's doctrine of relevancy is theoretically unsound and practically useless. The other parts of the work contain terse and vigorous statements of the law, but a Procrustean attempt to make legal rules square with a preconceived theory has often made the language and arrangement artificial, and the work, in spite of its compression, still contains rules which, under a more scientific treatment, would find their appropriate place in other branches of the law. These defects are characteristic of a strong and able man, who saw clearly, and expressed forcibly what he did see, but was apt to ignore or to deny the existence of what he did not see, whose mind was vigorous rather than subtle or accurate, and who, in spite of his learning, was somewhat deficient in the historical sense. But notwithstanding these defects, the conspicuous ability of the author, his learning, and his practical experience, especially in criminal cases, attach greater weight to FitzJames Stephen's statements than to those of any other English writer on the law of evidence.

Rules.

The object of every trial is, or may be, to determine two classes of questions or issues, which are usually distinguished as questions of law, and questions of fact, although the distinction between them is not so clear as might appear on a superficial view. In a trial by jury these two classes of questions are answered by different persons. The judge lays down the law. The jury, under the guidance of the judge, find the facts. It was with reference to trial by jury that the English rules of evidence were originally framed; it is by the peculiarities of this form of trial that many of them are to be explained; it is to this form of trial alone that some of the most important of them are exclusively applicable. The negative, exclusive, or exclusionary rules which form the characteristic features of the English law of evidence, are the rules in accordance with which the judge guides the jury. There is no difference of principle between the method of inquiry in judicial and in non-judicial proceedings. In either case a person who wishes to find out whether a particular event did or did not happen, tries, in the first place, to obtain information from persons who were present and saw what happened (direct evidence), and, failing this, to obtain information from persons who can tell him about facts from which he can draw an inference as to whether the event did or did not happen (indirect evidence). But in judicial inquiries the information given must be given on oath, and be liable to be tested by cross-examination. And there are rules of law which exclude from the consideration of the jury certain classes of facts which, in an ordinary inquiry, would, or might, be taken into consideration. Facts so excluded are said to be "not admissible as evidence," or "not evidence," according as the word is used in the wider or in the narrower sense. And the easiest way of determining whether a fact is or is not evidence in the narrower sense, is first to consider whether it has any bearing on the question to be tried, and, if it has, to consider whether it falls within any one or more of the rules of exclusion laid down by English law. These rules of exclusion are peculiar to English law and to systems derived from English law. They have been much criticized, and some of them have been repealed or materially modified by legislation. Most of them may be traced to directions given by a judge in the course of trying a particular case, given with special reference to the circumstances of that case, but expressed in general language, and, partly through the influence of text-writers, eventually hardened into general rules. In some cases their origin is only intelligible by reference to obsolete forms of pleading or practice. But in most cases they were originally rules of convenience laid down by the judge for the assistance of the jury. The judge is a man of trained experience, who has to arrive at a conclusion with the help of twelve untrained men, and who is naturally anxious to keep them straight, and give them every assistance in his power. The exclusion of certain forms of evidence assists the jury by concentrating their attention on the questions immediately before them, and by preventing them from being distracted or bewildered by facts which either have no bearing on the question before them, or have so remote a bearing on those questions as to be practically useless as guides to the truth. It also prevents a jury from being misled by statements the effect of which, through the prejudice they excite, is out of all proportion to their true weight. In this respect the rules of exclusion may be compared to blinkers, which keep a horse's eyes on the road before him. In criminal cases the rules of exclusion secure fair play to the accused, because he comes to the trial prepared to meet a specific charge, and ought not to be suddenly confronted by statements which he had no reason to expect would be made against him. They protect absent persons against statements affecting their character. And lastly they prevent the infinite waste of time which would ensue in the discussion of a question of fact if an inquiry were allowed to branch out into all the subjects with which that fact is more or less connected. The purely practical grounds on which the rules are based, according to the view of a great judge, may be illustrated by some remarks of Mr Justice Willes (1814-1872). In discussing the question whether evidence of the plaintiff's conduct on other occasions ought to be admitted, he said:

—

> "It is not easy in all cases to draw the line and to define with accuracy where probability ceases and speculation begins; but we are bound to lay down the rule to the best of our ability. No doubt the rule as to confining the evidence to that which is relevant and pertinent to the issue is one of great importance, not only as regards the particular case, but also with reference to saving the time of the court, and preventing the minds of the jury from being drawn away from the real point they have to decide.... Now it appears to me that the evidence proposed to be given in this case, if admitted, would not have shown that it was more probable that the contract was subject to the condition insisted upon by the defendant. The question may be put thus, Does the fact of a person having once or many times in his life done a particular act in a particular way make it more probable that he has done the same thing in the same way upon another and different occasion? To admit such speculative evidence would, I think, be fraught with great danger.... If such evidence were held admissible it would be difficult to say that the defendant might not in any case, where the question was whether or not there had been a sale of goods on credit, call witnesses to prove that the plaintiff had dealt with other persons upon a certain credit; or, in an action for an assault, that the plaintiff might not give evidence of former assaults committed by the defendant upon other persons, or upon other persons of a particular class, for the purpose of showing that he was a quarrelsome individual, and therefore that it was highly probable that the particular charge of assault was well founded. The extent to which this sort of thing might be carried is inconceivable.... To obviate the prejudices, the injustice, and the waste of time to which the admission of such evidence would lead, and bearing in mind the extent to which it might be carried, and that litigants are mortal, it is necessary not only to adhere to the rule, but to lay it down strictly. I think, therefore, the fact that the plaintiff had entered into contracts of a particular kind with other persons on other occasions could not be properly admitted in evidence where no custom of trade to make such contracts, and no connexion between such and the one in question, was shown to exist" (*Hollingham* v. *Head*, 1858, 4 C.B. N.S. 388).

There is no difference between the principles of evidence in civil and in criminal cases, although there are a few special rules, such as those relating to confessions and to dying declarations, which are only applicable to criminal proceedings. But in civil proceedings the issues are narrowed by mutual admissions of the parties, more use is made of evidence taken out of court, such as affidavits, and, generally, the rules of evidence are less strictly applied. It is often impolitic to object to the admission of evidence, even when the objection may be sustained by previous rulings. The general tendency of modern procedure is to place a more liberal and less technical construction on rules of evidence, especially in civil cases. In recent volumes of law reports cases turning on the admissibility of evidence are conspicuous by their rarity. Various causes have operated in this direction. One of them has been the change in the system of pleading, under which each party now knows before the actual trial the main facts on which his opponent relies. Another is the interaction of chancery and common-law practice and traditions since the Judicature Acts. In the chancery courts the rules of evidence were always less carefully observed, or, as Westminster would have said, less understood, than in the courts of common law. A judge trying questions of fact alone might naturally think that blinkers, though useful for a jury, are unnecessary for a judge. And the chancery judge was apt to read his affidavits first, and to determine their admissibility afterwards. In the meantime they had affected his mind.

The tendency of modern text-writers, among whom Professor J.B. Thayer (1831-1902), of Harvard, was perhaps the most independent, instructive and suggestive, is to restrict materially the field occupied by the law of evidence, and to relegate to other branches of the law topics traditionally treated under the head of evidence. Thus in every way the law of evidence, though still embodying some principles of great importance, is of less comparative importance as a branch of English law than it was half a century ago. Legal rules, like dogmas, have their growth and decay. First comes the judge who gives a ruling in a particular case. Then comes the text-writer who collects the scattered rulings, throws them into the form of general propositions, connects them together by some theory, sound or unsound, and often ignores or obscures their historical origin. After him comes the legislator who crystallizes the propositions into enactments, not always to the advantage of mankind. So also with decay. Legal rules fall into the background, are explained away, are ignored, are denied, are overruled. Much of the English law of evidence is in a stage of decay.

The subject-matter of the law of evidence may be arranged differently according to the taste or point of view of the writer. It will be arranged here under the following heads:—I. Preliminary Matter; II. Classes of Evidence; III. Rules of Exclusion; IV. Documentary Evidence; V. Witnesses.

Under this head may be grouped certain principles and considerations which limit the range of matters to which evidence relates.

1. *Law and Fact.*—Evidence relates only to facts. It is therefore necessary to touch on the distinction between law and facts. *Ad quaestionem facti non respondent judices; ad quaestionem juris non respondent juratores.* Thus Coke, attributing, after his wont, to Bracton a maxim which may have been invented by himself. The maxim became the subject of political controversy, and the two rival views are represented by Pulteney's lines—

> "For twelve honest men have decided the cause
> Who are judges alike of the facts and the laws,"

and by Lord Mansfield's variant—

> "Who are judges of facts, but not judges of laws."

The particular question raised with respect to the law of libel was settled by Fox's Libel Act 1792. Coke's maxim describes in a broad general way the distinction between the functions of the judge and of the jury, but is only true subject to important qualifications. Judges in jury cases constantly decide what may be properly called questions of fact, though their action is often disguised by the language applied or the procedure employed. Juries, in giving a general verdict, often practically take the law into their own hands. The border-line between the two classes of questions is indicated by the "mixed questions of law and fact," to use a common phrase, which arise in such cases as those relating to "necessaries," "due diligence," "negligence," "reasonableness," "reasonable and probable cause." In the treatment of these cases the line has been drawn differently at different times, and two conflicting tendencies are discernible. On the one hand, there is the natural tendency to generalize common inferences into legal rules, and to fix legal standards of duty. On the other hand, there is the sound instinct that it is a mistake to define and refine too much in these cases, and that the better course is to leave broadly to the jury, under the general guidance of the judge, the question what would be done by the "reasonable" or "prudent" man in particular cases. The latter tendency predominates in modern English law, and is reflected by the enactments in the recent acts codifying the law on bills of exchange and sale of goods, that certain questions of reasonableness are to be treated as questions of fact. On the same ground rests the dislike to limit the right of a jury to give a general verdict in criminal cases. Questions of custom begin by being questions of fact, but as the custom obtains general recognition it becomes law. Many of the rules of the English mercantile law were "found" as customs by Lord Mansfield's special juries. Generally, it must be remembered that the jury act in subordinate co-operation with the judge, and that the extent to which the judge limits or encroaches on the province of the jury is apt to depend on the personal idiosyncrasy of the judge.

2. *Judicial Notice.*—It may be doubted whether the subject of judicial notice belongs properly to the law of evidence, and whether it does not belong rather to the general topic of legal or judicial reasoning. Matters which are the subject of judicial notice are part of the equipment of the judicial mind. It would be absurd to require evidence of every fact; many facts must be assumed to be known. The judge, like the juryman, is supposed to bring with him to the consideration of the question which he has to try common sense, a general knowledge of human nature and the ways of the world, and also knowledge of things that "everybody is supposed to know." Of such matters judicial notice is said to be taken. But the range of general knowledge is indefinite, and the range of judicial notice has, for reasons of convenience, been fixed or extended, both by rulings of the judges and by numerous enactments of the legislature. It would be impossible to enumerate here the matters of which judicial notice must or may be taken. These are to be found in the text-books. For present purposes it must suffice to say that they include not only matters of fact of common and certain knowledge, but the law and practice of the courts, and many matters connected with the government of the country.

3. *Presumptions.*—A presumption in the ordinary sense is an inference. It is an argument, based on observation, that what has happened in some cases will probably happen in others of the like nature. The subject of presumptions, so far as they are mere inferences or arguments, belongs, not to the law of evidence, or to law at all, but to rules of reasoning. But a legal presumption, or, as it is sometimes called, a presumption of law, as distinguished from a presumption of fact, is something more. It may be described, in Stephen's language,

as “a rule of law that courts and judges shall draw a particular inference from a particular fact, or from particular evidence, unless and until the truth” (perhaps it would be better to say ‘soundness’) “of the inference is disproved.” Courts and legislatures have laid down such rules on grounds of public policy or general convenience, and the rules have then to be observed as rules of positive law, not merely used as part of the ordinary process of reasoning or argument. Some so-called presumptions are rules of substantive law under a disguise. To this class appear to belong “conclusive presumptions of law,” such as the common-law presumption that a child under seven years of age cannot commit a felony. So again the presumption that every one knows the law is merely an awkward way of saying that ignorance of the law is not a legal excuse for breaking it. Of true legal presumptions, the majority may be dealt with most appropriately under different branches of the substantive law, such as the law of crime, of property, or of contract, and accordingly Stephen has included in his *Digest of the Law of Evidence* only some which are common to more than one branch of the law. The effect of a presumption is to impute to certain facts or groups of facts a prima facie significance or operation, and thus, in legal proceedings, to throw upon the party against whom it works the duty of bringing forward evidence to meet it. Accordingly the subject of presumptions is intimately connected with the subject of the burden of proof, and the same legal rule may be expressed in different forms, either as throwing the advantage of a presumption on one side, or as throwing the burden of proof on the other. Thus the rule in Stephen’s Digest, which says that the burden of proving that any person has been guilty of a crime or wrongful act is on the person who asserts it, appears in the article entitled “Presumption of Innocence.” Among the more ordinary and more important legal presumptions are the presumption of regularity in proceedings, described generally as a presumption *omnia esse rite acta*, and including the presumption that the holder of a public office has been duly appointed, and has duly performed his official duties, the presumption of the legitimacy of a child born during the mother’s marriage, or within the period of gestation after her husband’s death, and the presumptions as to life and death. “A person shown not to have been heard of for seven years by those (if any) who, if he had been alive, would naturally have heard of him, is presumed to be dead unless the circumstances of the case are such as to account for his not being heard of without assuming his death; but there is no presumption as to the time when he died, and the burden of proving his death at any particular time is upon the person who asserts it. There is no presumption” (*i.e.* legal presumption) “as to the age at which a person died who is shown to have been alive at a given time, or as to the order in which two or more persons died who are shown to have died in the same accident, shipwreck or battle” (Stephen, *Dig.*, art. 99). A document proved or purporting to be thirty years old is presumed to be genuine, and to have been properly executed and (if necessary) attested if produced from the proper custody. And the legal presumption of a “lost grant,” *i.e.* the presumption that a right or alleged right which has been long enjoyed without interruption had a legal origin, still survives in addition to the common law and statutory rules of prescription.

4. *Burden of Proof.*—The expression *onus probandi* has come down from the classical Roman law, and both it and the Roman maxims, *Agenti incumbit probatio*, *Necessitas probandi incumbit ei qui dicit non ei qui negat*, and *Reus excipiendo fit actor*, must be read with reference to the Roman system of actions, under which nothing was admitted, but the plaintiff’s case was tried first; then, unless that failed, the defendant’s on his *exceptio*; then, unless that failed, the plaintiff’s on his *replicatio*, and so on. Under such a system the burden was always on the “actor.” In modern law the phrase “burden of proof” may mean one of two things, which are often confused—the burden of establishing the proposition or issue on which the case depends, and the burden of producing evidence on any particular point either at the beginning or at a later stage of the case. The burden in the former sense ordinarily rests on the plaintiff or prosecutor. The burden in the latter sense, that of going forward with evidence on a particular point, may shift from side to side as the case proceeds. The general rule is that he who alleges a fact must prove it, whether the allegation is couched in affirmative or negative terms. But this rule is subject to the effect of presumptions in particular cases, to the principle that in considering the amount of evidence necessary to shift the burden of proof regard must be had to the opportunities of knowledge possessed by the parties respectively, and to the express provisions of statutes directing where the burden of proof is to lie in particular cases. Thus many statutes expressly direct that the proof of lawful excuse or authority, or the absence of fraudulent intent, is to lie on the person charged with an offence. And the Summary Jurisdiction Act 1848 provides that if the information or complaint in summary proceedings negatives any exemption, exception, proviso, or condition in the statute on which it is founded, the prosecutor or complainant need not prove the negative, but the defendant may prove the affirmative in his defence.

II. Classes of Evidence

Evidence is often described as being either oral or documentary. To these two classes should be added a third, called by Bentham real evidence, and consisting of things presented immediately to the senses of the judge or the jury. Thus the judge or jury may go to view any place the sight of which may help to an understanding of the evidence, and may inspect anything sufficiently identified and produced in court as material to the decision. Weapons, clothes and things alleged to have been stolen or damaged are often brought into court for this purpose. Oral evidence consists of the statements of witnesses. Documentary evidence consists of documents submitted to the judge or jury by way of proof. The distinction between primary and secondary evidence relates only to documentary evidence, and will be noticed in the section under that head. A division of evidence from another point of view is that into direct and indirect, or, as it is sometimes called, circumstantial evidence. By direct evidence is meant the statement of a person who saw, or otherwise observed with his senses, the fact in question. By indirect or circumstantial evidence is meant evidence of facts from which the fact in question may be inferred. The difference between direct and indirect evidence is a difference of kind, not of degree, and therefore the rule or maxim as to "best evidence" has no application to it. Juries naturally attach more weight to direct evidence, and in some legal systems it is only this class of evidence which is allowed to have full probative force. In some respects indirect evidence is superior to direct evidence, because, as Paley puts it, "facts cannot lie," whilst witnesses can and do. On the other hand facts often deceive; that is to say, the inferences drawn from them are often erroneous. The circumstances in which crimes are ordinarily committed are such that direct evidence of their commission is usually not obtainable, and when criminality depends on a state of mind, such as intention, that state must necessarily be inferred by means of indirect evidence.

III. Rules of Exclusion

It seems desirable to state the leading rules of exclusion in their crude form instead of obscuring their historical origin by attempting to force them into the shape of precise technical propositions forming parts of a logically connected system. The judges who laid the foundations of our modern law of evidence, like those who first discoursed on the duties of trustees, little dreamt of the elaborate and artificial system which was to be based upon their remarks. The rules will be found, as might be expected, to be vague, to overlap each other, to require much explanation, and to be subject to many exceptions. They may be stated as follows:—(1) Facts not relevant to the issue cannot be admitted as evidence. (2) The evidence produced must be the best obtainable under the circumstances. (3) Hearsay is not evidence. (4) Opinion is not evidence.

1. *Rule of Relevancy.*—The so-called rule of relevancy is sometimes stated by text-writers in the form in which it was laid down by Baron Parke in 1837 (*Wright* v. *Doe and Tatham*, 7 A. and E. 384), when he described "one great principle" in the law of evidence as being that "all facts which are relevant to the issue may be proved." Stated in different forms, the rule has been made by FitzJames Stephen the central point of his theory of evidence. But relevancy, in the proper and natural sense, as we have said, is a matter not of law, but of logic. If Baron Parke's dictum relates to relevancy in its natural sense it is not true; if it relates to relevancy in a narrow and artificial sense, as equivalent to admissible, it is tautological. Such practical importance as the rule of relevancy possesses consists, not in what it includes, but in what it excludes, and for that reason it seems better to state the rule in a negative or exclusive form. But whether the rule is stated in a positive or in a negative form its vagueness is apparent. No precise line can be drawn between "relevant" and "irrelevant" facts. The two classes shade into each other by imperceptible degrees. The broad truth is that the courts have excluded from consideration certain matters which have some bearing on the question to be decided, and which, in that sense, are relevant, and that they have done so on grounds of policy and convenience. Among the matters so excluded are matters which are likely to mislead the jury, or to complicate the case unnecessarily, or which are of slight, remote, or merely conjectural importance. Instances of the classes of matters so excluded can be given, but it seems difficult to refer their exclusion to any more general principle than this. Rules as to evidence of character and conduct appear to fall under this principle. Evidence is not admissible to show that the person who is alleged to have done a thing was of a disposition or character which makes it probable that he would or would not have done it. This rule excludes the biographical accounts of the prisoner which are so familiar in French trials, and is an important principle in English trials. It is subject to three exceptions: first, that evidence of good character is admissible in favour of the prisoner in all criminal cases; secondly, that a prisoner indicted for rape is entitled to

call evidence as to the immoral character of the prosecutrix; and thirdly, that a witness may be called to say that he would not believe a previous witness on his oath. The exception allowing the good character of a prisoner to influence the verdict, as distinguished from the sentence, is more humane than logical, and seems to have been at first admitted in capital cases only. The exception in rape cases does not allow evidence to be given of specific acts of immorality with persons other than the prisoner, doubtless on the ground that such evidence would affect the reputations of third parties. Where the character of a person is expressly in issue, as in actions of libel and slander, the rule of exclusion, as stated above, does not apply. Nor does it prevent evidence of bad character from being given in mitigation of damages, where the amount of damages virtually depends on character, as in cases of defamation and seduction. As to conduct there is a similar general rule, that evidence of the conduct of a person on other occasions is not to be used merely for the purpose of showing the likelihood of his having acted in a similar way on a particular occasion. Thus, on a charge of murder, the prosecutor cannot give evidence of the prisoner's conduct to other persons for the purpose of proving a bloodthirsty and murderous disposition. And in a civil case a defendant was not allowed to show that the plaintiff had sold goods on particular terms to other persons for the purpose of proving that he had sold similar goods on the same terms to the defendant. But this general rule must be carefully construed. Where several offences are so connected with each other as to form parts of an entire transaction, evidence of one is admissible as proof of another. Thus, where a prisoner is charged with stealing particular goods from a particular place, evidence may be given that other goods, taken from the same place at the same time, were found in his possession. And where it is proved or admitted that a person did a particular act, and the question is as to his state of mind, that is to say, whether he did the act knowingly, intentionally, fraudulently, or the like, evidence may be given of the commission by him of similar acts on other occasions for the purpose of proving his state of mind on the occasion. This principle is most commonly applied in charges for uttering false documents or base coin, and not uncommonly in charges for false pretences, embezzlement or murder. In proceedings for the receipt or possession of stolen property, the legislature has expressly authorized evidence to be given of the possession by the prisoner of other stolen property, or of his previous conviction of an offence involving fraud or dishonesty (Prevention of Crimes Act 1871). Again, where there is a question whether a person committed an offence, evidence may be given of any fact supplying a motive or constituting preparation for the offence, of any subsequent conduct of the person accused, which is apparently influenced by the commission of the offence, and of any act done by him, or by his authority, in consequence of the offence. Thus, evidence may be given that, after the commission of the alleged offence, the prisoner absconded, or was in possession of the property, or the proceeds of the property, acquired by the offence, or that he attempted to conceal things which were or might have been used in committing the offence, or as to the manner in which he conducted himself when statements were made in his presence and hearing. Statements made to or in the presence of a person charged with an offence are admitted as evidence, not of the facts stated, but of the conduct or demeanour of the person to whom or in whose presence they are made, or of the general character of the transaction of which they form part (under the *res gestae* rule mentioned below).

2. *Best Evidence Rule.*—Statements to the effect of the best evidence rule were often made by Chief Justice Holt about the beginning of the 18th century, and became familiar in the courts. Chief Baron Gilbert, in his book on evidence, which must have been written before 1726, says that "the first and most signal rule in relation to evidence is this, that a man must have the utmost evidence the nature of the fact is capable of." And in the great case of *Omichund* v. *Barker* (1744), Lord Hardwicke went so far as to say, "The judges and sages of the law have laid down that there is but one general rule of evidence, the best that the nature of the case will admit" (1 Atkyns 49). It is no wonder that a rule thus solemnly stated should have found a prominent place in text-books on the law of evidence. But, apart from its application to documentary evidence, it does not seem to be more than a useful guiding principle which underlies, or may be used in support of, several rules.

It is to documentary evidence that the principle is usually applied, in the form of the narrower rule excluding, subject to exceptions, secondary evidence of the contents of a document where primary evidence is obtainable. In this form the rule is a rule of exclusion, but may be most conveniently dealt with in connexion with the special subject of documentary evidence. As noticed above, the general rule does not apply to the difference between direct and indirect evidence. And, doubtless on account of its vague character, it finds no place in Stephen's Digest.

3. *Hearsay.*—The term "hearsay" primarily applies to what a witness has heard another

person say in respect to a fact in dispute. But it is extended to any statement, whether reduced to writing or not, which is brought before the court, not by the author of the statement, but by a person to whose knowledge the statement has been brought. Thus the hearsay rule excludes statements, oral or written, made in the first instance by a person who is not called as a witness in the case. Historically this rule may be traced to the time when the functions of the witnesses were first distinguished from the functions of the jury, and when the witnesses were required by their formula to testify *de visu suo et auditu*, to state what they knew about facts from the direct evidence of their senses, not from the information of others. The rule excludes statements the effect of which is liable to be altered by the narrator, and which purport to have been made by persons who did not necessarily speak under the sanction of an oath, and whose accuracy or veracity is not tested by cross-examination. It is therefore of practical utility in shutting out many loose statements and much irresponsible gossip. On the other hand, it excludes statements which are of some value as evidence, and may indeed be the only available evidence. Thus, a statement has been excluded as hearsay, even though it can be proved that the author of the statement made it on oath, or that it was against his interest when he made it, or that he is prevented by insanity or other illness from giving evidence himself, or that he has left the country and disappeared, or that he is dead.

Owing to the inconveniences which would be caused by a strict application of the rule, it has been so much eaten into by exceptions that some persons doubt whether the rule and the exceptions ought not to change places. Among the exceptions the following may be noticed: (*a*) *Certain sworn statements.*—In many cases statements made by a person whose evidence is material, but who cannot come before the court, or could not come before it without serious difficulty, delay or expense, may be admitted as evidence under proper safeguards. Under the Indictable Offences Act 1848, where a person has made a deposition before a justice at a preliminary inquiry into an offence, his deposition may be read in evidence on proof that the deponent is dead, or too ill to travel, that the deposition was taken in the presence of the accused person, and that the accused then had a full opportunity of cross-examining the deponent. The deposition must appear to be signed by the justice before whom it purports to have been taken. Depositions taken before a coroner are admissible under the same principle. And the principle probably extends to cases where the deponent is insane, or kept away by the person accused. There are other statutory provisions for the admission of depositions, as in the Criminal Law Amendment Act 1867; the Foreign Jurisdiction Act 1890; and the Children Act 1908, incorporating an act of 1894. In civil cases the rule excluding statements not made in court at the trial is much less strictly applied. Frequent use is made of evidence taken before an examiner, or under a commission. Affidavits are freely used for subordinate issues or under an arrangement between the parties, and leave may be given to use evidence taken in other proceedings. The old chancery practice, under which evidence, both at the trial and at other stages of a proceeding, was normally taken by affidavit, irrespectively of consent, was altered by the Judicature Acts. Under the existing rules of the supreme court evidence may be given by affidavit upon any motion, petition or summons, but the court or a judge may, on the application of either party, order the attendance for cross-examination of the person making the affidavit. (*b*) *Dying declarations.*—In a trial for murder or manslaughter a declaration by the person killed as to the cause of his death, or as to any of the circumstances of the transaction which resulted in his death, is admissible as evidence. But this exception is very strictly construed. It must be proved that the declarant, at the time of making the declaration, was in actual danger of death, and had given up all hope of recovery. (*c*) *Statements in pedigree cases.*—On a question of pedigree the statement of a deceased person, whether based on his own personal knowledge or on family tradition, is admissible as evidence, if it is proved that the person who made the statement was related to the person about whose family relations the statement was made, and that the statement was made before the question with respect to which the evidence is required had arisen. (*d*) *Statements as to matters of public or general interest.*—Statements by deceased persons are admissible as evidence of reputation or general belief in questions relating to the existence of any public or general right or custom, or matter of public and general interest. Statements of this kind are constantly admitted in questions relating to right of way, or rights of common, or manorial or other local customs. Maps, copies of court rolls, leases and other deeds, and verdicts, judgments, and orders of court fall within the exception in cases of this kind. (*e*) *Statements in course of duty or business.*—A statement with respect to a particular fact made by a deceased person in pursuance of his duty in connexion with any office, employment or business, whether public or private, is admissible as evidence of that fact, if the statement appears to have been made from personal knowledge, and at or about the time when the fact occurred. This exception covers entries by clerks and other employees. (*f*) *Statements against interest.*—A statement made by a deceased person against his pecuniary or proprietary interest is admissible as evidence, without reference to the time

at which it was made. Where such a statement is admissible the whole of it becomes admissible, though it may contain matters not against the interest of the person who made it, and though the total effect may be in his favour. Thus, where there was a question whether a particular sum was a gift or a loan, entries in an account book of receipt of interest on the sum were admitted, and a statement in the book that the alleged debtor had on a particular date acknowledged the loan was also admitted. (*g*) *Public documents.*—Under this head may be placed recitals in public acts of parliament, notices in the *London*, *Edinburgh*, or *Dublin Gazette* (which are made evidence by statute in a large number of cases), and entries made in the performance of duty in official registers or records, such as registers of births, deaths or marriages, registers of companies, records in judicial proceedings, and the like. An entry in a public document may be treated as a statement made in the course of duty, but it is admissible whether the person who made the statement is alive or dead, and without any evidence as to personal knowledge, or the time at which the statement is made. (*h*) *Admissions.*—By the term "admission," as here used, is meant a statement made out of the witness-box by a party to the proceedings, whether civil or criminal, or by some person whose statements are binding on that party, against the interest of that party. The term includes admissions made in answer to interrogatories, or to a notice to admit facts, but not admissions made on the pleadings. Admissions, in this sense of the term, are admissible as evidence against the person by whom they are made, or on whom they are binding, without reference to the life or death of the person who made them. A person is bound by the statements of his agent, acting within the scope of his authority, and barristers and solicitors are agents for their clients in the conduct of legal proceedings. Conversely, a person suing or defending on behalf of another, *e.g.* as agent or trustee, is bound by the statements of the person whom he represents. Statements respecting property made by a predecessor in title bind the successor. Where a statement is put in evidence as an admission by, or binding on, any person, that person is entitled to have the whole statement given in evidence. The principle of this rule is obviously sound, because it would be unfair to pick out from a man's statement what tells against him, and to suppress what is in his favour. But the application of the rule is sometimes attended with difficulty. An admission will not be allowed to be used as evidence if it was made under a stipulation, express or implied, that it should not be so used. Such admissions are said to be made "without prejudice." (*i*) *Confessions.*—A confession is an admission by a person accused of an offence that he has committed the offence of which he is accused. But the rules about admitting as evidence confessions in criminal proceedings are much more strict than the rules about admissions in civil proceedings. The general rule is, that a confession is not admissible as evidence against any person except the person who makes it. But a confession made by one accomplice in the presence of another is admissible against the latter to this extent, that, if it implicates him, his silence under the charge may be used against him, whilst on the other hand his prompt repudiation of the charge might tell in his favour. In other words, the confession may be used as evidence of the conduct of the person in whose presence it was made. A confession cannot be admitted as evidence unless proved to be voluntary. A confession is not treated as being voluntary if it appears to the court to have been caused by any inducement, threat or promise which proceeded from a magistrate or other person in authority concerned in the charge, and which, in the opinion of the court, gave the accused person reasonable ground for supposing that by making a confession he would gain some advantage or avoid some evil in reference to the proceedings against him. This applies to any inducement, threat or promise having reference to the charge, whether it is addressed directly to the accused person or is brought to his knowledge indirectly. But a confession is not involuntary merely because it appears to have been caused by the exhortations of a person in authority to make it as a matter of religious duty, or by an inducement collateral to the proceedings, or by an inducement held out by a person having nothing to do with the apprehension, prosecution or examination of the prisoner. Thus, a confession made to a gaol chaplain in consequence of religious exhortation has been admitted as evidence. So also has a confession made by a prisoner to a gaoler in consequence of a promise by the gaoler, that if the prisoner confessed he should be allowed to see his wife. To make a confession involuntary, the inducement must have reference to the prisoner's escape from the charge against him, and must be made by some person having power to relieve him, wholly or partially, from the consequences of the charge. A confession is treated as voluntary if, in the opinion of the court, it was made after the complete removal of the impression produced by any inducement, threat or promise which would have made it involuntary. Where a confession was made under an inducement which makes the confession involuntary, evidence may be given of facts discovered in consequence of the confession, and of so much of the confession as distinctly relates to those facts. Thus, A. under circumstances which make the confession involuntary, tells a policeman that he, A., had thrown a lantern into the pond. Evidence may be given that the lantern was found in the pond, and that A. said he had thrown it there. It is of course improper to try to extort a confession by fraud or under the promise of secrecy. But if a confession is otherwise

admissible as evidence, it does not become inadmissible *merely* because it was made under a promise of secrecy, or in consequence of a deception practised on the accused person for the purpose of obtaining it, or when he was drunk, or because it was made in answer to questions, whether put by a magistrate or by a private person, or because he was not warned that he was not bound to make the confession, and that it might be used against him. If a confession is given in evidence, the whole of it must be given, and not merely the parts disadvantageous to the accused person. Evidence amounting to a confession may be used as such against the person who gave it, though it was given on oath, and though the proceeding in which it was given had reference to the same subject-matter as the proceeding in which it is to be used, and though the witness might have refused to answer the questions put to him. But if, after refusing to answer such questions, the witness is improperly compelled to answer, his answers are not a voluntary confession. The grave jealousy and suspicion with which the English law regards confessions offer a marked contrast to the importance attached to this form of evidence in other systems of procedure, such as the inquisitorial system which long prevailed, and still to some extent prevails, on the continent. (*j*) *Res gestae.*—Statements are often admitted as evidence on the ground that they form part of what is called the "transaction," or *res gestae*, the occurrence or nature of which is in question. For instance, where an act may be proved, statements accompanying and explaining the act made by or to the person doing it, may be given in evidence. There is no difficulty in understanding the principle on which this exception from the hearsay rule rests, but there is often practical difficulty in applying it, and the practice has varied. How long is the "transaction" to be treated as lasting? What ought to be treated as "the immediate and natural effect of continuing action," and, for that reason, as part of the *res gestae*? When an act of violence is committed, to what extent are the terms of the complaint made by the sufferer, as distinguished from the fact of a complaint having been made, admissible as evidence? These are some of the questions raised. The cases in which statements by a person as to his bodily or mental condition may be put in evidence may perhaps be treated as falling under the same principle. In the Rugeley poisoning case, statements by the deceased person before his illness as to his state of health, and as to his symptoms during illness, were admitted as evidence for the prosecution. Under the same principle may also be brought the rule as to statements in conspiracy cases. In charges of conspiracy, after evidence has been given of the existence of the plot, and of the connexion of the accused with it, the charge against one conspirator may be supported by evidence of anything done, written, or said, not only by him, but by any other of the conspirators, in furtherance of the common purpose. On the other hand, a statement made by one conspirator, not in execution of the common purpose, but in narration of some event forming part of the conspiracy, would be treated, not as part of the "transaction," but as a statement excluded by the hearsay rule. Thus the admissibility of writings in conspiracy cases may depend on the time when they can be shown to have been in the possession of a fellow-conspirator, whether before or after the prisoner's apprehension. (*k*) *Complaints in rape cases, &c.* —In trials for rape and similar offences, the fact that shortly after the commission of the alleged offence a complaint was made by the person against whom the offence was committed, and also the terms of the complaint, have been admitted as evidence, not of the facts complained of, but of the consistency of the complainant's conduct with the story told by her in the witness-box, and as negativing consent on her part.

4. *Opinion.*—The rule excluding expressions of opinion also dates from the first distinction between the functions of witnesses and jury. It was for the witnesses to state facts, for the jury to form conclusions. Of course every statement of fact involves inference, and implies a judgment on phenomena observed by the senses. And the inference is often erroneous, as in the answer to the question, "Was he drunk?" A prudent witness will often guard himself, and is allowed to guard himself, by answering to the best of his belief. But, for practical purposes, it is possible to draw a distinction between a statement of facts observed and an expression of opinion as to the inference to be drawn from these facts, and the rule telling witnesses to state facts and not express opinions is of great value in keeping their statements out of the region of argument and conjecture. The evidence of "experts," that is to say, of persons having a special knowledge of some particular subject, is generally described as constituting the chief exception to the rule. But perhaps it would be more accurate to say that experts are allowed a much wider range than ordinary witnesses in the expression of their opinions, and in the statement of facts on which their opinions are based. Thus, in a poisoning case, a doctor may be asked as an expert whether, in his opinion, a particular poison produces particular symptoms. And, where lunacy is set up as a defence, an expert may be asked whether, in his opinion, the symptoms exhibited by the alleged lunatic commonly show unsoundness of mind, and whether such unsoundness of mind usually renders persons incapable of knowing the nature of their acts, or of knowing that what they do is either wrong or contrary to the law. Similar principles are applied to the evidence of engineers, and in numerous other cases. In cases of disputed handwriting the

evidence of experts in handwriting is expressly recognized by statute (Evidence and Practice on Criminal Trials 1865).

IV. Documentary Evidence

Charters and other writings were exhibited to the jury at a very early date, and it is to writings so exhibited that the term “evidence” or “evidences” seems to have been originally applied *par excellence*. The oral evidence of witnesses came later. Where a document is to be used as evidence the first question is how its contents are to be proved. To this question the principle of “best evidence” applies, in the form of the rule that primary evidence must be given except in the cases where secondary evidence is allowed. By primary evidence is meant the document itself produced for inspection. By secondary evidence is meant a copy of the document, or verbal accounts of its contents.

The rule as to the inadmissibility of a copy of a document is applied much more strictly to private than to public or official documents. Secondary evidence may be given of the contents of a private document in the following cases:

(*a*) Where the original is shown or appears to be in the possession of the adverse party, and he, after having been served with reasonable notice to produce it, does not do so.

(*b*) Where the original is shown or appears to be in the possession or power of a stranger not legally bound to produce it, and he, after having been served with a writ of *subpoena duces tecum*, or after having been sworn as a witness and asked for the document, and having admitted that it is in court, refuses to produce it.

(*c*) Where it is shown that proper search has been made for the original, and there is reason for believing that it is destroyed or lost.

(*d*) Where the original is of such a nature as not to be easily movable, as in the case of a placard posted on a wall, or of a tombstone, or is in a country from which it is not permitted to be removed.

(*e*) Where the original is a document for the proof of which special provision is made by any act of parliament, or any law in force for the time being. Documents of that kind are practically treated on the same footing as private documents.

(*f*) Where the document is an entry in a banker’s book, provable according to the special provisions of the Bankers’ Books Evidence Act 1879.

Secondary evidence of a private document is usually given either by producing a copy and calling a witness who can prove the copy to be correct, or, when there is no copy obtainable, by calling a witness who has seen the document, and can give an account of its contents. No general definition of public document is possible, but the rules of evidence applicable to public documents are expressly applied by statute to many classes of documents. Primary evidence of any public document may be given by producing the document from proper custody, and by a witness identifying it as being what it professes to be. Public documents may always be proved by secondary evidence, but the particular kind of secondary evidence required is in many cases defined by statute. Where a document is of such a public nature as to be admissible in evidence on its mere production from the proper custody, and no statute exists which renders its contents provable by means of a copy, any copy thereof or extract therefrom is admissible as proof of its contents, if it is proved to be an examined copy or extract, or purports to be signed or certified as a true copy or extract by the officer to whose custody the original is entrusted. Many statutes provide that various certificates, official and public documents, documents and proceedings of corporations and of joint stock and other companies, and certified copies of documents, by-laws, entries in registers and other books, shall be receivable as evidence of certain particulars in courts of justice, if they are authenticated in the manner prescribed by the statutes. Whenever, by virtue of any such provision, any such certificate or certified copy is receivable as proof of any particular in any court of justice, it is admissible as evidence, if it purports to be authenticated in the manner prescribed by law, without calling any witness to prove any stamp, seal, or signature required for its authentication, or the official character of the person who appears to have signed it. The Documentary Evidence Acts 1868, 1882 and 1895, provide modes of proving the contents of several classes of proclamations, orders and regulations.

If a document is of a kind which is required by law to be attested, but not otherwise, an attesting witness must be called to prove its due execution. But this rule is subject to the following exceptions:

(*a*) If it is proved that there is no attesting witness alive, and capable of giving evidence, then it is sufficient to prove that the attestation of at least one attesting witness is in

his handwriting, and that the signature of the person executing the document is in the handwriting of that person.

(*b*) If the document is proved, or purports to be, more than thirty years old, and is produced from what the court considers to be its proper custody, an attesting witness need not be called, and it will be presumed without evidence that the instrument was duly executed and attested.

Where a document embodies a judgment, a contract, a grant, or disposition of property, or any other legal transaction or "act in the law," on which rights depend, the validity of the transaction may be impugned on the ground of fraud, incapacity, want of consideration, or other legal ground. But this seems outside the law of evidence. In this class of cases a question often arises whether extrinsic evidence can be produced to vary the nature of the transaction embodied in the document. The answer to this question seems to depend on whether the document was or was not intended to be a complete and final statement of the transaction which it embodies. If it was, you cannot go outside the document for the purpose of ascertaining the nature of the transaction. If it was not, you may. But the mere statement of this test shows the difficulty of formulating precise rules, and of applying them when formulated. FitzJames Stephen mentions, among the facts which may be proved in these cases, the existence of separate and consistent oral agreements as to matters on which the document is silent, if there is reason to believe that the document is not a complete and final statement of the transaction, and the existence of any usage or custom with reference to which a contract may be presumed to have been made. But he admits that the rules on the subject are "by no means easy to apply, inasmuch as from the nature of the case an enormous number of transactions fall close on one side or the other of most of them." The underlying principle appears to be a rule of substantive law rather than of evidence. When parties to an arrangement have reduced the terms of the arrangement to a definite, complete, and final written form, they should be bound exclusively by the terms embodied in that form. The question in each case is under what circumstances they ought to be treated as having done so.

The expression "parol evidence," which includes written as well as verbal evidence, has often been applied to the extrinsic evidence produced for the purpose of varying the nature of the transaction embodied in a document. It is also applied to extrinsic evidence used for another purpose, namely, that of explaining the meaning of the terms used in a document. The two questions, What is the real nature of the transaction referred to in a document? and, What is the meaning of a document? are often confused, but are really distinct from each other. The rules bearing on the latter question are rules of construction or interpretation rather than of evidence, but are ordinarily treated as part of the law of evidence, and are for that reason included by FitzJames Stephen in his Digest. In stating these rules he adopts, with verbal modifications, the six propositions laid down by Vice-Chancellor Wigram in his *Examinations of the Rules of Law respecting the admission of Extrinsic Evidence in Aid of the Interpretation of Wills*. The substance of these propositions appears to be this, that wherever the meaning of a document cannot be satisfactorily ascertained from the document itself, use may be made of any other evidence for the purpose of elucidating the meaning, subject to one restriction, that, except in cases of equivocation, *i.e.* where a person or thing is described in terms applicable equally to more than one, resort cannot be had to extrinsic expressions of the author's intention.

V. Witnesses

1. *Attendance.*—If a witness does not attend voluntarily he can be required to attend by a writ of *subpoena*.

2. *Competency.*—As a general rule every person is a competent witness. Formerly persons were disqualified by crime or interest, or by being parties to the proceedings, but these disqualifications have now been removed by statute, and the circumstances which formerly created them do not affect the competency, though they may often affect the credibility, of a witness.

Under the general law as it stood before the Criminal Evidence Act 1898 came into force, a person charged with an offence was not competent to give evidence on his own behalf. But many exceptions had been made to this rule by legislation, and the rule itself was finally abolished by the act of 1898. Under that law a person charged is a competent witness, but he can only give evidence for the defence, and can only give evidence if he himself applies to do so. Under the law as it stood before 1898, persons jointly charged and being tried together were not competent to give evidence either for or against each other. Under the act

of 1898 a person charged jointly with another is a competent witness, but only for the defence, and not for the prosecution. If, therefore, one of the persons charged applies to give evidence his cross-examination must not be conducted with a view to establish the guilt of the other. Consequently, if it is thought desirable to use against one prisoner the evidence of another who is being tried with him, the latter should be released, or a separate verdict of not guilty taken against him. A prisoner so giving evidence is popularly said to turn king's evidence. It follows that, subject to what has been said above as to persons tried together, the evidence of an accomplice is admissible against his principal, and *vice versa*. The evidence of an accomplice is, however, always received with great jealousy and caution. A conviction on the unsupported testimony of an accomplice may, in some cases, be strictly legal, but the practice is to require it to be confirmed by unimpeachable testimony in some material part, and more especially as to his identification of the person or persons against whom his evidence may be received. The wife of a person charged is now a competent witness, but, except in certain special cases, she can only give evidence for the defence, and can only give evidence if her husband applies that she should do so. The special cases in which a wife can be called as a witness either for the prosecution or for the defence, and without the consent of the person charged, are cases arising under particular enactments scheduled to the act of 1898, and relating mainly to offences against wives and children, and cases in which the wife is by common law a competent witness against her husband, *i.e.* where the proceeding is against the husband for bodily injury or violence inflicted on his wife. The rule of exclusion extends only to a lawful wife. There is no ground for supposing that the wife of a prosecutor is an incompetent witness. A witness is incompetent if, in the opinion of the court, he is prevented by extreme youth, disease affecting his mind, or any other cause of the same kind, from recollecting the matter on which he is to testify, from understanding the questions put to him, from giving rational answers to those questions, or from knowing that he ought to speak the truth. A witness unable to speak or hear is not incompetent, but may give his evidence by writing or by signs, or in any other manner in which he can make it intelligible. The particular form of the religious belief of a witness, or his want of religious belief, does not affect his competency. This ground of incompetency has now been finally removed by the Oaths Act 1888. It will be seen that the effect of the successive enactments which have gradually removed the disqualifications attaching to various classes of witnesses has been to draw a distinction between the *competency* of a witness and his *credibility*. No person is disqualified on moral or religious grounds, but his character may be such as to throw grave doubts on the value of his evidence. No relationship, except to a limited extent that of husband and wife, excludes from giving evidence. The parent may be examined on the trial of the child, the child on that of the parent, master for or against servant, and servant for or against master. The relationship of the witness to the prosecutor or the prisoner in such cases may affect the credibility of the witness, but does not exclude his evidence.

3. *Privilege.*—It does not follow that, because a person is *competent* to give evidence, he can therefore be compelled to do so.

No one, except a person charged with an offence when giving evidence on his own application, and as to the offence wherewith he is charged, is bound to answer a question if the answer would, in the opinion of the court, have a tendency to expose the witness, or the wife or husband of the witness, to any criminal charge, penalty, or forfeiture, which the court regards as reasonably likely to be preferred or sued for. Accordingly, an accomplice cannot be examined without his consent, but if an accomplice who has come forward to give evidence on a promise of pardon, or favourable consideration, refuses to give full and fair information, he renders himself liable to be convicted on his own confession. However, even accomplices in such circumstances are not required to answer on their cross-examination as to other offences. Where, under the new law, a person charged with an offence offers himself as a witness, he may be asked any question in cross-examination, notwithstanding that it would tend to criminate him as to the offence charged. But he may not be asked, and if he is asked must not be required to answer, any question tending to show that he has committed, or been convicted of, or been charged with, any other offence, or is of bad character, unless:—

(i.) The proof that he has committed, or been convicted of, the other offence is admissible evidence to show that he is guilty of the offence with which he is then charged; or,

(ii.) He has personally, or by his advocate, asked questions of the witnesses for the prosecution, with a view to establish his own good character, or has given evidence of his good character, or the nature or conduct of the defence is such as to involve imputations on the character of the prosecutor or the witnesses for the prosecution; or,

(iii.) He has given evidence against any other person charged with the same offence.

He may not be asked questions tending to criminate his wife.

The privilege as to criminating answers does not cover answers merely tending to establish a civil liability. No one is excused from answering a question or producing a document only because the answer or document may establish or tend to establish that he owes a debt, or is otherwise liable to any civil proceeding. It is a privilege for the protection of the witness, and therefore may be waived by him. But there are other privileges which cannot be so waived. Thus, on grounds of public policy, no one can be compelled, or is allowed, to give evidence relating to any affairs of state, or as to official communications between public officers upon public affairs, except with the consent of the head of the department concerned, and this consent is refused if the production of the information asked for is considered detrimental to the public service.

Again, in cases in which the government is immediately concerned, no witness can be compelled to answer any question the answer to which would tend to discover the names of persons by or to whom information was given as to the commission of offences. It is, as a rule, for the court to decide whether the permission of any such question would or would not, under the circumstances of the particular case, be injurious to the administration of justice.

A husband is not compellable to disclose any communication made to him by his wife during the marriage; and a wife is not compellable to disclose any communication made to her by her husband during the marriage.

A legal adviser is not permitted, whether during or after the termination of his employment as such, unless with his client's express consent, to disclose any communication, oral or documentary, made to him *as such legal adviser*, by or on behalf of his client, during, in the course of, and for the purpose of his employment, or to disclose any advice given by him to his client during, in the course of, and for the purpose of such employment. But this protection does not extend to—

(*a*) Any such communication if made in furtherance of any criminal purpose; nor

(*b*) Any fact observed by a legal adviser in the course of his employment as such, showing that any crime or fraud has been committed since the commencement of his employment, whether his attention was directed to such fact by or on behalf of his client or not; nor

(*c*) Any fact with which the legal adviser became acquainted otherwise than in his character as such.

Medical men and clergymen are not privileged from the disclosure of communications made to them in professional confidence, but it is not usual to press for the disclosures of communications made to clergymen.

4. *Oaths.*—A witness must give his evidence under the sanction of an oath, or of what is equivalent to an oath, that is to say, of a solemn promise to speak the truth. The ordinary form of oath is adapted to Christians, but a person belonging to a non-Christian religion may be sworn in any form prescribed or recognized by the custom of his religion. (See the article OATH.)

5. *Publicity.*—The evidence of a witness at a trial must, as a general rule, be given in open court in the course of the trial. The secrecy which was such a characteristic feature of the "inquisition" procedure is abhorrent to English law, and, even where publicity conflicts with decency, English courts are very reluctant to dispense with or relax the safeguards for justice which publicity involves.

6. *Examination.*—The normal course of procedure is this. The party who begins, *i.e.* ordinarily the plaintiff or prosecutor, calls his witnesses in order. Each witness is first examined on behalf of the party for whom he is called. This is called the examination in chief. Then he is liable to be cross-examined on behalf of the other side. And, finally, he may be re-examined on behalf of his own side. After the case for the other side has been opened, the same procedure is adopted with the witnesses for that side. In some cases the party who began is allowed to adduce further evidence in reply to his opponent's evidence. The examination is conducted, not by the court, but by or on behalf of the contending parties. It will be seen that the principle underlying this procedure is that of the duel, or conflict between two contending parties, each relying on and using his own evidence, and trying to break down the evidence of his opponent. It differs from the principle of the "inquisition" procedure, in which the court takes a more active part, and in which the cases for the two

sides are not so sharply distinguished. In a continental trial it is often difficult to determine whether the case for the prosecution or the case for the defence is proceeding. Conflicting witnesses stand up together and are “confronted” with each other. In the examination in chief questions must be confined to matters bearing on the main question at issue, and a witness must not be asked leading questions, *i.e.* questions suggesting the answer which the person putting the question wishes or expects to receive, or suggesting disputed facts about which the witness is to testify. But the rule about leading questions is not applied where the questions asked are simply introductory, and form no part of the real substance of the inquiry, or where they relate to matters which, though material, are not disputed. And if the witness called by a person appears to be directly hostile to him, or interested on the other side, or unwilling to reply, the reason for the rules applying to examination in chief breaks down, and the witness may be asked leading questions and cross-examined, and treated in every respect as though he was a witness called on the other side, except that a party producing a witness must not impeach his credit by general evidence of bad character (Evidence and Practice on Criminal Trials Act 1865). In cross-examination questions not bearing on the main issue and leading questions may be put and (subject to the rules as to privilege) must be answered, as the cross-examiner is entitled to test the examination in chief by every means in his power. Questions not bearing on the main issue are often asked in cross-examination merely for the purpose of putting off his guard a witness who is supposed to have learnt up his story. In cross-examination questions may also be asked which tend either to test the accuracy or credibility of the witness, or to shake his credit by impeaching his motives or injuring his character. The licence allowed in cross-examination has often been seriously abused, and the power of the court to check it is recognized by one of the rules of the supreme court (R.S.C. xxxvi. 39, added in 1883). It is considered wrong to put questions which assume that facts have been proved which have not been proved, or that answers have been given contrary to the fact. A witness ought not to be pressed in cross-examination as to any facts which, if admitted, would not affect the question at issue or the credibility of the witness. If the cross-examiner intends to adduce evidence contrary to the evidence given by the witness, he ought to put to the witness in cross-examination the substance of the evidence which he proposes to adduce, in order to give the witness an opportunity of retracting or explaining. Where a witness has answered a question which only tends to affect his credibility by injuring his character, it is only in a limited number of cases that evidence can be given to contradict his answer. Where he is asked whether he has ever been convicted of any felony or misdemeanour, and denies or refuses to answer, proof may be given of the truth of the facts suggested (28 & 29 Vict. c. 15, s. 6). The same rule is observed where he is asked a question tending to show that he is not impartial. Where a witness has previously made a statement inconsistent with his evidence, proof may be given that he did in fact make it. But before such proof is given the circumstances of the alleged statement, sufficient to designate the particular occasion, must be mentioned to the witness, and he must be asked whether he did or did not make the statement. And if the statement was made in, or has been reduced to, writing, the attention of the witness must, before the writing is used against him, be called to those parts of the writing which are to be used for the purpose of contradicting him (Evidence and Practice on Criminal Trials Act 1865, ss. 4, 5). The credibility of a witness may be impeached by the evidence of persons who swear that they, from their knowledge of the witness, believe him to be unworthy of credit on his oath. These persons may not on their examination in chief give reasons for their belief, but they may be asked their reasons in cross-examination, and their answers cannot be contradicted. When the credit of a witness is so impeached, the party who called the witness may give evidence in reply to show that the witness is worthy of credit. Re-examination must be directed exclusively to the explanation of matters referred to in cross-examination, and if new matter is, by the permission of the court, introduced in re-examination, the other side may further cross-examine upon it. A witness under examination may refresh his memory by referring to any writing made by himself at or about the time of the occurrence to which the writing relates, or made by any other person, and read and found accurate by the witness at or about the time. An expert may refresh his memory by reference to professional treatises.

For the history of the English law of evidence, see Brunner, *Entstehung der Schwurgerichte*; Bigelow, *History of Procedure in England*; Stephen (Sir J.F.), *History of the Criminal Law of England*; Pollock and Maitland, *History of English Law*, bk. ii. ch. ix.; Thayer, Preliminary Treatise on Evidence at the Common Law. The principal text-books now in use are—Roscoe, *Digest of the Law of Evidence on the Trial of Actions at Nisi Prius* (18th ed., 1907); Roscoe, *Digest of the Law of Evidence in Criminal Cases* (13th ed., 1908); Taylor, *Treatise on the Law of Evidence* (10th ed., 1906); Best, *Principles of the Law of Evidence* (10th ed., 1906); Powell, *Principles and Practice of the Law of Evidence* (8th ed., 1904); Stephen, *Digest of the Law of Evidence* (8th ed., 1907); Wills, *Theory and Practice of the*

Law of Evidence (1907). For the history of the law of criminal evidence in France, see Esmein, *Hist. de la procédure criminelle en France*. For Germany, see Holtzendorff, *Encyclopädie der Rechtswissenschaft* (passages indexed under head "Beweis"); Holtzendorff, *Rechtslexikon* ("Beweis").

(C. P. I.)

---

1 Reference may be made to a well-known passage in the *Essay concerning Human Understanding* (Book iv. ch. xv.): "The grounds of probability are—First, the conformity of anything with our own knowledge, observation and experience. Second, the testimony of others touching their observation and experience. In the testimony of others is to be considered (1) the number, (2) the integrity, (3) the skill of the witnesses. (4) The design of the author, where it is a testimony out of a book cited. (5) The consistency of the parts and circumstances of the relation. (6) Contrary testimonies."

EVIL EYE. The terror of the arts of "fascination," *i.e.* that certain persons can bewitch, injure and even kill with a glance, has been and is still very widely spread. The power was not thought to be always maliciously cultivated. It was as often supposed to be involuntary (cf. Deuteronomy xxviii. 54); and a story is told of a Slav who, afflicted with the evil eye, at last blinded himself in order that he might not be the means of injuring his children (Woyciki, *Polish Folklore*, trans. by Lewenstein, p. 25). Few of the old classic writers fail to refer to the dread power. In Rome the "evil eye" was so well recognized that Pliny states that special laws were enacted against injury to crops by incantation, excantation or fascination. The power was styled βασκανία by the Greeks and *fascinatio* by the Latins. Children and young animals of all kinds were thought to be specially susceptible. Charms were worn against the evil eye both by man and beast, and in Judges viii. 21 it is thought there is a reference to this custom in the allusion to the "ornaments" on the necks of camels. In classic times the wearing of amulets was universal. They were of three classes: (1) those the intention of which was to attract on to themselves, as the lightning-rod the lightning, the malignant glance; (2) charms hidden in the bosom of the dress; (3) written words from sacred writings. Of these three types the first was most numerous. They were oftenest of a grotesque and generally grossly obscene nature. They were also made in the form of frogs, beetles and so on. But the ancients did not wholly rely on amulets. Spitting was among the Greeks and Romans a most common antidote to the poison of the evil eye. According to Theocritus it is necessary to spit three times into the breast of the person who fears fascination. Gestures, too, often intentionally obscene, were regarded as prophylactics on meeting the dreaded individual. The evil eye was believed to have its impulse in envy, and thus it came to be regarded as unlucky to have any of your possessions praised. Among the 22
Romans, therefore, it was customary when praising anything to add *Praefiscini dixerim* (Fain Evil! I should say). This custom survives in modern Italy, where in like circumstances is said *Si mal occhio non ci fosse* (May the evil eye not strike it). The object of these conventional phrases was to prove that the speaker was sincere and had no evil designs in his praise. Though there is no set formula, traces of the custom are found in English rural sayings, *e.g.* the Somersetshire "I don't wish ee no harm, so I on't zay no more." This is what the Scots call "fore-speaking," when praise beyond measure is likely to be followed by disease or accident. A Manxman will never say he is very well: he usually admits that he is "middling," or qualifies his admission of good health by adding "now" or "just now." The belief led in many countries to the saying, when one heard anybody or anything praised superabundantly, "God preserve him or it." So in Ireland, to avoid being suspected of having the evil eye, it is advisable when looking at a child to say "God bless it"; and when passing a farm-yard where cows are collected at milking time it is usual for the peasant to say, "The blessing of God be on you and all your labour." Bacon writes: "It seems some have been so curious as to note that the times when the stroke ... of an envious eye does most hurt are particularly when the party envied is beheld in glory and triumph."

The powers of the evil eye seem indeed to have been most feared by the prosperous. Its powers are often quoted as almost limitless. Thus one record solemnly declares that in a town of Africa a fascinator called Elzanar killed by his evil art no less than 80 people in two years (W.W. Story, *Castle St Angelo*, 1877, p. 149). The belief as affecting cattle was universal in the Scottish Highlands as late as the 18th century and still lingers. Thus if a stranger looks admiringly on a cow the peasants still think she will waste away, and they offer the visitor some of her milk to drink in the belief that in this manner the spell is

broken. The modern Turks and Arabs also think that their horses and camels are subject to the evil eye. But the people of Italy, especially the Neapolitans, are the best modern instances of implicit believers. The *jettatore*, as the owner of the evil eye is called, is so feared that at his approach it is scarcely an exaggeration to say that a street will clear: everybody will rush into doorways or up alleys to avoid the dreaded glance. The *jettatore di bambini* (fascinator of children) is the most dreaded of all. The evil eye is still much feared for horses in India, China, Turkey, Greece and almost everywhere where horses are found. In rural England the pig is of all animals oftenest "overlooked." While the Italians are perhaps the greatest believers in the evil eye as affecting persons, the superstition is rife in the East. In India the belief is universal. In Bombay the blast of the evil eye is supposed to be a form of spirit-possession. In western India all witches and wizards are said to be evil-eyed. Modern Egyptian mothers thus account for the sickly appearance of their babies. In Turkey passages from the Koran are painted on the outside of houses to save the inmates, and texts as amulets are worn upon the person, or hung upon camels and horses by Arabs, Abyssinians and other peoples. The superstition is universal among savage races.

For a full discussion see *Evil Eye* by F.T. Elworthy (London, 1895); also W.W. Story, *Castle St Angelo and the Evil Eye* (1877); E.N. Rolfe and H. Ingleby, *Naples in 1888* (1888); Johannes Christian Frommann, *Tractatus de fascinatione novus et singularis*, &c. , &c. (Nuremburg, 1675); R.C. Maclagan, *Evil Eye in the Western Highlands* (1902).

EVOLUTION. The modern doctrine of evolution or "evolving," as opposed to that of simple creation, has been defined by Prof. James Sully in the 9th edition of this encyclopaedia as a "natural history of the cosmos including organic beings, expressed in physical terms as a mechanical process." The following exposition of the historical development of the doctrine is taken from Sully's article, and for the most part is in his own words.

In the modern doctrine of evolution the cosmic system appears as a natural product of elementary matter and its laws. The various grades of life on our planet are the natural consequences of certain physical processes involved in the gradual transformations of the earth. Conscious life is viewed as conditioned by physical (organic and more especially nervous) processes, and as evolving itself in close correlation with organic evolution. Finally, human development, as exhibited in historical and prehistorical records, is regarded as the highest and most complex result of organic and physical evolution. This modern doctrine of evolution is but an expansion and completion of those physical theories (see below) which opened the history of speculation. It differs from them in being grounded on exact and verified research. As such, moreover, it is a much more limited theory of evolution than the ancient. It does not necessarily concern itself about the question of the infinitude of worlds in space and in time. It is content to explain the origin and course of development of the world, the solar or, at most, the sidereal system which falls under our own observation. It would be difficult to say what branches of science had done most towards the establishment of this doctrine. We must content ourselves by referring to the progress of physical (including chemical) theory, which has led to the great generalization of the conservation of energy; to the discovery of the fundamental chemical identity of the matter of our planet and of other celestial bodies, and of the chemical relations of organic and inorganic bodies; to the advance of astronomical speculation respecting the origin of the solar system, &c. ; to the growth of the science of geology which has necessitated the conception of vast and unimaginable periods of time in the past history of our globe, and to the rapid march of the biological sciences which has made us familiar with the simplest types and elements of organism; finally, to the development of the science of anthropology (including comparative psychology, philology, &c.), and to the vast extension and improvement of all branches of historical study.

History of the Idea of Evolution.—The doctrine of evolution in its finished and definite form is a modern product. It required for its formation an amount of scientific knowledge which could only be very gradually acquired. It is vain, therefore, to look for clearly defined and systematic presentations of the idea among ancient writers. On the other hand, nearly all systems of philosophy have discussed the underlying problems. Such questions as the origin of the cosmos as a whole, the production of organic beings and of conscious minds, and the meaning of the observable grades of creation, have from the dawn of speculation occupied

men's minds; and the answers to these questions often imply a vague recognition of the idea of a gradual evolution of things. Accordingly, in tracing the antecedents of the modern philosophic doctrine we shall have to glance at most of the principal systems of cosmology, ancient and modern. Yet since in these systems inquiries into the *esse* and *fieri* of the world are rarely distinguished with any precision, it will be necessary to indicate very briefly the general outlines of the system so far as they are necessary for understanding their bearing on the problems of evolution.

Mythological Interpretation.—The problem of the origin of the world was the first to engage man's speculative activity. Nor was this line of inquiry pursued simply as a step in the more practical problem of man's final destiny. The order of ideas observable in children suggests the reflection that man began to discuss the "whence" of existence before the "whither." At first, as in the case of the child, the problem of the genesis of things was conceived anthropomorphically: the question "How did the world arise?" first shaped itself to the human mind under the form "Who made the world?" As long as the problem was conceived in this simple manner there was, of course, no room for the idea of a necessary self-conditioned evolution. Yet the first indistinct germ of such an idea appears to emerge in combination with that of creation in some of the ancient systems of theogony. Thus, for example, in the myth of the ancient Parsees, the gods Ormuzd and Ahriman are said to evolve themselves out of a primordial matter. It may be supposed that these crude fancies embody a dim recognition of the physical forces and objects personified under the forms of deities, and a rude attempt to account for their genesis as a natural process. These first unscientific ideas of a genesis of the permanent objects of nature took as their pattern the process of organic reproduction and development, and this, not only because these objects were regarded as personalities, but also because this particular mode of becoming would most impress these early observers. This same way of looking at the origin of the material world is illustrated in the Egyptian notion of a cosmic egg out of which issues the god (Phta) who creates the world.

Indian Philosophy.—Passing from mythology to speculation properly so called, we find in the early systems of philosophy of India theories of emanation which approach in some respects the idea of evolution. Brahma is conceived as the eternal self-existent being, which on its material side unfolds itself to the world by gradually condensing itself to material objects through the gradations of ether, fire, water, earth and the elements. At the same time this eternal being is conceived as the all-embracing world-soul from which emanates the hierarchy of individual souls. In the later system of emanation of Sankhya there is a more marked approach to a materialistic doctrine of evolution. If, we are told, we follow the chain of causes far enough back we reach unlimited eternal creative nature or matter. Out of this "principal thing" or "original nature" all material and spiritual existence issues, and into it will return. Yet this primordial creative nature is endowed with volition with regard to its own development. Its first emanation as plastic nature contains the original soul or deity out of which all individual souls issue.

Early Greek Physicists.—Passing by Buddhism, which, though teaching the periodic destruction of our world by fire, &c. , does not seek to determine the ultimate origin of the cosmos, we come to those early Greek physical philosophers who distinctly set themselves to eliminate the idea of divine interference with the world by representing its origin and changes as a natural process. The early Ionian physicists, including Thales, Anaximander and Anaximenes, seek to explain the world as generated out of a primordial matter (Gr. ὕλη; hence the name "Hylozoists"), which is at the same time the universal support of things. This substance is endowed with a generative or transmutative force by virtue of which it passes into a succession of forms. They thus resemble modern evolutionists, since they regard the world with its infinite variety of forms as issuing from a simple mode of matter. More especially the cosmology of Anaximander resembles the modern doctrine of evolution in its conception of the indeterminate (τὸ ἄπειρον) out of which the particular forms of the cosmos are differentiated. Again, Anaximander may be said to prepare the way for more modern conceptions of material evolution by regarding his primordial substance as eternal, and by looking on all generation as alternating with destruction, each step of the process being of course simply a transformation of the indestructible substance. Once more, the notion that this indeterminate body contains potentially in itself the fundamental contraries —hot, cold, &c. —by the excretion or evolution of which definite substances were generated, is clearly a forecasting of that antithesis of potentiality and actuality which from Aristotle downwards has been made the basis of so many theories of development. In conclusion, it is noteworthy that though resorting to utterly fanciful hypotheses respecting the order of the development of the world, Anaximander agrees with modern evolutionists in conceiving the heavenly bodies as arising out of an aggregation of diffused matter, and in assigning to

organic life an origin in the inorganic materials of the primitive earth (pristine mud). The doctrine of Anaximenes, who unites the conceptions of a determinate and indeterminate original substance adopted by Thales and Anaximander in the hypothesis of a primordial and all-generating air, is a clear advance on these theories, inasmuch as it introduces the scientific idea of condensation and rarefaction as the great generating or transforming agencies. For the rest, his theory is chiefly important as emphasizing the vital character of the original substance. The primordial air is conceived as animated. Anaximenes seems to have inclined to a view of cosmic evolution as throughout involving a quasi-spiritual factor. This idea of the air as the original principle and source of life and intelligence is much more clearly expressed by a later writer, Diogenes of Apollonia. Diogenes made this conception of a vital and intelligent air the ground of a teleological view of climatic and atmospheric phenomena. It is noteworthy that he sought to establish the identity of organic and inorganic matter by help of the facts of vegetal and animal nutrition. Diogenes distinctly taught that the world is of finite duration, and will be renewed out of the primitive substance.

Heraclitus again deserves a prominent place in a history of the idea of evolution. Heraclitus conceives of the incessant process of flux in which all things are involved as consisting of two sides or moments—generation and decay—which are regarded as a confluence of opposite streams. In thus making transition or change, viewed as the identity of existence and non-existence, the leading idea of his system, Heraclitus anticipated in some measure Hegel's peculiar doctrine of evolution as a dialectic process.[1] At the same time we may find expressed in figurative language the germs of thoughts which enter into still newer doctrines of evolution. For example, the notion of conflict (πόλεμος) as the father of all things and of harmony as arising out of a union of discords, and again of an endeavour by individual things to maintain themselves in permanence against the universal process of destruction and renovation, cannot but remind one of certain fundamental ideas in Darwin's theory of evolution.

Empedocles.—Empedocles took an important step in the direction of modern conceptions of physical evolution by teaching that all things arise, not by transformations of some primitive form of matter, but by various combinations of a number of permanent elements. Further, by maintaining that the elements are continually being combined and separated by the two forces love and hatred, which appear to represent in a figurative way the physical forces of attraction and repulsion, Empedocles may be said to have made a considerable advance in the construction of the idea of evolution as a strictly mechanical process. It may be observed, too, that the hypothesis of a primitive compact mass (*sphaerus*), in which love (attraction) is supreme, has some curious points of similarity to, and contrast with, that notion of a primitive nebulous matter with which the modern doctrine of cosmic evolution usually sets out. Empedocles tries to explain the genesis of organic beings, and, according to Lange, anticipates the idea of Darwin that adaptations abound, because it is their nature to perpetuate themselves. He further recognizes a progress in the production of vegetable and animal forms, though this part of his theory is essentially crude and unscientific. More important in relation to the modern problems of evolution is his thoroughly materialistic way of explaining the origin of sensation and knowledge by help of his peculiar hypothesis of effluvia and pores. The supposition that sensation thus rests on a material process of absorption from external bodies naturally led up to the idea that plants and even inorganic substances are precipient, and so to an indistinct recognition of organic life as a scale of intelligence.

Atomists.—In the theory of Atomism taught by Leucippus and Democritus we have the basis of the modern mechanical conceptions of cosmic evolution. Here the endless harmonious diversity of our cosmos, as well as of other worlds supposed to coexist with our own, is said to arise through the various combination of indivisible material elements differing in figure and magnitude only. The force which brings the atoms together in the forms of objects is inherent in the elements, and all their motions are necessary. The origin of things, which is also their substance, is thus laid in the simplest and most homogeneous elements or principles. The real world thus arising consists only of diverse combinations of atoms, having the properties of magnitude, figure, weight and hardness, all other qualities being relative only to the sentient organism. The problem of the genesis of mind is practically solved by identifying the soul, or vital principle, with heat or fire which pervades in unequal proportions, not only man and animals, but plants and nature as a whole, and through the agitation of which by incoming effluvia all sensation arises.

Aristotle.—Aristotle is much nearer a conception of evolution than his master Plato. It is true he sets out with a transcendent Deity, and follows Plato in viewing the creation of the cosmos as a process of descent from the more to the less perfect according to the distance

from the original self-moving agency. Yet on the whole Aristotle leans to a teleological theory of evolution, which he interprets dualistually by means of certain metaphysical distinctions. Thus even his idea of the relation of the divine activity to the world shows a tendency to a pantheistic notion of a divine thought which gradually realizes itself in the process of becoming. Aristotle's distinction of form and matter, and his conception of becoming as a transition from actuality to potentiality, provides a new ontological way of conceiving the process of material and organic evolution.[2] To Aristotle the whole of nature is instinct with a vital impulse towards some higher manifestation. Organic life presents itself to him as a progressive scale of complexity determined by its final end, namely, man.[3] In some respects Aristotle approaches the modern view of evolution. Thus, though he looked on species as fixed, being the realization of an unchanging formative principle (φύσις), he seems, as Ueberweg observes, to have inclined to entertain the possibility of a spontaneous generation in the case of the lowest organisms. Aristotle's teleological conception of organic evolution often approaches modern mechanical conceptions. Thus he says that nature fashions organs in the order of their necessity, the first being those essential to life. So, too, in his psychology he speaks of the several degrees of mind as arising according to a progressive necessity.[4] In his view of touch and taste, as the two fundamental and essential senses, he may remind one of Herbert Spencer's doctrine. At the same time Aristotle precludes the idea of a natural development of the mental series by the supposition that man contains, over and above a natural finite soul inseparable from the body, a substantial and eternal principle (νοῦς) which enters into the individual from without. Aristotle's brief suggestions respecting the origin of society and governments in the *Politics* show a leaning to a naturalistic interpretation of human history as a development conditioned by growing necessities.

Strato.—Of Aristotle's immediate successors one deserves to be noticed here, namely, Strato of Lampsacus, who developed his master's cosmology into a system of naturalism. Strato appears to reject Aristotle's idea of an original source of movement and life extraneous to the world in favour of an immanent principle. All parts of matter have an inward plastic life whereby they can fashion themselves to the best advantage, according to their capability, though not with consciousness.

The Stoics.—In the cosmology of the Stoics we have the germ of a monistic and pantheistic conception of evolution. All things are said to be developed out of an original being, which is at once material (fire) and spiritual (the Deity), and in turn they will dissolve back into this primordial source. At the same time the world as a developed whole is regarded as an organism which is permeated with the divine Spirit, and so we may say that the world-process is a self-realization of the divine Being. The formative principle or force of the world is said to contain the several rational germinal forms of things. Individual things are supposed to arise out of the original being, as animals and plants out of seeds. Individual souls are an efflux from the all-compassing world-soul. The necessity in the world's order is regarded by the Stoics as identical with the divine reason, and this idea is used as the basis of a teleological and optimistic view of nature. Very curious, in relation to modern evolutional ideas, is the Stoical doctrine that our world is but one of a series of exactly identical ones, all of which are destined to be burnt up and destroyed.

The Epicureans—Lucretius.—The Epicureans differed from the Stoics by adopting a purely mechanical view of the world-process. Their fundamental conception is that of Democritus; they seek to account for the formation of the cosmos, with its order and regularity, by setting out with the idea of an original (vertical) motion of the atoms, which somehow or other results in movements towards and from one another. Our world is but one of an infinite number of others, and all the harmonies and adaptations of the universe are regarded as a special case of the infinite possibilities of mechanical events. Lucretius regards the primitive atoms (first beginnings or first bodies) as seeds out of which individual things are developed. All living and sentient things are formed out of insentient atoms (*e.g.* worms spring out of dung). The peculiarity of organic and sentient bodies is due to the minuteness and shape of their particles, and to their special motions and combinations. So, too, mind consists but of extremely fine particles of matter, and dissolves into air when the body dies. Lucretius traces, in the fifth book of his poem, the progressive genesis of vegetal and animal forms out of the mother-earth. He vaguely anticipates the modern idea of the world as a survival of the fittest when he says that many races may have lived and died out, and that those which still exist have been protected either by craft, courage or speed. Lucretius touches on the development of man out of a primitive, hardy, beast-like condition. Pregnant hints are given respecting a natural development of language which has its germs in sounds of quadrupeds and birds, of religious ideas out of dreams and waking hallucinations, and of the art of music by help of the suggestion of natural sounds. Lucretius

thus recognizes the whole range of existence to which the doctrine of evolution may be applied.

Neoplatonists.—In the doctrines of the Neoplatonists, of whom Plotinus is the most important, we have the world-process represented after the example of Plato as a series of descending steps, each being less perfect than its predecessors, since it is further removed from the first cause.[5] The system of Plotinus, Zellar remarks, is not strictly speaking one of emanation, since there is no communication of the divine essence to the created world; yet it resembles emanation inasmuch as the genesis of the world is conceived as a necessary physical effect, and not as the result of volition. In Proclus we find this conception of an emanation of the world out of the Deity, or the absolute, made more exact, the process being regarded as threefold—(1) persistence of cause in effect, (2) the departure of effect from cause, and (3) the tendency of effect to revert to its cause.

The Fathers.—The speculations of the fathers respecting the origin and course of the world seek to combine Christian ideas of the Deity with doctrines of Greek philosophy. The common idea of the origin of things is that of an absolute creation of matter and mind alike. The course of human history is regarded by those writers who are most concerned to refute Judaism as a progressive divine education. Among the Gnostics we meet with the hypothesis of emanation, as, for example, in the curious cosmic theory of Valentinus.

Middle Ages—Early Schoolmen.—In the speculative writings of the middle ages, including those of the schoolmen, we find no progress towards a more accurate and scientific view of nature. The cosmology of this period consists for the most part of the Aristotelian teleological view of nature combined with the Christian idea of the Deity and His relation to the world. In certain writers, however, there appears a more elaborate transformation of the doctrine of creation into a system of emanation. According to John Scotus Erigena, the nothing out of which the world is created is the divine essence. Creation is the act by which God passes through the primordial causes, or universal ideas, into the region of particular things (*processio*), in order finally to return to himself (*reversio*). The transition from the universal to the particular is of course conceived as a descent or degradation. A similar doctrine of emanation is to be found in the writings of Bernhard of Chartres, who conceives the process of the unfolding of the world as a movement in a circle from the most general to the individual, and from this back to the most general. This movement is said to go forth from God to the animated heaven, stars, visible world and man, which represent decreasing degrees of cognition.

Arab Philosophers.—Elaborate doctrines of emanation, largely based on Neoplatonic ideas, are also propounded by some of the Arabic philosophers, as by Fārābī and Avicenna. The leading thought is that of a descending series of intelligences, each emanating from its predecessor, and having its appropriate region in the universe.

Jewish Philosophy.—In the Jewish speculations of the middle ages may be found curious forms of the doctrine of emanations uniting the Biblical idea of creation with elements drawn from the Persians and the Greeks. In the later and developed form of the Kabbala, the origin of the world is represented as a gradually descending emanation of the lower out of the higher. Among the philosophic Jews, the Spanish Avicebron, in his *Fons Vitae*, expounds a curious doctrine of emanation. Here the divine will is viewed as an efflux from the divine wisdom, as the intermediate link between God, the first substance, and all things, and as the fountain out of which all forms emanate. At the same time all forms, including the higher intelligible ones, are said to have their existence only in matter. Matter is the one universal substance, body and mind being merely specifications of this. Thus Avicebron approaches, as Salomon Munk observes,[6] a pantheistic conception of the world, though he distinctly denies both matter and form to God.

Later Scholastics.—Passing now to the later schoolmen, a bare mention must be made of Thomas Aquinas, who elaborately argues for the absolute creation of the world out of nothing, and of Albertus Magnus, who reasons against the Aristotelian idea of the past eternity of the world. More importance attaches to Duns Scotus, who brings prominently forward the idea of a progressive development in nature by means of a process of determination. The original substance of the world is the *materia primo-prima*, which is the immediate creation of the Deity. This serves Duns Scotus as the most universal basis of existence, all angels having material bodies. This matter is differentiated into particular things (which are not privations but perfections) through the addition of an individualizing principle (*haecceitas*) to the universal (*quidditas*). The whole world is represented by the figure of a tree, of which the seeds and roots are the first indeterminate matter, the leaves the accidents, the twigs and branches corruptible creatures, the blossoms the rational soul,

and the fruit pure spirits or angels. It is also described as a bifurcation of two twigs, mental and bodily creation out of a common root. One might almost say that Duns Scotus recognizes the principle of a gradual physical evolution, only that he chooses to represent the mechanism by which the process is brought about by means of quaint scholastic fictions.

Revival of Learning.—The period of the revival of learning, which was also that of a renewed study of nature, is marked by a considerable amount of speculation respecting the origin of the universe. In some of these we see a return to Greek theories, though the influence of physical discoveries, more especially those of Copernicus, Kepler and Galileo, is distinctly traceable.

Telesio.—An example of a return to early Greek speculation is to be met with in Bernardino Telesio. By this writer the world is explained as a product of three principles—dead matter, and two active forces, heat and cold. Terrestrial things arise through a confluence of heat, which issues from the heavens, and cold, which comes from the earth. Both principles have sensibility, and thus all products of their collision are sentient, that is, feel pleasure and pain. The superiority of animals to plants and metals in the possession of special organs of sense is connected with the greater complexity and heterogeneity of their structure.

Giordano Bruno.—In the system of Giordano Bruno, who sought to construct a philosophy of nature on the basis of new scientific ideas, more particularly the doctrine of Copernicus, we find the outlines of a theory of cosmic evolution conceived as an essentially vital process. Matter and form are here identified, and the evolution of the world is presented as the unfolding of the world-spirit to its perfect forms according to the plastic substratum (matter) which is but one of its sides. This process of change is conceived as a transformation, in appearance only, of the real unchanging substance (matter and form). All parts of matter are capable of developing into all forms; thus the materials of the table and chair may under proper circumstances be developed to the life of the plant or of the animal. The elementary parts of existence are the *minima*, or monads, which are at once material and mental. On their material side they are not absolutely unextended, but spherical. Bruno looked on our solar system as but one out of an infinite number of worlds. His theory of evolution is essentially pantheistic, and he does not employ his hypothesis of monads in order to work out a more mechanical conception.

Campanella.—A word must be given to one of Bruno's contemporary compatriots, namely Campanella, who gave poetic expression to that system of universal vitalism which Bruno developed. He argues, from the principle *quicquid est in effectibus esse et in causis*, that the elements and the whole world have sensation, and thus he appears to derive the organic part of nature out of the so-called "inorganic."

Boehme.—Another writer of this transition period deserves a passing reference here, namely, Jacob Boehme the mystic, who by his conception of a process of inner diremption as the essential character of all mind, and so of God, prepared the way for later German theories of the origin of the world as the self-differentiation and self-externalization of the absolute spirit.

Hobbes and Gassendi.—The influence of an advancing study of nature, which was stimulated if not guided by Bacon's writings, is seen in the more careful doctrines of materialism worked out almost simultaneously by Hobbes and Gassendi. These theories, however, contain little that bears directly on the hypothesis of a natural evolution of things. In the view of Hobbes, the difficulty of the genesis of conscious minds is solved by saying that sensation and thought are part of the reaction of the organism on external movement. Yet Hobbes appears (as Clarke points out) to have vaguely felt the difficulty; and in a passage of his *Physics* (chap. 25, sect. 5) he says that the universal existence of sensation in matter cannot be disproved, though he shows that when there are no organic arrangements the mental side of the movement (*phantasma*) is evanescent. The theory of the origin of society put forth by Hobbes, though directly opposed in most respects to modern ideas of social evolution, deserves mention here by reason of its enforcing that principle of struggle (*bellum omnium contra omnes*) which has played so conspicuous a part in the modern doctrine of evolution. Gassendi, with some deviations, follows Epicurus in his theory of the formation of the world. The world consists of a finite number of atoms, which have in their own nature a self-moving force or principle. These atoms, which are the seeds of all things, are, however, not eternal but created by God. Gassendi distinctly argues against the existence of a world-soul or a principle of life in nature.

Descartes.—In the philosophy of Descartes we meet with a dualism of mind and matter which does not easily lend itself to the conception of evolution. His doctrine that

consciousness is confined to man, the lower animals being unconscious machines (*automata*), excludes all idea of a progressive development of mind. Yet Descartes, in his *Principia Philosophiae*, laid the foundation of the modern mechanical conception of nature and of physical evolution. In the third part of this work he inclines to a thoroughly natural hypothesis respecting the genesis of the physical world, and adds in the fourth part that the same kind of explanation might be applied to the nature and formation of plants and animals. He is indeed careful to keep right with the orthodox doctrine of creation by saying that he does not believe the world actually arose in this mechanical way out of the three kinds of elements which he here supposes, but that he simply puts out his hypothesis as a mode of conceiving how it might have arisen. Descartes's account of the mind and its passions is thoroughly materialistic, and to this extent he works in the direction of a materialistic explanation of the origin of mental life.

Spinoza.—In Spinoza's pantheistic theory of the world, which regards thought and extension as but two sides of one substance, the problem of becoming is submerged in that of being. Although Spinoza's theory attributes a mental side to all physical events, he rejects all teleological conceptions and explains the order of things as the result of an inherent necessity. He recognizes gradations of things according to the degree of complexity of their movements and that of their conceptions. To Spinoza (as Kuno Fischer observes) man differs from the rest of nature in the degree only and not in the kind of his powers. So far Spinoza approaches the conception of evolution. He may be said to furnish a further contribution to a metaphysical conception of evolution in his view of all finite individual things as the infinite variety to which the unlimited productive power of the universal substance gives birth. Sir F. Pollock has taken pains to show how nearly Spinoza approaches certain ideas contained in the modern doctrine of evolution, as for example that of self-preservation as the determining force in things.

Locke.—In Locke we find, with a retention of certain anti-evolutionist ideas, a marked tendency to this mode of viewing the world. To Locke the universe is the result of a direct act of creation, even matter being limited in duration and created. Even if matter were eternal it would, he thinks, be incapable of producing motion; and if motion is itself conceived as eternal, thought can never begin to be. The first eternal being is thus spiritual or "cogitative," and contains in itself all the perfections that can ever after exist. He repeatedly insists on the impossibility of senseless matter putting on sense.[7] Yet while thus placing himself at a point of view opposed to that of a gradual evolution of the organic world, Locke prepared the way for this doctrine in more ways than one. First of all, his genetic method as applied to the mind's ideas—which laid the foundations of English analytical psychology—was a step in the direction of a conception of mental life as a gradual evolution. Again he works towards the same end in his celebrated refutation of the scholastic theory of real specific essences. In this argument he emphasizes the vagueness of the boundaries which mark off organic species with a view to show that these do not correspond to absolutely fixed divisions in the objective world, that they are made by the mind, not by nature.[8] This idea of the continuity of species is developed more fully in a remarkable passage (*Essay*, bk. iii. ch. vi. § 12), where he is arguing in favour of the hypothesis, afterwards elaborated by Leibnitz, of a graduated series of minds (species of spirits) from the Deity down to the lowest animal intelligence. He here observes that "all quite down from us the descent is by easy steps, and a continued series of things, that in each remove differ very little from one another." Thus man approaches the beasts, and the animal kingdom is nearly joined with the vegetable, and so on down to the lowest and "most inorganical parts of matter." Finally, it is to be observed that Locke had a singularly clear view of organic arrangements (which of course he explained according to a theistic teleology) as an adaptation to the circumstances of the environment or to "the neighbourhood of the bodies that surround us." Thus he suggests that man has not eyes of a microscopic delicacy, because he would receive no great advantage from such acute organs, since though adding indefinitely to his speculative knowledge of the physical world they would not practically benefit their possessor (*e.g.* by enabling him to avoid things at a convenient distance).[9]

Idea of Progress in History.—Before leaving the 17th century we must just refer to the writers who laid the foundations of the essentially modern conception of human history as a gradual upward progress. According to Flint,[10] there were four men who in this and the preceding century seized and made prominent this idea, namely, Bodin, Bacon, Descartes and Pascal. The former distinctly argues against the idea of a deterioration of man in the past. In this way we see that just as advancing natural science was preparing the way for a doctrine of physical evolution, so advancing historical research was leading to the application of a similar idea to the collective human life.

English Writers of the 18th Century—Hume.—The theological discussions which make up so large a part of the English speculation of the 18th century cannot detain us here. There is, however, one writer who sets forth so clearly the alternative suppositions respecting the origin of the world that he claims a brief notice. We refer to David Hume. In his *Dialogues concerning Natural Religion* he puts forward tentatively, in the person of one of his interlocutors, the ancient hypothesis that since the world resembles an animal or vegetal organism rather than a machine, it might more easily be accounted for by a process of generation than by an act of creation. Later on he develops the materialistic view of Epicurus, only modifying it so far as to conceive of matter as finite. Since a finite number of particles is only susceptible of finite transpositions, it must happen (he says), in an eternal duration that every possible order or position will be tried an infinite number of times, and hence this world is to be regarded (as the Stoics maintained) as an exact reproduction of previous worlds. The speaker seeks to make intelligible the appearance of art and contrivance in the world as a result of a natural settlement of the universe (which passes through a succession of chaotic conditions) into a stable condition, having a constancy in its forms, yet without its several parts losing their motion and fluctuation.

French Writers of the 18th Century.—Let us now pass to the French writers of the 18th century. Here we are first struck by the results of advancing physical speculation in their bearing on the conception of the world. Careful attempts, based on new scientific truths, are made to explain the genesis of the world as a natural process. Maupertuis, who, together with Voltaire, introduced the new idea of the universe as based on Newton's discoveries, sought to account for the origin of organic things by the hypothesis of sentient atoms. Buffon the naturalist speculated, not only on the structure and genesis of organic beings, but also on the course of formation of the earth and solar system, which he conceived after the analogy of the development of organic beings out of seed. Diderot, too, in his varied intellectual activity, found time to speculate on the genesis of sensation and thought out of a combination of matter endowed with an elementary kind of sentience. De la Mettrie worked out a materialistic doctrine of the origin of things, according to which sensation and consciousness are nothing but a development out of matter. He sought (*L'Homme-machine*) to connect man in his original condition with the lower animals, and emphasized (*L'Homme-plante*) the essential unity of plan of all living things. Helvétius, in his work on man, referred all differences between our species and the lower animals to certain peculiarities of organization, and so prepared the way for a conception of human development out of lower forms as a process of physical evolution. Charles Bonnet met the difficulty of the origin of conscious beings much in the same way as Leibnitz, by the supposition of eternal minute organic bodies to which are attached immortal souls. Yet though in this way opposing himself to the method of the modern doctrine of evolution, he aided the development of this doctrine by his view of the organic world as an ascending scale from the simple to the complex. Robinet, in his treatise *De la nature*, worked out the same conception of a gradation in organic existence, connecting this with a general view of nature as a progress from the lowest inorganic forms of matter up to man. The process is conceived as an infinite series of variations or specifications of one primitive and common type. Man is the *chef-d'œuvre* of nature, which the gradual progression of beings was to have as its last term, and all lower creations are regarded as pre-conditions of man's existence, since nature "could only realize the human form by combining in all imaginable ways each of the traits which was to enter into it." The formative force in this process of evolution (or "metamorphosis") is conceived as an intellectual principle (*idée génératrice*). Robinet thus laid the foundation of that view of the world as wholly vital, and as a progressive unfolding of a spiritual formative principle, which was afterwards worked out by Schelling. It is to be added that Robinet adopted a thorough-going materialistic view of the dependence of mind on body, going even to the length of assigning special nerve-fibres to the moral sense. The system of Holbach seeks to provide a consistent materialistic view of the world and its processes. Mental operations are identified with physical movements, the three conditions of physical movement, inertia, attraction and repulsion, being in the moral world self-love, love and hate. He left open the question whether the capability of sensation belongs to all matter, or is confined to the combinations of certain materials. He looked on the actions of the individual organism and of society as determined by the needs of self-preservation. He conceived of man as a product of nature that had gradually developed itself from a low condition, though he relinquished the problem of the exact mode of his first genesis and advance as not soluble by data of experience. Holbach thus worked out the basis of a rigorously materialistic conception of evolution.

The question of human development which Holbach touched on was one which occupied many minds both in and out of France during the 18th century, and more especially towards

its close. The foundations of this theory of history as an upward progress of man out of a barbaric and animal condition were laid by Vico in his celebrated work *Principii di scienza nuova*. In France the doctrine was represented by Turgot and Condorcet.

German Writers of the 18th Century—Leibnitz.—In Leibnitz we find, if not a doctrine of evolution in the strict sense, a theory of the world which is curiously related to the modern doctrine. The chief aim of Leibnitz is no doubt to account for the world in its static aspect as a co-existent whole, to conceive the ultimate reality of things in such a way as to solve the mystery of mind and matter. Yet by his very mode of solving the problem he is led on to consider the nature of the world-process. By placing substantial reality in an infinite number of monads whose essential nature is force or activity, which is conceived as mental (representation), Leibnitz was carried on to the explanation of the successive order of the world. He prepares the way, too, for a doctrine of evolution by his monistic idea of the substantial similarity of all things, inorganic and organic, bodily and spiritual, and still more by his conception of a perfect gradation of existence from the lowest "inanimate" objects, whose essential activity is confused representation, up to the highest organized being—man—with his clear intelligence.[11] Turning now to Leibnitz's conception of the world as a process, we see first that he supplies, in his notion of the underlying reality as force which is represented as spiritual (*quelque chose d'analogique au sentiment et à l'appétit*), both a mechanical and a teleological explanation of its order. More than this, Leibnitz supposes that the activity of the monads takes the form of a self-evolution. It is the following out of an inherent tendency or impulse to a series of changes, all of which were virtually pre-existent, and this process cannot be interfered with from without. As the individual monad, so the whole system which makes up the world is a gradual development. In this case, however, we cannot say that each step goes out of the other as in that of individual development. Each monad is an original independent being, and is determined to take this particular point in the universe, this place in the scale of beings. We see how different this metaphysical conception is from that scientific notion of cosmic evolution in which the lower stages are the antecedents and conditions of the higher. It is probable that Leibnitz's notion of time and space, which approaches Kant's theory, led him to attach but little importance to the successive order of the world. Leibnitz, in fact, presents to us an infinite system of perfectly distinct though parallel developments, which on their mental side assume the aspect of a scale, not through any mutual action, but solely through the determination of the Deity. Even this idea, however, is incomplete, for Leibnitz fails to explain the physical aspect of development. Thus he does not account for the fact that organic beings—which have always existed as preformations (in the case of animals as *animaux spermatiques*)—come to be developed under given conditions. Yet Leibnitz prepared the way for a new conception of organic evolution. The modern monistic doctrine, that all material things consist of sentient elements, and that consciousness arises through a combination of these, was a natural transformation of Leibnitz's theory.[12]

Lessing.—Of Leibnitz's immediate followers we may mention Lessing, who in his *Education of the Human Race* brought out the truth of the process of gradual development underlying human history, even though he expressed this in a form inconsistent with the idea of a spontaneous evolution.

Herder.—Herder, on the other hand, Lessing's contemporary, treated the subject of man's development in a thoroughly naturalistic spirit. In his I*deen zur Philosophie der Geschichte*, Herder adopts Leibnitz's idea of a graduated scale of beings, at the same time conceiving of the lower stages as the conditions of the higher. Thus man is said to be the highest product of nature, and as such to be dependent on all lower products. All material things are assimilated to one another as organic, the vitalizing principle being inherent in all matter. The development of man is explained in connexion with that of the earth, and in relation to climatic variations, &c. Man's mental faculties are viewed as related to his organization, and as developed under the pressure of the necessities of life.[13]

Kant.—Kant's relation to the doctrine of evolution is a many-sided one. In the first place, his peculiar system of subjective idealism, involving the idea that time is but a mental form to which there corresponds nothing in the sphere of noümenal reality, serves to give a peculiar philosophical interpretation to every doctrine of cosmic evolution. Kant, like Leibnitz, seeks to reconcile the mechanical and teleological views of nature, only he assigns to these different spheres. The order of the inorganic world is explained by properly physical causes. In his *Naturgeschichte des Himmels*, in which he anticipated the nebular theory afterwards more fully developed by Laplace, Kant sought to explain the genesis of the cosmos as a product of physical forces and laws. The worlds, or systems of worlds, which fill infinite space are continually being formed and destroyed. Chaos passes by a process of

evolution into a cosmos, and this again into chaos. So far as the evolution of the solar system is concerned, Kant held these mechanical causes as adequate. For the world as a whole, however, he postulated a beginning in time (whence his use of the word creation), and further supposed that the impulse of organization which was conveyed to chaotic matter by the Creator issued from a central point in the infinite space spreading gradually outwards.[14] While in his cosmology Kant thus relies on mechanical conceptions, in his treatment of organic life his mind is, on the contrary, dominated by teleological ideas. An organism was to him something controlled by a formative organizing principle. It was natural, therefore, that he rejected the idea of a spontaneous generation of organisms (which was just then being advocated by his friend Forster), not only as unsupported by experience but as an inadequate hypothesis. Experience forbids our excluding organic activity from natural causes, also our excluding intelligence from purposeful (*zwecktätigen*) causes; hence experience forbids our defining the fundamental force or first cause out of which living creatures arose.[15] Just as Kant thus sharply marks off the regions of the inorganic and the organic, so he sets man in strong opposition to the lower animals. His ascription to man of a unique faculty, free-will, forbade his conceiving our species as a link in a graduated series of organic developments. In his doctrine of human development he does indeed recognize an early stage of existence in which our species was dominated by sensuous enjoyment and instinct. He further conceives of this stage as itself a process of (natural) development, namely, of the natural disposition of the species to vary in the greatest possible manner so as to preserve its unity through a process of self-adaptation (*Anarten*) to climate. This, he says, must not be conceived as resulting from the action of external causes, but is due to a natural disposition (*Anlage*). From this capability of natural development (which already involves a teleological idea) Kant distinguishes the power of moral self-development or self-liberation from the dominion of nature, the gradual realization of which constitutes human history or progress. This moral development is regarded as a gradual approach to that rational, social and political state in which will be realized the greatest possible quantity of liberty. Thus Kant, though he appropriated and gave new form to the idea of human progress, conceived of this as wholly distinct from a natural (mechanical) process. In this particular, as in his view of organic actions, Kant distinctly opposed the idea of evolution as one universal process swaying alike the physical and the moral world.

Schelling.—In the earlier writings of Schelling, containing the philosophy of identity, existence is represented as a becoming, or process of evolution. Nature and mind (which are the two sides, or polar directions, of the one absolute) are each viewed as an activity advancing by an uninterrupted succession of stages. The side of this process which Schelling worked out most completely is the negative side, that is, nature. Nature is essentially a process of organic self-evolution. It can only be understood by subordinating the mechanical conception to the vital, by conceiving the world as one organism animated by a spiritual principle or intelligence (*Weltseele*). From this point of view the processes of nature from the inorganic up to the most complex of the organic become stages in the self-realization of nature. All organic forms are at bottom but one organization, and the inorganic world shows the same formative activity in various degrees or potences. Schelling conceives of the gradual self-evolution of nature in a succession of higher and higher forms as brought about by a limitation of her infinite productivity, showing itself in a series of points of arrest. The detailed exhibition of the organizing activity of nature in the several processes of the organic and inorganic world rests on a number of fanciful and unscientific ideas. Schelling's theory is a bold attempt to revitalize nature in the light of growing physical and physiological science, and by so doing to comprehend the unity of the world under the idea of one principle of organic development. His highly figurative language might leave us in doubt how far he conceived the higher stages of this evolution of nature as following the lower in time. In the introduction to his work *Von der Weltseele*, however, he argues in favour of the possibility of a transmutation of species in periods incommensurable with ours. The evolution of mind (the positive pole) proceeds by way of three stages—theoretic, practical and aesthetical activity. Schelling's later theosophic speculations do not specially concern us here.

Followers of Schelling.—Of the followers of Schelling a word or two must be said. Heinrich Steffens, in his *Anthropologie*, seeks to trace out the origin and history of man in connexion with a general theory of the development of the earth, and this again as related to the formation of the solar system. All these processes are regarded as a series of manifestations of a vital principle in higher and higher forms. Oken, again, who carries Schelling's ideas into the region of biological science, seeks to reconstruct the gradual evolution of the material world out of original matter, which is the first immediate appearance of God, or the absolute. This process is an upward one, through the formation of the solar system and of

our earth with its inorganic bodies, up to the production of man. The process is essentially a polar linear action, or differentiation from a common centre. By means of this process the bodies of the solar system separate themselves, and the order of cosmic evolution is repeated in that of terrestrial evolution. The organic world (like the world as a whole) arises out of a primitive chaos, namely, the infusorial slime. A somewhat similar working out of Schelling's idea is to be found in H.C. Oersted's work entitled *The Soul in Nature* (Eng. trans.). Of later works based on Schelling's doctrine of evolution mention may be made of the volume entitled *Natur und Idee*, by G.F. Carus. According to this writer, existence is nothing but a becoming, and matter is simply the momentary product of the process of becoming, while force is this process constantly revealing itself in these products.

Hegel.—Like Schelling, Hegel conceives the problem of existence as one of becoming. He differs from him with respect to the ultimate motive of that process of gradual evolution which reveals itself alike in nature and in mind. With Hegel the absolute is itself a dialectic process which contains within itself a principle of progress from difference to difference and from unity to unity. "This process (W. Wallace remarks) knows nothing of the distinctions between past and future, because it implies an eternal present." This conception of an immanent spontaneous evolution is applied alike both to nature and to mind and history. Nature to Hegel is the idea in the form of hetereity; and finding itself here it has to remove this exteriority in a progressive evolution towards an existence for itself in life and mind. Nature (says Zeller) is to Hegel a system of gradations, of which one arises necessarily out of the other, and is the proximate truth of that out of which it results. There are three stadia, or moments, in this process of nature—(1) the mechanical moment, or matter devoid of individuality; (2) the physical moment, or matter which has particularized itself in bodies—the solar system; and (3) the organic moment, or organic beings, beginning with the geological organism—or the mineral kingdom, plants and animals. Yet this process of development is not to be conceived as if one stage is naturally produced out of the other, and not even as if the one followed the other in time. Only spirit has a history; in nature all forms are contemporaneous.[16] Hegel's interpretation of mind and history as a process of evolution has more scientific interest than his conception of nature. His theory of the development of free-will (the objective spirit), which takes its start from Kant's conception of history, with its three stages of legal right, morality as determined by motive and instinctive goodness (*Sittlichkeit*), might almost as well be expressed in terms of a thoroughly naturalistic doctrine of human development. So, too, some of his conceptions respecting the development of art and religion (the absolute spirit) lend themselves to a similar interpretation. Yet while, in its application to history, Hegel's theory of evolution has points of resemblance with those doctrines which seek to explain the world-process as one unbroken progress occurring in time, it constitutes on the whole a theory apart and *sui generis*. It does not conceive of the organic as succeeding on the inorganic, or of conscious life as conditioned in time by lower forms. In this respect it resembles Leibnitz's idea of the world as a development; the idea of evolution is in each case a metaphysical as distinguished from a scientific one. Hegel gives a place in his metaphysical system to the mechanical and the teleological views; yet in his treatment of the world as an evolution the idea of end or purpose is the predominant one.

Of the followers of Hegel who have worked out his peculiar idea of evolution it is hardly necessary to speak. A bare reference may be made to J.K. F. Rosenkranz, who in his work *Hegel's Naturphilosophie* seeks to develop Hegel's idea of an earth-organism in the light of modern science, recognizing in crystallization the morphological element.

Schopenhauer.—Of the other German philosophers immediately following Kant, there is only one who calls for notice here, namely, Arthur Schopenhauer. This writer, by his conception of the world as will which objectifies itself in a series of gradations from the lowest manifestations of matter up to conscious man, gives a slightly new shape to the evolutional view of Schelling, though he deprives this view of its optimistic character by denying any co-operation of intelligence in the world-process. In truth, Schopenhauer's conception of the world as the activity of a blind force is at bottom a materialistic and mechanical rather than a spiritualistic and teleological theory. Moreover, Schopenhauer's subjective idealism, and his view of time as something illusory, hindered him from viewing this process as a sequence of events in time. Thus he ascribes eternity of existence to species under the form of the "Platonic ideas." As Ludwig Noiré observes, Schopenhauer has no feeling for the problem of the origin of organic beings. He says Lamarck's original animal is something metaphysical, not physical, namely, the will to live. "Every species (according to Schopenhauer) has of its own will, and according to the circumstances under which it would live, determined its form and organization,—yet not as something physical in time, but as something metaphysical out of time."

Von Baer.—Before leaving the German speculation of the first half of the century, a word must be said of von Baer, to whose biological contributions we shall refer later in this article, who recognized in the law of development the law of the universe as a whole. In his *Entwickelungsgeschichte der Thiere* (p. 264) he distinctly tells us that the law of growing individuality is "the fundamental thought which goes through all forms and degrees of animal development and all single relations. It is the same thought which collected in the cosmic space the divided masses into spheres, and combined these to solar systems; the same which caused the weather-beaten dust on the surface of our metallic planet to spring forth into living forms." Von Baer thus prepared the way for Herbert Spencer's generalization of the law of organic evolution as the law of all evolution.

Comte.—As we arrive at the 19th century, though yet before the days of Darwin, biology is already beginning to affect the general aspect of thought. It might suffice to single out the influence of Auguste Comte, as the last great thinker who wrote before Darwinism began to permeate philosophic speculation. Though Comte did not actually contribute to a theory of cosmic organic evolution, he helped to lay the foundations of a scientific conception of human history as a natural process of development determined by general laws of human nature together with the accumulating influences of the past. Comte does not recognize that this process is aided by any increase of innate capacity; on the contrary, progress is to him the unfolding of fundamental faculties of human nature which always pre-existed in a latent condition; yet he may perhaps be said to have prepared the way for the new conception of human progress by his inclusion of mental laws under biology.

Development of the Biological Doctrine.—In the 19th century the doctrine of evolution received new biological contents and became transformed from a vague, partly metaphysical theory to the dominant modern conception. At this point it is convenient to leave the guidance of Professor J. Sully and to follow closely T.H. Huxley, who in the 9th edition of this encyclopaedia traced the history of the growth of the biological idea of evolution from its philosophical beginnings to its efflorescence in Charles Darwin.

In the earlier half of the 18th century the term "evolution" was introduced into biological writings in order to denote the mode in which some of the most eminent physiologists of that time conceived that the generation of living things took place; in opposition to the hypothesis advocated, in the preceding century, by W. Harvey in that remarkable work[17] which would give him a claim to rank among the founders of biological science, even had he not been the discoverer of the circulation of the blood.

One of Harvey's prime objects is to defend and establish, on the basis of direct observation, the opinion already held by Aristotle, that, in the higher animals at any rate, the formation of the new organism by the process of generation takes place, not suddenly, by simultaneous accretion of rudiments of all or the most important of the organs of the adult, nor by sudden metamorphosis of a formative substance into a miniature of the whole, which subsequently grows, but by *epigenesis*, or successive differentiation of a relatively homogeneous rudiment into the parts and structures which are characteristic of the adult.

> "Et primo, quidem, quoniam per *epigenesin* sive partium superexorientium additamentum pullum fabricari certum est: quaenam pars ante alias omnes exstruatur, et quid de illa ejusque generandi modo observandum veniat, dispiciemus. Ratum sane est et in ovo manifeste apparet quod *Aristoteles* de perfectorum animalium generatione enuntiat: nimirum, non omnes partes simul fieri, sed ordine aliam post aliam; primumque existere particulam genitalem, cujus virtute postea (tanquam ex principio quodam) reliquae omnes partes prosiliant. Qualem in plantarum seminibus (fabis, puta, aut glandibus) gemmam sive apicem protuberantem cernimus, totius futurae arboris principium. *Estque haec particula velut filius emancipatus seorsumque collocatus, et principium per se vivens; unde postea membrorum ordo describitur; et quaecunque ad absolvendum animal pertinent, disponuntur*.[18] Quoniam enim *nulla pars se ipsam generat; sed postquam generata est, se ipsam jam auget; ideo eam primum oriri necesse est, quae principium augendi contineat* (*sive enim planta, sive animal est, aeque omnibus inest quod vim habeat vegetandi, sive nutriendi*),[19] simulque reliquas omnes partes suo quamque ordine distinguat et formet; proindeque in eadem primogenita particula anima primario inest, sensus, motusque, et totius vitae auctor et principium." (*Exercitatio* 51.)

Harvey proceeds to contrast this view with that of the "Medici," or followers of Hippocrates and Galen, who, "badly philosophizing," imagined that the brain, the heart, and the liver were simultaneously first generated in the form of vesicles; and, at the same time, while expressing his agreement with Aristotle in the principle of epigenesis, he maintains that it is the blood which is the primal generative part, and not, as Aristotle thought, the heart.

In the latter part of the 17th century the doctrine of epigenesis thus advocated by Harvey was controverted on the ground of direct observation by M. Malpighi, who affirmed that the body of the chick is to be seen in the egg before the *punctum sanguineum* makes it appearance. But from this perfectly correct observation a conclusion which is by no means warranted was drawn, namely, that the chick as a whole really exists in the egg antecedently to incubation; and that what happens in the course of the latter process is no addition of new parts, "alias post alias natas," as Harvey puts it, but a simple expansion or unfolding of the organs which already exist, though they are too small and inconspicuous to be discovered. The weight of Malpighi's observations therefore fell into the scale of that doctrine which Harvey terms metamorphosis, in contradistinction to epigenesis.

The views of Malpighi were warmly welcomed on philosophical grounds by Leibnitz,[20] who found in them a support to his hypothesis of monads, and by Nicholas Malebranche;[21] while, in the middle of the 18th century, not only speculative considerations, but a great number of new and interesting observations on the phenomena of generation, led the ingenious Charles Bonnet and A. von Haller, the first physiologist of the age, to adopt, advocate and extend them.

Bonnet affirms that, before fecundation, the hen's egg contains an excessively minute but complete chick; and that fecundation and incubation simply cause this germ to absorb nutritious matters, which are deposited in the interstices of the elementary structures of which the miniature chick, or germ, is made up. The consequence of this intussusceptive growth is the "development" or "evolution" of the germ into the visible bird. Thus an organized individual (*tout organisé*) "is a composite body consisting of the original, or *elementary*, parts and of the matters which have been associated with them by the aid of nutrition"; so that, if these matters could be extracted from the individual (*tout*), it would, so to speak, become concentrated in a point, and would thus be restored to its primitive condition of a *germ*; "just as, by extracting from a bone the calcareous substance which is the source of its hardness, it is reduced to its primitive state of gristle or membrane."[22]

"Evolution" and "development" are, for Bonnet, synonymous terms; and since by "evolution" he means simply the expansion of that which was invisible into visibility, he was naturally led to the conclusion, at which Leibnitz had arrived by a different line of reasoning, that no such thing as generation, in the proper sense of the word exists in nature. The growth of an organic being is simply a process of enlargement, as a particle of dry gelatine may be swelled up by the intussusception of water; its death is a shrinkage, such as the swelled jelly might undergo on desiccation. Nothing really new is produced in the living world, but the germs which develop have existed since the beginning of things; and nothing really dies, but, when what we call death takes place, the living thing shrinks back into its germ state.[23]

The two parts of Bonnet's hypothesis, namely, the doctrine that all living things proceed from pre-existing germs, and that these contain, one enclosed within the other, the germs of all future living things, which is the hypothesis of "emboîtement," and the doctrine that every germ contains in miniature all the organs of the adult, which is the hypothesis of evolution or development, in the primary senses of these words, must be carefully distinguished. In fact, while holding firmly by the former, Bonnet more or less modified the latter in his later writings, and, at length, he admits that a "germ" need not be an actual miniature of the organism, but that it may be merely an "original preformation" capable of producing the latter.[24]

But, thus defined, the germ is neither more nor less than the "particula genitalis" of Aristotle, or the "primordium vegetale" or "ovum" of Harvey; and the "evolution" of such a germ would not be distinguishable from "epigenesis."

Supported by the great authority of Haller, the doctrine of evolution, or development, prevailed throughout the whole of the 18th century, and Cuvier appears to have substantially adopted Bonnet's later views, though probably he would not have gone all lengths in the direction of "emboîtement." In a well-known note to Charles Leopold Laurillard's *Éloge*, prefixed to the last edition of the *Ossemens fossiles*, the "radical de l'être" is much the same thing as Aristotle's "particula genitalis" and Harvey's "ovum."[25]

Bonnet's eminent contemporary, Buffon, held nearly the same views with respect to the nature of the germ, and expresses them even more confidently.

> "Ceux qui ont cru que le cœur étoit le premier formé, se sont trompés; ceux qui disent que c'est le sang se trompent aussi: tout est formé en même temps. Si l'on ne consulte que l'observation, le poulet se voit dans l'œuf avant qu'il ait été couvé."[26]

"J'ai ouvert une grande quantité d'œufs à differens temps avant et après l'incubation, et je me suis convaincu par mes yeux que le poulet existe en entier dans le milieu de la cicatrule au moment qu'il sort du corps de la poule."[27]

The "moule intérieur" of Buffon is the aggregate of elementary parts which constitute the individual, and is thus the equivalent of Bonnet's germ,[28] as defined in the passage cited above. But Buffon further imagined that innumerable "molécules organiques" are dispersed throughout the world, and that alimentation consists in the appropriation by the parts of an organism of those molecules which are analogous to them. Growth, therefore, was, on this hypothesis, partly a process of simple evolution, and partly of what has been termed syngenesis. Buffon's opinion is, in fact, a sort of combination of views, essentially similar to those of Bonnet, with others, somewhat similar to those of the "Medici" whom Harvey condemns. The "molécules organiques" are physical equivalents of Leibnitz's "monads."

It is a striking example of the difficulty of getting people to use their own powers of investigation accurately, that this form of the doctrine of evolution should have held its ground so long; for it was thoroughly and completely exploded, not long after its enunciation, by Caspar Frederick Wolff, who in his *Theoria generatìonis*, published in 1759, placed the opposite theory of epigenesis upon the secure foundation of fact, from which it has never been displaced. But Wolff had no immediate successors. The school of Cuvier was 31
lamentably deficient in embryologists; and it was only in the course of the first thirty years of the 19th century that Prévost and Dumas in France, and, later on, Döllinger, Pander, von Bär, Rathke, and Remak in Germany, founded modern embryology; and, at the same time, proved the utter incompatibility of the hypothesis of evolution as formulated by Bonnet and Haller with easily demonstrable facts.

Nevertheless, though the conceptions originally denoted by "evolution" and "development" were shown to be untenable, the words retained their application to the process by which the embryos of living beings gradually make their appearance; and the terms "development," "Entwickelung," and "evolutio" are now indiscriminately used for the series of genetic changes exhibited by living beings, by writers who would emphatically deny that "development" or "Entwickelung" or "evolutio," in the sense in which these words were usually employed by Bonnet or Haller, ever occurs.

Evolution, or development, is, in fact, at present employed in biology as a general name for the history of the steps by which any living being has acquired the morphological and the physiological characters which distinguish it. As civil history may be divided into biography, which is the history of individuals, and universal history, which is the history of the human race, so evolution falls naturally into two categories—the evolution of the individual (see Embryology) and the evolution of the sum of living beings.

The Evolution of the Sum of Living Beings.—The notion that all the kinds of animals and plants may have come into existence by the growth and modification of primordial germs is as old as speculative thought; but the modern scientific form of the doctrine can be traced historically to the influence of several converging lines of philosophical speculation and of physical observation, none of which go further back than the 17th century. These are:—

1. The enunciation by Descartes of the conception that the physical universe, whether living or not living, is a mechanism, and that, as such, it is explicable on physical principles.

2. The observation of the gradations of structure, from extreme simplicity to very great complexity, presented by living things, and of the relation of these graduated forms to one another.

3. The observation of the existence of an analogy between the series of gradations presented by the species which compose any great group of animals or plants, and the series of embryonic conditions of the highest members of that group.

4. The observation that large groups of species of widely different habits present the same fundamental plan of structure; and that parts of the same animal or plant, the functions of which are very different, likewise exhibit modifications of a common plan.

5. The observation of the existence of structures, in a rudimentary and apparently useless condition, in one species of a group, which are fully developed and have definite functions in other species of the same group.

6. The observation of the effects of varying conditions in modifying living organisms.

7. The observation of the facts of geographical distribution.

8. The observation of the facts of the geological succession of the forms of life.

1. Notwithstanding the elaborate disguise which fear of the powers that were led Descartes to throw over his real opinions, it is impossible to read the *Principes de la philosophie* without acquiring the conviction that this great philosopher held that the physical world and all things in it, whether living or not living, have originated by a process of evolution, due to the continuous operation of purely physical causes, out of a primitive relatively formless matter.[29]

The following passage is especially instructive:—

> "Et tant s'en faut que je veuille que l'on croie toutes les choses que j'écrirai, que même je prétends en proposer ici quelques-unes que je crois absolument être fausses; à savoir, je ne doute point que le monde n'ait été créé au commencement avec autant de perfection qu'il en a; en sorte que le soleil, la terre, la lune, et les étoiles ont été dès lors; et que la terre n'a pas eu seulement en soi les semences des plantes, mais que les plantes même en ont couvert une partie; et qu'Adam et Ève n'ont pas été créés enfans mais en âge d'hommes parfaits. La religion chrétienne veut que nous le croyons ainsi, et la raison naturelle nous persuade entièrement cette vérité; car si nous considérons la toute puissance de Dieu, nous devons juger que tout ce qu'il a fait a eu dès le commencement toute la perfection qu'il devoit avoir. Mais néanmoins, comme on connoîtroit beaucoup mieux quelle a été la nature d'Adam et celle des arbres de Paradis si on avoit examiné comment les enfants se forment peu à peu dans le ventre de leurs mères et comment les plantes sortent de leurs semences, que si on avoit seulement considéré quels ils ont été quand Dieu les a créés: tout de même, nous ferons mieux entendre quelle est généralement la nature de toutes les choses qui sont au monde si nous pouvons imaginer quelques principes qui soient fort intelligibles et fort simples, desquels nous puissions voir clairement que les astres et la terre et enfin tout ce monde visible auroit pu être produit ainsi que de quelques semences (bien que nous sachions qu'il n'a pas été produit en cette façon) que si nous la décrivions seulement comme il est, ou bien comme nous croyons qu'il a été créé. Et parceque je pense avoir trouvé des principes qui sont tels, je tâcherai ici de les expliquer."[30]

If we read between the lines of this singular exhibition of force of one kind and weakness of another, it is clear that Descartes believed that he had divined the mode in which the physical universe had been evolved; and the *Traité de l'homme* and the essay *Sur les passions* afford abundant additional evidence that he sought for, and thought he had found, an explanation of the phenomena of physical life by deduction from purely physical laws.

Spinoza abounds in the same sense, and is as usual perfectly candid—

> "Naturae leges et regulae, secundum quas omnia fiunt et ex unis formis in alias mutantur, sunt ubique et semper eadem."[31]

Leibnitz's doctrine of continuity necessarily led him in the same direction; and, of the infinite multitude of monads with which he peopled the world, each is supposed to be the focus of an endless process of evolution and involution. In the *Protogaea*, xxvi., Leibnitz distinctly suggests the mutability of species—

> "Alii mirantur in saxis passim species videri quas vel in orbe cognito, vel saltem in vicinis locis frustra quaeras. Ita *Cornua Ammonis*, quae ex nautilorum numero habeantur, passim et forma et magnitudine (nam et pedali diametro aliquando reperiuntur) ab omnibus illis naturis discrepare dicunt, quas praebet mare. Sed quis absconditos ejus recessus aut subterraneas abyssos pervestigavit? quam multa nobis animalia antea ignota offert novus orbis? Et credibile est per magnas illas conversiones etiam animalium species plurimum immutatas."

Thus in the end of the 17th century the seed was sown which has at intervals brought forth recurrent crops of evolutional hypotheses, based, more or less completely, on general reasonings.

Among the earliest of these speculations is that put forward by Benoît de Maillet in his *Telliamed*, which, though printed in 1735, was not published until twenty-three years later. Considering that this book was written before the time of Haller, or Bonnet, or Linnaeus, or Hutton, it surely deserves more respectful consideration than it usually receives. For De Maillet not only has a definite conception of the plasticity of living things, and of the production of existing species by the modification of their predecessors, but he clearly apprehends the cardinal maxim of modern geological science, that the explanation of the structure of the globe is to be sought in the deductive application to geological phenomena of the principles established inductively by the study of the present course of nature. Somewhat later, P.L.M. de Maupertuis[32] suggested a curious hypothesis as to the causes of

variation, which he thinks may be sufficient to account for the origin of all animals from a single pair. Jean Baptiste René Robinet[33] followed out much the same line of thought as De Maillet, but less soberly; and Bonnet's speculations in the *Palingénésie*, which appeared in 1769, have already been mentioned. Buffon (1753-1778), at first a partisan of the absolute immutability of species, subsequently appears to have believed that larger or smaller groups of species have been produced by the modification of a primitive stock; but he contributed nothing to the general doctrine of evolution.

Erasmus Darwin (*Zoonomia*, 1794), though a zealous evolutionist, can hardly be said to have made any real advance on his predecessors; and, notwithstanding the fact that Goethe had the advantage of a wide knowledge of morphological facts, and a true insight into their signification, while he threw all the power of a great poet into the expression of his conceptions, it may be questioned whether he supplied the doctrine of evolution with a firmer scientific basis than it already possessed. Moreover, whatever the value of Goethe's labours in that field, they were not published before 1820, long after evolutionism had taken a new departure from the works of Treviranus and Lamarck—the first of its advocates who were equipped for their task with the needful large and accurate knowledge of the phenomena of life as a whole. It is remarkable that each of these writers seems to have been led, independently and contemporaneously, to invent the same name of "biology" for the science of the phenomena of life; and thus, following Buffon, to have recognized the essential unity of these phenomena, and their contradistinction from those of inanimate nature. And it is hard to say whether Lamarck or Treviranus has the priority in propounding the main thesis of the doctrine of evolution; for though the first volume of Treviranus's *Biologie* appeared only in 1802, he says, in the preface to his later work, the *Erscheinungen und Gesetze des organischen Lebens*, dated 1831, that he wrote the first volume of the *Biologie* "nearly five-and-thirty years ago," or about 1796.

Now, in 1794, there is evidence that Lamarck held doctrines which present a striking contrast to those which are to be found in the *Philosophie zoologique*, as the following passages show:—

> "685. Quoique mon unique objet dans cet article n'ait été que de traiter de la cause physique de l'entretien de la vie des êtres organiques, malgré cela j'ai osé avancer en débutant, que l'existence de ces êtres étonnants n'appartiennent nullement à la nature; que tout ce qu'on peut entendre par le mot *nature*, ne pouvoit donner la vie, c'est-à-dire, que toutes les qualités de la matière, jointes à toutes les circonstances possibles, et même à l'activité répandue dans l'univers, ne pouvaient point produire un être muni du mouvement organique, capable de reproduire son semblable, et sujet à la mort.
>
> "686. Tous les individus de cette nature, qui existent, proviennent d'individus semblables qui tous ensemble constituent l'espèce entière. Or, je crois qu'il est aussi impossible à l'homme de connoître la cause physique du premier individu de chaque espèce, que d'assigner aussi physiquement la cause de l'existence de la matière ou de l'univers entier. C'est au moins ce que le résultat de mes connaissances et de mes réflexions me portent à penser. S'il existe beaucoup de variétés produites par l'effet des circonstances, ces variétés ne dénaturent point les espèces; mais on se trompe, sans doute souvent, en indiquant comme espèce, ce qui n'est que variété; et alors je sens que cette erreur peut tirer à conséquence dans les raisonnements que l'on fait sur cette matière."[34]

The first three volumes of Treviranus's Biologie, which contains his general views of evolution, appeared between 1802 and 1805. The *Recherches sur l'organisation des corps vivants*, which sketches out Lamarck's doctrines, was published in 1802; but the full development of his views in the *Philosophie zoologique* did not take place until 1809.

The *Biologie* and the *Philosophie zoologique* are both very remarkable productions, and are still worthy of attentive study, but they fell upon evil times. The vast authority of Cuvier was employed in support of the traditionally respectable hypotheses of special creation and of catastrophism; and the wild speculations of the *Discours sur les révolutions de la surface du globe* were held to be models of sound scientific thinking, while the really much more sober and philosophical hypotheses of the *Hydrogéologie* were scouted. For many years it was the fashion to speak of Lamarck with ridicule, while Treviranus was altogether ignored.

Nevertheless, the work had been done. The conception of evolution was henceforward irrepressible, and it incessantly reappears, in one shape or another,[35] up to the year 1858, when Charles Darwin and A.R. Wallace published their *Theory of Natural Selection*. The *Origin of Species* appeared in 1859; and thenceforward the doctrine of evolution assumed a position and acquired an importance which it never before possessed. In the *Origin of Species*, and in his other numerous and important contributions to the solution of the

problem of biological evolution, Darwin confined himself to the discussion of the causes which have brought about the present condition of living matter, assuming such matter to have once come into existence. On the other hand, Spencer[36] and E. Haeckel[37] dealt with the whole problem of evolution. The profound and vigorous writings of Spencer embody the spirit of Descartes in the knowledge of our own day, and may be regarded as the *Principes de la philosophie* of the 19th century; while, whatever hesitation may not unfrequently be felt by less daring minds in following Haeckel in many of his speculations, his attempt to systematize the doctrine of evolution and to exhibit its influence as the central thought of modern biology, cannot fail to have a far-reaching influence on the progress of science.

If we seek for the reason of the difference between the scientific position of the doctrine of evolution in the days of Lamarck and that which it occupies now, we shall find it in the great accumulation of facts, the several classes of which have been enumerated above, under the second to the eighth heads. For those which are grouped under the second to the seventh of these classes, respectively, have a clear significance on the hypothesis of evolution, while they are unintelligible if that hypothesis be denied. And those of the eighth group are not only unintelligible without the assumption of evolution, but can be proved never to be discordant with that hypothesis, while, in some cases, they are exactly such as the hypothesis requires. The demonstration of these assertions would require a volume, but the general nature of the evidence on which they rest may be briefly indicated.

2. The accurate investigation of the lowest forms of animal life, commenced by Leeuwenhoek and Swammerdam, and continued by the remarkable labours of Réaumur, Abraham Trembley, Bonnet, and a host of other observers in the latter part of the 17th and the first half of the 18th centuries, drew the attention of biologists to the gradation in the complexity of organization which is presented by living beings, and culminated in the doctrine of the *échelle des êtres*, so powerfully and clearly stated by Bonnet, and, before him, adumbrated by Locke and by Leibnitz. In the then state of knowledge, it appeared that all the species of animals and plants could be arranged in one series, in such a manner that, by insensible gradations, the mineral passed into the plant, the plant into the polype, the polype into the worm, and so, through gradually higher forms of life, to man, at the summit of the animated world.

But, as knowledge advanced, this conception ceased to be tenable in the crude form in which it was first put forward. Taking into account existing animals and plants alone, it became obvious that they fell into groups which were more or less sharply separated from one another; and, moreover, that even the species of a genus can hardly ever be arranged in linear series. Their natural resemblances and differences are only to be expressed by disposing them as if they were branches springing from a common hypothetical centre.

Lamarck, while affirming the verbal proposition that animals form a single series, was forced by his vast acquaintance with the details of zoology to limit the assertion to such a series as may be formed out of the abstractions constituted by the common characters of each group.[38]

Cuvier on anatomical, and Von Baer on embryological grounds, made the further step of proving that, even in this limited sense, animals cannot be arranged in a single series, but that there are several distinct plans of organization to be observed among them, no one of which, in its highest and most complicated modification, leads to any of the others.

The conclusions enunciated by Cuvier and Von Baer have been confirmed in principle by all subsequent research into the structure of animals and plants. But the effect of the adoption of these conclusions has been rather to substitute a new metaphor for that of Bonnet than to abolish the conception expressed by it. Instead of regarding living things as capable of arrangement in one series like the steps of a ladder, the results of modern investigation compel us to dispose them as if they were the twigs and branches of a tree. The ends of the twigs represent individuals, the smallest groups of twigs species, larger groups genera, and so on, until we arrive at the source of all these ramifications of the main branch, which is represented by a common plan of structure. At the present moment it is impossible to draw up any definition, based on broad anatomical or developmental characters, by which any one of Cuvier's great groups shall be separated from all the rest. On the contrary, the lower members of each tend to converge towards the lower members of all the others. The same may be said of the vegetable world. The apparently clear distinction between flowering and flowerless plants has been broken down by the series of gradations between the two exhibited by the *Lycopodiaceae*, *Rhizocarpeae*, and *Gymnospermeae*. The groups of *Fungi*, *Licheneae* and *Algae* have completely run into one another, and, when the lowest forms of each are alone considered, even the animal and vegetable kingdoms cease to

have a definite frontier.

If it is permissible to speak of the relations of living forms to one another metaphorically, the similitude chosen must undoubtedly be that of a common root, whence two main trunks, one representing the vegetable and one the animal world, spring; and, each dividing into a few main branches, these subdivide into multitudes of branchlets and these into smaller groups of twigs.

As Lamarck has well said:—[39]

> "Il n'y a que ceux qui se sont longtemps et fortement occupés de la détermination des espèces, et qui ont consulté de riches collections, qui peuvent savoir jusqu'à quel point les *espèces*, parmi les corps vivants, se fondent les unes dans les autres, et qui ont pu se convaincre que, dans les parties où nous voyons des *espèces* isolées, cela n'est ainsi que parcequ'il nous en manque d'autres qui en sont plus voisines et que nous n'avons pas encore recueillies.
>
> "Je ne veux pas dire pour cela que les animaux qui existent forment une série très-simple et partout également nuancée; mais je dis qu'ils forment une série rameuse, irrégulièrement graduée et qui n'a point de discontinuité dans ses parties, ou qui, du moins, n'en a toujours pas eu, s'il est vrai que, par suite de quelques espèces perdues, il s'en trouve quelque part. Il en résulte que les *espèces* qui terminent chaque rameau de la série générale tiennent, au moins d'un côté, à d'autres espèces voisines qui se nuancent avec elles. Voilà ce que l'état bien connu des choses me met maintenant à portée de démontrer. Je n'ai besoin d'aucune hypothèse ni d'aucune supposition pour cela: j'en atteste tous les naturalistes observateurs."

3. In a remarkable essay[40] Meckel remarks:—

> "There is no good physiologist who has not been struck by the observation that the original form of all organisms is one and the same, and that out of this one form, all, the lowest as well as the highest, are developed in such a manner that the latter pass through the permanent forms of the former as transitory stages. Aristotle, Haller, Harvey, Kielmeyer, Autenrieth, and many others have either made this observation incidentally, or, especially the latter, have drawn particular attention to it, and drawn therefrom results of permanent importance for physiology."

Meckel proceeds to exemplify the thesis, that the lower forms of animals represent stages in the course of the development of the higher, with a large series of illustrations.

After comparing the salamanders and the perenni-branchiate *Urodela* with the tadpoles and the frogs, and enunciating the law that the more highly any animal is organized the more quickly does it pass through the lower stages, Meckel goes on to say:—

> "From these lowest Vertebrata to the highest, and to the highest forms among these, the comparison between the embryonic conditions of the higher animals and the adult states of the lower can be more completely and thoroughly instituted than if the survey is extended to the Invertebrata, inasmuch as the latter are in many respects constructed upon an altogether too dissimilar type; indeed they often differ from one another far more than the lowest vertebrate does from the highest mammal; yet the following pages will show that the comparison may be also extended to them with interest. In fact, there is a period when, as Aristotle long ago said, the embryo of the highest animal has the form of a mere worm, and, devoid of internal and external organization, is merely an almost structureless lump of polype-substance. Notwithstanding the origin of organs, it still for a certain time, by reason of its want of an internal bony skeleton, remains worm and mollusk, and only later enters into the series of the Vertebrata, although traces of the vertebral column even in the earliest periods testify its claim to a place in that series."—*Op. cit.* pp. 4, 5.

If Meckel's proposition is so far qualified, that the comparison of adult with embryonic forms is restricted within the limits of one type of organization; and if it is further recollected, that the resemblance between the permanent lower form and the embryonic stage of a higher form is not special but general, it is in entire accordance with modern embryology; although there is no branch of biology which has grown so largely, and improved its methods so much since Meckel's time, as this. In its original form, the doctrine of "arrest of development," as advocated by Geoffroy Saint-Hilaire and Serres, was no doubt an over-statement of the case. It is not true, for example, that a fish is a reptile arrested in its development, or that a reptile was ever a fish; but it is true that the reptile embryo, at one stage of its development, is an organism which, if it had an independent existence, must be classified among fishes; and all the organs of the reptile pass, in the course of their development, through conditions which are closely analogous to those which are permanent in some fishes.

4. That branch of biology which is termed morphology is a commentary upon, and expansion of, the proposition that widely different animals or plants, and widely different parts of animals or plants, are constructed upon the same plan. From the rough comparison of the skeleton of a bird with that of a man by Pierre Delon, in the 16th century (to go no further back), down to the theory of the limbs and the theory of the skull at the present day; or, from the first demonstration of the homologies of the parts of a flower by C.F. Wolff, to the present elaborate analysis of the floral organs, morphology exhibits a continual advance towards the demonstration of a fundamental unity among the seeming diversities of living structures. And this demonstration has been completed by the final establishment of the cell theory (see Cytology), which involves the admission of a primitive conformity, not only of all the elementary structures in animals and plants respectively, but of those in the one of these great divisions of living things with those in the other. No *a priori* difficulty can be said to stand in the way of evolution, when it can be shown that all animals and all plants proceed by modes of development, which are similar in principle, from a fundamental protoplasmic material.

5. The innumerable cases of structures, which are rudimentary and apparently useless, in species, the close allies of which possess well-developed and functionally important homologous structures, are readily intelligible on the theory of evolution, while it is hard to conceive their *raison d'être* on any other hypothesis. However, a cautious reasoner will probably rather explain such cases deductively from the doctrine of evolution than endeavour to support the doctrine of evolution by them. For it is almost impossible to prove that any structure, however rudimentary, is useless—that is to say, that it plays no part whatever in the economy; and, if it is in the slightest degree useful, there is no reason why, on the hypothesis of direct creation, it should not have been created. Nevertheless; double-edged as is the argument from rudimentary organs, there is probably none which has produced a greater effect in promoting the general acceptance of the theory of evolution.

6. The older advocates of evolution sought for the causes of the process exclusively in the influence of varying conditions, such as climate and station, or hybridization, upon living forms. Even Treviranus has got no further than this point. Lamarck introduced the conception of the action of an animal on itself as a factor in producing modification. Starting from the well-known fact that the habitual use of a limb tends to develop the muscles of the limb, and to produce a greater and greater facility in using it, he made the general assumption that the effort of an animal to exert an organ in a given direction tends to develop the organ in that direction. But a little consideration showed that, though Lamarck had seized what, as far as it goes, is a true cause of modification, it is a cause the actual effects of which are wholly inadequate to account for any considerable modification in animals, and which can have no influence at all in the vegetable world; and probably nothing contributed so much to discredit evolution, in the early part of the 19th century, as the floods of easy ridicule which were poured upon this part of Lamarck's speculation. The theory of natural selection, or survival of the fittest, was suggested by William Charles Wells in 1813, and further elaborated by Patrick Matthew in 1831. But the pregnant suggestions of these writers remained practically unnoticed and forgotten, until the theory was independently devised and promulgated by Charles Robert Darwin and Alfred Russell Wallace in 1858, and the effect of its publication was immediate and profound.

Those who were unwilling to accept evolution, without better grounds than such as are offered by Lamarck, and who therefore preferred to suspend their judgment on the question, found in the principle of selective breeding, pursued in all its applications with marvellous knowledge and skill by Darwin, a valid explanation of the occurrence of varieties and races; and they saw clearly that, if the explanation would apply to species, it would not only solve the problem of their evolution, but that it would account for the facts of teleology, as well as for those of morphology; and for the persistence of some forms of life unchanged through long epochs of time, while others undergo comparatively rapid metamorphosis.

How far "natural selection" suffices for the production of species remains to be seen. Few can doubt that, if not the whole cause, it is a very important factor in that operation; and that it must play a great part in the sorting out of varieties into those which are transitory and those which are permanent.

But the causes and conditions of variation have yet to be thoroughly explored; and the importance of natural selection will not be impaired, even if further inquiries should prove that variability is definite, and is determined in certain directions rather than in others, by conditions inherent in that which varies. It is quite conceivable that every species tends to produce varieties of a limited number and kind, and that the effect of natural selection is to favour the development of some of these, while it opposes the development of others along

their predetermined lines of modification.

7. No truths brought to light by biological investigation were better calculated to inspire distrust of the dogmas intruded upon science in the name of theology than those which relate to the distribution of animals and plants on the surface of the earth. Very skilful accommodation was needful, if the limitation of sloths to South America, and of the *Ornithorhynchus* to Australia, was to be reconciled with the literal interpretation of the history of the Deluge; and, with the establishment of the existence of distinct provinces of distribution, any serious belief in the peopling of the world by migration from Mount Ararat came to an end.

Under these circumstances, only one alternative was left for those who denied the occurrence of evolution; namely, the supposition that the characteristic animals and plants of each great province were created, as such, within the limits in which, we find them. And as the hypothesis of "specific centres," thus formulated, was heterodox from the theological point of view, and unintelligible under its scientific aspect, it may be passed over without further notice, as a phase of transition from the creational to the evolutional hypothesis.

8. In fact, the strongest and most conclusive arguments in favour of evolution are those which are based upon the facts of geographical, taken in conjunction with those of geological, distribution.

Both Darwin and Wallace lay great stress on the close relation which obtains between the existing fauna of any region and that of the immediately antecedent geological epoch in the same region; and rightly, for it is in truth inconceivable that there should be no genetic connexion between the two. It is possible to put into words the proposition, that all the animals and plants of each geological epoch were annihilated, and that a new set of very similar forms was created for the next epoch, but it may be doubted if any one who ever tried to form a distinct mental image of this process of spontaneous generation on the grandest scale ever really succeeded in realizing it.

In later years the attention of the best palaeontologists has been withdrawn from the hodman's work of making "new species" of fossils, to the scientific task of completing our knowledge of individual species, and tracing out the succession of the forms presented by any given type in time.

Evolution at the Beginning of the 20th century.—Since Huxley and Sully wrote their masterly essays in the 9th edition of this encyclopaedia, the doctrine of evolution has outgrown the trammels of controversy and has been accepted as a fundamental principle. Writers on biological subjects no longer have to waste space in weighing evolution against this or that philosophical theory or religious tradition; philosophical writers have frankly accepted it, and the supporters of religious tradition have made broad their phylacteries to write on them the new words. A closer scrutiny of the writers of all ages who preceded Charles Darwin, and, in particular, the light thrown back from Darwin on the earlier writings of Herbert Spencer, have made plain that without Darwin the world by this time might have come to a general acceptance of evolution; but it seems established as a historical fact that the world has come to accept evolution, first, because of Darwin's theory of natural selection, and second, because of Darwin's exposition of the evidence for the actual occurrence of organic evolution. The evidence as set out by Darwin has been added to enormously; new knowledge has in many cases altered our conceptions of the mode of the actual process of evolution, and from time to time a varying stress has been laid on what are known as the purely Darwinian factors in the theory. The balance of these tendencies has been against the attachment of great importance to sexual selection, and in favour of attaching a great importance to natural selection; but the dominant feature in the recent history of the theory has been its universal acceptance and the recognition that this general acceptance has come from the stimulus given by Darwin.

A change has taken place in the use of the word evolution. Huxley, following historical custom, devoted one section of his article to the "Evolution of the Individual." The facts and theories respecting this are now discussed under such headings as Embryology; Heredity; Variation and Selection; under these headings must be sought information on the important recent modifications with regard to the theory of the relation between the development of the individual and the development of the race, the part played by the environment on the individual, and the modern developments of the old quarrel between evolution and epigenesis. The most striking general change has been against seeing in the facts of ontogeny any direct evidence as to phylogeny. The general proposition as to a parallelism between individual and ancestral development is no doubt indisputable, but extended knowledge of the very different ontogenetic histories of

Ontogeny.

closely allied forms has led us to a much fuller conception of the mode in which stages in embryonic and larval history have been modified in relation to their surroundings, and to a consequent reluctance to attach detailed importance to the embryological argument for evolution.

Phylogeny.

The vast bulk of botanical and zoological work on living and extinct forms published during the last quarter of the 19th century increased almost beyond all expectation the evidence for the fact of evolution. The discovery of a single fossil creature in a geological stratum of a wrong period, the detection of a single anatomical or physiological fact irreconcilable with origin by descent with modification, would have been destructive of the theory and would have made the reputation of the observer. But in the prodigious number of supporting discoveries that have been made no single negative factor has appeared, and the evolution from their predecessors of the forms of life existing now or at any other period must be taken as proved. It is necessary to notice, however, that although the general course of the stream of life is certain, there is not the same certainty as to the actual individual pedigrees of the existing forms. In the attempts to place existing creatures in approximately phylogenetic order, a striking change, due to a more logical consideration of the process of evolution, has become established and is already resolving many of the earlier difficulties and banishing from the more recent tables the numerous hypothetical intermediate forms so familiar in the older phylogenetic trees. The older method was to attempt the comparison between the highest member of a lower group and the lowest member of a higher group—to suppose, for example, that the gorilla and the chimpanzee, the highest members of the apes, were the existing representatives of the ancestors of man and to compare these forms with the lowest members of the human race. Such a comparison is necessarily illogical, as the existing apes are separated from the common ancestor by at least as large a number of generations as separate it from any of the forms of existing man. In the natural process of growth, the gap must necessarily be wider between the summits of the twigs than lower down, and, instead of imagining “missing links,” it is necessary to trace each separate branch as low down as possible, and to institute the comparisons between the lowest points that can be reached. The method is simply the logical result of the fact that every existing form of life stands at the summit of a long branch of the whole tree of life. A due consideration of it leads to the curious paradox that if any two animals be compared, the zoologically lower will be separated from the common ancestor by a larger number of generations, since, on the average, sexual maturity is reached more quickly by the lower form. Naturally very many other factors have to be considered, but this alone is a sufficient reason to restrain attempts to place existing forms in linear phylogenetic series. In embryology the method finds its expression in the limitation of comparisons to the corresponding stages of low and high forms and the exclusion of the comparisons between the adult stages of low forms and the embryonic stages of higher forms. Another expression of the same method, due to Cope, and specially valuable to the taxonomist, is that when the relationship between orders is being considered, characters of subordinal rank must be neglected. It must not be supposed that earlier writers all neglected this method, or still less that all writers now employ it, but merely that formerly it was frequently overlooked by the best writers, and now is neglected only by the worst. The result is, on the one hand, a clearing away of much fantastic phylogeny, on the other, an enormous reduction of the supposed gaps between groups.

Comparative anatomy.

There has been a renewed activity in the study of existing forms from the point of view of obtaining evidence as to the nature and origin of species. Comparative anatomists have been learning to refrain from basing the diagnosis of a species, or the description of the condition of an organ, on the evidence of a single specimen. Naturalists who deal specially with museum collections have been compelled, it is true, for other reasons to attach an increasing importance to what is called the type specimen, but they find that this insistence on the individual, although invaluable from the point of view of recording species, is unsatisfactory from the point of view of scientific zoology; and propositions for the amelioration of this condition of affairs range from a refusal of Linnaean nomenclature in such cases, to the institution of a division between *master species* for such species as have been properly revised by the comparative morphologist, and *provisional species* for such species as have been provisionally registered by those working at collections. Those who work with living forms of which it is possible to obtain a large number of specimens, and those who make revisions of the provisional species of palaeontologists, are slowly coming to some such conception as that a species is the abstract central point around which a group of variations oscillate, and that the peripheral oscillations of one species may even overlap those of an allied species. It is plain that we have moved far from the connotation and denotation of the word *species* at

the time when Darwin began to discuss the origin of species, and that the movement, on the one hand, tends to simplify the problem philosophically, and, on the other, to make it difficult for the amateur theorist.

The conception of evolution is being applied more rigidly to the comparative anatomy of organs and systems of organs. When a series of the modifications of an anatomical structure has been sufficiently examined, it is frequently possible to decide that one particular condition is primitive, ancestral or central, and that the other conditions have been derived from it. Such a condition has been termed, with regard to the group of animals or plants the organs of which are being studied, *archecentric*. The possession of the character in the archecentric condition in (say) two of the members of the group does not indicate that these two members are more nearly related to one another than they are to other members of the group; the archecentric condition is part of the common heritage of all the members of the group, and may be retained by any. On the other hand, when the ancestral condition is modified, it may be regarded as having moved outwards along some radius from the archecentric condition. Such modified conditions have been termed *apocentric*. It is obvious that the mere apocentricity of a character can be no guide to the affinities of its possessor. It is necessary to determine if the modification be a simple change that might have occurred in independent cases, in fact if it be a multiradial apocentricity, or if it involved intricate and precisely combined anatomical changes that we could not expect to occur twice independently; that is to say, if it be a uniradial apocentricity. Multiradial apocentricities lie at the root of many of the phenomena that have been grouped under the designation *convergence*. Especially in the case of manifest adaptations, organs possessed by creatures far apart genealogically may be moulded into conditions that are extremely alike. Sir E. Ray Lankester's term, *homoplasy*, has passed into currency as designating such cases where different genetic material has been pressed by similar conditions into similar moulds. These may be called heterogeneous homoplasies, but it is necessary to recognize the existence of homogeneous homoplasies, here called multiradial apocentricities. A complex apocentric modification of a kind which we cannot imagine to have been repeated independently, and which is to be designated as uniradial, frequently forms a new centre around which new diverging modifications are produced. With reference to any particular group of forms such a new centre of modification may be termed a *metacentre*, and it is plain that the archecentre of the whole group is a metacentre of the larger group of which the group under consideration is a branch. Thus, for instance, the archecentric condition of any Avian structure is a metacentre of the Sauropsidan stem. A form of apocentricity extremely common and often perplexing may be termed *pseudocentric*; in such a condition there is an apparent simplicity that reveals its secondary nature by some small and apparently meaningless complexity.

Bionomics.

Another group of investigations that seems to play an important part in the future development of the theory of evolution relates to the study of what is known as organic symmetry. The differentiations of structure that characterize animals and plants are being shown to be orderly and definite in many respects; the relations of the various parts to one another and to the whole, the modes of repetition of parts, and the series of changes that occur in groups of repeated parts appear to be to a certain extent inevitable, to depend on the nature of the living material itself and on the necessary conditions of its growth. Closely allied to the study of symmetry is the study of the direct effect of the circumambient media on embryonic young and adult stages of living beings (see Embryology: *Physiology*; Heredity; and Variation and Selection), and a still larger number of observers have added to our knowledge of these. It is impossible here to give even a list of the names of the many observers who in recent times have made empirical study of the effects of growth-forces and of the symmetrical limitations and definitions of growth. It is to be noticed, however, that, even after such phenomena have been properly grouped and designated under Greek names as laws of organic growth, they have not become explanations of the series of facts they correlate. Their importance in the theory of evolution is none the less very great. In the first place, they lessen the number of separate facts to be explained; in the second, they limit the field within which explanation must be sought, since, for instance, if a particular mode of repetition of parts occur in mosses, in flowering-plants, in beetles and in elephants, the seeker of ultimate explanations may exclude from the field of his inquiry all the conditions individual to these different organic forms, and confine himself only to what is common to all of them; that is to say, practically only the living material and its environment. The prosecution of such inquiries is beginning to make unnecessary much ingenious speculation of a kind that was prominent from 1880 to 1900; much futile effort has been wasted in the endeavour to find on Darwinian principles special "selection-values" for phenomena the universality of which places them outside the

possibility of having relations with the particular conditions of particular organisms. On the other hand, many of those who have been specially successful in grouping diverse phenomena under empirical generalizations have erred logically in posing their generalizations against such a *vera causa* as the preservation of favoured individuals and races. The thirty years which followed the publication of the *Origin of Species* were characterized chiefly by anatomical and embryological work; since then there has been no diminution in anatomical and embryological enthusiasm, but many of the continually increasing body of investigators have turned again to bionomical work. Inasmuch as Lamarck attempted to frame a theory of evolution in which the principle of natural selection had no part, the interpretation placed on their work by many bionomical investigators recalls the theories of Lamarck, and the name *Neo-Lamarckism* has been used of such a school of biologists, particularly active in America. The weakness of the Neo-Lamarckian view lies in its interpretation of heredity; its strength lies in its zealous study of the living world and the detection therein of proximate empirical laws, a strength shared by very many bionomical investigations, the authors of which would prefer to call themselves Darwinians, or to leave themselves without sectarian designation.

Biometrics.

Statistical inquiry into the facts of life has long been employed, and in particular Francis Galton, within the Darwinian period, has advocated its employment and developed its methods. Within quite recent years, however, a special school has arisen with the main object of treating the processes of evolution quantitatively. Here it is right to speak of Karl Pearson as a pioneer of notable importance. It has been the habit of biologists to use the terms variation, selection, elimination, correlation and so forth, vaguely; the new school, which has been strongly reinforced from the side of physical science, insists on quantitative measurements of the terms. When the anatomist says that one race is characterized by long heads, another by round heads, the biometricist demands numbers and percentages. When an organ is stated to be variable, the biometricist demands statistics to show the range of the variations and the mode of their distribution. When a character is said to be favoured by natural selection, the biometricist demands investigation of the death-rate of individuals with or without the character. When a character is said to be transmitted, or to be correlated with another character, the biometricist declares the statement valueless without numerical estimations of the inheritance or correlation. The subject is still so new, and its technical methods (see VARIATION AND SELECTION) have as yet spread so little beyond the group which is formulating and defining them, that it is difficult to do more than guess at the importance of the results likely to be gained. Enough, however, has already been done to show the vast importance of the method in grouping and codifying the empirical facts of life, and in so preparing the way for the investigation of ultimate “causes.” The chief pitfall appears to be the tendency to attach more meaning to the results than from their nature they can bear. The ultimate value of numerical inquiries must depend on the equivalence of the units on which they are based. Many of the characters that up to the present have been dealt with by biometrical inquiry are obviously composite. The height or length of the arm of a human being, for instance, is the result of many factors, some inherent, some due to environment, and until these have been sifted out, numerical laws of inheritance or of correlation can have no more than an empirical value. The analysis of composite characters into their indivisible units and statistical inquiry into the behaviour of the units would seem to be a necessary part of biometric investigation, and one to which much further attention will have to be paid.

Segregation.

It is well known that Darwin was deeply impressed by differences in flora and fauna, which seemed to be functions of locality, and not the result of obvious dissimilarities of environment. A.R. Wallace’s studies of island life, and the work of many different observers on local races of animals and plants, marine, fluviatile and terrestrial, have brought about a conception of segregation as apart from differences of environment as being one of the factors in the differentiation of living forms. The segregation may be geographical, or may be the result of preferential mating, or of seasonal mating, and its effects plainly can be made no more of than proximate or empirical laws of differentiation, of great importance in codifying and simplifying the facts to be explained. The minute attention paid by modern systematists to the exact localities of subspecies and races is bringing together a vast store of facts which will throw further light on the problem of segregation, but the difficulty of utilizing these facts is increased by an unfortunate tendency to make locality itself one of the diagnostic characters.

Bathmism.

Consideration of phylogenetic series, especially from the palaeontological side, has led many writers to the conception that there is something of the nature of a growth-force inherent in organisms and tending inevitably towards divergent evolution. It is suggested that even in the absence of modification produced by any

possible Darwinian or Lamarckian factors, that even in a neutral environment, divergent evolution of some kind would have occurred. The conception is necessarily somewhat hazy, but the words *bathmism* and *bathmic Evolution* have been employed by a number of writers for some such conception. Closely connected with it, and probably underlying many of the facts which have led to it, is a more definite group of ideas that may be brought together under the phrase "phylogenetic limitation of variation." In its simplest form, this phrase implies such an obvious fact as that whatever be the future development of, say, existing cockroaches, it will be on lines determined by the present structure of these creatures. In a more general way, the phrase implies that at each successive branching of the tree of life, the branches become more specialized, more defined, and, in a sense, more limited. The full implications of the group of ideas require, and are likely to receive, much attention in the immediate future of biological investigation, but it is enough at present to point out that until the more obvious lines of inquiry have been opened out much more fully, we cannot be in a position to guess at the existence of a residuum, for which such a metaphysical conception as bathmism would serve even as a convenient disguise for ignorance. 37

Almost every side of zoology has contributed to the theory of evolution, but of special importance are the facts and theories associated with the names of Gregor Mendel, A. Weismann and Hugo de Vries. These are discussed under the headings Heredity; Mendelism; and Variation and Selection. It has been a feature of great promise in recent contributions to the theory of evolution, that such contributions have received attention almost directly in proportion to the new methods of observation and the new series of facts with which they have come. Those have found little favour who brought to the debate only formal criticisms or amplifications of the Darwinian arguments, or re-marshallings of the Darwinian facts, however ably conducted. The time has not yet come for the attempt to synthesize the results of the many different and often apparently antagonistic groups of workers. The great work that is going on is the simplification of the facts to be explained by grouping them under empirical laws; and the most general statement relating to these that can yet be made is that no single one of these laws has as yet shown signs of taking rank as a *vera causa* comparable with the Darwinian principle of natural selection.

For evolution in relation to society see Sociology.

References.—Practically, every botanical and zoological publication of recent date has its bearing on evolution. The following are a few of the more general works: Bateson, *Materials for the Study of Variation*; Bunge, *Vitalismus und Mechanismus*; Cope, *Origin of the Fittest*, *Primary Factors of Organic Evolution*, *Darwin's Life and Letters*; H. de Vries, *Species and Varieties and their Origin by Mutation*; Eimer, *Organic Evolution*; Gulick, "Divergent Evolution through Cumulative Segregation," *Jour. Linn. Soc.* xx.; Haacke, *Schöpfung des Menschen*; Mitchell, "Valuation of Zoological Characters," *Trans. Linn. Soc.* viii. pt. 7; Pearson, *Grammar of Science*; Romanes, *Darwin and after Darwin*; Sedgwick, Presidential Address to Section Zoology, *Brit. Ass. Rep. 1899*; Wallace, *Darwinism*; Weismann, *The Germ-Plasm*. Further references of great value will be found in the works of Bateson and Pearson referred to above, and in the annual volumes of the *Zoological Record*, particularly under the head "General Subject."

(P. C. M.)

---

1 This is brought out by F. Lassalle, *Die Philosophie Herakleitos*, p. 126.

2 Zeller says that through this distinction Aristotle first made possible the idea of development.

3 See this well brought out in G.H. Lewes's *Aristotle*, p. 187.

4 Grote calls attention to the contrast between Plato's and Aristotle's way of conceiving the gradations of mind (*Aristotle*, ii. 171).

5 Zeller observes that this scale of decreasing perfection is a necessary consequence of the idea of a transcendent deity.

6 Mélanges de philosophie juive et arabe, p. 225.

7 Yet he leaves open the question whether the Deity has annexed thought to matter as a faculty, or whether it rests on a distinct spiritual principle.

8 Locke half playfully touches on certain monsters, with respect to which it is difficult to determine whether they ought to be called men. (*Essay*, book iii. ch. vi. sect. 26, 27.)

9 A similar coincidence between the teleological and the modern evolutional way of viewing things is to be met with in Locke's account of the use of pain in relation to the preservation of our being (bk. ii. ch. vii. sect. 4).

10 *Philosophy of History* (1893), p. 103, where an interesting sketch of the growth of the idea of progress is to be found.

11 G.H. Lewes points out that Leibnitz is inconsistent in his account of the intelligence of man in relation to that of lower animals, since when answering Locke he no longer regards these as differing in degree only.

12 Both Lewes and du Bois Reymond have brought out the points of contact between Leibnitz's theory of monads and modern biological speculations (*Hist. of Phil.* ii. 287, and *Leibnitzsche Gedanken in der modernen Naturwissenschaft*, p. 23 seq.).

13 For Herder's position in relation to the modern doctrine of evolution see F. von Bärenbach's *Herder als Vorgänger Darwins*, a work which tends to exaggerate the proximity of the two writers.

14 Kant held it probable that other planets besides our earth are inhabited, and that their inhabitants form a scale of beings, their perfection increasing with the distance of the planet which they inhabit from the sun.

15 Kant calls the doctrine of the transmutation of species "a hazardous fancy of the reason." Yet, as Strauss and others have shown, Kant's mind betrayed a decided leaning at times to a more mechanical conception of organic forms as related by descent.

16 Hegel somewhere says that the question of the eternal duration of the world is unanswerable: time as well as space can be predicated of finitudes only.

17 *The Exercitationes de generatione animalium*, which Dr George Ent extracted from him and published in 1651.

18 *De generatione animalium*, lib. ii. cap. x.

19 *De generatione animalium*, lib. ii. cap. iv.

20 "Cependant, pour revenir aux formes ordinaires ou aux âmes matérielles, cette durée qu'il leur faut attribuer, à la place de celle qu'on avoit attribuée aux atomes pourroit faire douter si elles ne vont pas de corps en corps; ce qui seroit la métempsychose, à peu près comme quelques philosophes ont cru la transmission du mouvement et celle des espèces. Mais cette imagination est bien éloignée de la nature des choses. Il n'y a point de tel passage; et c'est ici où les transformations de Messieurs Swammerdam, Malpighi, et Leewenhoek, qui sont des plus excellens observateurs de notre tems, sont venues à mon secours et m'ont fait admettre plus aisément, que l'animal, et toute autre substance organisée ne commence point lorsque nous le croyons, et que sa génération apparente n'est qu'un développement et une espèce d'augmentation. Aussi ai-je remarqué que l'auteur de la *Recherche de la vérité*, M. Regis, M. Hartsœker, et d'autres habiles hommes n'ont pas été fort éloignés de ce sentiment." Leibnitz, *Système nouveau de la nature* (1695). The doctrine of "Emboîtement" is contained in the *Considérations sur le principe de vie* (1705); the preface to the *Théodicée* (1710); and the *Principes de la nature et de la grâce* (§ 6) (1718).

21 "Il est vrai que la pensée la plus raisonnable et la plus conforme à l'expérience sur cette question très difficile de la formation du fœtus; c'est que les enfans sont déjà presque tout formés avant même l'action par laquelle ils sont conçus; et que leurs mères ne font que leur donner l'accroissement ordinaire dans le temps de la grossesse." *De la recherche de la vérité*, livre ii. chap. vii. p. 334 (7th ed., 1721).

22 *Considérations sur les corps organisés*, chap. x.

23 Bonnet had the courage of his opinions, and in the *Palingénésie philosophique*, part vi. chap, iv., he develops a hypothesis which he terms "évolution naturelle"; and which, making allowance for his peculiar views of the nature of generation, bears no small resemblance to what is understood by "evolution" at the present day:—

"Si la volonté divine a créé par un seul Acte l'Universalité des êtres, d'où venoient ces plantes et ces animaux dont Moyse nous décrit la Production au troisième et au cinquième jour du renouvellement de notre monde?

"Abuserois-je de la liberté de conjectures si je disois, que les Plantes et les Animaux qui existent aujourd'hui sont parvenus par une sorte d'évolution naturelle des Êtres organisés qui peuplaient ce premier Monde, sorti immédiatement des Mains du Créateur?...

"Ne supposons que trois révolutions. La Terre vient de sortir des Mains du Créateur. Des causes préparées par sa Sagesse font développer de toutes parts les Germes. Les Êtres organisés commencent à jouir de l'existence. Ils étoient probablement alors bien différens de ce qu'ils sont aujourd'hui. Ils l'étoient autant que ce premier Monde différoit de celui que nous habitons. Nous manquons de moyens pour juger de ces dissemblances, et peut-être que le plus habile Naturaliste qui auroit été placé dans ce premier Monde y auroit entièrement méconnu nos Plantes et nos Animaux."

24 "Ce mot (germe) ne désignera pas seulement un corps organisé *réduit en petit*; il désignera encore toute espèce de *préformation originelle dont un Tout organique peut résulter comme de*

son principe immédiat."—Palingénésie philosophique, part. x. chap. ii.

25 "M. Cuvier considérant que tous les êtres organisés sont dérivés de parens, et ne voyant dans la nature aucune force capable de produire l'organisation, croyait à la pré-existence des germes; non pas à la pré-existence d'un être tout formé, puisqu'il est bien évident que ce n'est que par des développemens successifs que l'être acquiert sa forme; mais, si l'on peut s'exprimer ainsi, à la pré-existence du radical de l'être, radical qui existe avant que la série des évolutions ne commence, et qui remonte certainement, suivant la belle observation de Bonnet, à plusieurs générations."—Laurillard, *Éloge de Cuvier*, note 12.

26 *Histoire naturelle*, tom. ii. ed. ii. (1750), p. 350.

27 *Ibid.* p. 351.

28 See particularly Buffon, l.c. p. 41.

29 As Buffon has well said:—"L'idée de ramener l'explication de tous les phénomènes à des principes mécaniques est assurément grande et belle, ce pas est le plus hardi qu'on peut faire en philosophie, et c'est Descartes qui l'a fait."—l.c. p. 50.

30 *Principes de la philosophie*, Troisième partie, § 45.

31 *Ethices*, Pars tertia, Praefatio.

32 *Système de la Nature. Essai sur la formation des corps organisés*, 1751, xiv.

33 *Considérations philosophiques sur la gradation naturelle des formes de l'être; ou les essais de la nature qui apprend à faire l'homme* (1768).

34 *Recherches sur les causes des principaux faits physiques*, par J.B. Lamarck. Paris. Seconde année de la République. In the preface, Lamarck says that the work was written in 1776, and presented to the Academy in 1780; but it was not published before 1794, and at that time it presumably expressed Lamarck's mature views. It would be interesting to know what brought about the change of opinion manifested in the *Recherches sur l'organisation des corps vivants*, published only seven years later.

35 See the "Historical Sketch" prefixed to the last edition of the *Origin of Species*.

36 *First Principles and Principles of Biology* (1860-1864).

37 *Generelle Morphologie* (1866).

38 "Il s'agit donc de prouver que la série qui constitute l'échelle animale réside essentiellement dans la distribution des masses principals qui la composent et non dans celle des espèces ni même toujours dans celle des genres."—*Phil. zoologique*, chap. v.

39 *Philosophie zoologique*, première partie, chap. iii.

40 "Entwurf einer Darstellung der zwischen dem Embryozustände der höheren Thiere und dem per manenten der niederen stattfindenden Parallele," *Beyträge zur vergleichenden Anatomie*, Bd. ii. 1811.

EVORA, the capital of an administrative district in the province of Alemtejo, Portugal; 72 m. E. by S. of Lisbon, on the Casa Branca-Evora-Elvas railway. Pop. (1900) 16,020. Evora occupies a fertile valley enclosed by low hills. It is surrounded by ramparts flanked with towers, and is further defended by two forts; but the neglected condition of these, combined with the narrow arcaded streets and crumbling walls of Roman or Moorish masonry, gives the city an appearance corresponding with its real antiquity. Evora is the see of an archbishop, and has several churches, convents and hospitals, barracks, a diocesan school and a museum. A university, founded in 1550, was abolished on the expulsion of the Jesuits in the 18th century. The cathedral, originally a Romanesque building erected 1186-1204, was restored in Gothic style about 1400; its richly decorated chancel was added in 1761. The church of São Francisco (1507-1525) is a good example of the blended Moorish and Gothic architecture known as Manoellian. The art gallery, formerly the archbishop's palace, contains a collection of Portuguese and early Flemish paintings. An ancient tower, and the so-called aqueduct of Sertorius, 9 m. long, have been partly demolished to make room for the market-square, in which one of the largest fairs in Portugal is held at midsummer. Both tower and aqueduct were long believed to have been of Roman origin, but are now known to have been constructed about 1540-1555 in the reign of John III., at the instance of an antiquary named Resende. The aqueduct was probably constructed on the site of the old Roman one. A small Roman temple is used as a public library; it is usually known as the

temple of Diana, a name for which no valid authority exists. Evora is of little commercial importance, except as an agricultural centre, but its neighbourhood is famous for its mules and abounds in cork-woods; there are also mines of iron, copper, and asbestos and marble quarries.

Under its original name of *Ebora*, the city was from 80 to 72 B.C. the headquarters of Sertorius, and it long remained an important Roman military station. It was called *Liberalitas Juliae* on account of certain municipal privileges bestowed on it by Julius Caesar (*c.* 100-44 B.C.). Its bishopric, founded in the 5th century, was raised to an archbishopric in the 16th. In 712 Evora was conquered by the Moors, who named it *Jabura*; and it was only retaken in 1166. From 1663 to 1665 it was held by the Spaniards. In 1832 Dom Miguel, retreating before Dom Pedro, took refuge in Evora; and here was signed the convention of Evora, by which he was banished. (See PORTUGAL.)

The administrative district of Evora coincides with the central part of Alemtejo (*q.v.*); pop. (1900) 128,062; area, 2856 sq. m.

ÉVREUX, a town of north-western France, capital of the department of Eure, 67 m. W.N.W. of Paris on the Western railway to Cherbourg. Pop. (1906) town, 13,773; commune, 18,971. Situated in the pleasant valley of the Iton, arms of which traverse it, the town, on the south, slopes up toward the public gardens and the railway station. It is the seat of a bishop, and its cathedral is one of the largest and finest in France. Part of the lower portion of the nave dates from the 11th century; the west façade with its two ungainly towers is, for the most part, the work of the late Renaissance, and various styles of the intervening period are represented in the rest of the church. A thorough restoration was completed in 1896. The elaborate north transept and portal are in the flamboyant Gothic; the choir, the finest part of the interior, is in an earlier Gothic style. Cardinal de la Balue, bishop of Évreux in the latter half of the 15th century, constructed the octagonal central tower, with its elegant spire; to him is also due the Lady chapel, which is remarkable for some finely preserved stained glass. Two rose windows in the transepts and the carved wooden screens of the side chapels are masterpieces of 16th-century workmanship. The episcopal palace, a building of the 15th century, adjoins the south side of the cathedral. An interesting belfry, facing the handsome modern town hall, dates from the 15th century. The church of St Taurin, in part Romanesque, has a choir of the 14th century and other portions of later date; it contains the shrine of St Taurin, a work of the 13th century. At Vieil Évreux, 3½ m. south-east of the town, the remains of a Roman theatre, a palace, baths and an aqueduct have been discovered, as well as various relics which are now deposited in the museum of Évreux. Évreux is the seat of a prefect, a court of assizes, of tribunals of first instance and commerce, a chamber of commerce and a board of trade arbitrators, and has a branch of the Bank of France, a lycée and training colleges for teachers. The making of ticking, boots and shoes, agricultural implements and gas motors, and metal-founding and bleaching are carried on.

Vieil-Évreux (*Mediolanum Aulercorum*) was the capital of the Gallic tribe of the *Aulerci Eburovices* and a flourishing city during the Gallo-Roman period. Its bishopric dates from the 4th century.

The first family of the counts of Évreux which is known was descended from an illegitimate son of Richard I., duke of Normandy, and became extinct in the male line with the death of Count William in 1118. The countship passed in right of Agnes, William's sister, wife of Simon de Montfort-l'Amaury (d. 1087) to the house of the lords of Montfort-l'Amaury. Amaury III. of Montfort ceded it in 1200 to King Philip Augustus. Philip the Fair presented it (1307) to his brother Louis, for whose benefit Philip the Long raised the countship of Évreux into a peerage of France (1317). Philip of Évreux, son of Louis, became king of Navarre by his marriage with Jeanne, daughter of Louis the Headstrong (Hutin), and their son Charles the Bad and their grandson Charles the Noble were also kings of Navarre. The latter ceded his countships of Évreux, Champagne and Brie to King Charles VI. (1404). In 1427 the countship of Évreux was bestowed by King Charles VII. on Sir John Stuart of Darnley (*c.* 1365-1429), the commander of his Scottish bodyguard, who in 1423 had received the seigniory of Aubigny and in February 1427/8 was granted the right to quarter the royal arms of France for his victories over the English (see Lady Elizabeth Cust, *Account of the Stuarts*

of Aubigny in France, 1422-1672, 1891). On Stuart's death (before Orleans during an attack on an English convoy) the countship reverted to the crown. It was again temporarily alienated (1569-1584) as an appanage for Francis, duke of Anjou, and in 1651 was finally made over to Frédéric Maurice de la Tour d'Auvergne, duke of Bouillon, in exchange for the principality of Sedan.

EWALD, GEORG HEINRICH AUGUST VON (1803-1875), German Orientalist and theologian, was born on the 16th of November 1803 at Göttingen, where his father was a linen-weaver. In 1815 he was sent to the gymnasium, and in 1820 he entered the university of his native town, where under J.G. Eichhorn and T.C. Tychsen he devoted himself specially to the study of Oriental languages. At the close of his academical career in 1823 he was appointed to a mastership in the gymnasium at Wolfenbüttel, and made a study of the Oriental manuscripts in the Wolfenbüttel library. But in the spring of 1824 he was recalled to Göttingen as *repetent*, or theological tutor, and in 1827 (the year of Eichhorn's death) he became professor *extraordinarius* in philosophy and lecturer in Old Testament exegesis. In 1831 he was promoted to the position of professor *ordinarius* in philosophy; in 1833 he became a member of the Royal Scientific Society, and in 1835, after Tychsen's death, he entered the faculty of theology, taking the chair of Oriental languages.

Two years later occurred the first important episode in his studious life. In 1837, on the 18th of November, along with six of his colleagues he signed a formal protest against the action of King Ernst August (duke of Cumberland) in abolishing the liberal constitution of 1833, which had been granted to the Hanoverians by his predecessor William IV. This bold procedure of the seven professors led to their speedy expulsion from the university (14th December). Early in 1838 Ewald received a call to Tübingen, and there for upwards of ten years he held a chair as professor *ordinarius*, first in philosophy and afterwards, from 1841, in theology. To this period belong some of his most important works, and also the commencement of his bitter feud with F.C. Baur and the Tübingen school. In 1847, "the great shipwreck-year in Germany," as he has called it, he was invited back to Göttingen on honourable terms—the liberal constitution having been restored. He gladly accepted the invitation. In 1862-1863 he took an active part in a movement for reform within the Hanoverian Church, and he was a member of the synod which passed the new constitution. He had an important share also in the formation of the Protestantenverein, or Protestant association, in September 1863. But the chief crisis in his life arose out of the political events of 1866. His loyalty to King George (son of Ernst August) would not permit him to take the oath of allegiance to the victorious king of Prussia, and he was therefore placed on the retired list, though with the full amount of his salary as pension. Perhaps even this degree of severity might have been held by the Prussian authorities to be unnecessary, had Ewald been less exasperating in his language. The violent tone of some of his printed manifestoes about this time, especially of his *Lob des Königs u. des Volkes*, led to his being deprived of the *venia legendi* (1868) and also to a criminal process, which, however, resulted in his acquittal (May 1869). Then, and on two subsequent occasions, he was returned by the city of Hanover as a member of the North German and German parliaments. In June 1874 he was found guilty of a libel on Prince Bismarck, whom he had compared to Frederick II. in "his unrighteous war with Austria and his ruination of religion and morality," to Napoleon III. in his way of "picking out the best time possible for robbery and plunder." For this offence he was sentenced to undergo three weeks' imprisonment. He died in his 72nd year of heart disease on the 4th of May 1875.

Ewald was no common man. In his public life he displayed many noble characteristics,—perfect simplicity and sincerity, intense moral earnestness, sturdy independence, absolute fearlessness. As a teacher he had a remarkable power of kindling enthusiasm; and he sent out many distinguished pupils, among whom may be mentioned Hitzig, Schrader, Nöldeke, Diestel and Dillmann. His disciples were not all of one school, but many eminent scholars who apparently have been untouched by his influence have in fact developed some of the many ideas which he suggested. His numerous writings, from 1823 onwards, were the reservoirs in which the entire energy of a life was stored. His *Hebrew Grammar* inaugurated a new era in biblical philology. All subsequent works in that department have been avowedly based on his, and to him will always belong the honour of having been, as Hitzig has called him, "the second founder of the science of the Hebrew language." As an exegete and biblical

critic no less than as a grammarian he has left his abiding mark. His *Geschichte des Volkes Israël*, the result of thirty years' labour, was epoch-making in that branch of research. While in every line it bears the marks of intense individuality, it is at the same time a product highly characteristic of the age, and even of the decade, in which it appeared. If it is obviously the outcome of immense learning on the part of its author, it is no less manifestly the result of the speculations and researches of many laborious predecessors in all departments of history, theology and philosophy. Taking up the idea of a divine education of the human race, which Lessing and Herder had made so familiar to the modern mind, and firmly believing that to each of the leading nations of antiquity a special task had been providentially assigned, Ewald felt no difficulty about Israel's place in universal history, or about the problem which that race had been called upon to solve. The history of Israel, according to him, is simply the history of the manner in which the one true religion really and truly came into the possession of mankind. Other nations, indeed, had attempted the highest problems in religion; but Israel alone, in the providence of God, had succeeded, for Israel alone had been inspired. Such is the supreme meaning of that national history which began with the exodus and culminated (at the same time virtually terminating) in the appearing of Christ. The historical interval that separated these two events is treated as naturally dividing itself into three great periods,—those of Moses, David and Ezra. The periods are externally indicated by the successive names by which the chosen people were called—Hebrews, Israelites, Jews. The events prior to the exodus are relegated by Ewald to a preliminary chapter of primitive history; and the events of the apostolic and post-apostolic age are treated as a kind of appendix. The entire construction of the history is based, as has already been said, on a critical examination and chronological arrangement of the available documents. So far as the results of criticism are still uncertain with regard to the age and authorship of any of these, Ewald's conclusions must of course be regarded as unsatisfactory. But his work remains a storehouse of learning and is increasingly recognized as a work of rare genius.

Of his works the more important are:—*Die Composition der Genesis kritisch untersucht* (1823), an acute and able attempt to account for the use of the two names of God without recourse to the document-hypothesis; he was not himself, however, permanently convinced by it; *De metris carminum Arabicorum* (1825); *Das Hohelied Salomo's übersetzt u. erklärt* (1826; 3rd ed., 1866); *Kritische Grammatik der hebr. Sprache* (1827)—this afterwards became the *Ausführliches Lehrbuch der hebr. Sprache* (8th ed., 1870); and it was followed by the *Hebr. Sprachlehre für Anfänger* (4th ed., 1874); *Über einige ältere Sanskritmetra* (1827); *Liber Vakedii de Mesopotamiae expugnatae historia* (1827); *Commentarius in Apocalypsin Johannis* (1828); *Abhandlungen zur biblischen u. orientalischen Literatur* (1832); *Grammatica critica linguae Arabicae* (1831-1833); *Die poetischen Bücher des alten Bundes* (1835-1837, 3rd ed., 1866-1867); *Die Propheten des alten Bundes* (1840-1841, 2nd ed., 1867-1868); *Geschichte des Volkes Israël* (1843-1859, 3rd ed., 1864-1868); *Alterthümer Israels* (1848); *Die drei ersten Evangelien übersetzt u. erklärt* (1850); *Über das äthiopische Buch Henoch* (1854); *Die Sendschreiben des Apostels Paulus übersetzt u. erklärt* (1857); *Die Johanneischen Schriften übersetzt u. erklärt* (1861-1862); *Über das vierte Esrabuch* (1863); *Sieben Sendschreiben des neuen Bundes* (1870); *Das Sendschreiben an die Hebräer u. Jakobos' Rundschreiben* (1870); *Die Lehre der Bibel von Gott, oder Theologie des alten u. neuen Bundes* (1871-1875). The *Jahrbücher der biblischen Wissenschaft* (1849-1865) were edited, and for the most part written, by him. He was the chief promoter of the *Zeitschrift für die Kunde des Morgenlandes*, begun in 1837; and he frequently contributed on various subjects to the *Götting. gelehrte Anzeigen*. He was also the author of many pamphlets of an occasional character.

The following have been translated into English:—*Hebrew Grammar*, by John Nicholson (from 2nd German edition) (London 1836); *Introductory Hebrew Grammar* (from 3rd German edition) (London, 1870); *History of Israel*, 5 vols. (corresponding to vols. i.-iv. of the German), by Russell Martineau and J. Estlin Carpenter (London, 1867-1874); *Antiquities of Israel*, by H.S. Solly (London, 1876); *Commentary on the Prophets of the Old Testament*, by J. Frederick Smith (2 vols., London, 1876-1877); *Isaiah the Prophet*, chaps. i.-xxxiii., by O. Glover (London, 1869); *Life of Jesus Christ*, also by O. Glover (London, 1865).

See the article in Herzog-Hauck; T. Witton Davies, *Heinrich Ewald* (1903); and cf. T.K. Cheyne, *Founders of Old Testament Criticism* (1893); F. Lichtenberger, *History of German Theology in the Nineteenth Century* (1889).

EWALD, JOHANNES (1743-1781), the greatest lyrical poet of Denmark, was the son of a melancholy and sickly chaplain at Copenhagen, where he was born on the 18th of November 1743. At the age of eleven he was sent to school at Schleswig, his father's birthplace, and returned to the capital only to enter the university in 1758. His father was by that time dead, and in his mother, a frivolous and foolish woman, he found neither sympathy nor moral support. At fifteen he fell passionately in love with Arense Hulegaard, a girl whose father afterwards married the poet's mother; and the romantic boy resolved on various modes of making himself admired by the young lady. He began to learn Abyssinian, for the purpose of going out as a missionary to Africa, but this scheme was soon given up, and he persuaded a brother, four years older than himself, to run away that they might enlist as hussars in the Prussian army. They managed to reach Hamburg just when the Seven Years' War was commencing and were allowed to enter a regiment. But the elder brother soon got tired and ran away, while the poet, after a series of extraordinary adventures, deserted to the Austrian army, where from being drummer he rose to being sergeant, and was only not made an officer because he was a Protestant. In 1760 he was weary of a soldier's life and deserted again, getting safe back to Denmark. For the next two years he worked with great diligence at the university, but the Arense for whom he had gone through so much hardship and taken so much pains married another man almost immediately after Ewald's final and very successful examination. The disappointment was one from which he never recovered, but his own weakness of will was largely to blame for it. He plunged into dissipation of every kind, and gave his serious thoughts only to poetry.

In 1763 his first work, a perfunctory dissertation, *De pyrologia sacra*, first saw the light. In 1764 he made a considerable success with a short prose story in the popular manner of Sneedorf, *Lykkens Tempel* (The Temple of Fortune), which was translated into German and Icelandic. On the death of Frederick V., however, Ewald first appeared prominently as a poet; he published in 1766 three *Elegies* over the dead king, which were received with universal acclamation, and of which one, at least, is a veritable masterpiece. But his dramatic poem *Adam og Eva* (Adam and Eve), by far the finest imaginative work produced in Denmark up to that time, was rejected by the Society of Arts in 1767 and was not published until 1769. At the latter date, however, its merits were perceived. In 1770 Ewald attained success with *Philet*, a narrative and lyrical poem, and still more with his splendid *Rolf Krage*, the first original Danish tragedy. For the next ten years Ewald was occupied in producing one brilliant poetical work after another, in rapid succession. In 1771 he published *De brutale Klappers* (The Brutal Clappers), a tragi-comedy or parody satirizing the dispute then raging between the critics and the manager of the Royal Theatre; in 1772 he translated from the German the lyrical drama of *Philemon and Baucis*, and brought out his versified comedy of *Harlequin Patriot*, a satire on the passion for political scribbling created by Struensee's introduction of the liberty of the press. In 1773 he published *Pebersvendene* (Old Bachelors), a prose comedy. In 1771 he had already collected some of his lyrical poems under the title of *Adskilligt af Johannes Ewald* (Miscellanies). In 1774 appeared the heroic opera of *Balder's Död* (Balder's Death), and in 1779 the finest of his works, the lyrical drama *Fiskerne* (The Fishers), which contains the Danish National Song, "King Christian stood by the high Mast," his most famous lyric. In the two poems last mentioned, however, Ewald passed beyond contemporary taste, and these great works, the pride of Danish literature, were coldly received. But while the new poetry was slowly winning its way into popular esteem, the poet did not lack admirers, and at the head of these he founded in 1775 the Danish Literary Society, a body which became influential, and which made the study of Ewald a cultus. But the poet's health had broken; when he was writing *Rolf Krage* he was already an inmate of the consumptive hospital, and when he seemed to be recovering, his health was shattered again by a night spent in the frosty streets. He embittered his existence by the recklessness of his private life, and finally, through a fall from a horse, he ended by becoming a complete invalid. His last ten years were full of acute suffering; his mother treated him with cruelty, his family with neglect, and but few even of his friends showed any manliness or generosity towards him. In 1774 he was placed in the house of an inspector of fisheries at Rungsted, where Anna Hedevig Jacobsen, the daughter of the house, tended the wasted poet with infinite tenderness and skill. He stayed in this house for three years, and wrote there some of his finest later lyrics. Meanwhile he had fallen deeply in love with the charming solace of his sufferings and won her consent to a marriage. This step, however, was prevented by his family, who roughly removed him to their own keeping near Kronborg. Here he was treated so infamously that he insisted on being taken back to Copenhagen in 1777, where he found an older, but no less tender nurse, in Ane Kirstine Skou. Here he wrote *Fiskerne* with his imagination full of the familiar shore at Hornbaek, near Rungsted. In 1780 he was a little better, and managed to be present at the theatre at the first performance of his poem. But this excitement hastened his end, and after months of

extreme agony he died on the 17th of March 1781, and was carried to the grave by a large assembly of his admirers, since he was now just recognized by the public for the first time as the greatest national poet. Among his papers were found fragments of three dramas, two on old Scandinavian subjects, entitled *Frode* and *Helgo*, and the third a tragedy on the story of *Hamlet*, which he meant to treat in a way wholly distinct from Shakespeare's.

Ewald belongs to the race of poetical reformers who appeared in all countries of Europe at the end of the 18th century; but it is interesting to observe that in point of time he preceded all of them. He was born six years earlier than Goethe and Alfieri, sixteen years before Schiller, nine years before André Chénier, and twenty-seven years earlier than Wordsworth, but he did for Denmark what each of these poets did for his own country. Ewald found Danish literature given over to tasteless rhetoric, and without art or vigour. He introduced vivacity of style, freshness and brevity of form, and an imaginative study of nature which was then unprecedented. But perhaps his greatest claim to notice is the fact that he was the first person to call the attention of the Scandinavian peoples to the treasuries of their ancient history and mythology, and to suggest the use of these in imaginative writing. With a colouring more distinctly modern than that of Collins and Gray, his lyrics yet resemble the odes of these his English contemporaries more closely than those of any continental poet; from another point of view his ballads remind us of those of Schiller, which they preceded. His dramas, which had an immense influence on the Danish stage, are now chiefly of antiquarian interest, with the exception of "The Fishers," a work that must always live as a great national poem. In personal character and in fate Ewald seems to have been not unlike Heinrich Heine.

The first collected edition of Ewald's works began to appear in his lifetime. It is in four volumes, 1780-1784. His works have constantly been reprinted, but the standard edition is that by Liebenberg, in 8 vols., 1850-1855. The best biographies of him are those by C. Molbech (1831), Hammerich (1860) and Andreas Dolleris (1900).

(E. G.)

EWART, WILLIAM (1798-1869), English politician, was born in Liverpool on the 1st of May 1798. He was educated at Eton and Christ Church, Oxford, gaining the Newdigate prize for English verse. He was called to the bar at the Middle Temple in 1827, and the next year entered parliament for the borough of Bletchingley in Surrey. He subsequently sat for Liverpool from 1830 to 1837, for Wigan in 1839, and for Dumfries Burghs from 1841 until his retirement from public life in 1868. He died at Broadleas, near Devizes, on the 23rd of January 1869, Ewart, who was an advanced liberal in politics, was responsible during his long political career for many useful measures. In 1834 he carried a bill for the abolition of hanging in chains, and in 1837 he was successful in getting an act passed for abolishing capital punishment for cattle-stealing and other offences. In 1850 he carried a bill for establishing free libraries supported out of the rates, and in 1864 he was instrumental in getting an act passed for legalizing the use of the metric system of weights and measures. He was always a strong advocate for the abolition of capital punishment, and on his motion in 1864 a select committee was appointed to consider the subject. Other reforms which he advocated and which have since been carried out were an annual statement on education, and the examination of candidates for the civil service and army.

EWE, a group of Negro peoples of the Slave Coast, West Africa. By the natives their country is called *Ewe-me*, "Land of the Ewe." The Ewe family forms five linguistic groups: the Anlo or Anglawa on the Gold Coast frontier, the Krepi of Anfueh speech, the Jeji, the Dahomeyans and the Mahi.

See further Dahomey, and A.B. Ellis, *The Ewe-Speaking Peoples of the Slave Coast* ... (London, 1890).

EWELL, RICHARD STODDERT (1817-1872), American soldier, lieutenant-general in the Confederate army, was born in Georgetown, now a part of Washington, D.C., on the 2nd of February 1817, and graduated at West Point in 1840. As a cavalry officer he saw much active service in the Mexican War and later in Indian warfare in New Mexico. He resigned his commission at the outbreak of the Civil War, and entered the Confederate service. He commanded a brigade in the first Bull Run campaign, and a division in the famous Valley Campaign of “Stonewall” Jackson, to whom he was next in rank. At Cross Keys he was in command of the forces which defeated General Frémont. Ewell’s division served with Jackson in the Seven Days and in the campaign of Second Bull Run. At the action of Groveton Ewell lost a leg, but did not on that account retire from active service, though other generals led his men in the sanguinary battles of Antietam (where they lost 47% of their numbers) and Fredericksburg. After the death of “Stonewall” Jackson, Ewell was promoted lieutenant-general and appointed to command the 2nd Corps, with which he had served from the beginning of the Valley Campaign. His promotion set aside General J.E.B. Stuart, the temporary commander of Jackson’s corps; that Ewell, crippled as he was, was preferred to the brilliant cavalry leader was a marked testimony to his sterling qualities as a soldier. The invasion of Pennsylvania soon followed, Ewell’s corps leading the advance of Lee’s army. A federal force was skilfully cut off and destroyed near Winchester, Va., and Ewell’s corps then raided Maryland and southern Pennsylvania unchecked. At the battle of Gettysburg, the 2nd Corps decided the fighting of the first day in favour of the Confederates, driving the enemy before them; on the second day it fought a desperate action on Lee’s left wing. Ewell took part in the closing operations of 1863 and in all the battles of the Wilderness and Petersburg campaigns. In the final campaign of 1865 he and the remnant of his corps were cut off and forced to surrender at Sailor’s Creek, a few days before his chief capitulated to Grant at Appomattox. After the war General Ewell lived in retirement. He died near Spring Hill, Maury County, Tennessee, on the 25th of January 1872.

EWING, ALEXANDER (1814-1873), Scottish divine, was born of an old Highland family in Aberdeen on the 25th of March 1814. In October 1838 he was admitted to deacon’s orders, and after his return from Italy he took charge of the episcopal congregation at Forres, and was ordained a presbyter in the autumn of 1841. In 1846 he was elected first bishop of the newly restored diocese of Argyll and the Isles, the duties of which position he discharged till his death on the 22nd of May 1873. In 1851 he received the degree of D.C.L. from the university of Oxford. Though hampered by a delicate bodily constitution, he worked in a spirit of buoyant cheerfulness. By the charm of his personal manner and his catholic sympathies he gradually attained a prominent position. In theological discussion he contended for the exercise of a wide tolerance, and attached little importance to ecclesiastical authority and organization. His own theological position had close affinity with that of Thomas Erskine of Linlathen and Frederick Denison Maurice; but his opinions were the fruit of his own meditation, and were coloured by his own individuality. The trend of his teaching is only to be gathered from fragmentary publications—letters to the newspapers, pamphlets, special sermons, essays contributed to the series of *Present Day Papers*, of which he was the editor, and a volume of sermons entitled *Revelation considered as Light*.

Besides his strictly theological writings, Ewing was the author of the *Cathedral or Abbey Church of Iona* (1865), the first part of which contains drawings and descriptive letterpress of the ruins, and the second a history of the early Celtic church and the mission of St Columba. See *Memoir of Alexander Ewing, D.C.L.*, by A.J. Ross (1877).

EWING, JULIANA HORATIA ORR (1841-1885), English writer of books for children, daughter of the Rev. Alfred Gatty and of Margaret Gatty (*q.v.*), was born at Ecclesfield, Yorkshire, in 1841. One of a large family, she was accustomed to act as nursery story-teller to her brothers and sisters, and her brother Alfred Scott Gatty provided music to accompany her plays. She was well educated in classics and modern languages, and at an early age began to publish verses, being a contributor to *Aunt Judy’s Magazine*, which her mother

started in 1866. *The Land of Lost Toys* and many other of Juliana's stories appeared in this magazine. In 1867 she married Major Alexander Ewing, himself an author, and the composer of the well-known hymn "Jerusalem the Golden." From this time until her death (13th May 1885), previously to which she had been a constant invalid, Mrs Ewing produced a number of charming children's stories. The best of these are: *The Brownies* (1870), *A Flat-Iron for a Farthing* (1873), *Lob-lie-by the Fire* (1874), *The Story of a Short Life* (1885) and *Jackanapes* (1884), the two last-named, in particular, obtaining great success; among others may be mentioned *Mrs Over-the-Way's Remembrances* (1869), *Six to Sixteen, Jan of the Windmill* (1876), *A Great Emergency* (1877), *We and the World* (1881), *Old-Fashioned Fairy Tales, Brothers of Pity* (1882), *The Doll's Wash*, *Master Fritz*, *Our Garden*, *A Soldier's Children*, *Three Little Nest-Birds*, *A Week Spent in a Glass-House*, *A Sweet Little Dear*, and *Blue-Red* (1883). Many of these were published by the S.P.C.K. Simple and unaffected in style, and sound and wholesome in matter, with quiet touches of humour and bright sketches of scenery and character, Mrs Ewing's best stories have never been surpassed in the style of literature to which they belong.

EWING, THOMAS (1789-1871), American lawyer and statesman, was born near the present West Liberty, West Virginia, on the 28th of December 1789. His father, George Ewing, settled at Lancaster, Fairfield county, Ohio, in 1792. Thomas graduated at Ohio University, Athens, Ohio, in 1815, and in August 1816 was admitted to the bar at Lancaster, where he won high rank as an advocate. He was a Whig member of the United States senate in 1831-1837, and as such took a prominent part in the legislative struggle over the United States Bank, whose rechartering he favoured and which he resolutely defended against President Jackson's attack, opposing in able speeches the withdrawal of deposits and Secretary Woodbury's "Specie Circular" of 1836. In March 1841 he became secretary of the treasury in President W.H. Harrison's cabinet. When, however, after President Tyler's accession, the relations between the President and the Whig Party became strained, he retired (September 1841) and was succeeded by Walter Forward (1786-1852). Subsequently from March 1849 to July 1850 he was a member of President Taylor's cabinet as the first secretary of the newly established department of the interior. He thoroughly organized the department, and in his able annual report advocated the construction by government aid of a railroad to the Pacific Coast. In 1850-1851 he filled the unexpired term of Thomas Corwin in the U.S. Senate, strenuously opposing Clay's compromise measures and advocating the abolition of slavery in the District of Columbia. He was subsequently a delegate to the Peace Congress in 1861, and was a loyal supporter of President Lincoln's war policy. He died at Lancaster, Ohio, on the 26th of October 1871.

His daughter was the wife of General William T. Sherman. His son, Hugh Boyle Ewing (1826-1905), served throughout the Civil War in the Federal armies, rising from the rank of colonel (1861) to that of brigadier-general (1862) and brevet major-general (1865), and commanding brigades at Antietam and Vicksburg and a division at Chickamauga; and was minister of the United States to the Netherlands in 1866-1870. Another son, Thomas Ewing (1829-1896), studied at Brown University in 1852-1854 (in 1894, by a special vote, he was placed on the list of graduates in the class of 1856); he was a lawyer and a free-state politician in Kansas in 1857-1861, and was the first chief-justice of the Kansas supreme court (1861-1862). In the Civil War he attained the rank of brigadier-general (March 1863) and received the brevet of major-general (1865). He was subsequently a representative in Congress from Ohio in 1877-1881; and from 1882 to 1896 practised law in New York City, where he was long one of the recognized leaders of the bar.

EXAMINATIONS. The term "examination" (*i.e.* inspecting, weighing and testing; from Lat. *examen*, the tongue of a balance) is used in the following article to denote a systematic test of knowledge, and of either special or general capacity or fitness, carried out under the authority of some public body.

1. *History.*—The oldest known system of examinations in history is that used in China for the selection of officers for the public service (*c.* 1115 B.C.), and the periodic tests which they undergo after entry (*c.* 2200 B.C.). See China; also W.A.P. Martin, *The Lore of Cathay* (1901), p. 311 et seq.; T.L. Bullock, "Competitive Examinations in China" (*Nineteenth Century*, July 1894); and Étienne Zi, *Pratique des examens littéraires en Chine* (Shanghai, 1894). The abolition of this system was announced in 1906, and, as a partial substitute, it was decided to hold an annual examination in Peking of Chinese graduates educated abroad (*Times*, 22nd of October 1906).

The majority of examinations in western countries are derived from the university examinations of the middle ages. The first universities of Europe consisted of corporations of teachers and of students analogous to the trade gilds and merchant gilds of the time. In the trade gilds there were apprentices, companions, and masters. No one was admitted to mastership until he had served his apprenticeship (*q.v.*), nor, as a rule, until he had shown that he could accomplish a piece of work to the satisfaction of the gild.

The object of the universities was to teach; and to the three classes established by the gild correspond roughly the *scholar*, the *bachelor* or pupil-teacher (see Rashdall i. 209, note 2, and 221, note 5), and the *master* or *doctor* (two terms at first equivalent) who, having served his apprenticeship and passed a definite technical test, had received permission to teach. The early universities of Europe, being under the same religious authority and animated by the same philosophy, resembled each other very closely in curriculum and general organization and examinations, and by the authority of the emperor, or of the pope in most cases, the permission to teach granted by one university was valid in all (*jus ubicunque docendi*).

The earliest university examinations of which a description is available are those in civil and in canon law held at Bologna at a period subsequent to 1219. The student was admitted without examination as bachelor after from four to six years' study, and after from six to eight years' study became qualified as a candidate for the doctorate. He might obtain the doctorate in both branches of law in ten years (Rashdall i. 221-222).

The doctoral examination at Bologna in the 13th-14th centuries consisted of two parts—a private examination which was the real test, and a public one of a ceremonial character (*conventus*). The candidate first took an "oath that he had complied with all the statutable conditions, that he would give no more than the statutable fees or entertainments to the rector himself, the doctor or his fellow-students, and that he would obey the rector." He was then presented to the archdeacon of Bologna by one or more doctors, who were required to have satisfied themselves of his fitness by private examination. On the morning of the examination, after attending mass, he was assigned by one of the doctors of the assembled college two passages (*puncta*) in the civil or canon law, which he retired to his house to study, possibly with the assistance of the presenting doctor. Later in the day he gave a lecture on, or exposition of, the prepared passages, and was examined on them by two of the doctors appointed by the college. Other doctors might then put supplementary questions on law arising out of the passages, or might suggest objections to his answers. The vote of the doctors present was taken by ballot, and the fate of the candidate was determined by the majority. The successful candidate, who received the title of licentiate, was, on payment of a heavy fee and other expenses, permitted to proceed to the *conventus* or final public examination. This consisted in the delivery of a speech and the defence of a thesis on some point of law, selected by the candidate, against opponents selected from among the students. The successful candidate received from the archdeacon the formal "licence to teach" by the authority of the pope in the name of the Trinity, and was invested with the insignia of office. At Bologna, though not at Paris, the "permission to teach" soon became fictitious, only a small number of doctors being allowed to exercise the right of teaching in that university (Rashdall).

In the faculty of arts of Paris, towards the end of the 13th century, the system was already more complicated than at Bologna. The baccalaureate, licentiateship, and mastership formed three distinct degrees. For admission to the baccalaureate a preliminary test or "Responsions" was first required, at which the candidate had to dispute in grammar or logic with a master. The examiners then inspected the certificates (*schedulae*) of residence and of having attended lectures in the prescribed subjects, and examined him in the contents of his books. The successful candidate was admitted to maintain a thesis against an opponent, a process called "determination" (see Rashdall i. 443 et seq.), and as bachelor was then permitted to give "cursory" lectures. After five or six years from the date of beginning his studies (matriculation) and being twenty years of age (these conditions varied at different periods), a bachelor was permitted to present himself for the examination for the

licentiateship, which was divided into two parts. The first part was conducted in private by the chancellor and four examiners (*temptatores in cameris*), and included an inquiry into the candidate's residence, attendance at lectures, and performance of exercises, as well as examination in prescribed books; those candidates adjudged worthy were admitted to the more important examination before the faculty, and the names of successful candidates were sent to the chancellor in batches of eight or more at a time, arranged in order of merit. (The order of merit at the examination for the licentiateship existed in Paris till quite recently.) Each successful candidate was then required to maintain a thesis chosen by himself (*quodlibetica*) in St Julian's church, and was finally submitted to a purely formal public examination (*collatio*) at either the episcopal palace or the abbey of Ste Geneviève, before receiving from the chancellor, in the name of the Trinity, the licence to incept or begin to teach in the faculty of arts. After some six months more the licentiate took part "in a peculiarly solemn disputation known as his 'Vespers,'" then gave his formal inaugural lecture or disputation before the faculty, and was received into the faculty as master. This last process was called "inception."

In discussing the value of medieval examinations of the kind described, Paulsen (*The German Universities* (1906), p. 25) asserts that they were well adapted to increase a student's alertness, his power of comprehending new ideas, and his ability quickly and surely to assimilate them to his own, and that "they did more to enable [students] to grasp a subject than the mute and solitary reviewing and cramming of our modern examinations can possibly do." At their best they fulfilled precisely the technical purpose for which they were intended; they fully tested the capacity of the candidate to teach the subjects which he was required to teach in accordance with the methods which he was required to use. The limitations of the test were the limitations of the educational and philosophic ideals of the time, in which a dogmatic basis was presupposed to all knowledge and criticism was limited to the superstructure. At their worst, even with venal examiners (and additional fees were often offered as a bribe), Rashdall regards these examinations (at the end of the 13th century) as probably "less of a farce than the pass examinations of Oxford and Cambridge almost within the memory of persons now living." It is, however, to be pointed out that the standard in Paris and elsewhere at a later date became scandalously low in some cases. In some universities the sons of nobles were regularly excused certain examinations. At Cambridge in 1774 Fellow Commoners were examined with such precipitation to fulfil the formal requirements of the statutes that the ceremony was termed "huddling for a degree" (Jebb, *Remarks upon the Present Mode of Education in the University of Cambridge*, 4th ed., 1774, p. 32). The last privileges of this kind were abolished at Cambridge by a grace passed on the 20th of March 1884.

In the medieval examinations described above we find most of the elements of our present examinations: certificates of previous study and good conduct, preparation of set-books, questioning on subjects not specially prepared, division of examinations into various parts, classification in order of merit, payment of fees, the presentation of a dissertation, and the defence and publication of a thesis (a term of which the meaning has now become extended).

The requirement to write answers to questions written or dictated, to satisfy a practical test (other than in teaching), and a clinical test in medicine, appear to be of later date.[1] The medieval candidate for the doctorate in medicine, although required to have attended practice before presenting himself, discussed as his thesis a purely theoretical question, often semi-theological in character, of which as an extreme example may be quoted "whether Adam had a navel."

The competitive system was developed considerably at Louvain, and in the 15th century the candidates for the mastership of arts were divided into three classes (*rigorosi*, honour-men; *transibiles*, pass-men; *gratiosi*, charity-passes), while a fourth, which was not published, contained the names of those who failed. In the 17th century the first class comprised the names of twelve, and the second, of twenty-four, candidates, who were divided on the report of their teachers into classes before the examination, and finally arranged in order of merit by the examiners (Vernulaeus, quoted by Sir W. Hamilton, *Discussions*, 1852; p. 647; Rashdall, loc. cit. ii. 262). At the Cambridge tripos (as described by Jebb in 1774, *Remarks*, &c. , pp. 20-31) the first twenty-four candidates were also selected by a preliminary test; they were then divided further into "wranglers" (the disputants, *par excellence*) and *Senior Optimes*, the next twelve on the list being called the *Junior Optimes*. These names have in the mathematics tripos survived the procedure. (The name *Tripos* is derived from the three-legged stool on which "an old bachilour," selected for the purpose, sat during his disputation with the senior bachelor of the year, who was

required to propound two questions to him.)

The subjects in which the medieval universities examined were (i.) those of the trivium and quadrivium in the faculty of arts; (ii.) theology; (iii.) medicine; and (iv.) civil and canon law. The number of subjects in which examinations are held has since grown immensely. We can only sketch in outline the transformations of certain typical university systems of examinations.

At Oxford there is no record of a process of formal examination on books similar to that of Paris (Rashdall, ii. 442 et seq.), disputations being apparently the only test applied in its early history. Examinations were definitely introduced for the B.A. and M.A. degrees by Laud in 1636-1638 (Brodrick, *History of Oxford*, p. 114), but the standard prescribed was so much beyond the actual requirements of later times that it may be doubted if it was enforced. The studies fell in the 18th century into an "abject state," from which they were first raised by a statute passed in 1800 (*Report of Oxford University Commission of 1850-1852*, p. 60 et seq.), under which distinctions were first allotted to the ablest candidates for the bachelor's degree. Further changes were made in 1807 and 1825; and in 1830 a distinction was made between honours examinations of a more difficult character, at which successful candidates were divided into four classes, and pass examinations of an easier character. By the statutes of 1849 and 1858 an intermediate "Moderations" examination was instituted between the preliminary examination called "Responsions" and the final examination. Since 1850, although fresh subjects of examination have been introduced, no considerable change of system has been made.

The bachelor's degree at Oxford tended from an early period to be postponed to an advanced stage of studies, while the requirements for the master's degree diminished until, in 1807, the examination for the M.A. was abolished. It is now awarded to bachelors of three years' standing on payment of a fee.

Cambridge in early times followed the example of Oxford, and here also the bachelor's degree became more and more important (Bass Mullinger, *History of the University of Cambridge from 1535*..., p. 414), and the M.A. has been finally reduced to a mere formality, awarded on terms similar to those of the sister university. The standard of examinations was raised in Cambridge at an earlier date than at Oxford, and in the 18th century the tripos "established the reputation of Cambridge as a School of Mathematical Science." The school, however, produced few, if any, great mathematicians between Newton and George Green. It was only between 1830 and 1840 that the standard of the tripos became a high one. At Cambridge there is no intermediate examination between the "Previous Examination" (commonly called "Little-go"), which corresponds to Oxford "Responsions" or "Smalls" and the triposes and examinations for the "Poll" degree, which correspond to the Oxford final honours and pass examinations respectively. But most of the triposes have been divided into two parts, of which the second is not obligatory in order to obtain a degree. The "senior wrangler" was the first candidate in order of merit in the first part of the mathematical tripos. The abolition of order of merit at this examination was decided on in 1906, and names of candidates appeared in this order for the last time in 1909.

At the Scottish universities the B.A. degree has become extinct, and the M.A., awarded on the results of examination, is the first degree in the faculty of arts.

The incorporation of the university of London in 1836 marks an era in the history of examinations; the teaching and examining functions of a university were dissociated for the first time. Until 1858 the London examinations were open only to students in affiliated colleges, and the teachers had no share in the appointment of the examiners or in determining the curricula for examinations; in 1858 the examinations were thrown open to all comers, and no requirements were insisted on with regard to courses of study except for degrees in the faculty of medicine. The sole function of the university was to examine, and its examinations for matriculation and for degrees in arts and science were carried on by means of written papers not only in London but in many centres in the United Kingdom and the colonies. From the first the degrees were (unlike those of Oxford and Cambridge until 1871) open to all male persons without religious distinctions; and in 1878 they were opened to women. (Tripos examinations were thrown open to women at Cambridge by the grace of 24th Feb. 1881, and at Oxford women were admitted to examinations for honours by statute of 29th April 1884. Proposals to admit women to university degrees were rejected by Oxford and Cambridge in 1896 and 1897 respectively.)

The standard of difficulty set by the university of London was a high one, very much higher for its pass degrees than the corresponding standards at Oxford and Cambridge, while the standard for honours was equally high. In medicine the examinations were made

both wider in range and more searching than those of any other examining body. But, for reasons dealt with below, great discontent was roused by the new system. In 1880 the Victoria University, Manchester, was established, in which teaching and examining were again united; and in the universities since established, with the exception of the Royal University of Ireland (which was created in 1880 as an examining body on the model of London, but which was dissolved under the Irish Universities Act 1908, and replaced by the National University of Ireland and the Queen's University of Belfast), the precedent of Victoria has been followed. By an act passed in 1898, of which the provisions came into force in 1900, the university of London was reconstituted as a teaching university, although provision was made for the continuance of the system of examinations by "external examiners" for "external students," together with "internal examinations" for "internal students," in which the teachers and the external examiners of the university are associated. The examinations in music and the final examinations in law and medicine are carried on [1910] both for "internal" and "external" students by "external" examiners only, who are, however, appointed on the recommendation of boards of studies consisting mainly of London teachers.

At the university of Dublin, examinations have been maintained both for the B.A. and M.A. degrees, and students may be admitted to the examinations in subjects other than divinity, law, medicine, and engineering without attendance at university courses.

The examinations of the newer universities, the Victoria University of Manchester, Birmingham, Liverpool, Leeds, Sheffield and Wales, are open only to students at these universities, and are conducted by the teachers in association with one or more external examiners for each subject. In some universities, *e.g.* Manchester, the M.A. degree is given after examination to students who have taken a pass, and without examination to those who have taken an honours degree.

The universities which have departed furthest from the medieval system of examinations, at any rate in appearance, are those of Germany. The baccalaureate has disappeared, but students cannot be matriculated without having passed the *Abiturienten-examen* (see below), probably the most severe of all entrance examinations (foreign students may be exempted under certain conditions). The student desiring to proceed to the doctorate is free from examinations thereafter until he presents his thesis for the doctor's degree,[2] when, if it is accepted, he is submitted to a public oral examination not only in his principal subject (*Hauptfach*), but also as a rule in two or more collateral subjects (*Nebenfächer*). The doctor's degree does not give the right to teach in a faculty (*venia legendi*). To acquire this a doctor must present a further thesis (*Habilitationsschrift*), and must deliver two lectures, one before the faculty, followed by a discussion (*colloquium*), the other in public; but these lectures "seem to be merely secondary and are tending to become so more and more"; "scientific productiveness is so sharply emphasized among the conditions for admission that it overshadows all the rest" (Paulsen, *loc. cit.* p. 165).

In France the examination for the baccalaureate, though conducted in part by university examiners, has become a school-leaving examination (see below). The licentiateship has been preserved in the faculties of arts, science and laws, and is in point of difficulty about equal to the pass degree examinations of the university of London, though differing in the nature of the tests. In the faculty of sciences, the three subjects of examination selected may, under a recent regulation, be taken separately. Until a few years ago the successful candidates at the licentiateship were arranged in order of merit. For the doctorate in the faculty of letters two theses must be submitted, of which the subject and plan must be approved by the faculty (until recently one of them was required to be written in Latin). Permission to print the theses is given by the rector or vice-rector after report from one or more professors, and they are then discussed publicly by the faculty and the candidate (*soutenance de thèse*). In this public discussion the "disputation" of the middle ages survives in its least changed form. The literary theses required by French universities are, as a rule, volumes of several hundred pages, and more important in character even than the German *Habilitationsschrift*. The possession of the doctorate is a *sine qua non* for eligibility to a university chair, and to a lectureship in the university of Paris.

In the faculty of sciences a candidate for the doctorate may submit two theses, or else submit one thesis and undergo an oral examination.

For the doctorate in law, a thesis and two oral examinations are required.

In the faculty of medicine there is no licentiateship, but for the doctorate six examinations must be passed and a thesis submitted.

There is also a special doctorate, the "*doctorat d'Université*," awarded on a thesis and an oral examination; and there are diplomas (*Diplômes d'Études supérieures*) awarded on dissertations and examinations on subjects in philosophy, history and geography, classics or modern languages, selected mainly by the candidate and approved by the faculty.

2. *Professional Examinations.* (*a*) *Teaching.*—University examinations for degrees having ceased to be used as technical tests of teaching capacity, new examinations have been devised for this purpose. The test for German university teachers has been described above. For secondary teachers, W. von Humboldt instituted a special examination in 1810 (Paulsen, *Gesch. des gelehrten Unterrichts*, ii. pp. 283 and 393), and an examination for primary teachers was instituted in Prussia in 1794.

In France there is a competitive examination for secondary teachers, the *agrégation*, originally established in 1766. *Agrégés* have a right to state employment and they alone can occupy the highest teaching post (*chaire de professeur*) in a state secondary school, other posts being open to licentiates. There are also examinations for primary teachers. The tests for teachers are different for the two sexes.

In England there is no obligatory test for secondary teachers. The universities and the College of Preceptors conduct examinations for teaching diplomas. The Board of Education holds special examinations (Preliminary Certificate examination and Certificate examination, &c.) for primary teachers.

(*b*) *Medicine.*—See Medical Education.

(*c*) *Other Professions.*—A system of professional examinations carried on by professional bodies, in some cases with legal sanction, was developed in England during the 19th century. Those in the following subjects are the most important: Accountancy (Institute of Chartered Accountants and Society of Accountants and Auditors), actuarial work (Institute of Actuaries), music (Royal Academy of Music, Royal College of Music, Trinity College of Music, Royal College of Organists, and the Incorporated Society of Musicians), pharmacy (Pharmaceutical Society), plumbing (the Plumbers' Company), surveying (Surveyors' Institution), veterinary medicine (Royal College of Veterinary Surgeons), technical subjects, *e.g.* cotton-spinning, dyeing, motor-manufacture (City & Guilds of London Institute), architecture (Royal Institute of British Architects), commercial subjects, shorthand (the Society of Arts and London Chamber of Commerce), engineering (Institutions of Civil Engineers, of Mechanical Engineers, and of Electrical Engineers).

3. *School-leaving Examinations.*—The faculty of arts in medieval universities covered secondary as well as higher education in the subjects concerned. The division in arts subjects between secondary and university education has been drawn at different levels in different countries. Thus the first two years of the arts curriculum in English and American universities correspond, roughly speaking, to the last two years spent in a secondary school of Germany or France, and the continental "school-leaving examinations" correspond to the intermediate examinations of the newer English universities and to the pass examinations for the degree at Oxford and Cambridge (Mark Pattison, *Suggestions on Academical Organization*, 1868, p. 238, and Matthew Arnold, *Higher Schools and Universities in Germany*, 1892, p. 209).

A tabular summary is given (see Tables I., II., III., IV.) of the requirements of the secondary school-leaving examinations of France, Prussia (for the nine-year secondary schools) and Scotland, and of the university of London.

There are in England a number of school examinations which, under prescribed conditions, also serve as school-leaving examinations, and give entrance to certain universities, especially the Oxford and Cambridge local examinations (both established in 1858), and the examinations of the Oxford and Cambridge "Joint Board." A movement to reduce the number of entrance examinations and to secure uniformity in their standard was set on foot in 1901. In that year the General Medical Council communicated to the Board of Education a memorial on the subject from the Headmasters' Conference. The memorial was further communicated to various professional bodies concerned. Conferences were held by the consultative committee of the Board of Education in 1903, with representatives of the universities, the Headmasters' Conference, the Association of Head-Masters, the Association of Head-Mistresses, the College of Preceptors, the Private Schools' Association, and with representatives of professional bodies. The committee were of opinion that a central board, consisting of representatives of the Board of Education and the different examining bodies, should be established, to co-ordinate and control the standards of the examinations, and to secure interchangeability of certificates, &c. , as soon as a sufficient number of such bodies

signified their willingness to be represented on the board. They recommended that the examination should be conducted by external and internal examiners, representing in each case the examining body and the school staff respectively, and that reports on the school work of candidates should be available for reference by the examiners (circular of the Board of Education of 12th of July 1904).

The "accrediting" system in the United States was started by the university of Michigan in 1871. A school desiring to be accredited is submitted to inspection without previous notice. If the inspection is satisfactory, the school is accredited by a university for from one to three years, and upon the favourable report of its principal any of its students are admitted to the university by which it has been accredited without any entrance examination. In practice it is found that many students whom their teachers refuse to certify are able to pass the university entrance examination. The statistics of nine years show that the standard of the certified students is higher than that of non-certified students. Two hundred and fifty schools are accredited by the university of Michigan. In 1904 it was stated that the system was gaining favour in the east,[3] and that it had been adopted more or less by all the eastern colleges and universities with the exception of Harvard, Yale, Princeton and Columbia.

4. *Methods of Examination.*—Examinations may test (i.) knowledge, or, more exactly, the power of restating facts and arguments of a kind that may be learnt by rote; (ii.) the power of doing something, *e.g.* of making a *précis* of a written document, of writing a letter or a report on a particular subject with a particular object in view, of translating from or into a foreign language, of solving a mathematical problem, of criticizing a passage from a literary work, of writing an essay on an historical or literary subject with the aid of books in a library, of diagnosing the malady of a patient, of analysing a chemical mixture or compound; and (the highest form under the rubric) of making an original contribution to learning or science as the result of personal investigation or experiment. Examinations are carried out at present by means of (1) written papers; (2) oral examinations; (3) practical, including in medicine clinical, tests; (4) theses; or a combination of these.

Written.

In written examinations the candidates are, as a rule, supplied with a number of printed questions, of which they must answer all, or a certain proportion, within a given time, varying, as a rule, from 1½ to 3 hours, the latter being the duration most generally adopted for higher examinations in England. Whereas in France and Germany the questions are generally few in number and require long answers, showing constructive skill and mastery of the mother-tongue on the part of the candidates, such "essay-papers" are comparatively rare in England. In many subjects, the written examinations test memory rather than capacity. It has been suggested that sets of questions to be answered in writing should as a rule be divided into two parts: (i.) a number of questions requiring short answers and intended to test the range of the candidate's knowledge; (ii.) questions requiring long answers, intended to test its depth, and the candidate's powers of co-ordination and reflection. A necessary condition for the application of the second kind of test is that time should be given for reflection and for rewriting, say one-third or one-quarter of the whole time allowed. A further distinction is important, especially in such subjects as mathematics or foreign languages, in which it is legitimate to ask what precise power on the part of a candidate the passing of an examination shall signify. Owing to a prevailing confusion between tests of memory and tests of capacity, the allowance for chance fairly applied to the former is apt to be unduly extended to the latter. In applying tests of memory, it may be legitimate to allow a candidate to pass who answers correctly from 30 to 50% of the questions; such an allowance if applied to a test of capacity, such as the performance of a sum in addition, the solution of triangles by means of trigonometrical tables, or the translation of an easy passage from a foreign language, appears to be irrational. A candidate who obtains only 50% of the marks in performing such operations cannot be regarded as being able to perform them; and, if the examination is to be treated as a test of his capacity to perform them, he should be rejected unless he obtains full marks, less a certain allowance (say 10, or at most 20%) in view of the more or less artificial conditions inherent in all examinations.

Oral.

The oral examination is better suited than the written to discover the range of a candidate's knowledge; it also serves as a test of his powers of expression in his mother-tongue, or in a foreign language, and may be used (as in the examination for entrance to the Osborne Naval College) to test the important qualities (hardly tested in any other examinations at present), readiness of wit, common-sense and nerve. It may be objected that candidates are heavily handicapped by nervousness in oral examinations, but this objection does not afford sufficient ground for rejecting the test, provided that it is supplemented by others. Oral tests are used almost

invariably in medical examinations; and there is a growing tendency to make them compulsory in dealing with modern languages. Oral examinations are much more used abroad than in England, where the pupils during their school years receive but little exercise in the art of consecutive speaking.

TABLE I.—PRUSSIA: ABITURIENTEN EXAMEN

I. Name of Examination.	*Abiturienten Examen* (established in 1788).		
II. Minimum Age for Entry.	Age only limited by condition of length of school course. The usual age is 17-18.		
III. Length of Course of Study.	9 years. Candidates who have not attended the 9 years' school course may be admitted to the examination on special application.		
IV. Subjects.	In *Gymnasium*.	Written. German essay. Mathematics. Translation into Latin. Translation from Greek into German.	Oral. Latin. Greek. English or French. Religion. History. Mathematics.
	In *Real-Gymnasium*.	Written. German essay. Mathematics. Translation from Latin. Translation from German into or essay in English or French. Physics.	Oral. Latin. English. French. Physics or Chemistry. Religion. History. Mathematics.
	In *Ober-Realschule*.	Written. German essay. Mathematics. An exercise in French and in English (an essay in one language and a translation from the other into German). Physics or Chemistry.	Oral. English. French. Physics. Chemistry. Religion. History. Mathematics.
V. Co-ordination with Teaching.	The object of the examination is defined as being a test of whether the candidate has fulfilled the aims laid down in the curricula, &c. , prescribed for a *Gymnasium*, *Real-gymnasium*, or *Ober-realschule*, as the case may be, and the subjects of examination are those prescribed in the curricula for the kind of school concerned. The report on the school work of each candidate in his various subjects is laid before the Examining Board before the beginning of the examination.		
VI. Examiners.	The Examining Board consists of a government inspector (*der Königliche Kommissar*) acting as chairman, the headmaster of the school, and the teachers of the highest classes in the school. The inspector may nominate a deputy, who is as a rule, the headmaster of the school. Each teacher concerned selects for the written examination three alternative subjects in his branch, from which, after receiving a report thereon from the headmaster, the inspector makes a final choice. The papers are marked by the teachers concerned and circulated the the whole Board of Examiners, who then decide whether individual candidates shall be (i.) rejected, (ii.) admitted with (ii.) admitted with oral examination, or (iii.) submitted to the oral examination.		
VII. Nature of Examination and General Remarks.	The written examination extends over four or five days. Only one paper is given each day, for which 3 to 5½ hours are allowed (5½ hours for the German essay). For essays in foreign languages dictionaries may be used.		

TABLE II.—FRANCE: BACCALAURÉAT

I. Name of Examination.	*Baccalauréat de l'enseignement secondaire.* This examination has been carried on under different forms since 1808. The regulations summarized here date from 1902, when the *baccalauréat* described replaced the *baccalauréat-ès-lettres, baccalauréat-ès-sciences*, and *baccalauréat de*

	l'enseignement moderne.	
II. Minimum Age for Entry.	Part I., 16, or, with special permission, 15. Part II. may not be taken within an academic year after passing Part I.	
III. Length of Course of Study.	There is no requirement of attendance. Part I. of the examination corresponds exactly to the subjects taken in the "second cycle" of secondary education, and Part II. to the *classe de philosophie* and *classe de mathématiques.* See also under V.	
IV. Subjects.	Part I. is divided into four Branches, viz.:— (1) Latin-Greek. (2) Latin-modern languages. (3) Latin-science. (4) Science-modern languages. In each Branch the examination is divided into two parts, viz., written and oral. The nature of the examination may be indicated by the following requirements in Branch (1):—	
	Written (i.) French composition. (ii.) Translation from Latin. (iii.) Translation from Greek.	Oral (i.) Explanation of a Greek text. (ii.) Explanation of a Latin text. (iii.) Explanation of a French text. (iv.) Text in a modern foreign language. (v.) Interrogation on ancient history. (vi.) Interrogation on modern history. (vii.) Interrogation on geography. (viii.) Interrogation on mathematics. (ix.) Interrogation on physics.
	Part II. is divided into two Branches, viz.:— (1) Philosophy. (2) Mathematics. The nature of the examination may be indicated by the following requirements in Branch (I):—	
	Written (i.) An essay in French on a philosophical subject. (ii.) An examination in physical and natural science.	Oral (i.) Interrogation on philosophy and philosophical writers. (ii.) Interrogation on contemporary history. (iii.) Interrogation on physical science. (iv.) Interrogation on natural science.
V. Co-ordination with Teaching.	The syllabus of the examination is that prescribed for the higher classes in the Government secondary schools. The candidate may submit his *livret scolaire*, or school record, which will be taken into account.	
VI. Examiners.	The Board of Examiners (or "jury") consists of (i.) University examiners being members of a faculty of letters or faculty of sciences; (ii.) secondary teachers, active or retired, selected by the minister of public instruction. The Board consists of from four to six examiners, of whom, when the number is even, half are chosen from either category.	
VII. Nature of Examination and General Remarks.	The written portion of Part I. extends over from 9 to 10 hours in all (not on a single day), in periods of 3 or 4 hours each; the written portion of Part II. extends over from 6 to 9 hours. The oral examination for each part lasts ¾ hour on the average, and is public.	

TABLE III.—SCOTLAND: SCHOOL-LEAVING EXAMINATION

I. Name of Examination.	Scottish school-leaving examination (established 1888). (See pamphlet on the "Leaving Certificate Examination" issued by the Scottish Education Department, 1908.)
II. Minimum Age for Entry.	17 on 1st of January following the year in which the candidate passes the last of the written examinations.
III. Length of Course of Study.	4 years.
	Candidates must pass in four subjects on the higher grade standard, or in three subjects on the higher grade standard and two on the lower. A pass in drawing is accepted in lieu of one of the two lower grade passes. A pass in Gaelic is reckoned as a pass on lower grade. All candidates must have passed in higher English and in either higher or lower grade mathematics. The remaining subjects may be either

IV. Subjects.	science with one or more languages (Latin Greek, French, German, Spanish, or Italian), or languages only. But where two or more languages other than English are taken, the candidate's group must include either higher or lower grade Latin. A pass in Spanish, Italian, or science (in which subjects there is only one examination) is reckoned as a pass on the higher grade standard.
V. Co-ordination with Teaching.	Schools are inspected, and the course of instruction must be approved by the Scottish Education Department, but the examinations are conducted by external examiners with whom teachers are not associated.
VI. Examiners.	The examiners are appointed by the Scottish Education Department.
VII. Nature of Examination and General Remarks.	The examination consists of a written examination and an oral examination, on which stress is laid. The length of the examination varies with the subjects selected. The periods of examination vary from 1 to 2½ hours. If the candidate selects on the higher grade, English, Latin, mathematics, and French, the examination extends over 19½ hours.

TABLE IV.—UNIVERSITY OF LONDON SCHOOL EXAMINATION, MATRICULATION STANDARD

I. Name of Examination.	School examination, matriculation standard (established in 1902). *Note*—A higher school-leaving certificate is awarded to pupils who (i.) have pursued an approved course of study for a period of years at a school or schools under inspection approved by the University; and (ii.) being matriculated students, have passed the "higher school examination" in at least three subjects at one and the same examination.
II. Minimum Age For Entry.	The minimum age of entry is 15, but if the candidate is under 16 he must remain at school until he is 16 years of age in order to be qualified for the school-leaving certificate, and cannot be registered as a student of the University until he has reached that age.
III. Length of Course of Study.	The curriculum of each school is considered on its own merits.
IV. Subjects.	Pupils must satisfy the examiners in not less than five subjects, as follows:— (1) English. (2) Elementary mathematics. (3) Latin, or elementary mechanics, or elementary physics—heat, light and sound, or elementary chemistry, or elementary botany, or general elementary science. (4) and (5) Two of the following subjects, neither of which has already been taken under section (3). If Latin be not taken, one of the other subjects selected must be another language, either ancient or modern, from the list, and languages other than those included in the list may be taken if approved by the University, provided that the language is included in the regular curriculum:—Latin, Greek, French, German, ancient history, modern history, history and geography, physical and general geography, logic, geometrical and mechanical drawing, mathematics (more advanced), elementary mechanics, elementary chemistry, elementary physics—heat, light and sound, elementary physics—electricity and magnetism, elementary biology—botany, elementary biology—zoology, general elementary science (chemistry and physics).
V. Co-ordination with Teaching.	Schools under approved inspection, and course of instruction approved by the University. The papers are ordinarily set on the matriculation syllabus, but papers may be specially set more closely in accordance with the school curriculum provided that the syllabus proposed is approved by the University as at least equivalent to that for which it is substituted.
VI. Examiners.	The examiners are ordinarily those appointed by the University for the ordinary matriculation examination.
VII. Nature of Examination and General Remarks.	The examination extends over at least 18 hours, and includes an oral examination in modern languages.

Practical.

The laboratory examination may be used in subjects like physics, chemistry, geology, zoology, botany, anatomy, physiology, to test powers of manipulation and knowledge of experimental methods. In some cases (*e.g.* in certain honours examinations) the examination may be prolonged over one or more days, and may test

higher powers of investigation. But such powers can only be fully tested by the performance of original work, under conditions difficult to fulfil in the examination room or laboratory. At the French examinations for the *prix de Rome* the candidates are required to execute a painting in a given number of days, under strict supervision (*en loge*).

In medicine the clinical examination of a patient is a test carried out under conditions more nearly approaching those of actual work than any other; and distinction in medical examinations is probably more often followed by distinction in after life than is the case in other examinations.

For the doctor's degree (where this is not an honorary distinction) a thesis or dissertation is generally, though not invariably, required in England. Of recent years the thesis has been introduced into lower examinations; it is required for the master's degree at London in the case of internal students, in subjects other than mathematics (1910); both at Oxford and London, the B.Sc. degree, and at Cambridge the B.A. degree, may be given for research, although the number of students proceeding to a degree in this way is at present relatively small. In certain of the honours B.A. and B.Sc. examinations at Manchester and Liverpool, candidates may take the written portion of the examination at the end of the second year's course of study and submit a dissertation at the end of the third year. Theses are generally examined by two or more specialists.

Thesis.

5. *Competitive Examinations.*—The arrangement of students in order of merit led naturally to the use of examinations not only as a qualifying but also as a selective test, and to the offering of money prizes (including exhibitions, scholarships and fellowships) on the results. In 1854 selection by examination as a method of appointment to posts in the English public service was first substituted for the patronage system, which had caused grave dissatisfaction (see Macaulay's speech on the subject, *The Times* of the 25th of June 1853). The first public competitive examination for the Royal Military Academy, Woolwich, took place in 1855, and in 1870 the principle of open competition for the civil service was adopted as a general rule. (For further details see Civil Service.)

In the Württemberg civil service candidates are admitted to a year's probation after passing a theoretical examination, at the conclusion of which they must pass an examination of a more practical character (A. Herbert, *Sacrifice of Education* ..., 1889, p. 111).

In the award of scholarships, &c. , it should be definitely decided whether the scholarship is to be awarded (1) for attainment, in which case the examination-test pure and simple may suffice, or (2) for promise, in which case personal information and a *curriculum vitae* are necessary. To take a simple instance: a candidate partly educated in Germany may obtain more marks in German at a scholarship examination than another who is more gifted, but whose opportunities have been less; the question at once arises, are the examiners to take the circumstances of the candidate into account or not? It is understood that at the colleges of the older universities such circumstances are considered. It must again be decided whether the financial circumstances of candidates are to be taken into account; are scholarships intended as prizes, or as a means of enabling poor students to obtain a university education? In some cases wealthy students have been known to return the emoluments of scholarships. In many universities of the United States there is a definite understanding that emoluments shall only be accepted by those needing them. It would not be difficult to ask candidates to make a confidential declaration on this subject on entrance and to establish in Great Britain a tradition similar to that of the United States, and steps in this direction have been taken both at Oxford and Cambridge (Lord Curzon of Kedleston, *University Reform*, p. 86).

A special allowance may be made for age. In certain scholarship examinations held formerly by the London County Council a percentage was added to the marks of each candidate proportionate to the number of months by which his age fell short of the maximum age for entry. The whole subject of entrance scholarships at English schools and universities, and especially their tendency to produce premature specialization, has recently been much discussed.

6. *The Organization and Conduct of Examinations.*—The organization and conduct of examinations, in such a way that each candidate shall be treated in precisely the same way as every other candidate, is a complex matter, especially where several thousand candidates are concerned. The greatest precautions must be taken to ensure the secrecy of the examination papers before the examination, and the effective isolation of individual candidates during the examination. The supervision should be adequate to remove all temptation to copying. The hygienic conditions should be such as to reduce the strain to a minimum. The question of the mental fatigue produced by examinations has been studied by

certain German observers, but has not yet been fully investigated.

7. *Marking, Classification and Errors of Detail.*—In applying a single test in a qualifying examination it would be sufficient to mark candidates as passing or failing. But examinations consist as a rule of a number of tests, each one of which is complex; and a mark is recorded in respect of each test or portion of a test in order to enable the examining body to estimate the performance, considered as a whole, of the candidate. At Oxford the marks are not numerical, but the papers are judged as of this or that supposed "class," and various degrees of merit are indicated by the symbols α, β, γ, δ, to which the signs + or − may be prefixed, according as they are above or below a certain standard within each class. At Cambridge, numerical marks are used. The advantage of numerical marks is that they are more easily manipulated than symbols; the disadvantage, that they produce the false impression that merit can be estimated with mathematical accuracy. Professor F.Y. Edgeworth, in two papers on "The Statistics of Examinations" and the "Element of Chance in Competitive Examinations" (*Journal of the Royal Statistical Society*, 1888 and 1890), has dealt with the subject, although on somewhat limited lines. His investigations show clearly that with candidates near the border-line of failure, which must necessarily be fixed at a given point (subject to certain allowances, where more than one subject is considered), the element of chance necessarily enters largely into the question of pass and failure. The fact may be stated in this way:—the general efficiency of the test being granted, it is true to say that the large majority of those who pass an examination will be superior in efficiency to those who fail; but a few of those who fail may be superior to a few of those who pass. These errors are not peculiar to the examination system, they are inherent in all human judgments. It is necessary to allow for them in considering the failure of an individual candidate as an index of inefficiency.

The element of chance, which prevails in the region on either side of the border between pass and failure, obviously prevails equally on either side of the border between "classes," where candidates are classified; it has been suggested by Dr Schuster that numerical order should accompany classification so as to avoid the creation of an artificial gap between the last candidate in one class and the highest in the next. Edgeworth's objection to such an argument is that the number of uncertainties is far less when candidates are classed than when they are placed in ostensible order of merit.

The difficulties of comparison of marks are further complicated when students take different subjects and it is necessary to compare their merit by means of marks allotted by different examiners and added together. In a pass examination the question has to be considered how far, if at all, excellence in one subject shall compensate for deficiency in another, a question which is indeterminate until the precise object of the whole examination is formulated. In the competitive examination for the Indian civil service, places are allotted on the aggregate of marks obtained in a number of subjects selected by the candidate from a list of thirty-two. The successful candidates are compared a year later on the results of another examination in which there is again a choice, though a much more limited one. The order of merit in the two examinations is, as a rule, very different.

Two further points may be noted. An examiner may have underestimated the time required to answer the questions which he has set; this will be obvious if with a large number of candidates (say 300 or 400) none approaches the maximum mark. In this case the maximum should be reduced. Again, it is generally recognized to be undesirable to give marks for a smattering. In order to avoid this various devices are adopted. The simplest is to award a proportion of marks (say 10 to 15, or even 20%) for "general impression." In some examinations, unless say 20% or more marks are obtained for a particular subject, no credit is given for the paper in that subject. Latham (*The Action of Examinations*, 1877, p. 490) describes other numerical adjustments used to meet this difficulty, especially that used in English civil service examinations. The numerical results of the civil service examinations are reduced so as to conform to a certain symmetrical "frequency-curve," of which the abscissae represent percentages of marks between definite limits and the ordinates the number of candidates obtaining marks between those limits. C.E. Fawsitt (*The Education of the Examiner*, Royal Philosophical Society of Glasgow, 1905) shows that frequency-curves deduced from actual investigation of class-marks are not symmetrical, but have two maxima corresponding to the performance of "non-workers" and of "workers." In pass examinations of a well-known character there is a maximum just beyond the pass mark, this being the point of efficiency at which many students aim.

8. *The Object and Efficiency of Examinations, and their Indirect Effects.*—In order to estimate the efficiency of an examination as a test, the precise question should be asked in each case—what is it intended to test? Much of the evil attributed to, and resulting from,

examinations is due to the fact that this question has not been definitely put, and that a test legitimate for certain purposes has been used for others to which it is unsuited. Examinations are suited in the first instance for the purpose for which they were originally designed in medieval universities—the test of technical and professional capacity; it has never been proposed to abolish qualifying examinations for doctors, pharmaceutical chemists, &c. ; the tests applied are (or should be) direct tests of capacity carried out under conditions as nearly as possible like those of actual practice. If a student can auscultate correctly, or make up a prescription, at an examination, he will in all probability be able to do so in other circumstances.

Examinations as tests of the knowledge of isolated facts are necessarily of relatively small value, because the memory of such facts is transient; and memorization of a large number of facts for examination purposes is generally admitted to be specially transient; the "knowledge-test," considered apart from a test of capacity, is in fact not a test of permanent knowledge, but of the power of retaining facts for a length of time which it is impossible to estimate and which with some candidates extends over a few weeks only. When used as tests of "general culture," examinations, in the view of Paulsen, based on a study of German education, not only fail in their purpose, but tend to destroy the faculties which it is desired to develop (*Geschichte des gelehrten Unterrichts*, ii. 684 et seq.); to prepare ready answers to the numberless questions which an examiner may ask on a large variety of subjects is to paralyse the natural and free activity of the mind (cf. A.C. Benson on the results of English secondary classical education, *From a College Window*, 3rd ed., 1906, pp. 154-177). If pushed to its logical conclusion the view of Paulsen must, it is submitted, lead to the complete abandonment at examinations of tests of "knowledge" as distinguished from direct tests of capacity. Thus isolated questions on details of grammar would disappear from papers on the mother-tongue and on foreign languages, in which the test would consist mainly or entirely of composition and translation. Erudition would be tested by the power of writing, at leisure, a dissertation on some subject selected by the examiners or the candidate or, in the case of a teacher, by the delivery of a lecture on the subject. At the French *agrégation* candidates are given twenty-four hours for the preparation of a lecture of this kind. Such examinations would test the "skill in the manipulation of facts which is the true sign of a trained intelligence" (cf. K. Pearson, "The Function of Science in the Modern State," *Ency. Brit.* 10th ed. xxxii. Prefatory essay). They might possibly be supplemented by easy oral examinations to test both range of knowledge and readiness of mind. But in the case of a pupil who had passed through a good secondary school it would be as safe to rely for supplementary information under this head on the testimony of his teachers, as it is to rely on their evidence with regard to the fundamental and all-important element on which no examination supplies direct information—personal character.

The main arguments of those opposed to the examination system may be summarized as follows: (i.) Examinations tend to destroy natural interests and exclude from the attention of the pupil all matters outside the purview of the examination (they would not do so if examinations were so limited in character that preparation therefor could absorb only a fraction of the pupil's time); (ii.) they tend to cultivate a personal judgment where no personal basis of judgment is possible (this argument, directed mainly against the Oxford essay system, applies not to examinations in general, but to the character of the subjects set for essays); (iii.) competitive examinations on the home and Indian civil services scheme tend to diffuse mental energy over too many subjects (but see (xviii.) below); (iv.) examinations, especially competitive examinations, tend to become more and more difficult, difficulty being confused with efficiency—this has shown itself with the Cambridge mathematical tripos, in which for years questions of increasing difficulty were set on relatively unimportant subjects, until the examination was reformed (reply: all examinations should be overhauled periodically); (v.) they tend to paralyse the powers of exposition, all statements of knowledge being thrown into a form suitable, not for an uninstructed person, but for one who already possesses it, the examiner (this tendency should be counteracted by definite training in composition); (vi.) the sample of knowledge and capacity yielded at an examination is frequently not a fair sample; it is liable to extreme variations in a favourable sense, if the candidate happens to have prepared the precise questions asked; in an unfavourable sense, if the candidate is suffering from misfortune or from accidental ill-health, the latter, owing to the periodic function, occurring much more frequently in the case of women than of men—[the reform of examination methods may remove to a great extent the element of chance in questions set; in a competitive examination it is impossible to allow for ill-health; in a qualifying examination it is difficult to make any allowance unless the examination is definitely conducted in whole or in part by the teachers, and the past record of the candidate is taken into account (cf. Paulsen, *The German Universities*, pp. 344-

345)]; (vii.) examinations of several hundred candidates at a time cannot be rationally conducted so as to be equally fair to the individuality of all candidates; the individual test is the only complete one (it is admitted that examinations on a large scale necessarily involve a margin of error; but this error may be reduced to a minimum, especially by a combination of oral and practical with written work); (viii.) the multiplicity of school examinations required for different reasons produces confusion in our secondary education (there is a growing tendency to admit equivalence of "school-leaving" and entrance examinations; thus entrance examinations of Oxford, Cambridge and London, and the Northern Universities Joint Board are interchangeable under certain conditions); (ix.) the multiplicity of examinations tends to "underselling" (the success of the London examinations in medicine proves that a high standard attracts candidates as well as a low one; possibly intermediate standards may be killed in the competition; it is by no means obvious that a uniform system of examinations would conduce to efficiency); (x.) examinations produce physical damage to health, especially in the case of women-students (on this point more statistical evidence is needed; see, however, Engelmann quoted by G. Stanley Hall, *Adolescence*, 1905, ii. 588 et seq.); (xi.) examinations have in England mechanically cast the education of women into the same mould as that of men, without reference to the different social functions of the two sexes (the remedy is obvious); (xii.) it is unjustifiable to give a man a university position on the results of his performance in the examination room, a practice common in England though almost unknown on the continent; a just estimate of a man's powers in research or for teaching can only be properly based on his performance. The present system merely leads to the transmission of the sterile art of passing examinations. (At Oxford and Cambridge many fellowships are now awarded on the results of examination; it is sometimes stated, in defence of this system, that young men cannot be expected to carry out research in classics or philosophy.)

On the other hand, the defenders of examinations reply that (xiii.) examinations are necessary in order to test the efficiency of schools to which grants of public money are given (this argument has become somewhat out of date owing to the recent substitution of "inspection" for examination as a test of the efficiency of schools; a combination of inspection and examination is also sometimes used); (xiv.) they serve as a necessary incentive to steady and concentrated work[4] (the reply made to this is that the incentive is a bad one, and that with efficient teachers it is unnecessary); (xv.) they show both student and teacher where they have failed (unnecessary for efficient teachers); (xvi.) though possibly harmful to the highest class of men, they are good for the mass (reply: no system which damages the highest class of men is tolerable); (xvii.) they are indispensable as an impartial means of selecting men for the civil service; (xviii.) in a difficult examination like the first class civil service examination the qualities of quickness of comprehension, industry, concentration, power of rapidly passing from one subject to another, good health, are necessary for success, though not tested directly, and these qualities are valuable in any kind of work (this appears to be incontrovertible); (xix.) examination records show that success in examinations is generally followed by success in after-life, and the test is therefore efficient (it does not follow that certain rejected candidates may not be extremely efficient); (xx.) as a plea for purely "external examinations," teachers cannot be trusted to be impartial and it is better for a boy to "cram" than to curry favour with his teacher (Latham).

The brief comments in brackets, appended above to the arguments, merely indicate what has been said or can be said on the other side. It can scarcely be doubted that in spite of the powerful objections that have been advanced against examinations, they are, in the view of the majority of English people, an indispensable element in the social organization of a highly specialized democratic state, which prefers to trust nearly all decisions to committees rather than to individuals. But in view of the extreme importance of the matter, and especially of the evidence that, for some cause or other (which may or may not be the examination system), intellectual interest and initiative seem to diminish in many cases very markedly during school and college life in England, the whole subject seems to call for a searching and impartial inquiry.

Sources of Information.—The works mentioned above, and T.D. Acland, *Some Account of the Origin and Objects of the New Oxford Examinations for the Title of Associate in Arts* (London, 1858); Matthew Arnold, *Higher Schools and Universities in Germany* (1874); Graham Balfour, *The Educational Systems of Great Britain and Ireland* (2nd ed., Oxford, 1903); W.W. Rouse Ball, *Origin and History of the Mathematical Tripos* (Cambridge, 1880); Adolf Beier, *Die höheren Schulen in Preussen und ihre Lehrer* (1902-1906) (in progress); Cloudesley Brereton, "A New Method of awarding Scholarships," *School World*, 1907, p. 409; G.C. Brodrick, *A History of the University of Oxford* (London, 1886); F. Buisson, *Dictionnaire de pédagogie* (1880-1887); Lord Curzon of Kedleston, *Principles and Methods of*

University Reform (1909); J. Demogeot and H. Montucci, *De l'enseignement supérieur en Angleterre et en Écosse* (1870); H. Denifle, *Die Universitäten des Mittelalters bis 1400* (Berlin, 1885); F.Y. Edgeworth, "The Statistics of Examinations," and "The Element of Chance in Competitive Examinations," *Journal of the Statistical Society*, 1888 and 1890 respectively; H.W. Eve, Lecture "On Marking," in *The Practice of Education* (Cambridge, 1883); Charles E. Fawsitt, *The Education of the Examiner* (Royal Philosophical Society of Glasgow) (Glasgow, 1905); J.G. Fitch, "The Proposed Admission of Girls to the University Local Examination," *Education Miscellanies* (1865), vol. x.; W. Garnett, "The Representation of certain Examination Results," *Journ. Statist. Soc.* (Jan. 1910); G. Stanley Hall, *Adolescence* (London, 1905); Sir W. Hamilton, *Discussions on Philosophy* (London, 1853); P.J. Hartog, "Universities, Schools and Examinations" in the *University Review* (July 1905); P.J. Hartog and Mrs A.H. Langdon, *The Writing of English* (1907); Auberon Herbert (edited by), *The Sacrifice of Education to Examination*, Letters from "All Sorts and Conditions of Men" (1889); *Influence of Examinations*, Report by a Committee, British Association Reports for 1903, p. 434. and for 1904, p. 360; John Jebb, *Remarks upon the Present Mode of Education in the University of Cambridge* (4th ed., 1774); Henry Latham, *On the Action of Examinations* (Cambridge, 1877); H.C. Maxwell Lyte, *A History of the University of Oxford to the Year 1530* (London, 1886); W.A.P. Martin, *The Lore of Cathay* (Edinburgh and London, 1901); J.B. Mullinger, *The University of Cambridge* (Cambridge, 1873); *How to pass Examinations successfully*, by an Oxford Coach; Mark Pattison, *Suggestions on Academical Organization* (Edinburgh, 1868); Friedrich Paulsen, *The German Universities and University Study* (London, 1906) and *Geschichte des gelehrten Unterrichts* (Leipzig, 1896); George Peacock, *Observations on the Statutes of the University of Cambridge* (1841); *Programme des examens du nouveau baccalauréat de l'enseignement secondaire*, Delalain frères, Paris; Hastings Rashdall, *The Universities of Europe in the Middle Ages* (Oxford, 1895); Rein's *Encyklopädisches Handbuch der Pädagogik* (2nd ed., 1902, &c.), articles "Prüfungen" (by F. Paulsen), &c. ; Third Report of the Royal Commissioners on Scientific Instructions, 1873; J.E. Thorold Rogers, *Education in Oxford* (1861); M.E. Sadler, "Memorandum on the Leaving Examinations ... in the Secondary Schools of Prussia," in Report of Royal Commission on Secondary Education, vol. v. p. 27 (1895); C.A. Schmid, *Geschichte der Erziehung* (Stuttgart, 1884, &c.), and *Encyklopädie des gesammten Erziehungs- und Unterrichtswesens* (2nd ed., 1876-87), articles "Prüfung," "Schulprüfungen," "Versetzungsprüfungen," &c. ; Scholarships, various papers on, by H.B. Baker, A.A. David, H.A. Miers, M.E. Sadler and H. Bompas Smith, and others, British Association Report, 1907, pp. 707-718; Arthur Schuster, article on "Universities and Examinations" in the University Review (May 1905); W.H. Sharp, *The Educational System of Japan* (Office of the Director-General of Education in India) (Bombay, 1906); Special Educational Reports, issued by the Board of Education, *passim*; A.M.M. Stedman, *Oxford: its Life and Schools* (London, 1887); I. Todhunter, *Conflict of Studies* (1873); William Whewell, *Of a Liberal Education* (London, 1845); Christopher Wordsworth, *Scholae academicae* (Cambridge, 1877); Étienne Zi (or Siu or Seu), *Pratique des examens littéraires en Chine* (Shanghai, 1894). Private information from Professor M.E. Sadler and Mr A.E. Twentyman.

(P. J. H.; A. Wn.)

---

1 W.W. Rouse Ball in his *History of the Study of Mathematics at Cambridge* (1889), p. 193, states that he can find no record of any European examinations by means of written papers earlier than those introduced by R. Bentley at Trinity College, Cambridge, in 1702.

2 It should be mentioned that the professors of chemistry of a number of German, Austrian and Swiss universities, have, by agreement, instituted an intermediate examination in that subject which students are required to pass before beginning work on the doctoral thesis. The examination of the students is conducted by the teachers concerned.

3 See E.E. Brown in *Monographs on Education in the United States* (ed. by N.M. Butler, 1900, i. 164), and T. Gregory Foster and H.R. Reichel, *Report of Mosely Educational Commission* (1904), pp. 117-119 and 288-289.

4 The Oxford commissioners of 1852 reported that "the examinations have become the chief instruments not only for testing the proficiency of the students but also for stimulating and directing the studies of the place" (*Report*, p. 61).

EXARCH (ἔξαρχος, a chief person or leader), a title that has been conferred at different periods on certain chief officers or governors, both in secular and ecclesiastical matters. Of these, the most important were the exarchs of Ravenna (*q.v.*). In the ecclesiastical

organization the exarch of a *diocese* (the word being here used of the political division) was in the 4th and 5th centuries the same as primate. This dignity was intermediate between the patriarchal and the metropolitan, the name patriarch being restricted after A.D. 451 to the chief bishops of the most important cities (see PATRIARCH). The title of Exarch was also formerly given in the Eastern Church to a general or superior over several monasteries, and to certain ecclesiastics deputed by the patriarch of Constantinople to collect the tribute payable by the Church to the Turkish government. In the modern Greek Church an exarch is a deputy, or legate *a latere*, of the patriarch, whose office it is to visit the clergy and churches in the provinces allotted to him. The title of exarch has been borne by the head of the Bulgarian Church (see BULGARIA), since in 1872 it repudiated the jurisdiction of the Greek patriarch of Constantinople. Hence the names of the politico-religious parties in the recent history of the Near East: "Exarchists" and "Patriarchists."

EXCAMBION (a word connected with a large class of Low Latin and Romance forms, such as *cambium*, *concambium*, *scambium*, from Lat. *cambire*, Gr. κάμβειν or κάμπτειν, to bend, turn or fold), in Scots law, the exchange (*q.v.*) of one heritable subject for another. The modern Scottish excambion may consist in the exchange of any heritable subjects whatever, *e.g.* a patronage or, what often occurs, a portion of a glebe for servitude. Writing is not, by the law of Scotland, essential to an excambion. Chiefly in favour of the class of cottars and small feuars, and for convenience in straightening marches, the law will consider the most informal memoranda, and even a verbal agreement, if supported by the subsequent possession. The power to excamb was gradually conferred on entailed proprietors. The Montgomery Act, which was passed in 1770, to facilitate agricultural improvements, permitted 50 acres arable and 100 acres not fit for the plough to be excambed. This was enlarged by the Rosebery Act in 1836, under which one-fourth of an entailed estate, not including the mansion-house, home farm and policies, might be excambed, provided the heirs took no higher grassum (O.E. *gersum*, fine) than £200. The power was applied to the whole estate by the Rutherford Act of 1848, and the necessary consents of substitute heirs are now regulated by the Entail (Scotland) Act 1882.

EXCELLENCY (Lat. *excellentia*, excellence), a title or predicate of honour. The earliest records of its use are associated with the Frank and Lombard kings; *e.g.* Anastasius Bibliothecarius (d. c. 886) in his life of Pope Honorius refers to Charlemagne as "his excellency" (*ejus excellentia*); and during the middle ages it was freely applied to or assumed by emperors, kings and sovereign princes generally, though rather as a rhetorical flourish than as a part of their formal style. Its use is well illustrated in the various charters in the Red Book of the exchequer, where the addresses to the king vary between "your excellency," "your dignity" (*vestra dignitas*), "your sublimity" (*vestra sublimitas*) and the like, according to the taste and inventiveness of the writers. Du Cange also gives examples of the style *excellentia* being applied to the pope and even to a bishop (in a charter of 1182). With the gradual stereotyping of titles of honour that of "excellency" was definitively superseded in the case of sovereigns of the highest rank, about the beginning of the 15th century, by those of "highness" and "grace," and later by "majesty," first assumed in England by King Henry VIII. Dukes and counts of the Empire and the Italian reigning princes continued, however, to be "excellencies" for a while longer. In 1593 the bestowal of the title of *excellence* by Henry IV. of France on the duc de Nevers, his ambassador at Rome, set a precedent that was universally followed from the time of the treaty of Westphalia (1648). This, together with the reservation in 1640 of the title "eminence" (*q.v.*) to the cardinals, led the Italian princes to adopt the style of "highness" (*altezza*) instead of "excellency." In France, from 1654 onwards, the title of *excellence* was given to all high civil and military officials, and this example was followed in Germany in the 18th century.

The subsequent fate of the title varies very greatly in different countries. In Great Britain it is borne by the viceroy of India, the lord-lieutenant of Ireland, all governors of colonies and ambassadors. In the United States it is part of the official style of the governors of

states, but not of that of the president; though diplomatic usage varies in this respect, some states (*e.g.* France) conceding to him the style of "excellency," others (*e.g.* Belgium) refusing it. The custom of other republics differs: in France the president is addressed as *excellence* by courtesy; in Switzerland the title is omitted; in the South American republics it is part of the official style (Pradier-Fodéré, *Cours de droit diplom.* i. 89). In Spain the title of *excelencia* properly belonged to the grandees and to those who had the right to be covered in the royal presence, but it was extended also to high officials, viceroys, ministers, captains-general, lieutenants-general, ambassadors and knights of the Golden Fleece. In Austria the title *Exzellenz* belongs properly to privy councillors. It has, however, gradually been extended by custom to all the higher military commands from lieutenant-field-marshal upwards. Ministers, even when not privy councillors, are styled *Exzellenz*. In Germany the title is borne by the imperial chancellor, the principal secretaries of state, ministers and *Oberpräsidenten* in Prussia, by generals from the rank of lieutenant-general upwards, by the chief court officials, and it is also sometimes bestowed as a title of honour in cases where it is not attached to the office held by its recipient. In Russia the title is very common, being borne by all officers from major-general upwards and by all officials above the rank of acting privy councillor. Officers and officials of the highest rank have the title of "high excellency." Finally, in Italy, the title *eccelenza*, which had come to be used in the republics of Venice and Genoa as the usual form of address to nobles, has become as meaningless as the English title of "esquire" or the address of "sir," being, especially in the south, the usual form of address to any stranger.

In the diplomatic service the title of excellency is technically reserved to ambassadors, but in addressing envoys also this form is commonly used by courtesy.

(W. A. P.)

EXCHANGE, in general, the action of mutual giving and receiving objects, interests, benefits, rights, &c. The word comes through the French from the Late Lat. *excambium* (see EXCAMBION). The present article deals with the theory and practice of exchange in monetary transactions, but this may conveniently be prefaced by a brief statement as to the law relating to the exchange of property and other matters. In English law exchange is defined as the mutual grant of equal interests, the one in consideration of the other. The ancient common law conveyance had certain restrictions, *e.g.* identity in quantity of interest, fee-simple for fee-simple, &c. , entry to perfect the conveyance, and an implied warranty of title and right of entry by either party in case of eviction. Such exchanges are now effected by mutual conveyances with the usual covenants for title. Exchanges are also frequently made by order of the Board of Agriculture under the Inclosure Acts, and there are also statutes enabling ecclesiastical corporations to exchange benefices with the approval of the ecclesiastical commissioners. The international exchange of territories is effected by treaties. The exchange of prisoners of war is regulated by documents called "cartels" (Med. Lat. *cartellus*, diminutive of *carta*, paper, bill), which specify a certain agreed-on value for each rank of prisoners. The practice superseded the older one of ransom at the end of a war. By the Regimental Exchanges Act 1875 the sovereign may by regulation authorize exchanges by officers from one regiment to another. (For "labour exchanges" see UNEMPLOYMENT.)

Exchange in relation to money affairs denotes a species of barter not of goods but of the value of goods, a payment in one place being exchanged for a payment in another place. The popular statement of the theory of exchange represents four principals involved in two transactions. A and B are two persons residing in one place different from the domicile of C and D; A sells goods to C; B buys goods from D; A sells his claim on C to B, who remits it to D in satisfaction of his debt, and D receives the cash from C, so that, assuming the two transactions to be of equal value, one piece of paper satisfies the four parties to these two transactions, and the trouble, expense and risk of sending money from both places are avoided. The piece of paper which performs the service may be a telegraphic order, cheque or bill of exchange. In this elementary proposition there would be no difficulty of exchange, as the full value of A's claim on C would be paid for by B, who is under the necessity of sending in exactly similar amount of money to D; but it can be seen that in actual practice the claims of one place on another place would not be exactly balanced by the necessities of the one place to meet obligations in the other place; thus arises the complication of

exchange, which may best be described as the price of monetary claims on distant debtors.

Supposing, for example, that A in London had a claim on C in Edinburgh amounting to £100, and that B in London did not require to remit more than £90 to D in Edinburgh, it is evident that B in London must be offered some inducement to take over the whole of A's claim. B might give A £99:19:0, and could then, after satisfying his debt to D, have £10 to his credit in Edinburgh, which he could retain there at interest until he had incurred further liability to D, or he could have the balance of £10 returned him in coin at an expense, say, of sixpence; this would leave B with a profit of sixpence on the transaction, and, assuming that these figures are reasonable, exchange on Edinburgh in London would be one shilling discount per £100. Supposing the necessities of B induced him to offer A only £99 : 14 : 0 for his £100 claim, A would then prefer that C remitted him £100 in coin, which, on the above scale of expenses would cost 5s. and A would receive £99 : 15 : 0 net. On these premises, exchange on Edinburgh in London cannot fall below ¼% discount, and the same circumstances prevent it from rising above ¼% premium, for B, in no case, would pay more for A's claim than £100 plus the cost of sending coin to Scotland. If this basis is appreciated, all exchange problems between different countries can be mastered, and the quotations in the daily papers of cable payments, sight drafts (cheques) and long bills are then understood and supply an interesting indication of the state of international financial relations. As shown above, the balance of indebtedness must eventually be remitted by coin, and consequently when exchange in any city is quoted at one or other of the limit points given in our example as ¼% discount or ¼% premium, this exchange immediately acquires a very serious importance, because with the development of modern monetary systems under which enormous trade is carried on with a most moderate foundation of actual coin the weakening or strengthening of that foundation is a very vital matter.

While the understanding of the theory is essential for any facile interpretation of an exchange, there are of course innumerable details of practice which require to be known to identify the limit points of exchange in any particular city. The limit points can only be taken advantage of by banking experts, and, although we assume a trader remitting his indebtedness in coin when he is asked to pay too high a price for his bill of exchange, in actual affairs the banker will supply the cheque or bill and himself will do the professional business of sending away bullion. Similarly, we have represented one trader drawing on another trader and selling his draft to a third trader who remits the draft to a fourth. In actual practice, however, No. 1 draws on No. 2 and disposes of his draft to a banker; No. 4 draws on No. 3 and sells his draft to a banker; because, speaking generally, whenever goods are shipped, the shipper immediately requires his money; he draws a bill against the goods, and it is the function of a banker to help, as a sort of debt-collecting agency, by buying these drafts; and the bank, being a mart for all forms of remittance, gets an immense variety of demand for cable payments, cheques and bills on all centres. This does not affect the theory, for it must be remembered that the banker is a necessary link between the buyer and seller of exchange, because the seller can only sell what he has and the buyer must have exactly what he wants.

To return to the question of limit points: if a universal currency system existed, with the same monetary standard that is used in England, and the coinage kept in a proper condition of weight and fineness, and the coin readily supplied to meet every reasonable claim—if, in fact, the pound sterling were the prevalent coin and the English banking system obtained everywhere, then we should find all exchange quotations as simple as our case of London and Edinburgh, that is to say, all exchanges would be quoted at par or a premium or a discount. The limit points in any place of the exchange on London would represent simply and obviously the cost of the transmission of the coin. These limit points would vary at each place according to the distance from London, the cost of freight, the risk involved in the transmission and the local rate of interest. On the continent of Europe some advance has been made in the direction of a universal coinage. Countries subscribing to the Latin Union have agreed on the franc as a common unit, and Belgium, Switzerland, France and Italy quote exchange between themselves at a premium or discount. Greece, Spain and other countries are also parties to the arrangement, but their currencies are in a bad state, and the exchange quotations involve a considerable element of speculation. We have, however, to deal with another factor in international finance, namely, the enormous variety of currency systems; and we have then to discover, in each case, the exchange which represents par and corresponds to our £100 for £100 in the London-Edinburgh example. The United States furnishes perhaps the easiest problem, and we must find out how many dollars in gold contain exactly the same amount of the precious metal as is contained in one hundred sovereigns. The answer is 486⅝, and the arithmetic is a question of the mint laws of the two countries. Gold coin in the United States contains one-tenth alloy and in England

one-twelfth alloy. Ten dollars contain 258 grains of gold, nine-tenths fine. One pound contains 123.274 grains of gold, eleven-twelfths fine, consequently £100 is worth $486⅝, or, to be exact, $486⅔, and when cable payments between London and New York are quoted at 4.86⅝ for the £1 sterling, exchange is about par. As a cable payment is an immediate transfer from one city to another, no question of interest or other charge is involved. Owing to the cost of sending gold as detailed above, the New York cable exchange varies from about 4.84 to 4.89½; at the former point gold leaves London for New York, and at the latter point gold comes to England. Besides insurance, freight, packing, commission and interest, there must also be considered the circumstance that coin taken in bulk is always a little worn and under full weight, and in the process of turning sovereigns into dollars, the result would not bear out the calculation based on the mint regulations: consequently, when taking gold from London, the demand would first fall on the raw metal as received from South Africa or Australia to be minted in the United States, then on any stock of American coin the Bank of England might have and be willing to sell by weight (which would be accounted by tale in New York), and lastly the demand would be satisfied by sovereigns taken by tale from the Bank of England and converted by weight in America.

The instance of the American quotation may be further taken to explain some of the numerous points which the study of the exchange involves. In the first place, it will be noted that we have quoted the price in dollars. In London, business in bills, &c. , on New York is quoted either in pence or in dollars, that is to say, payments are negotiated for so many dollars either at 49$^{3}/_{16}$ pence per dollar, or at the equivalent rate $4.88 for the pound. In practice it is much more convenient to quote in London in the money of the foreign country, as it makes comparison with the foreign rate on London very simple. Some foreign countries quote exchange on London in pence, and then, of course, in relation to those countries the same practice will obtain in England, but the majority of the exchange quotations on London are in francs, marks, gulden, lire, kronen or other foreign money. Another point which must be explained is the reason why exchange varies between what we have called the limit points; why there is sometimes so much demand for bills on London and why at other times so many bills are being offered. Similar causes operate on other exchanges, and if we develop the New York case we shall provide explanations for exchange movements in other countries.

At one time the financial relations between England and America were as follows. England was the principal creditor of the United States, and the latter country had to remit continually very large amounts in payment of interest on English money and profits on English investments, in payment for shipping freights, for banking commissions, insurance premiums and an immense variety of services, besides paying for the large imports which crossed the Atlantic from English ports. In the fall of the year these payments would be more than offset by the enormous exports of food-stuffs, cotton, tobacco, &c. , so that during the first half of the year exchange would be at or about the limit of 4.89½ and gold would have to be sent from New York to supplement the deficient quantity of bills. In the autumn the produce bills would flood the exchange market and gold would be sent from London as exchange got to the other limit point of 4.84. These conditions are still very potent, but latterly another element has entered into the position, and the new development is so powerful as to reverse sometimes what we may call the natural and legitimate movement in the exchange. This new element is the more intimate banking and financial relationship which has been established between the two countries. As American conditions have become more stable, with better security for capital and an assured feeling about the currency of the United States, bankers in London have gladly allowed their banking friends in New York and other large cities to draw bills on London whenever there was a good demand for sterling remittances. We have, therefore, to consider a fresh type of bill of which the drawer has no claim on the drawee, but, on the other hand, incurs a debt to the drawee. To take a very usual method, a banker in Wall Street, New York, will advance money to stockbrokers, investors and speculators against bonds and shares with a 20% margin. He deposits this security with a trust company in New York which acts both for the American and English banker. The Wall Street banker then draws a bill at 60 days’ sight or 90 days’ sight on the banker in Lombard Street and sells this draft to supply the money he lends the stockbroker. Two or three months hence the New York banker must send money to London with which to meet the bill, so that, whereas, in the case of a commercial bill, the produce is despatched and in due course the consignee must find the money for the bill, in the case of a finance bill, as it is called, the bill is drawn and in due course the drawer must send the value with which it is to be honoured. In any event the acceptor, the London banker, has to pay the bill, so that it will be easily understood that relations of the greatest confidence are necessary between the drawer and drawee before finance bills of this class can be created.

The profit arising from the transaction we have sketched is realized by the separate parties in this way. The New York banker lends money for three months, say, at 5% per annum, he pays a commission of 1/32% to the trust company which has custody of the security, a charge equivalent to 1/8% interest per annum. He draws on London at 90 days' sight and sells the bill at 4.83 5/8, the cable rate being 4.87¾, the buyer of a three months' bill making the allowance for the English bill stamp of ½ per mille and the London discount rate of 3%. The drawer of the bill must also pay a commission of 3/16% to the London banker who accepts the draft; this is equivalent to another ¾% per annum in the rate of discount, so that money raised in this way costs ⅛% for the trust company, 3% the London discount rate, about ¼% for bill stamps, and ¾% for London commission—altogether, 4⅛%; and, as the money is loaned at 5%, there appears to be ⅞% profit to the drawer of the bill. This, however, is on the assumption that the cable rate is still 4.87¾ when the bill falls due for payment and that the drawer would have to pay that price to telegraph the money to meet the draft. But exchange on London can go up or down between 4.84 and 4.89½, and if at the end of the three months the cable rate is 4.84 the New York banker will be able to cover his bill at almost the same rate at which he sold it and will only be out of pocket to the extent of the commissions and stamps, so that the accommodation will only cost him 1½% and his profit will be 3½%. If he has to pay more than 4.87¾ for his cable at the maturity of the bill his profit will be less than ⅞%, and he may even be a loser on the transaction.

It is obvious, then, that a high rate of interest in New York, with a high rate of exchange on London and a low rate of discount in England, would induce the creation of these finance bills. The supply of these bills would prevent New York exchange reaching the limit point at which gold leaves the United States, and the maturity of these bills in the autumn would ensure a demand for the produce bills and possibly prevent exchange from falling to the other limit point at which London has to send gold to New York.

We have pointed out the essential difference between these finance bills and what we have called produce bills, but there is another very striking difference, that of the question of supply. These finance bills are obviously very difficult to limit in their amounts; produce bills are, of course, limited by the extent of the surplus crops of the United States and by the demand for the produce in Europe, but so long as it is mutually satisfactory to the big finance houses in both countries to draw on credit granted in London, so long may these accommodation bills be created, and the pressure of the bills in New York may depress exchange so much that gold leaves London at a time when it is required in other directions. In such a case the embarrassment caused by this artificial drain of the gold reserve would much more than offset the amount of the commission earned by the accepting houses. The Bank of England may have to raise its rate of discount at the expense of the entire home trade; probably, also, with the rise in the value of money, consequent on the diminished resources, all investment securities fall in value and more onerous terms must be submitted to by the government, corporations and colonies, in the issue of any loans they may require. It will, therefore, be appreciated that, although these finance bills may be perfectly safe, their excessive creation is viewed with great disfavour, and considerable apprehension is felt when the adventures of speculators in New York make great demands for loans against stocks and shares, and, through the instrumentality of these finance bills, shift the burden on to the shoulders of the London discount market. The effect of this is to level money rates as between New York and London, and in the process the pressure falls on London and the relief goes to America. Eventually, of course, the bills must be met and funds sent for that purpose from across the Atlantic, but in the meanwhile the disturbance of the gold supply is an inconvenience.

We have explained the process of employing credits granted in London to finance Wall Street; there are, also, many other types of bill to which the acceptor lends his name on the assurance that he will in due course be supplied with the funds required to meet the acceptance. In the case of the produce bills, a London banker will accept the bills in order that they may be more easily marketable than if they were drawn direct on the actual consignee of the cotton, tobacco or wheat. The consignees in Liverpool, &c. , pay a commission for this assistance and reimburse the London bank as the produce is gradually disposed of. The transaction appears slightly more complicated when English bankers accept bills for produce shipped from the United States to merchants living in Hamburg, Genoa, Singapore and all other great ports, but the principle is the same, and the influence of such business on the exchange affects, in the first instance, the quotation between America and London, but afterwards, when money must be sent to London with which to honour the bills, the exchanges with Germany, Italy or the Straits Settlements bear their share in the eventual adjustment, the spinners, tobacco manufacturers and corn factors

requiring drafts on London where so much of the trade of the world is financed.

We shall have to consider later the reasons which ensure to London this peculiar and predominant position. We have so far used the American exchange as an example to explain causes which produce fluctuations in all the principal exchanges on London and to show the points between which fluctuations are limited. The fact that America is still developing at a much greater rate than the Old World makes an important distinction between the financial position in New York and the financial position of the big capitals in Europe. There is not in America the huge accumulation of savings and investment money which the Old World has collected, so that whereas Europe helps to finance the United States, the latter country has so many home enterprises that she can spare none of her funds to assist Europe. It would not be possible for London to draw on New York such bills as we have described as finance bills, for they could never be discounted there except on the most onerous terms, and there is nothing in America which corresponds to the London money market.

We have to deal with dollars and cents in America, with francs in France, with marks in Germany, and different money units in nearly every country; but, given the mint regulations, the theoretical par of exchange and the theoretical limit points are arrived at by simple arithmetic. An exhaustive statement with reference to every country would involve an amount of tedious repetition, so that for the purposes of this article it is more instructive to consider the essential differences between the important exchanges than to go into the details of coinage, which would appeal rather to the numismatist than to the exchange expert.

The United States, offering as it does a vast field for profitable investment, must annually remit huge amounts for interest on bonds and shares held by Europeans; coupons and dividend warrants payable in America are offered for sale daily in London, and at the end of the quarters the amount of these claims, coupons and drawn bonds is very large, and a considerable set off to the indebtedness of Europe for American produce. It is often asserted that the United States is rapidly getting sufficiently wealthy to repurchase all these bonds and shares; but whenever trade conditions are exceptionally good in the States, fresh evidence is forthcoming that assistance from London and Europe is essential to finance the commercial development of the United States. This illustrates a feature common to all new countries, and the effect is that they make annual payments to the older countries and especially to England.

A government loan or other large borrowing arranged abroad will immediately move the exchange in favour of the borrowing country. A tendency adverse to the United States results from the drafts and letters of credit of the large number of holiday makers who cross the Atlantic and spend so much money in Europe. When remittance is made of the incomes of Americans who have taken up their residence in the Old World the exchange is affected in a similar manner.

In one respect the United States stands far superior to most of the older countries. There are no restrictions on the free export of gold when exchange reaches the limit point showing that the demand for bills on London exceeds the supply. New York (with London and India) is a free gold market, and this is undoubtedly one of the reasons why money is so readily advanced to the United States, and the finance bills, to which we referred above, would not be allowed to the same extent were it not for the fact that New York will remit gold when other forms of remittance are insufficient to satisfy foreign creditors. When exchange between Paris and London reaches the theoretical limit point of 25.32 (25 francs 32 centimes for the £1 sterling), gold does not leave Paris for London unless the Bank of France is willing to allow it. By law, silver is also legal tender in France, and if the State Bank is pressed for gold a premium will be charged for it if it is supplied. Gold may be collected on cheaper terms in small amounts from the great trading corporations or from the offices of the railways, but a large shipment can only be made by special arrangement with the Bank of France. Similarly, in Germany, where a gold standard is supposed to obtain, if a banker requires a large amount of gold from the Reichsbank he is warned that he had better not take it, and if he persists he incurs the displeasure of the government institution to the prejudice of his business, so that the theoretical limit point of 20 marks 52 pf. to the pound sterling has no practical significance, and gold cannot be secured from Berlin when exchange is against that city, and Germany has, when put to the test, an inconvertible and sometimes a debased currency. There is no state bank in the United States, and no government interference with the natural course of paying debts. On the other hand, when monetary conditions in New York indicate a great shortage of funds, and rates of interest are uncomfortably high, the United States treasury has sometimes parted with some of its revenue accumulations to the principal New York bankers on condition that they at once

engage a similar amount of gold for import from abroad, which shall be turned over to the treasury on arrival. As these advances are made free of interest the effect is to adjust the limit point of 484 to about 485, and the United States treasury seems to have taken a leaf out of the book of the German Reichsbank, which frequently offers similar facilities to gold importers and creates an artificial limit point in the Berlin Exchange. The Reichsbank gives credit in Berlin for gold that has only got as far as Hamburg, and sometimes gives so many days' credit that the agent in London of German banking houses can afford an extravagant price for bar gold and even risk the loss in weight on a withdrawal of sovereigns, although the exchange may not have fallen to the other limit point of 20.32. In England the only effort that is made to attract gold is some action by the Bank of England in the direction of raising discount rates; occasionally, also, the bank outbids other purchasers for the arrivals of raw gold from South Africa, Australia and other mining countries. Quite exceptionally, for instance during the Boer War, the Bank of England allowed advances free of interest against gold shipped to London.

Many of the principal banking houses in all the important capitals receive continually throughout the day telegraphic information of the tendency and movement of all the exchanges, and on the smallest margin of profit a large business is done in what is called arbitrage (*q.v.*). For instance, cheques or bills on London will be bought by X in Paris and remitted to Y in London. X will recoup himself by selling a cable payment on Z in New York. Z will put himself in funds to meet the cable payment by selling 60 days' sight drafts on Y, who pays the 60 days' drafts at maturity out of the proceeds of the cheques or bills received from Paris, and this complicated transaction, involving no outlay of capital, must show some minute profit after all expense of bill stamps, discount, cables and commissions has been allowed for. Such business is very difficult and very technical. The arbitrageur must be in first-class credit, must make the most exact calculation, and be prompt to take advantage of the small differences in exchange, differences which can be only temporary, as these operations soon bring about an adjustment.

The European exchanges with which London is chiefly concerned are Paris and Berlin, through which centres most of the financial business of the rest of Europe is conducted; for example, Scandinavia, Russia and Austria bank more largely with Berlin than elsewhere. Italy, Switzerland, Belgium and Spain bank chiefly in Paris. European claims on London or debts to London are settled mostly through Germany or France, and consequently the German and French rates of exchange are affected by the relation of England with the rest of the Continent. The exchanges on Paris and Berlin are therefore most carefully watched by all those big interests which are concerned with the rate of discount and the value of money in London.

If the Paris cheque falls to 25.12, gold arrivals in the London bullion market will be taken by French bankers unless the profit shown by the exchange on some other country enables other buyers to pay more for the gold than Paris can afford. If the Paris cheque falls still further, it would pay to take sovereigns from the Bank of England for export, and so much would be taken as would satisfy the demand to send money to France, or until the consequent scarcity of money in London made rates of interest so high in England that French bankers would prefer to leave money and perhaps increase their balances. As between London and Paris and Berlin the greatest factor operating the exchanges is the relative value of money in the three centres. There is no great excess of trade balance at any season in favour of Germany or France and against England. On the other hand the banking relations between those countries are very intimate, and if funds can be very profitably employed in one of these places, there will be a good demand for remittance, and exchange will move in favour of that place, that is to say, exchange will go towards that limit point at which gold will be sent. The great pastoral and agricultural countries like South America, Egypt and India are in a position to draw very largely on London when their crops or other products are ready for shipment. In the early months of the year gold goes freely to South America to pay for the cereals, hides and meat, and in the autumn Egypt and India send such quantities of cotton and wheat that exchange moves heavily in favour of those countries, and gold must go to adjust the trade balance. During the rest of the year the gold tends to return as these countries always require bills on London or some form of payment to meet interest and dividends on European money invested in their government debts, railways and trading enterprises, and to pay for the European manufactures which they import. Exchange then moves in favour of England, and the Bank of England can replenish its reserve. Over the greater part of the world the rate of exchange on London is an indication simply of the trade balance. The greater part of the world receives payment for food stuffs, and has to pay for European manufactures, shipping freights, banking services and professional commissions.

The greatest complication in exchange questions arises when we have to deal with a country employing a silver standard, and, fortunately for the development of trade, this problem has disappeared of late years in the case of India, Ceylon, Japan, Mexico and the Straits Settlements, and now the only important country using silver as a standard is China. When the monetary standard in one country is only a commodity in another country we are as far removed from the ideal of an international currency as can be imagined. We can fix no limit points to the exchange and we cannot settle any theoretical par of exchange. The price of silver in the gold-using country may vary as much as the price of copper or tin, and in the silver-using country gold is dealt in just as any other metal. In both cases the only metal of constant price is the metal which is used as the money standard. The easiest method of explaining the position is to consider that any one in a gold-using country having a claim in currency on a silver-using country has to offer for sale so many ounces of silver, and vice versa the exporter in a silver-using country sending produce to London has to offer a draft representing so many ounces of gold. This introduces a very unsatisfactory element. To take a practical example:—a tea-grower in China has raised his crop in spite of the usual experience of weather and labour difficulties and the endless risks that a planter must face; the tea is then sent to London to take its chance of good or bad prices, and at the same time the planter has a draft to sell representing locally a certain weight of gold; now, in addition to all the risks of weather and trading conditions, and the chances of the fluctuations in the tea market, he is compelled to gamble in the metal market on the price of gold. Some years ago when a large number of important countries employed a silver standard it was seriously suggested that a fixed ratio should be agreed internationally at which gold and silver should be exchanged. This advocacy of bimetallism (*q.v.*) was especially persistent at a time when silver had suffered a very great fall in price and the prominent exponents could generally be identified either as extremely practical men who were interested in the price of silver, or as very inexperienced theorists. The difficulty of the two standards was successfully solved by discarding the use of silver, and the chief silver-using countries adopted a gold standard which has given greater security for the investment of foreign capital, has simplified business and brought about a large increase of trade.

In the case of a country of which the government has been subject to great financial difficulties, gold has been shipped to satisfy foreign creditors so long as the supply held out, and the exchange with such a country will continue to move adversely with every fresh political embarrassment and any other economic cause reflecting on the national credit. With the collapse of the monarchy in Brazil the value of the milreis fell from 27d. to 5d., and all the Spanish-American countries have from time to time afforded most distressing examples of the demoralizing effects on the currency of unstable and reckless administration. In Europe similar results have been shown by the mistrust inspired by the governments of Spain, Greece, Italy and some other states. The raising of revenue by the use of the printing press creates an inconvertible and depreciating paper currency which frightens foreign capital and severely taxes the unfortunate country which must make payment abroad for the service of debt and other obligations. With the tardy appreciation of the old proverb that “honesty is the best policy” nearly every country of importance has made strenuous efforts to improve the integrity of its money.

Exchange quotations are not published from many of the British colonies, as their financial business is in the hands of a comparatively few excellently managed banks, which establish, by agreement, conventional exchanges fixed for a considerable period, notably in the case of Australia, New Zealand and South Africa. The Scottish and Irish banks supply similar examples of a monopoly in exchange.

The following table taken from the money article of a London daily paper indicates the exchanges which are of most interest to England:—

Foreign Exchanges.

	June 14.	June 15.	June 16.
Paris, cheques	25 f. 18 c.	25 f. 18 c.	25 f. 18 c.
Paris, Mkt. discount	2½-⅝ p.c.	2½-⅝ p.c.	2½-⅝ p.c.
Brussels, cheques	25 f. 23 c.	25 f. 23½ c.	..
Berlin, sight	20 m. 48¾ pf.	20 m. 48¾ pf.	20 m. 48 pf.
Berlin, 8 days	20 m. 46½ pf.	20 m. 46¼ pf.	20 m. 45½ pf.
Berlin, Mkt. discount	3⅞ p.c.	3⅞ p.c.	3⅞ p.c.
Vienna, sight	Holiday	24 kr. 02¼ h.	24 kr. 02¾ h.
Amsterdam, sight	12 fl. 13⅛ c.	12 fl. 13¼ c.	..
Italy, sight	Holiday	25 lire 15 c.	..

Madrid, sight	”	27 ps. 68	..
Lisbon, sight	”	..	..
St Petersburg, 3 ms.	94 r. 10	94 r. 10	..
Bombay, T.T.	1s. 4d.	1s. 4d.	1s. 4d.
Calcutta, T.T.	1s. 4d.	1s. 4d.	1s. 4d.
Hong-Kong, T.T.	2s. 1 1/16d.	2s. 1 1/16d.	2s. 1 1/16d.
Shanghai, T.T.	2s. 10 3/4d.	2s. 10 5/8d.	2s. 10 5/8d.
Singapore, T.T.	2s. 4 1/16d.	2s. 4 1/16d.	2s. 4 1/16d.
Yokohama, T.T.	2s. 0 3/8d.	2s. 0 3/8d.	2s. 0 3/8d.
*Rio de Jan’ro, 90 days	16 9/16d.	16 9/16d.	16 17/32d.
*Valparaiso, 90 days Coml.	14 3/8d.	14 3/8d.	14 1/4d.
*B. Ayres, 90 days	48 1/8d.	48d.	48d.

* These rates are telegraphed on the day preceding their receipt.

In the case of Paris and Berlin it will be noticed that the local rate of discount is also given, as the value of money in these centres, in relation to the value of money in London, is the most important factor in a movement of the exchange. Vienna has become important owing to the improvement in the financial position of Austria, and still greater improvement is shown in the case of Italy, whose currency stands in the above list better even than that of France. Spain, which should stand at about the same rate, still has a depreciated paper currency. Lisbon stands also at a discount, as the milreis should be worth 53¼ pence.

In Russia the exchange showing 94.10 roubles to £10 is carefully and cleverly controlled in spite of the bad internal position. The India exchanges move slightly, as the currency is firmly established at the rate of 15 rupees to the £1. Hong-Kong quotes for the old Mexican dollar and a British trade dollar; Shanghai for the tael containing on an average 517½ grains of fine silver. The Straits Settlements have fixed their money on a gold basis at 2s. 4d. per dollar, on the lines of the arrangement made in India. In Japan there is a gold standard, and par of exchange is 2s. 0½d. for the yen. Brazil, Chile and Argentina have a depreciated paper currency, and the last quotation of 48d. is for the gold dollar equal to five francs, but there is a premium on gold in the River Plate of 127.27½% and for the present a gold standard is re-established on this basis. The letters T.T. with the eastern exchanges signify telegraphic transfer or the rate for payments made by cable. The very important New York rates are always given in another part of the daily paper with other details of American commercial interest.

These rates are all quotations for payments in England, and all over the world the exchange on London is the exchange of the greatest importance. This unique position was gained originally, probably, through the geographical position of the United Kingdom, and has been maintained owing to several reasons which secure to London a peculiar position by comparison with any other capital. Britain’s colossal trade ensures a supply of and a demand for English remittances. Even when goods or produce are dealt in between foreign countries a credit is opened in London, so that the shipper of the produce can offer in the local market a bill of exchange which is readily saleable. With the highly developed banking system a large amount of deposits is collected in London, and the result is that bills of any usance up to six months can be immediately discounted, and the proceeds, if required, can be handed over in gold. There are in London a great number of wealthy banks and banking houses whose reputation and solidity allow any one of them to accept bills for amounts varying from one to ten millions sterling, whereby large commissions are earned.

These four advantages, namely, a free gold market, a huge trade, an enormous accumulation of wealth, and a discount market such as exists nowhere else, have made London an unrivalled financial centre, and consequently bills on London are an international money and the best medium of exchange.

AUTHORITIES.—*A B C of the Foreign Exchanges*, by George Clare; *Foreign Exchanges*, by Goschen; *Arbitrage*, by Deutsch; *Arbitrages et Parités*, by Ottomar Haupt; Swoboda, *Arbitrage* (12th edition), by Max Fuerst.

(E. M. HA.)

EXCHEQUER. The word “exchequer” is the English form of the Fr. *échiquier*, low Lat. *scaccarium*, and its primary meaning is a chess-board (see CHESS). As the name of a government department dealing with accounts it is derived from the exchequer or the

"abacus" by means of which such accounts were kept, such a contrivance being almost universally in use before the introduction of the Arabic notation. In England the department or court of accounts was named originally "the tallies" from the notched sticks or tallies which constituted the primitive means of account-keeping (which were only abolished in 1826), and was only subsequently, probably in the reign of Henry I., named the exchequer from the use of the abacus. Both the name and the general features of the institution may reasonably be attributed to Norman influence, since we find both in Normandy and in the Norman kingdom of Sicily, as well as in Scotland and Ireland; the two latter cases being directly due to English example. As a court of law the exchequer owed its existence in England, as elsewhere, to the necessity of deciding legal questions arising from matters of account, and its secondary activities soon overshadowed its original functions.

We cannot say whether the exchequer, as known in England, is older than the beginning of the 12th century. The treasury, which may be regarded as one of its constituents, dates from before the conquest, and the officers of the exchequer who were drawn from the treasury staff can be traced back to Domesday. But our earliest information about the exchequer itself, apart from that afforded by the pipe rolls (see RECORD), rests on a treatise (*Dialogus de Scaccario*) written about A.D. 1179 by Richard, bishop of London and treasurer of England. His father, Nigel, bishop of Ely, had been treasurer of Henry I., and nephew to that king's great financial minister Roger, bishop of Salisbury. Nigel is said to have reconstituted the exchequer after the troubles of Stephen's reign upon the model which he inherited from his uncle. The Angevin, or rather the Norman, exchequer cannot be regarded in strictness as a permanent department. It consisted of two parts: the lower exchequer, which was closely connected with the permanent treasury and was an office for the receipt and payment of money; and the upper exchequer, which was a court sitting twice a year to settle accounts and thus nearly related to the Curia Regis (*q.v.*). We dare hardly say that either exchequer existed in vacation; indeed the word (like the word "diet") seems to have been limited at first to the actual sitting of the king's court for financial purposes. The Michaelmas and Easter exchequers were the sessions of this court "at the exchequer" or chess-board as it had previously sat "at the tallies." The constitution of the court was that of the normal Frankish curia. The king was the nominal president, and the court consisted of his great officers of state and his barons, or tenants-in-chief, and it is doubtless due to the fact that the exchequer was originally the curia itself sitting for a special purpose that its unofficial judges retained the name of "barons" until recent times. Of the great officers we may probably find the steward in the person of the justiciar, the normal president of the court. He sat at the head of the exchequer table. The butler was not represented. The chancellor sat on the justiciar's left; he was custodian *ex officio* of the seal of the court, and thus responsible for the issue of all writs and summonses, and moreover for the keeping of a duplicate roll of accounts embodying the judgments of the court. On the left of the chancellor, and thus clear of the table, since their services might be required elsewhere at any moment, sat the constable, the two chamberlains and the marshal. The constable was the chief of the outdoor service of the court, and was responsible for everything connected with the army, or with hunting and hawking. The two chamberlains were the lay colleagues of the treasurer, and shared with him the duty of receiving and paying money, and keeping safe the seal of the court, and all the records and other contents of the treasury. The marshal, who was subordinate to the constable, shared his duties, and was specially responsible for the custody of prisoners and of the vouchers produced by accountants. At the head of the table on the justiciar's right sat, in Henry II.'s time, an extraordinary member of the court, the bishop of Winchester. The treasurer, like the chancellor a clerk, sat at the head of the right-hand side of the table. He charged the accountants with their fixed debts, and dictated the contents of the great roll of accounts (or pipe roll) which embodied the decisions of the court as to the indebtedness of the sheriffs and other accountants. These persons with certain subordinates constituted the court of accounts, or upper exchequer, whereas the lower exchequer, or exchequer of receipt, consisted almost exclusively of the subordinates of the treasurer and chamberlains. In the upper exchequer the justiciar appointed the calculator, who exhibited the state of each account by means of counters on the exchequer table, so that the proceedings of the court might be clear to the presumably illiterate sheriff. The calculator sat in the centre of the side of the table on the president's left. The chancellor's staff consisted of the *Magister Scriptorii* (probably the ancestor of the modern master of the rolls), whose duties are not stated; a clerk (the modern chancellor of the exchequer) who settled the form of all writs and summonses, charged the sheriff with all fines and amercements, and acted as a check on the treasurer in the composition of the great roll; and a scribe (afterwards the comptroller of the pipe), who wrote out the writs and summonses and kept a duplicate of the great roll, known as the chancellor's roll. The constable's subordinates were the marshal and a clerk, who, besides

the duty of paying outdoor servants of the crown, had the special task of producing duplicates of all writs issued by the Curia Regis. The treasurer and chamberlains, being colleagues, had a joint staff, the clerical or literate members of which were servants of the treasurer, while the lay or illiterate members depended on the chamberlains. Hence while the treasurer and his clerks kept their accounts by means of rolls, the chamberlains and their serjeants duplicated them so far as possible by means of tallies. Thus the great roll was written by the treasurer's scribe (the engrosser, afterwards the clerk of the pipe), while the payments on account and other allowances to be credited to the sheriff were registered by the tally cutter of the chamberlains.

In the exchequer of receipt the staff was similarly divided between the treasurer and chamberlains; the treasurer having a clerk who kept the issue and receipt rolls (the later clerk of the pells) and four tellers, while each of the chamberlains was represented by a knight (afterwards the deputy chamberlains), who controlled the clerk's account by means of tallies, and held their lands by this serjeanty; these three had joint control of the treasury, and could not act independently. The other serjeants were the knight or "pesour" who weighed the money, the melter who assayed it, and the ushers of the two exchequers. It should be noted that all the lay offices of the treasury in both exchequers were hereditary. Henry II. had also a personal clerk who supervised the proceedings personally in the upper, and by deputy in the lower, exchequer.

The business of the ancient exchequer was primarily financial, although we know that some judicial business was done there and that the court of common pleas was derived from it rather than from the curia proper. The principal accountants were the sheriffs, who were bound, as the king's principal financial agents in each county, to give an account of their stewardship twice a year, at the exchequers of Easter and Michaelmas. Half the annual revenue was payable at Easter, and at Michaelmas the balance was exacted, and the accounts made up for the year, and formally enrolled on the pipe roll. The fixed revenue consisted of the farms of the king's demesne lands within the counties, of the county mints, and of certain boroughs (see BOROUGH) which paid annual sums as the price of their liberties. Danegeld was also regarded as fixed revenue, though after the accession of Henry II. it was not frequently levied. There were also rents of assarts and purprestures and mining and other royalties. The casual revenue consisted of the profits of the feudal incidents (escheat, wardship and marriage), of the profits of justice (amercements, and goods of felons and outlaws), and of fines, or payments made by the king's subjects to secure grants of land, wardships or marriages, and of immunities, as well as for the hastening and sometimes the delaying of justice. Besides this, there were the revenues arising from aids and scutages of the king's military tenants, tallages of the crown lands, customs of ports, and special "gifts," or general assessments made on particular occasions. For the collection of all these the sheriff was primarily responsible, though in some cases the accountants dealt directly with the exchequer, and were bound to make their appearance in person on the day when the sheriff accounted.

We gather both from tradition and from the example of the Scottish exchequer that the farms of demesne lands were originally paid in kind, by way of purveyance for the royal household, and although such farms are expressed even in Domesday Book in terms of money, the tradition that there was a system of customary valuation is a sufficient explanation, and not of itself incredible. At some date, possibly under the administration of Roger of Salisbury, the inconvenience of this arrangement led to the substitution of money payments at the exchequer. The rapid deterioration of a small silver coinage led to successive efforts to maintain the value of these payments, first by a "scale" deduction of 6d. in the £ for wear, then by the substitution of payment by weight for payment by tale, and finally by the reduction of most of such payments to their pure silver value by means of an assay, a process originally confined to payments from particular manors. Only the farms of counties, however, were so treated, and not all of those. The amount to be deducted in these cases was settled by the weighing and assaying of a specimen pound of silver in the presence of the sheriff by the pesour and the melter in the lower exchequer. The casual revenue was paid by tale, and for the determination of its amount it was necessary to have copies of all grants made in the chancery on which rents were reserved, or fines payable. These were known first as *contrabrevia* and later as *originalia*; the profits of justice were settled by the delivery of "estreats" from the justices, while for certain minor casualties the oath of the sheriff was at first the only security. At a later date many of them were determined by copies of inquisitions sent in from the chancery. All this business might be transacted anywhere in England, and though convenience placed the exchequer first at Winchester (where the treasury was), and afterwards usually at Westminster, it held occasional sessions at other towns even in the 14th century.

The Angevin exchequer, described by Richard the Treasurer, remained the ideal of the institution throughout its history, and the lineaments of the original exemplar were never completely effaced; but the rapid increase both of financial and judicial business led to a multiplication of machinery and a growing complexity of constitution. Even in the time of Henry II. we gather that the great officers of state, except the treasurer and chancellor, commonly attended by deputy. In the reign of Henry III. the chancellor had also ceased to attend, and his clerk acquired the title of chancellor of the exchequer. To the same period belongs the institution of the king's and lord treasurer's remembrancers. These at first had common duties and kept duplicate rolls, but by the ordinance of 1323 their functions were differentiated. Henceforward the king's remembrancer was more particularly concerned with the casual, and the lord treasurer's remembrancer with the fixed revenue. The former put all debts in charge, while the latter saw to their recovery when they had found their way on to the great roll. Hence the preliminary stages of each account, the receiving and registering of the king's writs to the treasurer and barons, and the drawing up of all particulars of account, lay with the king's remembrancer, and he retained the corresponding vouchers. The lord treasurer's remembrancer exacted the "remanets" of such accounts as had been enrolled, as well as reserved rents and fixed revenue, and so became closely connected with the clerk of the pipe. Before the end of the 14th century these three offices had already crystallized into separate departments.

In the meantime the increasing length and variety of accounts, as well as the growth of judicial business, had led to various efforts at reform. As early as 22 Henry II. it became necessary to remove from the great roll the debts which it seemed hopeless to levy, and further ordinances to the same end were made by statute in 54 Henry III. and in 12 Edward I. By this last a special "exannual roll" was established in which the "desperate debts" were recorded, in order that the sheriff might be reminded of them yearly without their overloading the great roll. But the largest accession of financial business arose from the "foreign accounts," that is to say, the accounts of national services, which did not naturally form part of the account of any county. These did not in the reign of Henry II. form a part of the exchequer business. Such expenses as appear on the pipe roll were paid by the sheriffs, or by the bailiffs of "honours"; payments out of the treasury itself would only appear on the receipt and issue rolls, and the "spending departments" probably drew their supplies from the camera curie, and not directly from the exchequer. In the course of the 13th century the exchequer gradually acquired partial control of these national accounts. Even in 18 Henry II. there is an account for the forests of England, and soon the mint, the wardrobe and the escheators followed. The undated statute of the exchequer (probably about 1276) provides for escheators, the earldom of Chester, the Channel Islands, the customs and the wardrobe. During the reign of Edward I., the wardrobe account became unmanageable, since it not only financed the household, army, navy and diplomatic service, but raised money on the customs independently of the exchequer. The reform of 1323-1326, due to Walter de Stapledon, in remedying this state of things, greatly increased the number of "foreign accounts" by making the great wardrobe (the storekeeping department), the butler, purveyors, keepers of horses or of the stud, the clerk of the "hamper" of the chancery (who took the fees for the great seal), and the various ambassadors, directly accountable to the exchequer. At the same time the sheriffs' accounts were expedited by the further simplification of the great roll, and by appointing a special officer, the "foreign apposer," to take the account of the "green wax," or estreats, so that two accounts could go on at once. Another baron (the 5th or cursitor baron) was appointed, and the whole business of foreign accounts was transferred to a separate building where one baron and certain auditors spent their whole time in settling the balances due on the accounts already mentioned, as well as those of castles, &c. , not let to farm, Wales, Gascony, Ireland, aids (clerical and lay), temporalities of vacant bishoprics, abbeys, priories and dignities, mines of silver and tin, ulnage and so forth. These balances were accounted for in the exchequer itself, and entered on the pipe roll, but the preliminary accounts were filed by the king's remembrancer, and enrolled separately by the treasurer's remembrancer as a supplement to the pipe roll.

The next important change, about the end of the 15th century, was the gradual substitution of special auditors appointed by the crown, known as the auditors of the prests (the predecessors of the commissioners for auditing public accounts), for the auditors of the exchequer. Accounts when passed by them were presented in duplicate and "declared" before the treasurer, under-treasurer and chancellor. Of the two copies, one, on paper, was retained by the auditors, the other, on parchment, was successively enrolled by the king's and lord treasurer's remembrancers, and finally by the clerk of the pipe, to secure the levying of any "remanets" or "supers" by process of the exchequer.

Besides the two great difficulties of the postponement of financial to legal business, and of

preventing the sheriffs from exacting the same debt twice, the exchequer was, as has been seen, hampered in its functions by the interference of other departments in financial matters. Its own branches even acquired a certain independence. The exchequer of the Jews, which came to an end in 18 Edward I., was such a branch. In 27 Henry VIII. the court of augmentations was established to deal with forfeited lands of monasteries. This was followed in 32 & 33 Henry VIII. by the courts of first-fruits and tenths and of general surveyors. These were reabsorbed by the exchequer in 1 Mary, but remained as separate departments within it. But the development of the treasury, which succeeded to the functions of the camera curie or the king's chamber, ultimately reduced the administrative functions of the exchequer to unimportance, and the audit office took over its duties with regard to public accounts. So that when the statute of 3 & 4 William IV. cap. 99, removed the sheriff's accounts also from its competence, and brought to an end the series of pipe rolls which begins in 1130, the ancient exchequer may be said to have come to an end.

(C. J.)

In 1834 an act was passed abolishing the old offices of the exchequer, and creating a new exchequer under a comptroller-general, the detailed business of payments formerly made at the exchequer being transferred to the paymaster-general, whose office was further enlarged in 1836 and 1848. And in 1866, as the result of a select committee reporting unfavourably on the system of exchequer control as established in 1834, the exchequer was abolished altogether as a distinct department of state, and a new exchequer and audit department established.

The ancient term exchequer now survives mainly as the official title of the national banking account of the United Kingdom. This central account is commonly called the exchequer, and its statutory title is "His Majesty's Exchequer." It may also be described with statutory authority as "The Account of the Consolidated Fund of Great Britain and Ireland." This account is, in fact, divided between the Banks of England and Ireland. At the head office of each of these institutions receipts are accepted and payments made on account of the exchequer; but in published documents the two accounts are consolidated into one, the balances only at the two banks being shown separately.

Operations affecting the exchequer are regulated by the Exchequer and Audit Departments Act 1866. Section 10 prescribes that the gross revenue of the United Kingdom (less drawbacks and repayments, which are not really revenue) is payable, and must sooner or later be paid into the exchequer. Section 11 directs that payments should be made from the fund so formed to meet the current requirements of spending departments. Sections 13, 14, 15 lay down the conditions under which money can be drawn from the exchequer. Drafts on the exchequer require the approval of an officer independent of the executive government, the comptroller and auditor-general. But the description of the formal procedure required by statute cannot adequately express the actual working of the system, or the part it plays in the national finance. The simplicity of the system laid down by the act of 1866 has been disturbed by the diversion of certain branches or portions of revenue from the exchequer to "Local Taxation Accounts," under a system initiated by the Local Government Act 1888, and much extended since.

While the exchequer is, as already stated, the central account, it is not directly in contact with the details of either revenue or expenditure. As regards revenue, the produce of taxes and other sources of income passes, in the first instance, into the separate accounts of the respective receiving departments—mainly, of course, those of the customs, inland revenue and post office. A not inconsiderable portion is received in the provinces, and remitted to London or Dublin by bills or otherwise, and the ultimate transfers to the exchequer are made (in round sums) from the accounts of the receiving departments in London or in Dublin. Thus, there are always considerable sums due to the exchequer by the revenue departments; on the other hand, as floating balances are (for the sake of economy) used temporarily for current expenses, there are generally amounts due by the exchequer to the receiving departments; such cross claims are adjusted periodically, generally once a month. The finance accounts of the United Kingdom show the gross amounts due to the exchequer from the departments, and likewise the amounts payable out of the gross revenue in priority to the claim of the exchequer. On the expenditure side a similar system prevails. No detailed payments are made direct from the exchequer, but round sums are issued from it to subsidiary accounts, from which the actual drafts for the public services are met. For instance, the interest on the national debt is paid by the Bank of England from a separate account fed by transfers of round sums from the exchequer as required. Similarly, payments for army, navy and most civil services are met by the paymaster-general out of an account of his own, fed by daily transfers from the exchequer.

This system has two noticeable effects. Firstly, it secures the simplicity and finality of the exchequer accounts, and therefore of all ordinary statements of national finance. Every evening the chancellor of the exchequer can tell his position so far as the exchequer is concerned; on the first day of every quarter the press is able to comment on the national income and expenditure up to the evening before. The annual account is closed on the evening of the 31st of March, and there can be no reopening of the budget of a past year such as may occur under other financial systems. The second effect of the system is to introduce a certain artificiality into the financial statements. Actual facts cannot be reduced to the simplicity of exchequer figures; there is always (as already explained) revenue received by government which has not yet reached the exchequer; and there must always be a considerable outstanding liability in the form of cheques issued but not yet cashed. The suggested criticism is, however, met if it can be shown that, on the whole, the differences between the true revenue and the exchequer receipts, or between the true (or audited) expenditure and the exchequer issues, are not, taking one year with another, relatively considerable. The following figures (000's omitted) illustrate this point:—

Expenditure.

Year.	Exchequer Issues.	Audited Expenditure.	Difference.
1888-1889	£85,674	£86,070	£+396
1889-1890	86,083	86,033	− 50
1890-1891	87,732	87,638	− 94
1891-1892	89,928	90,125	+197
1892-1893	90,375	90,164	−211
1893-1894	91,303	91,530	+227
1894-1895	93,919	93,818	−101
1895-1896	97,764	97,667	− 97
1896-1897	101,477	101,543	+ 66
1897-1898	102,936	103,010	+ 74
Total for 10 years	£927,191	£927,598	£+407

Revenue.

Year.	Exchequer Receipts.	Actual Revenue.	Difference.
1888-1889	£88,473	£88,038	£−435
1889-1890	89,304	89,416	+112
1890-1891	89,489	89,282	−207
1891-1892	90,995	91,428	+433
1892-1893	90,395	90,181	−214
1893-1894	91,133	91,265	+132
1894-1895	94,684	94,873	+189
1895-1896	101,974	102,031	+ 57
1896-1897	103,960	104,089	+129
1897-1898	106,614	106,691	+ 77
Total for 10 years	£947,011	£947,294	£+273

Surplus.

Year.	Exchequer Accounts.	Diff. between Actual Rev. and Aud. Exp.	Difference.
1888-1889	£2,799	£1,968	£−831
1889-1890	3,221	3,383	+162
1890-1891	1,757	1,644	−113
1891-1892	1,067	1,303	+236
1892-1893	20	17	− 3
1893-1894	*−170*	*−265*	− 95
1894-1895	765	1,055	+290
1895-1896	4,210	4,364	+154
1896-1897	2,473	2,546	+ 73
1897-1898	3,678	3,681	+ 3

Total for 10 years	£19,820	£19,696	£−124

The third column in the above shows the price which has to be paid (in the form of discrepancies between facts and figures) for the simplicity secured to statements and records of the national finance by the present system embodied in the term exchequer. Probably few will think the price too high in consideration of the advantages secured.

The principal official who derives a title from the exchequer in its living sense is, of course, the chancellor of the exchequer. He is the person named second in the patent appointing commissions for executing the office of lord high treasurer of Great Britain and Ireland; but he is appointed chancellor of the exchequer for Great Britain and chancellor of the exchequer for Ireland by two additional patents. Although, in fact, the finance minister of the United Kingdom, he has no *statutory* power over the exchequer apart from his position as second commissioner of the treasury; but in virtue of his office he is by statute master of the mint, senior commissioner for the reduction of the national debt, a trustee of the British Museum, an ecclesiastical commissioner, a member of the board of agriculture, a commissioner of public works and buildings, local government, and education, a commissioner for regulating the offices of the House of Commons, and has certain functions connected with the office of the secretary of state for India. The only other exchequer officer requiring mention is the comptroller and auditor-general, whose functions as comptroller-general of the exchequer have been already described. 58

The ancient name of the national banking account has been attached to two of the forms of unfunded national debt. Exchequer bills, which date from the reign of William and Mary (they took the place of the tallies, previously used for the same purpose), became extinct in 1897, but exchequer bonds (first issued by Mr Gladstone in 1853) still possess a practical importance. An exchequer bond is a promise by government to pay a specified sum after a specified period, generally three or five years, and meanwhile to pay interest half-yearly at a specified rate on that sum. Government possesses no general power to issue exchequer bonds; such power is only conferred by a special act, and for specified purposes; but when the power has been created, exchequer bonds issued in pursuance of it are governed by general statutory provisions contained in the Exchequer Bills and Bonds Act 1866, and amending acts. These acts create machinery for the issue of exchequer bonds and for the payment of interest thereon, and protect them against forgery.

Some traces may be mentioned of the ancient uses of the name exchequer which still remain. The chancellor of the exchequer still presides at the ceremony of “pricking the list of sheriffs,” which is a quasi-judicial function; and on that occasion he wears a robe of black silk with gold embroidery, which suggests a judicial costume. In England the last judge who was styled baron of the exchequer (Baron Pollock) died in 1897. In Scotland the jurisdiction of the barons of the exchequer was transferred to the court of session in 1856, but the same act requires the appointment of one of the judges as “lord ordinary in exchequer causes,” which office still exists. In Ireland Lord Chief Baron Palles was the last to retain the old title. A street near Dublin Castle is called Exchequer Street, recalling the separate Irish exchequer, which ceased in 1817. The old term also survives in the full title of the treasury representative in Scotland, which is “The King’s and the Lord Treasurer’s Remembrancer in Exchequer,” while his office in the historic Parliament Square is styled “Exchequer Chambers.”

(S. E. S.-R.)

BIBLIOGRAPHY.—For the early exchequer Thomas Madox’s *History and Antiquities of the Exchequer* (London, 1711) remains the standard authority, and in it the *Dialogus de Scaccario* of Richard the Treasurer (1179) was first printed (edited since by A. Hughes, C.G. Crump and C. Johnson, Oxford, 1902). The publications of the Pipe Roll Society (London, 1884 et seq.), the Pipe Rolls and Chancellor’s Roll, printed by the Record Commission (London, 1833 and 1844), and H. Hall’s edition of the *Receipt Roll of the Exchequer 31 Henry II.* (London, 1899) should also be consulted. A popular account is in H. Hall’s *Court Life under the Plantagenets* (London, 1901), and a careful study in Dr Parow’s thesis, *Compotus Vicecomitis* (Berlin, 1906). For the 13th and 14th centuries H. Hall’s edition of the *Red Book of the Exchequer* (London, Rolls Series, 1896) is essential, as also the Public Record Office *List of Foreign Accounts* (London, 1900). Later practice may be gathered from the similar *List and Index of Declared Accounts* (London, 1893), and from such books as Sir T. Fanshawe’s *Practice of the Exchequer Court*, written about A.D. 1600 (London, 1658); Christopher Vernon’s *The Exchequer Opened* (London, 1661), or Sir Geoffrey Gilbert’s *Treatise on the Court of Exchequer* (London, 1758), as well as from the statutes abolishing various offices in the exchequer. H. Hall’s *Antiquities of the Exchequer* (London, 1891) gives

many interesting details of various dates. For the Scottish exchequer *The Exchequer Rolls of Scotland* (Edinburgh, 1878 et seq.) should be consulted, while Gilbert's book noted above gives some details on that of Ireland. See also Appendix 13 to the great account of *Public Income and Expenditure from 1688 to 1869*, in three volumes, prepared for parliament by H.W. Chisholm (1869); and for sidelights on the working of the office from 1825 to 1866 the reminiscences of the same author (the last chief clerk of the exchequer) in *Temple Bar* (January to April 1891).

EXCISE (derived through the Dutch, *excijs* or *accijs*, possibly from Late Lat. *accensare*, —*ad*, to, and *census*, tax; the word owes something to a confusion with *excisum*, cut out), a term now well known in public finance, signifying a duty charged on home goods, either in the process of their manufacture, or before their sale to the home consumers. This form of taxation implies a commonwealth somewhat advanced in manufactures, markets and general riches; and it interferes so directly with the industry and liberty of the subject that it has seldom been introduced save in some supreme financial exigency, and has as seldom been borne, even after long usage, with less than the ordinary impatience of taxation. Yet excise duties can boast a respectable antiquity, having a distinct parallel in the *vectigal rerum venalium* (or toll levied on all commodities sold by auction, or in public market) of the Romans. But the Roman excise was mild compared with that of modern nations, having never been more than *centesima*, or 1%, of the value; and it was much shorter lived than the modern examples, having been first imposed by Augustus, reduced for a time one-half by Tiberius, and finally abolished by Caligula, A.D. 38, so that the Roman excise cannot have had a duration of much more than half a century. Its remission must have been deemed a great boon in the marts of Rome, since it was commemorated by the issue of small brass coins with the legend *Remissis Centesimis*, specimens of which are still to be found in collections.

The history of this branch of revenue in the United Kingdom dates from the period of the civil wars, when the republican government, following the example of Holland, established, as a means of defraying the heavy expenditure of the time, various duties of excise, which the royalists when restored to power found too convenient or too necessary to be abandoned, notwithstanding their origin and their general unpopularity. On the contrary, they were destined to be steadily increased both in number and in amount. It is curious that the first commodities selected for excise were those on which this branch of taxation, after great extension, had again in the period of reform and free trade been in a manner permanently reduced, viz. malt liquors, and such kindred beverages as cider perry and spruce beer. The other excise duties remaining are chiefly in the form of licences, such as to kill game and to use and carry guns, to sell gold and silver plate, to pursue the business of appraisers or auctioneers, hawkers or pedlars, pawnbrokers or patent-medicine vendors, to manufacture tobacco or snuff, to deal in sweets or in foreign wines, to make vinegar, to roast malt, or to use a still in chemistry or otherwise. It may be presumed that the policy of the licence duties was at first not so much to collect revenue, though in the aggregate they yielded a large sum, as to guard the main sources of excise, and to place certain classes of dealers, by registration and an annual payment to the exchequer, under a direct legal responsibility. The excise system of the United Kingdom as now pruned and reformed, however, while still the most prolific of all the sources of revenue, is simple in process, and is contentedly borne as compared with what was the case in the 18th, and the beginning of the 19th century. The wars with Bonaparte strained the government resources to the uttermost, and excise duties were multiplied and increased in every practicable form. Bricks, candles, calico prints, glass, hides and skins, leather, paper, salt, soap, and other commodities of home manufacture and consumption were placed, with their respective industries, under excise surveillance and fine. When the duties could no longer be increased in number, they were raised in rate. The duty on British spirits, which had begun at a few pence per gallon in 1660, rose step by step to 11s. 8¼d. per gallon in 1820; and the duty on salt was augmented to three or fourfold its value.

The old unpopularity of excise, though now somewhat out of date, must have had real enough grounds. It breaks out in English literature, from songs and pasquinades to grave political essays and legal commentaries. Blackstone, in quoting the declaration of parliament in 1649 that "excise is the most easy and indifferent levy that can be laid upon the people," adds on his own authority that "from its first original to the present time its very name has

been odious to the people of England" (book i. cap. 8, tenth edition, 1786); while the definition of "excise" gravely inserted by Dr Johnson in the *Dictionary*, at the imminent risk of subjecting the eminent author to a prosecution for libel—viz. "a hateful tax levied upon commodities, and adjudged not by the common judges of property, but wretches hired by those to whom excise is paid"—can hardly be ever forgotten.

The duties of excise in the United Kingdom were, until the passing of the Finance Act 1908, under the control of the commissioners of inland revenue; they are now under the control of the commissioners of customs; the amount raised, apart from changes in the rate, shows a fairly constant tendency to increase, and is usually regarded as one of the best tests of the prosperity of the working classes.

The *spirit duty* is levied according to the quantity of "proof spirit" contained in the product of distillation, and the charge is taken at three different points in the process of manufacture, the trader being liable for the result of the highest of the three calculations. What is known as "proof spirit" is obtained by mixing nearly equal weights of pure alcohol and water, the quantity of pure alcohol being in bulk about 57% of the whole. Owing to the high rate of duty as compared with the volume and intrinsic value of the spirits, the whole process of manufacture is carried on under the close supervision of revenue officials. All the vessels used are measured by them and are secured with revenue locks; the premises are under constant survey; and notice has to be given by the distiller of the materials used and of the several stages of his operations. Though the charge for duty is raised at the time when the process of distillation is completed, the duty is not actually paid until the spirits are required for consumption. In the meanwhile they may be retained in an approved "warehouse," which is also subject to close supervision.

The *beer duty* dates from 1880, in which year it was substituted for the duty on malt. The specific gravity of the worts depends chiefly on the amount of sugar which they contain, and is ascertained by the saccharometer.

Excise *licences* may be divided into—(*a*) licences for the sale or manufacture of excisable liquors, (*b*) licences for other trades, such as tobacco dealers or manufacturers, auctioneers, pawnbrokers, &c. , (*c*) licences for male servants, carriages, motors and armorial bearings, and (*d*) gun, game and dog licences. Nearly the whole of the licence duties is paid over to the local taxation account.

The *railway passenger duty*, which was made an excise duty by the Railway Passenger Duty Act 1847, applies only to Great Britain. It is levied on all passenger fares exceeding 1d. per mile, the rate being 2% on urban and 5% on other traffic.

The other items which go to make up the excise revenue are the charges on deliveries from bonded warehouses, and the duties on coffee mixture labels and on chicory.

For more detailed information reference should be made to Highmore's *Excise Laws*, and the annual reports of the commissioners of inland revenue, especially those issued in 1870 and 1885. See also TAXATION; ENGLISH FINANCE.

EXCOMMUNICATION (Lat. *ex*, out of, away from; *communis*, common), the judicial exclusion of offenders from the rights and privileges of the religious community to which they belong. The history of the practice of excommunication may be traced through (1) pagan analogues, (2) Hebrew custom, (3) primitive Christian practice, (4) medieval and monastic usage, (5) modern survivals in existing Christian churches.

1. Among pagan analogues are the Gr. χερνίβων εἴργεσθαι (Demosth. 505, 14), the exclusion of an offender from purification with holy water. This exclusion was enforced in the case of persons whose hands were defiled with bloodshed. Its consequences are described Aesch. *Choëph.* 283, *Eum.* 625 f., Soph. *Oed. Tyr.* 236 ff. The Roman *exsecratio* and diris *devotio* was a solemn pronouncement of a religious curse by priests, intended to call down the divine wrath upon enemies, and to devote them to destruction by powers human and divine. The Druids claimed the dread power of excluding offenders from sacrifice (Caes. *B.G.* vi. 13). Primitive Semitic customs recognize that when persons are laid under a ban or taboo (*ḥerem*) restrictions are imposed on contact with them, and that the breach of these involves supernatural dangers. Impious sinners, or enemies of the community and its

god, might be devoted to utter destruction.

2. *Hebrew Custom.*—In a theocracy excommunication is necessarily both a civil and a religious penalty. The word used in the New Testament to describe an excommunicated person, ἀνάθεμα(1 Cor. xvi. 22, Gal. i. 8-9, Rom. ix. 3), is the Septuagint rendering of the Hebrew *ḥerem*. The word means "set apart" (cf. harem), and does not distinguish originally between things set apart because devoted to God and things devoted to destruction. Lev. xxvii. 16-34 defines the law for dealing with "devoted" things; according to v. 28 "No devoted thing that a man shall devote unto the Lord, of all that he hath, whether of man or beast, or of the field of his possession, shall be sold or redeemed. None devoted shall be ransomed, he shall surely be put to death." As in Greece and Rome whole cities or nations might be devoted to destruction by pronouncement of a ban (Numbers xxi. 2, 3, Deut. ii. 34, iii. 6, vii. 2). Occasionally Israelites as well as aliens fall under the curse (Judg. xxi. 5, 11). A milder form of penalty was the temporary separation or seclusion (*niddah*) prescribed for ceremonial uncleanness. This was the ordinary form of religious discipline. In the time of Ezra the Jewish "magistrates and judges" among their ecclesiastico-civil functions have the right of pronouncing sentence whether it be unto death, or to "rooting out," or to confiscation of goods, or to imprisonment (Ezra vii. 26). There is also a lighter form of excommunication which "devotes" the goods of an offender, but only separates him from the congregation. Both major and minor kinds of excommunication are recognized by the Talmud. The lesser (*niddah*) involved exclusion from the synagogue for thirty days, and other penalties, and might be renewed if the offender remained impenitent. The major excommunication (*ḥerem*) excluded from the Temple as well as the synagogue and from all association with the faithful. Spinoza was excommunicated (July 16, 1656) for contempt of the law. Seldon (*De jure nat. et gen.*, iv. 7) gives the text of the curse pronounced on the culprit. The *Exemplar Humanae Vitae* of Uriel d'Acosta also deserves reference. The practice of the Jewish courts in New Testament times may be inferred from certain passages in the Gospels. Luke vi. 22, John ix. 22, xii. 42 indicate that exclusion from the synagogue was a recognized penalty, and that it was probably inflicted on those who confessed Jesus as the Christ. John xvi. 2 ("Whosoever killeth you," &c.) may point to the power of inflicting the major penalty. The Talmud itself says that the judgment of capital cases was taken away from Israel forty years before the destruction of the Temple. "Forty" is probably a round number without historical value, but the circumstance recorded by this tradition and confirmed by the evangelist's account of the trial of Jesus is historical, and is to be regarded as one of several restrictions imposed on the Jewish courts in the time of the Roman procurators.

3. *Primitive Christian Practice.*—The use of excommunication as a form of Christian discipline is based on the precept of Christ and on apostolic practice. The general principles which govern the exclusion of members from a religious community may be gathered from the New Testament writings. Matt. xviii. 15-17 prescribes a threefold admonition, first privately, then in the presence of witnesses (cf. Titus iii. 10), then before the church. This is a graded procedure as in the Jewish synagogue and makes exclusion a last resort. Nothing is said as to the nature and effects of excommunication. The tone of the passage when compared with the disciplinary methods of the synagogue indicates that its purpose was to introduce elements of reason and moral suasion in place of sterner methods. Its object is rather the protection of the church than the punishment of the sinner. The offender is only treated as a heathen and publican when the purity and safety of the church demand it. In the *locus classicus* on this subject (1 Cor. v. 5) Paul refers to a formal meeting of the Corinthian church at which the incestuous person is "delivered unto Satan for the destruction of the flesh that the spirit may be saved in the day of the Lord Jesus." These are mysterious words implying (1) a formal ecclesiastical censure, (2) a physical penalty, (3) the hope of a spiritual result. The form of penalty which would meet these conditions is not explained. There is a reference in 2 Cor. ii. 6-11 to a case of discipline which may or may not be the same. If it be the same it indicates that the excommunication had not been final; the offender had been received back. If it be not the same it shows the Corinthian church exercising discipline independently of apostolic advice. Up to this point there is no established formal practice. 1 Tim. i. 20 ("Hymenaeus and Alexander whom I delivered unto Satan that they might be taught not to blaspheme") seems to refer to an excommunication, but it does not appear whether the apostle had acted as representing a church, nor is there anything to explain the exact consequences or limits of the deliverance to Satan. 1 Cor. xvi. 22, Gal. i. 8, 9, Rom. ix. 3 refer to the practice of regarding a person as anathema. Taking these passages as a whole they seem to point to an exclusion from church fellowship rather than to a final cutting off from the hope of salvation. In the pastoral letters there is already a formal and recognized method of procedure in cases of church discipline. 1 Tim. v. 19, 20

requires two or three witnesses in the case of an accusation against an elder, and a public reproof. Tit. iii. 20 recognizes a factious spirit as a reason for excommunication after two admonitions (cf. Tim. vi. and 2 John v. 10). In 3 John v. 9-10 Diotrephes appears to have secured an excommunication by the action of a party in the church. It is clear from these illustrations that within the New Testament there is development from spontaneous towards strictly regulated methods; also that the use of excommunication is chiefly for disciplinary and protective rather than punitive purposes. A process which is intended to produce penitence and ultimate restoration cannot at the same time contemplate handing the offender over to eternal punishment.

4. *Medieval and Monastic Usage.*—The writings of the church Fathers give sufficient evidence that two degrees of excommunication, the ἀφορισμός and the ἀφορισμὸς παντελής, as they were generally called, were in use during, or at least soon after, the apostolic age. The former, which involved exclusion from participation in the eucharistic service and from the eucharist itself, though not from the so-called "service of the catechumens," was the usual punishment of comparatively light offences; the latter, which was the penalty for graver scandals, involved "exclusion from all church privileges,"—a vague expression which has sometimes been interpreted as meaning total exclusion from the very precincts of the church building (*inter hiemantes orare*) and from the favour of God (Bingham, *Antiquities of Christian Church*, xvi. 2. 16). For some sins, such as adultery, the sentence of excommunication was in the 2nd century regarded as παντελής in the sense of being irrevocable. Difference of opinion as to the absolutely "irremissible" character of mortal sins led to the important controversy associated with the names of Zephyrinus, Tertullian, Calistus, Hippolytus, Cyprian and Novatian, in which the stricter and more montanistic party held that for those who had been guilty of such sins as theft, fraud, denial of the faith, there should be no restoration to church fellowship even in the hour of death. On this point the provincial synods of Illiberis (Elvira) in 305 and of Ancyra in 315 subsequently came to conflicting decisions, the council of Elvira forbidding the reception of offenders into communion during life, and the council of Ancyra fixing a limit to the penalty in the same cases. But the excommunication was on all hands regarded as being "medicinal" in its character. It is noteworthy that the word ἀνάθεμα had fallen into disuse about the beginning of the 4th century, and that, throughout the same period, no instance of the judicial use of the phrase παραδοῦναι τῷ Σατανᾷ can be found.

A new chapter in the history of the church censure may be said to have begun with the publication of those imperial edicts against heresy, the first of which, *De summa trinitate et fide catholica*, dates from 380. Till then exclusion from church privileges had been a spiritual discipline merely; thenceforward it was to expose a man to serious temporal risks. Excommunication still continued to be occasionally used in the spirit of genuine Christian fidelity, as by Ambrose in the case of Theodosius himself (390); but the temptation to wield it as an instrument of secular tyranny too often proved to be irresistible. The church fell back on carnal weapons in her warfare and invoked the secular powers to uphold the ecclesiastical. In the formula used by Synesius (410) which is to be found in Bingham's *Antiquities*, we already find the attention of magistrates specially called to the censured person. The history of the next thousand years shows that the magistrates were seldom slow to respond to the appeal. Even the hastiest survey of that long and interesting period enables the student to notice a marked development in the theory and practice of excommunication. One or two points may be specially noted. (1) When the Empire became nominally Christian and the quality of the church life was sacrificed to the quantity of its adherents, the original character of excommunication was lost. The power of excommunication was transferred from the community to the bishop, and was liable to abuse from personal motives: Gregory the Great rebukes a bishop for using for private ends power conferred for the public good (*Epist.* ii. 34). Excommunication became a common penalty applied in numberless cases (see the *Penitential* of Archbishop Theodosius: Haddan and Stubbs, *Councils and Documents*, iii. 1737), and was invested with superstitious terrors. (2) While it had been held as an undoubted principle by the ancient church that this sentence could only be passed on living individuals whose fault had been distinctly stated and fully proved, we find the medieval church on the one hand sanctioning the practice of excommunication of the dead (Morinus, *De poenit.* x. c. 9), and, on the other hand, by means of the papal interdict, excluding whole countries and kingdoms at once from the means of grace. The earliest well-authenticated instance of such an interdict is that which was passed (998) by Pope Gregory V. on France, in consequence of the contumacy of King Robert the Wise. Other instances are those laid respectively on Germany in 1102 by Gregory VII. (Hildebrand), on England in 1208 by Innocent III., on Rome itself in 1155 by Adrian IV. (3) While in the ancient church the language used in excommunicating had been carefully

measured, we find an amazing recklessness in the phraseology employed by the medieval clergy. The curse of Ernulphus or Arnulphus of Rochester (*c.* 1100), often quoted by students of English literature, is a very fair specimen of that class of composition. With it may be compared the formula transcribed by Dr Burton in his *History of Scotland* (iii. 317 ff.). To the spoken word was added the language of symbol. By means of lighted candles violently dashed to the ground and extinguished the faithful were graphically taught the meaning of the greater excommunication—though in a somewhat misleading way, for it is a fundamental principle of the canon law that *disciplina est excommunicatio, non eradicatio*. The first instance, however, of excommunication by "bell, book and candle" is comparatively late (*c.* 1190).

5. *Modem Survivals in Existing Christian Churches.*—At the Reformation the necessity for church discipline did not cease to be recognized; but the administration of it in many Reformed churches has passed through a period of some confusion. In some instances the old episcopal power passed more or less into the hands of the civil magistrate (a state of matters which was highly approved by Erastus and his followers), in other cases it was conceded to the presbyterial courts. In the Anglican Church the bishops (subject to appeal to the sovereign) have the right of excommunicating, and their sentence, if sustained, may in certain cases carry with it civil consequences. But this right is in practice never exercised. In the law of England sentence of excommunication, upon being properly certified by the bishop, was followed by the writ *de excommunicato capiendo* for the arrest of the offender. The statute 5 Eliz. c. 23 provided for the better execution of this writ. By the 53 Geo. III. c. 127 (which does not, however, extend to Ireland) it was enacted that "excommunication, together with all proceedings following thereupon, shall in all cases, save those hereafter to be specified, be discontinued." Disobedience to or contempt of the ecclesiastical courts is to be punished by a new writ, *de contumace capiendo*, to follow on the certificate of the judge that the defender is contumacious and in contempt. Sect. 2 provides that nothing shall prevent "any ecclesiastical court from pronouncing or declaring persons to be excommunicate on definite sentences pronounced as spiritual censures for offences of ecclesiastical cognizance." No persons so excommunicated shall incur any civil penalty or incapacity whatever, save such sentence of imprisonment, not exceeding six months, as the court shall direct and certify to the king in chancery.

In the churches which consciously shaped their polity at or after the Reformation the principle of excommunication is preserved in the practice of church discipline. Calvin devotes a chapter in the *Institutes* (bk. iv. chap. xii.) to the "Discipline of the Church; its Principal Use in Censure and Excommunication." The three ends proposed by the church in such discipline are there stated to be, (1) that those who lead scandalous lives may not to the dishonour of God be numbered among Christians, seeing that the church is the body of Christ; (2) that the good may not be corrupted by constant association with the wicked; (3) that those who are censured or excommunicated, confounded with shame, may be led to repentance. He differentiates decisively between excommunication and anathema. "When Christ promises that what his ministers bind on earth shall be bound in heaven, he limits the power of binding to the censure of the church; by which those who are excommunicated are not cast into eternal ruin and condemnation, but by having their life and conduct condemned are also certified of their final condemnation unless they repent. For excommunication differs from anathema: anathema which ought to be very rarely, or never, resorted to, in precluding all pardon, execrates a person, and devotes him to eternal perdition: whereas excommunication rather censures and punishes his conduct. Yet in such a manner by warning him of his future condemnation it recalls him to salvation" (*Inst.* bk. iv. chap. xii. 10). The Reformed churches in England and America accepted the distinction between public and private offences. The usual provision is that private offences are to be dealt with according to the rule in Matt. v. 23-24, xviii. 15-17; public offences are to be dealt with according to the rule in 1 Cor. v. 3-5, 13. The public expulsion or suspension of the offender is necessary for the good repute of the church, and its influence over the faithful members. The expelled member may be readmitted on showing the fruits of repentance.

In Scotland three degrees of church censure are recognized—admonition, suspension from sealing ordinances (which may be called temporary excommunication), and excommunication properly so-called. Intimation of the last-named censure may occasionally (but very rarely) be given by authority of a presbytery in a public and solemn manner, according to the following formula:—"Whereas thou N. hast been by sufficient proof convicted (here mention the sin) and after due admonition and prayer remainest obstinate without any evidence or sign of true repentance: Therefore in the name of the Lord Jesus Christ, and before this congregation, I pronounce and declare thee N. excommunicated, shut out from the communion of the faithful, debar thee from privileges, and deliver thee unto

Satan for the destruction of thy flesh, that thy spirit may be saved in the day of the Lord Jesus." This is called the greater excommunication. The congregation are thereafter warned to shun all unnecessary converse with the excommunicate (see *Form of Process*, c. 8). Formerly excommunicated persons were deprived of feudal rights in Scotland; but in 1690 all acts enjoining civil pains upon sentences of excommunication were finally repealed (Burton's *History*, vii. 435).

The question whether the power of excommunication rests in the church or in the clergy has been an important one in the history of English and American churches. Hooker lays down (*Survey*, pt. 3, pp. 33-46) four necessary conditions for the execution of a sentence involving church discipline. "(1) The cause exactly recorded is fully and nakedly to be presented to the consideration of the congregation. (2) The elders are to go before the congregation in laying open the rule so far as reacheth any particular now to be considered, and to express their judgment and determination thereof, so far as appertains to themselves. (3) Unless the people be able to convince them of errors and mistakes in their sentence, they are bound to joyn their judgment with theirs to the compleating of the sentence. (4) The sentence thus compleatly issued is to be solemnly passed and pronounced upon the delinquent by the ruling Elder whether it be of censure or excommunication." In this passage it is clear that the effective power of discipline is regarded as being wholly in the power of the individual church or congregation. Hooker expressly denies the power of synods to excommunicate: "that there should be Synods, which have *potestatem juridicam* is nowhere proved in Scripture because it is not a truth" (*Survey*, pt. 4, pp. 48, 49).

The confession of faith issued by the London-Amsterdam church (the original of the Pilgrim Fathers' churches) in 1596 declares that the Christian congregation having power to elect its minister has also power to excommunicate him if the case so require (Walker, *Creeds and Platforms of Congregationalism*, p. 66). In 1603 the document known as "Points of Difference" (*i.e.* from the established Anglicanism) submitted to James I. sets forth: "That all particular Churches ought to be so constituted as, having their owne peculiar Officers, the whole body of every Church may meet together in one place, and jointly performe their duties to God and one towards another. And that the censures of admonition and excommunication be in due manner executed, for sinne, convicted, and obstinately stood in. This power also to be in the body of the Church whereof the partyes so offending and persisting are members." The *Cambridge Platform* of 1648 by which the New England churches defined their practice, devotes ch. xiv. to "excommunication and other censures." It follows in the main the line of Hooker and Calvin, but adds (§ 6) an important definition: "Excommunication being a spirituall punishment it doth not prejudice the excommunicate in, nor deprive him of his *civil* rights, therfore toucheth not princes, or other magistrates, in point of their civil dignity or authority. And, the excommunicate being but as a publican and a heathen, heathen being lawfully permitted to come to hear the word in church assemblyes; wee acknowledg therfore the like liberty of hearing the word, may be permitted to persons excommunicate, that is permitted unto heathen. And because wee are not without hope of his recovery, wee are not to account him as an enemy but to admonish him as a brother." The Savoy Declaration of 1658 defines the theory and practice of the older English Nonconformist churches in the section on the "Institution of Churches and the Order appointed in them by Jesus Christ" (xix.). The important article is as follows:—"The Censures so appointed by Christ, are Admonition and Excommunication; and whereas some offences are or may be known onely to some, it is appointed by Christ, that those to whom they are so known, do first admonish the offender in private: in publique offences where any sin, before all; or in case of non-amendment upon private admonition, the offence being related to the Church, and the offender not manifesting his repentance, he is to be duely admonished in the Name of Christ by the whole Church, by the Ministery of the Elders of the Church, and if this Censure prevail not for his repentance, then he is to be cast out by Excommunication with the consent of the Church."

In contemporary English Free Churches the purity of the church is commonly secured by the removal of persons unsuitable for membership from the church books by a vote of the responsible authority.

(D. Mn.)

EXCRETION (Lat. *ex*, out of, *cernere*, *cretum*, to separate), in plant and animal

physiology, the separation from an organ of some substance, also the substance separated. The term usually refers to the separation of waste or harmful products, as distinguished from “secretion,” which refers to products that play a useful or necessary part in the functions of the organism.

EXECUTION (from Lat. *ex-sequor*, *exsecutus*, follow or carry out), the carrying into effect of anything, whether a rite, a piece of music, an office, &c. ; and so sometimes involving a notion of skill in the performance. Technically, the word is used in law in the *execution* of a deed (its formal signing and sealing), an *execution* (see below) by the sheriff’s officers under a “writ of execution” (the enforcement of a judgment on a debtor’s goods); and *execution of death* has been shortened to the one word to denote Capital Punishment (*q.v.*).

Civil Execution may be defined as the process by which the judgments or orders of courts of law are made effectual. In Roman law the earliest mode of execution was the seizure, legalized by the *actio per manus injectionem*, of the debtor as a slave of the creditor. During the later Republic, imprisonment took the place of slavery. Under the régime of the *actio per manus injectionem*, the debtor might dispute the debt—the issue being raised by his finding a substitute (*vindex*) to conduct the case for him. By the time of Gaius (iv. 25) the *actio per manus injectionem* had been superseded by the *actio judicati*, the object of which was to enable the creditor to take payment of the debt or compel the debtor to find security (*pignus in causa judicati captum: Cautio judicatum solvi*), and in A.D. 320 Constantine abolished imprisonment for debt, unless the debtor were contumacious. The time allowed for payment of a judgment debt was by the XII. Tables 30 days; it was afterwards extended to two months, and ultimately, by Justinian, to four months. The next stage in the Roman law of execution was the recognition of bankruptcy either against the will of the bankrupt (*missio in bona*) or on the application of the bankrupt (*cessio bonorum*; and see Bankruptcy). Lastly, in the time of Antoninus Pius, judgment debts were directly enforced by the seizure and sale of the debtor’s property. Slaves, oxen and implements of husbandry were privileged; and movable property was to be exhausted before recourse was had to land (see Hunter, *Roman Law*, 4th ed. pp. 1029 et seq., Sohm, *Inst. Rom. Law*, 2nd ed. pp. 302-305).

Great Britain.—The English law of execution is very complicated, and only a statement of the principal processes can here be attempted.

High Court.—Fieri Facias. A judgment for the recovery of money or costs is enforced, as a rule, by writ of *fieri facias* addressed to the sheriff, and directing him to cause to be made (*fieri facias*) of the goods and chattels of the debtor a levy of a sum sufficient to satisfy the judgment and costs, which carry interest at 4% per annum. The seizure effected by the sheriff or his officer, under this writ, of the property of the debtor, is what is popularly known as “the putting-in” of an execution. The seizure should be carried out with all possible despatch. The sheriff or his officer must not break open the debtor’s house in effecting a seizure, for “a man’s house is his castle” (*Semayne’s Case* [1604], 5 Coke Rep. 91); but this principle applies only to a dwelling-house, and a barn or outhouse unconnected with the dwelling-house may be broken into. The sheriff on receipt of the writ endorses on it the day, hour, month and year when he received it; and the writ binds the debtor’s goods as at the date of its delivery, except as regards goods sold before seizure in market overt, or purchased for value, without notice before actual seizure (Sale of Goods Act 1893, s. 26, which supersedes s. 16 of the Statute of Frauds and s. 1 of the Mercantile Law Amendment Act 1856). This rule is limited to goods, and does not apply to the money or bank notes of the debtor which are not bound by the writ till seized under it (*Johnson* v. *Pickering*, Oct. 14, 1907, C.A.). The mere seizure of the goods, however, although, subject to such exceptions as those just stated, it binds the interest of the debtor, and gives the sheriff such an interest in the goods as will enable him to sue for the recovery of their possession, does not pass the property in the goods to the sheriff. The goods are in the custody of the law. But the property remains in the debtor who may get rid of the execution on payment of the claim and fees of the sheriff [as to which see Sheriffs Act 1887, s. 20, and order of 21st of August 1888, *Annual Practice* (1908), vol. ii. p. 278]. The wearing apparel, bedding, tools, &c. , of the debtor to the value of £5 are protected. Competing claims as to the ownership of the goods seized are brought before the courts by the procedure of “interpleader.” After seizure, the sheriff must retain possession, and, in default of payment by the execution debtor, proceed to sell. Where the judgment debt, including legal expenses, exceeds £20, the sale must be by public auction, unless the Court otherwise orders, and must be publicly

advertised. The proceeds of sale, after deduction of the sheriff's fees and expenses, become the property of the execution creditor to the extent of his claim. The Bankruptcy Act 1890 (53 & 54 Vict. c. 71, s. 11 [2]) requires the sheriff in case of sale under a judgment for a sum exceeding £20 to hold the proceeds for 14 days in case notice of bankruptcy proceedings should be served upon him (see BANKRUPTCY). The form of the writ of *fieri facias* requires the sheriff to make a return to the writ. In practice this is seldom done unless the execution has been ineffective or there has been delay in the execution of the writ; but the judgment creditor may obtain an order calling on the sheriff to make a return. A sheriff or his officer, who is guilty of extortion in the execution of the writ, is liable to committal for contempt, and to forfeit £200 and pay all damages suffered by the person aggrieved (Sheriffs Act 1887 [50 & 51 Vict. c. 55], s. 29 [2]), besides being civilly liable to such person. Imprisonment for debt in execution of civil judgments is now abolished except in cases of default in the nature of contempt, unsatisfied judgments for penalties, defaults by persons in a fiduciary character, and defaults by judgment debtors (Debtors Act 1869 [32 & 33 Vict. c. 62]; Bankruptcy Act 1883 [46 & 47 Vict. c. 52], ss. 53, 103). Imprisonment for debt has been abolished within similar limits in Scotland (Debtors [Scotland] Act 1880 [43 & 44 Vict. c. 34] and Ireland, Debtors [Ireland] Act 1872, 35 & 36 Vict. c. 57). There may still be imprisonment in England, under the writ—rarely used in practice—*ne exeat regno*, which issues to prevent a debtor from leaving the kingdom.

Writ of Elegit.—The writ of *elegit* is a process enabling the creditor to satisfy his judgment debt out of the lands of the debtor. It derives its name from the election of the creditor in favour of this mode of recovery. It is founded on the Statute of Westminster (1285, 13 Ed. I. c. 18), under which the sheriff was required to deliver to the creditor all the chattels (except oxen and beasts of the plough) and *half* the lands of the debtor until the debt was satisfied. By the Judgments Act 1838 the remedy was extended to *all* the debtor's lands, and by the Bankruptcy Act 1883 the writ no longer extends to the debtor's goods. The writ is enforceable against legal interests whether in possession or remainder (*Hood-Barrs* v. *Cathcart*, 1895, 2 Ch. 411), but not against equitable interests in land (*Earl of Jersey* v. *Uxbridge Rural Sanitary Authority*, 1891, 3 Ch. 183). When the debtor's interest is equitable, recourse is had to equitable execution by the appointment of a receiver or to bankruptcy proceedings.

The writ is directed to the sheriff, who, after marking on it the date of its receipt, at once in pursuance of its directions holds an inquiry with a jury as to the nature and value of the interest of the debtor in the lands extended under the writ, and delivers to the creditor at a reasonable price and extent in accordance with the writ, the lands of which the debtor was possessed in the bailiwick. When the sheriff has returned and filed a record (in the central office of the High Court) of the writ and the execution thereof, the execution creditor becomes "tenant to the elegit." Where the land is freehold the creditor acquires only a chattel interest in it; where the land is leasehold he acquires the whole of the debtor's interest (*Johns* v. *Pink*, 1900, 1 Ch. 296). The creditor is entitled to hold the land till his debt is satisfied, or enough to satisfy it is tendered to him, and under the Judgments Act 1864 the creditor may obtain an order for sale. Until the land is delivered on execution and the writs which have effected the delivery are registered in the Land Registry, the judgment does not create any charge on the land so as to fetter the debtor's power of dealing with it. Land Charges Registration Acts 1888 and 1900. (See R.S.C., O. xliii.)

Writs of Possession and Delivery.—Judgments for the recovery or for the delivery of the possession of land are enforceable by writ of possession. The recovery of specific chattels is obtained by writ of delivery (R.S.C., O. xlvii., xlviii.).

Writ of Sequestration.—Where a judgment directing the payment of money into court, or the performance by the defendant of any act within a limited time, has not been complied with, or where a corporation has wilfully disobeyed a judgment, a writ of sequestration is issued, to not less than four sequestrators, ordering them to enter upon the real estate of the party in default, and "sequester" the rents and profits until the judgment has been obeyed (R.S.C., O. xliii. r. 6).

Equitable Execution.—Where a judgment creditor is otherwise unable to reach the property of his debtor he may obtain equitable execution, usually by the appointment of a receiver, who collects the rents and profits of the debtor's land for the benefit of the creditor (R.S.C., O. l. rr. 15A-22). But receivers may be appointed of interests in personal property belonging to the debtor by virtue of the Judicature Act 1873, s. 25 (8).

Attachment.—A judgment creditor may "attach" debts due by third parties to his debtor by what are known as garnishee proceedings. Stock and shares belonging to a judgment debtor may be charged by a charging order, so as, in the first instance, to prevent transfer of the stock or payment of the dividends, and ultimately to enable the judgment creditor to realise his charge. A writ of attachment of the person of a defaulting debtor or party may be

obtained in a variety of cases akin to contempt (*e.g.* against a person failing to comply with an order to answer interrogatories, or against a solicitor not entering an appearance in an action, in breach of his written undertaking to do so), and in the cases where imprisonment for debt is still preserved by the Debtors Act 1869 (R.S.C., O. xliv.). CONTEMPT OF COURT (*q.v.*) in its ordinary forms is also punishable by summary committal.

County Courts.—In the county courts the chief modes of execution are "warrant of execution in the nature of a writ of *fieri facias*"; garnishee proceedings; equitable execution; warrants of possession and delivery, corresponding to the writs of possession and delivery above mentioned; committal, where a judgment debtor has, or, since the date of the judgment has had, means to pay his debt; and attachment of the person for contempt of court. If the judgment debtor assaults the bailiff or his officer or rescues the goods, he is liable to a fine not exceeding £5.

SCOTLAND.—The principal modes of execution or "diligence" in Scots law are (i.) Arrestment and furthcoming, which corresponds to the English garnishee proceedings; (ii.) arrestment *jurisdictionis fundandae causa*, *i.e.* the seizure of movables within the jurisdiction to found jurisdiction against their owner, being a foreigner; this precedure, which is not, however, strictly a "diligence," as it does not bind the goods, is analogous to the French *saisie-arrêt*, and to the obsolete practice in the mayor's court of London known as "foreign attachment" (see Glyn and Jackson, *Mayor's Court Practice*, 2nd ed., vii. 260); (iii.) arrestment under *meditatione fugae* warrant, corresponding to the old English writ of *ne exeat regno*, and applicable in the case of a debtor who intends to leave Scotland to evade an action; (iv.) arrestment on dependence, *i.e.* of funds in security; (v.) poinding, *i.e.* valuation and sale of the debtor's goods; (vi.) sequestration, *e.g.* of tenant's effects under a landlord's hypothec for rent; (vii.) action of adjudication, by which a debtor's "heritable" (*i.e.* real) estate is transferred to his judgment creditor in satisfaction of his debt or security therefor. In Scots law "multiplepoinding" is the equivalent of "interpleader."

IRELAND.—The law of execution in Ireland (see R.S.C., 1905, Orders xli.-xlviii.) is practically the same as in England.

BRITISH POSSESSIONS.—The Judicature Acts of most of the Colonies have also adopted English Law. Parts of the French *Code de procédure civile* are still in force in Mauritius. But its provisions have been modified by local enactment (No. 19 of 1868) as regards realty, and the rules of the Supreme Court 1903 have introduced the English forms of writs. Quebec and St Lucia, where French law formerly prevailed, have now their own codes of Civil Procedure. The law of execution under the Quebec Code resembles the French, that under the St Lucia Code the English system. In British Guiana and Ceylon, in which Roman Dutch law in one form or another prevailed, the English law of execution has now in substance been adopted (British Guiana Rules of Court, 1900, Order xxxvi.)., Ceylon (Code of Civil Procedure, No. 2 of 1889); the modes of execution in the South African Colonies are also the subject of local enactment, largely influenced by English law (cf. the Sheriffs' Ordinance, 1902, No. 9 of 1902), (Orange River Colony) and (Proclamation 17 of 1902), Transvaal (Nathan, *Common Law of South Africa*, vol. iv. p. 2206); and generally, Van Zyl, *Judicial Practice of South Africa*, pp. 198 et seq.

UNITED STATES.—Execution in the United States is founded upon English law, which it closely resembles. Substantially the same forms of execution are in force. The provisions of the Statute of Frauds making the lien of execution attach only on delivery to the sheriff were generally adopted in America, and are still law in many of the states. The law as to the rights and duties of sheriffs is substantially the same as in England. The "homestead laws" (*q.v.*) which are in force in nearly all the American States exempt a certain amount or value of real estate occupied by a debtor as his homestead from a forced sale for the payment of his debts. This homestead legislation has been copied in some British colonies, *e.g.* Western Australia (No. 37 of 1898, Pt. viii.), Quebec (Rev. Stats., ss. 1743-1748), Manitoba (Rev. Stats., 1902, c. 58, s. 29, c. 21, s. 9), Ontario (Rev. Stats., 1897, c. 29), British Columbia (Rev. Stats., 1897, c. 93), New South Wales (Crown Lands Act 1895, Pt. iii.), New Zealand (Family Homes Protection Act 1895, No. 20 of 1895).

FRANCE.—Provisional execution (*saisie-arrêt*) with a view to obtain security has been already mentioned. Execution against personalty (*saisie-exécution*) is preceded by a *commandement* or summons, personally served upon, or left at the domicile of the debtor calling on him to pay. The necessary bedding of debtors and of their children residing with them, and the clothes worn by them, cannot be seized in execution under any circumstances. Objects declared by law to be immovable by destination (*immeubles par destination*), such as beasts of burden and agricultural implements, books relating to the debtor's profession, to the value of 300 francs, workmen's tools, military equipments, provisions and certain cattle cannot be seized, even for a debt due to Government, unless in respect of provisions furnished to the debtor, or amounts due to the manufacturers or vendors of protected

articles or to parties who advanced moneys to purchase, manufacture or repair them. Growing fruits cannot be seized except during the six weeks preceding the ordinary period when they become ripe. Execution against immovable property (*la saisie immobilière*) is preceded also by a summons to pay, and execution cannot issue until the expiry of 30 days after service of such summons (see further Code Proc. Civ., Arts. 673-689). Imprisonment for debt was abolished in all civil and commercial matters by the law of 22nd of July 1867, which extends to foreigners. It still subsists in favour of the State for non-payment of fines, &c. The French system is in substance in force in Belgium (Code Civ. Proc., Arts. 51 et seq.), the Netherlands (Code Civ. Proc., Arts. 430 et seq.), Italy (Code Civ. Proc., Arts. 553 et seq., 659 et seq.), and Spain.

GERMANY.—Under the German Code of Civil Procedure (Arts. 796 et seq.), both the goods and (if the goods do not offer adequate security) the person of the debtor may be seized (the process is called *arrest*) as a guarantee of payment. The debtor's goods cannot be sold except in pursuance of a judgment notified to the debtor either before or within a prescribed period after the execution (Art. 809 [3], and law of 30th of April 1886). Imprisonment for debt in civil and commercial matters has been abolished or limited on the lines of the French law of 1867 in many countries (*e.g.* Italy, law of the 6th of December 1877; Belgium, law of the 27th of July 1871; Greece, law of the 9th of March 1900; Russia, decree of the 7th of March 1879).

AUTHORITIES.—Anderson, *Execution* (London, 1889); *Annual Practice* (London, 1908); Johnston Edwards, *Execution* (London, 1888); Mather, *Sheriff Law* (London, 1903). As to Scots law, Mackay, *Manual of Practice* (Edinburgh, 1893). As to American law, Bingham, *Judgments and Executions* (Philadelphia, 1836); A.C. Freeman, *Law of Execution*, Civil Cases (3rd ed., San Francisco, 1900); H.M. Herman, *Law of Executions* (New York, 1875); American Notes to *tit.* "Execution," in *Ruling Cases* (London and Boston, 1897); Bouvier, *Law Dict.*, ed. Rawle (1897), *s.v.* "Execution."

EXECUTORS AND ADMINISTRATORS, in English law, those persons upon whom the property of a deceased person both real and personal devolves according as he has or has not left a will. Executors differ from administrators both in the mode of their creation and in the date at which their estate vests. An executor can only be appointed by the will of his testator; such appointment may be express or implied, and in the latter case he is said to be an executor "according to the tenor." The estate of an executor vests in him from the date of the testator's death. An administrator on the other hand is appointed by the probate division of the High Court, and his estate does not vest till such appointment, the title to the property being vested till then in the judge of the probate division. As to whom the court will appoint administrators and the various kinds of administrators see under ADMINISTRATION. Apart from these two points the rights and liabilities of executors and administrators are the same, and they may be indifferently referred to as the representative of the deceased. As to their appointment before the establishment of the court of probate see articles WILL and INTESTACY. Before the Land Transfer Act 1897, the real estate of the deceased did not devolve upon the representative but vested directly in the devisee or heir-at-law, but by that act it was provided that the personal representative should be also the real representative, and therefore it may now be said broadly that the representative takes the whole estate of the deceased. There are, however, a few minor exceptions to this rule, of which the most important are lands held in joint tenancy and copyhold lands. As the representative stands in the shoes of the deceased he is entitled to sue upon any contract or for any debt which the deceased might have sued in his lifetime.

The duties of a representative are as follows: 1. To bury the deceased in a manner suitable to the estate he leaves behind him; and the expenses of such funeral take precedence of any duty or debt whatever; but extravagant expenses will not be allowed. No rule can be laid down as to what is a reasonable allowance for this purpose, as it is impossible to know at the time of the funeral what the estate of the deceased may amount to. The broad rule is that the representative must allow such sum as seems reasonable, having regard to all the circumstances of the case and the conditions in life of the deceased, remembering that if he should exceed this he will be personally liable for such excess in the event of the estate proving insolvent.

2. He must obtain probate or letters of administration to the deceased within six months of the death, or, if such grant be disputed, within two months of the determination of such suit.

The penalty for not doing so is fixed by the Stamp Act 1815, § 37, at £100, and an additional stamp duty at the rate of 10%. As to the formalities of PROBATE see that article.

3. Strictly speaking, he must compile an inventory of all the estate of the deceased, whether in possession or outstanding, and he is to deliver it to the court on oath. He is to collect all the goods so inventoried and to commence actions to get in all those outstanding, and he is responsible to creditors for the whole of such estate, whether in possession or in action. This duty is thrown upon the representative by an act of 1529, but it is not the modern practice to exhibit such inventory unless he be cited for it in the spiritual court at the instance of a party interested. It is, however, necessary to file an affidavit setting out the value of the estate of the deceased upon applying for a grant of probate or letters of administration.

4. The representative must pay the debts of the deceased according to their priority. Next to the legitimate funeral expenses come the costs of proving and administering the estate; in the event, however, of the funeral and testamentary expenses being charged by the will upon any particular fund, they will be primarily payable out of that fund. The representative must be careful to pay the debts according to the rules of priority, otherwise he will become personally liable to the creditors of one degree if he has exhausted the estate in paying creditors of a lesser degree. First of all, a solicitor has a lien for his costs upon any fund or duty which he has recovered for the deceased; next in order come debts due to the crown by record or speciality; then debts given a priority by statute, as, for example, by the Poor Relief Act 1743, money due by an overseer of the poor to his parish. Next, debts of record, *i.e.* judgment recovered against the deceased in any court of record; all such debts are equal among themselves, but a judgment creditor who has sued out execution is preferred to one who has not; another class of debts of record are statutes merchant and staple, or recognizances in the nature of statute staple, *i.e.* bonds of record acknowledged before the lord mayor of London or the mayor of the staple. Last in the order of debts come specialty and simple contract debts, which by Hinde Palmer's Act (the Executors Act 1869) are of equal degree, though as between specialty debts bonds given for value rank before voluntary bonds unless assigned for value, and as between simple contract debts those due to the crown have priority. Though the creditors can if necessary take all the estate of the deceased to satisfy their claims, yet as between the various classes of assets the representative must pay the debts out of assets in the following order: (i.) General personal estate not specifically bequeathed nor exempted from payment of debts; (ii.) real estate appropriated to debts; (iii.) real estate descended; (iv.) real estate devised charged with payment of debts; (v.) general pecuniary legacies *pro rata*; (vi.) specific legacies and devises; (vii.) real estate over which a general power of appointment has been exercised by will; (viii.) the widow's paraphernalia.

5. The debts of the deceased being satisfied, the representative must next proceed to satisfy the legacies and devises left by the testator. In order to enable him to do this with safety to himself, it is provided that he cannot be compelled to divide the estate among the legatees or next of kin until twelve months from the death of the deceased (this is commonly known as "the executor's year"), though if there is no doubt as to the solvency of the estate he may do so at once. As a further protection the representative may give notice by advertisement for creditors to send in their claims against the estate, and on expiration of the notices he may proceed to divide the estate, though even then the creditor may follow the assets to the person who has received them and recover for his debt. As between legatees the following priorities must be observed: (1) Specific legatees and devisees, (2) demonstrative legatees, and (3) general legatees; and as to this last class the testator can give priority to one over another. If there are not sufficient assets to pay the general legatees they must abate rateably. Legacies were not payable out of the real estate prior to the Land Transfer Act 1897, unless the testator charged the realty with them. Even then unless the testator exonerates his personalty from payment of the legacies the personalty will be the first fund chargeable. It has been suggested that the effect of the act is to make the realty chargeable *pro rata* with the personalty, but this is doubtful.

6. The residue, after all legacies and devises are satisfied, must, if there be a will, be paid to the residuary legatee therein named, and if there be no will the real estate will go to the heir (see INHERITANCE) and the personalty to the next of kin (see INTESTACY). It was held at one time that in default of a residuary legatee the residue fell to the executor himself, but now nothing less than the expressed intention of the testator can give it to him.

The liabilities of the representative may be shortly stated. He is liable in his representative capacity in all cases where the deceased would be liable were he alive. To this general rule there are some exceptions. The representative cannot be sued for breach of a contract for personal services which can be performed only in the lifetime of the person contracting, nor again can he be sued in a case where unliquidated damages only could have been recovered against the deceased. He is liable in his personal capacity in the following cases: if he

contracts to pay a debt due by the deceased, or if having admitted that he had assets in his hands sufficient to pay a debt or legacy he has misapplied such assets so that he cannot satisfy them; or lastly, if by mismanaging the estate and effects of the deceased he has made himself liable for a *devastavit*. Shortly stated, a representative is bound to exercise the ordinary care of a business man in administering the estate of the deceased, and he will be liable for the loss to the estate caused by his own negligence, or by the negligence of a co-representative which his act or neglect has rendered possible. Though the general rule of *delegatus non potest delegari* holds good of a representative, yet in certain cases he may "rely upon skilled persons in matters in which he cannot be expected to be experienced," *e.g.* he must employ solicitors to conduct a lawsuit.

The privileges of the representative are these: he may prefer one creditor to another of equal degree; he may retain a debt owing to him from the deceased as against other creditors of equal degree (see RETAINER); he may reimburse himself out of the estate all expenses incurred in the execution of his trust.

An executor *de son tort* is one who, without any title to do so, wrongfully intermeddles with the assets of the deceased, dealing with them in such a way as to hold himself out as executor. In such a case he is subject to all the liabilities of an executor, and can claim none of the privileges. He may be treated by the creditor as the executor, and, if he is really assuming to act as executor, creditors and legatees will get a good title from him, but he is liable to be sued by the rightful representative for damages for interfering with the property of the deceased.

Scotland.—Executor in Scots law is a more extensive term than in English. He is either nominative or dative, the latter appointed by the court and corresponding in most respects to the English administrator. Caution is required from the latter, not from the former. By the common law doctrine of passive representation the heir or executor was liable to be sued for implement of the deceased's obligations. The Roman principle of *beneficium inventarii* was first introduced by an act of 1695. As the law at present stands, the heir or executor is liable only to the value of the succession, except where there has been vitious intromission in movables, and in *gestio pro haerede* (behaviour as heir) and other cases in heritables. The present inventory duty on succession to movables and heritables depends on the Finance Acts 1894-1909 (see ESTATE DUTY). In England the executor is bound to pay the debts of the deceased in a certain order, but in Scotland they all rank *pari passu* except privileged debts (see PRIVILEGE).

AUTHORITIES.—R.L. Vaughan Williams, *The Law of Executors and Administrators*; W.G. Walker, *Compendium on the Law of Executors and Administrators*; James Schouler, *Law of Executors and Administrators* (3rd ed., Boston, 1901).

EXEDRA, or EXHEDRA (from Gr. ἐξ, out, and ἕδρα, a seat), an architectural term originally applied to a seat or recess out of doors, intended for conversation. Such recesses were generally semicircular, as in the important example built by Herodes Atticus at Olympia. In the great Roman thermae (baths) they were of large size, and like apses were covered with a hemispherical vault. An example of these exists at Pompeii in the Street of the Tombs. From Vitruvius we learn that they were often covered over, and they are described by him (v. 11) as places leading out of porticoes, where philosophers and rhetoricians could debate or harangue.

EXELMANS, RENÉ JOSEPH ISIDORE, COUNT (1775-1852), marshal of France, was born at Bar-le-Duc on the 13th of November 1775. He volunteered into the 3rd battalion of the Meuse in 1791, became a lieutenant in 1797, and in 1798 was aide-de-camp to General Éblé, and in the following year to General Broussier. In his first campaign in Italy he greatly distinguished himself; and in April 1799 he was rewarded for his services by the grade of captain of dragoons. In the same year he took part with honour in the conquest of Naples and was again promoted, and in 1801 he became aide-de-camp to General Murat. He accompanied Murat in the Austrian, Prussian and Polish campaigns of 1805, 1806 and 1807.

At the passage of the Danube, and in the action of Wertingen, he specially distinguished himself; he was made colonel for the valour which he displayed at Austerlitz, and general of brigade for his conduct at Eylau in 1807. In 1808 he accompanied Murat to Spain, but was there made prisoner and conveyed to England. On regaining his liberty in 1811 he went to Naples, where King Joachim Murat appointed him grand-master of horse. Exelmans, however, rejoined the French army on the eve of the Russian campaign, and on the field of Borodino won the rank of general of division. In the retreat from Moscow his steadfast courage was conspicuously manifested on several occasions. In 1813 he was made, for services in the campaign of Saxony and Silesia, grand-officer of the Legion of Honour, and in 1814 he reaped additional glory by his intrepidity and skill in the campaign of France. When the Bourbons were restored, Exelmans retained his position in the army. In January 1815 he was tried on an accusation of having treasonable relations with Murat, but was acquitted. Napoleon on his return from Elba made Exelmans a peer of France and placed him in command of the II. cavalry corps, which he commanded in the Waterloo campaign, the battle of Ligny and Grouchy's march on Wavre. In the closing operations round Paris Exelmans won great distinction. After the second Restoration he denounced, in the House of Peers, the execution of Marshal Ney as an "abominable assassination"; thereafter he lived in exile in Belgium and Nassau for some years, till 1819, when he was recalled to France. In 1828 he was appointed inspector-general of cavalry; and after the July revolution of 1830 he received from Louis Philippe the grand cross of the Legion of Honour, and was reinstated as a peer of France. At the revolution of 1848 Exelmans was one of the adherents of Louis Napoleon; and in 1851 he was, in recognition of his long and brilliant military career, raised to the dignity of a marshal of France. His death, which took place on the 10th of July 1852, was the result of a fall from his horse.

EXEQUATUR, the letter patent, issued by a foreign office and signed by a sovereign, which guarantees to a foreign consul the rights and privileges of his office, and ensures his recognition in the state in which he is appointed to exercise them. If a consul is not appointed by commission he receives no exequatur; and a notice in the *Gazette* in this case has to suffice. The exequatur may be withdrawn, but in practice, where a consul is obnoxious, an opportunity is afforded to his government to recall him.

EXETER, EARL, MARQUESS AND DUKE OF. These English titles have been borne at different times by members of the families of Holand or Holland, Beaufort, Courtenay and Cecil. The earls of Devon of the family of de Redvers were sometimes called earls of Exeter; but the 1st duke of Exeter was John (*c.* 1355-1400), a younger son of Thomas Holand, earl of Kent (d. 1360). John's mother, Joan (d. 1385), a descendant of Edward I., married for her third husband Edward the Black Prince, by whom she was the mother of Richard II., and her son John was thus the king's half-brother, a relationship to which he owed his high station at the English court. He married Elizabeth (d. 1426), a daughter of John of Gaunt, duke of Lancaster, and was constantly in Richard's train until 1385, when his murder of Ralph Stafford disturbed these friendly relations. John then went to Spain as constable of the English army under John of Gaunt; but after his return to England in 1387 he was created earl of Huntingdon, was made admiral of the fleet and chamberlain of England, and was again high in the king's favour. He was Richard's chief helper in the proceedings against the lords appellant in 1397, was created duke of Exeter in September of this year, and went with the king to Ireland in 1399. After the accession of his brother-in-law, Henry IV., Holand was tried for his share in the events of 1397, and was reduced to his earlier rank of earl of Huntingdon. He was soon plotting against Henry's life, and after the projected rising in 1400 had failed he was captured and was probably beheaded at Pleshey in Essex on the 16th of January 1400.[1] He was afterwards attainted and his titles and lands were forfeited.

In 1416 Thomas Beaufort, earl of Dorset, was created duke of Exeter; but this dignity was only granted for his life, and consequently it expired on his death in 1426.

In 1416 John (1395-1447), son of John Holand, the former duke of Exeter, was allowed to take his father's earldom of Huntingdon. This nobleman rendered great assistance to Henry V. in his conquest of France, fighting both on sea and on land. He was marshal of England, admiral of England and governor of Aquitaine under Henry VI.; was one of the king's representatives at the conference of Arras in 1435; and in 1443 was created duke of Exeter. When he died on the 5th of August 1447 his titles passed to his son Henry (1430-1473), who, although married to Anne (d. 1476), daughter of Richard, duke of York, fought for Henry VI. during the Wars of the Roses. After having been imprisoned by York at Pontefract, he was present at the battle of Towton, sailed with Henry's queen, Margaret of Anjou, to Flanders in 1463, and was wounded at Barnet in 1471. In 1461 he had been attainted and his dukedom declared forfeited, and he died without sons, probably in 1473.

Coming to the family of Courtenay the title of marquess of Exeter was borne by Henry Courtenay (*c.* 1496-1538), earl of Devon, who was made a marquess in 1525. A grandson of Edward IV., Courtenay was a prominent figure at the court of Henry VIII. until Thomas Cromwell rose to power, when his high birth, his great wealth and his independent position made him an object of suspicion. Some slight discontent in the west of England gave the occasion for his arrest, and he was tried and beheaded on the 9th of December 1538. A few days later he was declared a traitor and his titles were forfeited; although his only son, Edward (*c.* 1526-1556), who was restored to the earldom of Devon in 1553 and was a suitor for the hand of Queen Mary, is sometimes called marquess of Exeter.

The title of earl of Exeter was first bestowed upon the Cecils (see Cecil: *Family*) in 1605 when Thomas, 2nd Lord Burghley (1542-1623), the eldest son of William Cecil, Lord Burghley, was made earl of Exeter by James I. Thomas had been a member of parliament during the reign of Queen Elizabeth, who knighted him in 1575, and had fought under the earl of Leicester in the Netherlands. After his father's death in 1598 he became president of the Council of the North and was made a knight of the Garter. He died on the 7th or 8th of February 1623. His direct descendants continued to bear the title of earl of Exeter, and in 1801 Henry (1754-1804), the 10th earl, was advanced to the dignity of marquess of Exeter, the present marquess being his lineal descendant. It may be noted that the 1st marquess is Tennyson's "lord of Burghley."

See G.E. C(okayne), *Complete Peerage* (1887-1898).

1 There is some difference of opinion about the place and manner of the earl's death, and this question has an important bearing upon the privilege of trial by peers of the realm. See L.W. Vernon-Harcourt, *His Grace the Steward and Trial of Peers* (1907).

EXETER, a city and county of a city, municipal, county and parliamentary borough, and the county town of Devonshire, England, 172 m. W.S.W. of London, on the London & South Western and the Great Western railways. Pop. (1901) 47,185. The ancient city occupies a broad ridge of land, which rises steeply from the left bank of the Exe. At the head of the ridge is the castle, on the site of a great British earthwork. The High Street and its continuation, called Fore Street, are narrow, but very picturesque, with many houses of the 16th and 17th centuries. There is a maze of lesser streets within the ancient walls, the line of which may be traced. All the gates have disappeared. The suburbs, which have greatly extended since the beginning of the 19th century, contain many good streets, terraces and detached villas. The surrounding country is rich, fertile and of great beauty. Extensive views are commanded in the direction of Haldon, a stretch of high moorland which may be regarded as an outlier of Dartmoor. The lofty mound of the castle is laid out as a promenade, with fine trees and broad walks.

The cathedral, although not one of the largest in England, is unsurpassed in the beauty of its architecture and the richness of its details. With the exception of the Norman transeptal towers, the general character is Decorated, ranging from about 1280 to 1369. Transeptal towers occur elsewhere in England only in the collegiate church of Ottery St Mary, in Devonshire, for which Exeter cathedral served as a model. The west front is of later date than the rest (probably 1369-1394), and the porch is wholly covered with statues. Within, the most noteworthy features are the long unbroken roof, extending throughout nave and choir, with no central tower or lantern; the beautiful sculpture of bosses and corbels; the

minstrel's gallery, projecting from the north triforium of the nave; and the remarkable manner in which the several parts of the church are made to correspond. The window tracery is much varied; but each window answers to that on the opposite side of nave or choir; pier answers to pier, aisle to aisle, and chapel to chapel, while the transeptal towers complete the balance of parts. A complete restoration under Sir G.G. Scott was carried out between 1870 and 1877. The modern stall work, the reredos, the choir pavement of tiles, rich marbles and porphyries, the stained glass and the sculptured pulpits in choir and nave are meritorious. The episcopal throne, a sheaf of tabernacle work in wood, was erected by Bishop Stapeldon about 1320, and in the north transept is an ancient clock. The most interesting monuments are those of bishops of the 12th and 13th centuries, in the choir and lady chapel. Some important MSS., including the famous book of Saxon poetry given by Leofric to his cathedral, are preserved in the chapter-house. The united sees of Devonshire and Cornwall were fixed at Exeter from the installation there of Leofric (1050) by the Confessor, until the re-erection of the Cornish see in 1876. The bishop's palace embodies Early English portions. The diocese covers the greater part of Devonshire, with a very small part of Dorsetshire.

The guildhall in the High Street is a picturesque Elizabethan building, which contains some interesting portraits; among them being one of General Monk, who was a native of Devon, and another of Henrietta, duchess of Orleans, given by her brother Charles II. Both are by Sir Peter Lely. The assize hall and sessions house dates from 1774. The Albert Memorial Museum contains a school of art, an excellent free library, a reading-room, and a museum of natural history and antiquities. There is a good collection of local birds, and some remarkable pottery and bronze relics extracted from barrows near Honiton or found in various parts of Devonshire. Of the castle, called Rougemont, the chief architectural remnant is a portion of a gateway tower which may be late Norman. Traces are also seen of the surrounding earthworks, which may have belonged to the original British stronghold. Beneath the castle wall is the pleasant promenade of Northernhay. The churches of Exeter are of little importance, being mostly small, and closely beset with buildings, but the modern church of St Michael (1860) deserves notice. The Devon and Exeter Institution, founded in 1813, contains a large and valuable library, and among educational establishments may be noticed the technical and university extension college, the diocesan training college and school; and the grammar school, which was founded under a scheme of Walter de Stapeldon, bishop of Exeter and founder of Exeter College, Oxford, in 1332, and refounded in 1629, but occupies modern buildings (1886) outside the city. It is endowed with a large number of leaving exhibitions, and about 150 boys are educated. There are two market-houses in the city, many hospitals and many charitable institutions, including the picturesque hospital or almshouse of William Wynard, recorder of Exeter (1439).

Exeter is one of the principal railway centres in the south-west, and it also has some shipping trade, communicating with the sea by way of the Exeter ship-canal, originally cut in the reign of Elizabeth (1564), and enlarged in 1675 and 1827. This canal is an interesting work, being the first canal carried out in the United Kingdom for the purpose of enabling sea-going vessels to pass to an inland port. The river Exe was very early utilized by small craft trading to Exeter, parliament having granted powers for the improvement of the navigation by the construction of a canal 3 m. long from Exeter to the river; at a later date this canal was extended lower down to the tidal estuary of the Exe. Previous to the year 1820 it was only available for vessels of a draft not exceeding 9 ft., but by deepening it, raising the banks, and constructing new locks, vessels drawing 14 ft. of water were enabled to pass up to a basin and wharves at Exeter. These works were carried out under the advice of Thomas Telford. A floating basin is accessible to vessels of 350 tons. Larger vessels lie at Topsham, at the junction of the canal with the estuary of the Exe; while at the mouth of the estuary is the port of Exmouth. Imports are miscellaneous, while paper, grain, cider and other goods are exported. Brewing, paper-making and iron-founding are carried on, and the city is an important centre of agricultural trade. The parliamentary borough returns one member. The city is governed by a mayor, 14 aldermen and 42 councillors. Area, 3158 acres. The eastern suburb of Heavitree, where is the Exeter city asylum, is an urban district with a population (1901) of 7529.

Exeter was the Romano-British country town of *Isca Damnoniorum*—the most westerly town in the south-west of Roman Britain. Mosaic pavements, potsherds, coins and other relics have been found, and probably traces of the Roman walls survive here and there in the medieval walls. It is said to be the *Caer Isce* of the Britons, and its importance as a British stronghold is shown by the great earthwork which the Britons threw up to defend it, on the site of which the castle was afterwards built, and by the number of roads which branch from it. Exeter is famous for the number of sieges which it sustained as the chief town in the

south-west of England. In 1001 it was unsuccessfully besieged by the Danes, but in the following year was given by King Æthelred to Queen Emma, who appointed as reeve, Hugh, a Frenchman, owing to whose treachery it was taken and destroyed by Sweyn in 1003. By 1050, however, it had recovered, and was chosen by Leofric as the new seat of the bishops of Devon. In 1068, after a siege of eighteen days, Exeter surrendered to the Conqueror, who threw up a castle which was called Rougemont, from the colour of the rock on which it stood. Again in 1137 the town was held for Matilda by Baldwin de Redvers for three months and surrendered, at last, owing to lack of water. Three times subsequently Exeter held out successfully for the king—in 1467 against the Yorkists, in 1497 against Perkin Warbeck, and in 1549 against the men of Cornwall and Devon, who rose in defence of the old religion. During the civil wars the city declared for parliament, but was in 1643 taken by the royalists, who held it until 1646. The only other historical event of importance is the entry of William, prince of Orange, in 1688, shortly after his arrival in England. Exeter was evidently a borough by prescription some time before the Conquest, since the burgesses are mentioned in the Domesday Survey. Its first charter granted by Henry I. gave the burgesses all the free customs which the citizens of London enjoyed, and was confirmed and enlarged by most of the succeeding kings. By 1227 government by a reeve had given place to that by a mayor and four bailiffs, which continued until the Municipal Reform Act of 1835. Numerous trade gilds were incorporated in Exeter, one of the first being the tailors' gild, incorporated in 1466. This by 1482 had become so powerful that it interfered with the government of the town, and was dissolved on the petition of the burgesses. Another powerful gild was that of the merchant adventurers, incorporated in 1559, which is said to have dictated laws to which the mayor and bailiffs submitted. From 1295 to 1885 Exeter was represented in parliament by two members, but in the latter year the number of representatives was reduced to one. Exeter was formerly noted for the manufacture of woollen goods, introduced in Elizabeth's reign, and the value of its exports at one time exceeded half a million sterling yearly. The trade declined partly owing to the stringent laws of the trade gilds, and by the beginning of the 19th century had entirely disappeared, although at the time of its greatest prosperity it had been surpassed in value and importance only by that of Leeds.

See *Victoria County History*, *Devon*; Richard Izacke, *Antiquities of the City of Exeter* (1677); George Oliver, *The History of the City of Exeter* (1861); and E.A. Freeman, *Exeter* ("Historic Towns" series) (London, 1887), in the preface to which the names of earlier historians of the city are given.

EXETER, a town and one of the county-seats of Rockingham county, New Hampshire, U.S.A., on the Squamscott river, about 12 m. S.W. of Portsmouth and about 51 m. N. by E. of Boston, Mass. Pop. (1890) 4284; (1900) 4922 (1066 foreign-born); (1910) 4897; area, about 17 sq. m. It is served by the Western Division of the Boston & Maine railway. The town has a public library and some old houses built in the colonial period, and is the seat of Phillips Exeter Academy (incorporated in 1781 and opened in 1783). In its charter this institution is described as "an academy for the purpose of promoting piety and virtue, and for the education of youth in the English, Latin and Greek languages, in writing, arithmetic, music and the art of speaking, practical geometry, logic and geography, and such other of the liberal arts and sciences or languages, as opportunity may hereafter permit." It was founded by Dr John Phillips (1719-1795), a graduate of Harvard College, who acquired considerable wealth as a merchant at Exeter and gave nearly all of it to the cause of education. The academy is one of the foremost secondary schools in the country, and among its *alumni* have been Daniel Webster, Edward Everett, Lewis Cass (born in Exeter in a house still standing), John Parker Hale, George Bancroft, Jared Sparks, John Gorham Palfrey, Richard Hildreth and Francis Bowen. The government of the academy is vested in a board of six trustees, regarding whom the founder provided that a majority should be laymen and not inhabitants of Exeter. In 1909-1910 the institution had 20 buildings, 32 acres of recreation grounds, 16 instructors and 488 students, representing 38 states and territories of the United States and 4 foreign countries. At Exeter also is the Robinson female seminary (1867), with 14 instructors and 272 students in 1906-1907. The river furnishes water-power, and among the manufactures of the town are shoes, machinery, cottons, brass, &c. The town is one of the oldest in the state; it was founded in 1638 by Rev. John Wheelwright, an Antinomian leader who with a number of followers settled here after his banishment from Massachusetts. For

their government the settlers adopted (1639) a plantation covenant. There was disagreement from the first, however, with regard to the measure of loyalty to the king, and in 1643, when Massachusetts had asserted her claim to this region and the other three New Hampshire towns had submitted to her jurisdiction, the majority of the inhabitants of Exeter also yielded, while the minority, including the founder, removed from the town. In 1680 the town became a part of the newly created province of New Hampshire. During the French and Indian wars it was usually protected by a garrison, and some of the garrison houses are still standing. From 1776 to 1784 the state legislature usually met at Exeter.

See C.H. Bell, *History of the Town of Exeter* (Exeter, 1888).

EXETER BOOK [*Codex Exoniensis*], an anthology of Anglo-Saxon poetry presented to Exeter cathedral by Leofric,[1] bishop of Exeter, England, from 1050 to 1071, and still in the possession of the dean and chapter. It contains some legal documents, the poems entitled *Crist*, *Guthlac*, *Phoenix*, *Juliana*, *The Wanderer* and others, and concludes with between eighty and ninety riddles. It was first described in Humphrey Wanley's *Catalogus* ... (1705) in detail but with many inaccuracies; subsequently by J.J. Conybeare, *Account of a Saxon Manuscript* (a paper read in 1812; printed with some extracts from the MS. in *Archaeologia*, vol. xvii. pp. 180-197, 1814). A complete transcript made (1831) by Robert Chambers is in the British Museum (Addit. MS. 9067). It was first printed in 1842 by Benjamin Thorpe for the Soc. of Antiq., London, as *Codex Exoniensis ... with an English Translation, Notes and Indexes*. More recent editions, chiefly based on Thorpe's text, are:—in Chr. Grein's *Bibliothek der A.S. Poesie* (vol. iii. part 1, ed. R. Wülker, Leipzig, 1897, with a bibliography), J. Schipper in Pfeiffer's *Germania*, vol. xix. pp. 327-339, and Israel Gollancz, *The Exeter Book*, pt. i. (1895), with English translation, for the Early English Text Society.

A detailed account, with bibliographies of the separate poems, is given by R. Wülker, in *Grundriss ... der A.S. Literatur*, pp. 218-236 (Leipzig, 1885); see also the introduction to *The Crist of Cynewulf* ..., edited by Prof. A.S. Cook, with introduction, notes and a glossary (Boston, U.S.A., 1900). For the poems contained in the MS. see also CYNEWULF and RIDDLES.

1 For Leofric, see F.E. Warren, *The Leofric Missal* (1883).

EXHIBITION, a term, meaning in general a public display,[1] which has a special modern sense as applied to public shows of goods for the promotion of trade (Fr. *exposition*). The first exhibition in this sense of which there is any account, in either sacred or profane history, was that held by King Ahasuerus, who, according to the Book of Esther, showed in the third year of his reign "the riches of his glorious kingdom, and the honour of his excellent majesty, many days, even a hundred and fourscore days." The locale of this function was Shushan, the palace and the exhibits consisted of "white, green and blue hangings, fastened with cords of fine linen and purple to silver rings and pillars of marble: the beds were of gold and silver, upon a pavement of red, and blue, and white and black marble. And they gave them drink in vessels of gold, the vessels being diverse one from another." The first exhibition since the Christian era was at Venice during the dogeship of Lorenzo Tiepolo, in 1268. On that occasion there was a grand display, consisting of a water fête, a procession of the trades and an industrial exhibition. The various gilds of the Queen City of the Seas marched through the narrow streets to the great square of St Mark, and their leaders asked the dogaressa to inspect the products of their industry. Other medieval exhibitions were the fairs held at Leipzig and Nizhni Novgorod in Europe, at Tanta in Egypt, and in 1689 that by the Dutch at Leiden.

The first modern exhibition was held at London in 1756 by the Society of Arts, which offered prizes for improvements in the manufacture of tapestry, carpets and porcelain, the exhibits being placed side by side. Five years afterwards, in 1761, the same society gave an exhibition of agricultural machinery. In 1797 a collective display of the art factories of

France, including those of Sèvres, the Gobelins and the Savonnerie, was made in the palace of St Cloud, and the exhibition was repeated during the following year in the rue de Varennes, Paris. This experiment was so successful that in the last three days of the same year an exhibition under official auspices, at which private exhibitors were allowed to compete, was held in the Champ de Mars. Four years later, in 1801, there was a second official exhibition in the grand court of the Louvre. Upon that occasion juries of practical men examined the objects shown, and the winners of a gold medal were invited to dine with Napoleon, who was at that time First Consul. In the report of the jury the following remarkable sentence appeared:—"There is not an artist or inventor who, once obtaining thus a public recognition of his ability, has not found his reputation and his business largely increased." The third Paris Exhibition, held in 1802, was the first to publish an official catalogue. There were 540 exhibitors, including J.E. Montgolfier, the first aëronaut, and J.M. Jacquard, the inventor of the loom which bears his name. The fourth exhibition was held in 1806 in the esplanade in front of the Hôtel des Invalides, and attracted 1422 exhibitors. There were no more exhibitions till after the fall of the empire, but in 1819 the fifth was held during the reign of Louis XVIII., with 1622 exhibitors. Others were held at Paris at various intervals, that in 1849 having 4500 exhibitors.

Other exhibitions, though on a smaller scale, were held in Dublin, London, and in various parts of Germany and Austria during the first half of the 19th century—that in 1844, held at Berlin, having 3040 exhibitors. Switzerland, Holland, Belgium, Sweden, Russia, Poland, Italy, Spain and Portugal all held exhibitions, and there was a Free Trade Bazaar of British Manufactures at Covent Garden theatre in 1845, which at the time created a great deal of interest. But all these exhibitions were confined to the products of the country in which they took place, and the first great International Exhibition was held in London in 1851 by the Society of Arts, under the presidency of the prince consort. All nations were invited to compete; a site was obtained in Hyde Park, and a building 20 acres in extent was erected, after the design of Sir Joseph Paxton, at a cost of £193,168. The exhibition was open for five months and fifteen days. The receipts amounted to £506,100, and the surplus was £186,000. The number of visitors was 6,039,195, and the money taken at the doors was £423,792. The total, number of exhibitors was 13,937, of which Great Britain contributed 6861, the British colonies 520 and foreign countries 6556. The International Exhibition of 1851 was followed by those of New York and Dublin in 1853, Melbourne and Munich in 1854, and Paris in 1855—this latter was held in the Palais d'Industrie, which remained in existence until pulled down to make room for the two Palais des Beaux Arts, which formed one of the attractions of the 1900 exhibition. The exhibitors numbered 20,839 and the visitors 5,162,330. There were national exhibitions during the following years in several European countries, but the next great world's fair was held at London in 1862. The total space roofed in amounted to 988,000 sq. ft., 22.65 acres, the number of visitors was 6,211,103, and the amount received at the doors £408,530. The death of the prince consort had a depressing effect upon the enterprise. In 1865 an exhibition was held at Dublin, the greater proportion of the funds being supplied by Sir Benjamin Lee Guinness. The number of attendances during six months was 900,000, and the exhibition was opened at night. An Italian exhibition was held at Rome in 1862.

The Paris Exhibition of 1867 was upon a far larger scale than that of 1855. It was held, like those that preceded and succeeded it, at the Champ de Mars, and covered 41 acres. The building resembled an exaggerated gasometer. The external ring was devoted to machinery, the internal to the gradual development of civilization, commencing with the stone age and continuing to the present era. A great feature of the exhibition was the park, which was studded with specimens of every style of modern architecture—Turkish mosques, Swedish cottages, English lighthouses, Egyptian palaces and Swiss châlets. The number of attendances was 6,805,969. The exhibitors numbered 43,217, and the total amount received for entrances, concessions, &c. , was £420,735. This was the first exhibition at which there were international restaurants. The cost of the exhibition was defrayed partly by the state and partly by private subscriptions.

Small exhibitions were held in various parts of Europe between 1867 and 1870, and in the latter year a series of international exhibitions, confined to one or two special descriptions of produce or manufactures, was inaugurated in London at South Kensington. These continued till 1874, but they failed to attract any very large attendance of the public and were abandoned. A medal was given to each exhibitor, and reports on the various exhibits were published, but there was no examination of the exhibits by jurors. In 1873 there was an International Exhibition at Vienna. The main building, a rotunda, was erected in the beautiful park of the Austrian capital. There were halls for machinery and agricultural products, and hundreds of buildings, erected by different nations, were scattered amongst

the woodlands of the Prater. Unfortunately, an outbreak of cholera diminished the attendance of visitors, and the receipts were only £206,477, although the visitors were said to have reached 6,740,500, and the number of exhibitors was 25,760.

None of the International Exhibitions held between 1857 and 1873 had attracted as many as 7,000,000 visitors, but the gradual extension of education amongst the masses, and the greater facilities for locomotion, brought about by the growth of the railway system in all portions of the civilized world, largely increased the attendances at subsequent World's Fairs. The Centennial Exhibition of 1876, to celebrate the one-hundredth anniversary of American Independence, was held at Fairmount Park, Philadelphia. The funds were raised partly by private subscriptions, and partly by donations from the city of Philadelphia, from Pennsylvania and some of the neighbouring states. The central government at Washington made a large loan, which was subsequently repaid. The principal buildings, five in number, occupied an area of 48½ acres, and there were several smaller structures, which in the aggregate must have filled half as much space more, the largest being that devoted to the exhibits of the various departments of the United States government, which covered 7 acres. Several novelties in exhibition management were introduced at Philadelphia. Instead of gold, silver and bronze medals, only one description, bronze, was issued, the difference between the merits of the different exhibits being shown by the reports. Season tickets were not issued, and the price of admission, the same on all occasions, was half a dollar, or about 2s. 1d. The exhibition was not open at night or on Sundays, thus following the British, and not the continental, precedent. The number of visitors was 9,892,625, of whom 8,004,214 paid for admission, the balance being exhibitors, officials and attendants. The total receipts amounted to £763,899. Upon one occasion, the Pennsylvania day, 274,919 persons—the largest number that had visited any exhibition up to that date—passed through the turnstiles. The display of machinery was the finest ever made, that of the United States occupying 480,000 sq. ft. The motive-power was obtained from a Corliss engine of 1600 horse-power. At this exhibition the United Kingdom and the British Colonies of Canada, Victoria, New South Wales, New Zealand, Cape Colony and Tasmania made a very fine display, which was only excelled by that of the United States.

The Paris Exhibition of 1878 was upon a far larger scale in every respect than any which had been previously held in any part of the world. The total area covered not less than 66 acres, the main building in the Champ de Mars occupying 54 acres. The French exhibits filled one-half the entire space, the remaining moiety being occupied by the other nations of the world. The United Kingdom, British India, Canada, Victoria, New South Wales, Queensland, South Australia, Cape Colony and some of the British crown colonies occupied nearly one-third of the space set aside for nations outside France. Germany was the only great country which was not represented, but there were a few German paintings. The display of fine arts and machinery was upon a very large and comprehensive scale, and the Avenue des Nations, a street 2400 ft. in length, was devoted to specimens of the domestic architecture of nearly every country in Europe, and of several in Asia, Africa and America. The palace of the Trocadero, on the northern bank of the Seine, was erected for the exhibition. It was a handsome structure, with towers 250 ft. in height and flanked by two galleries. The rules for admission were the same as those at Philadelphia, and every person —exhibitor, journalist or official—who had the right of entrance was compelled to forward two copies of his or her photograph, one of which was attached to the card of entry. The ordinary tickets were not sold at the doors, but were obtainable at various government offices and shops, and from numerous pedlars in all parts of the city and suburbs. The buildings were somewhat unfinished upon the opening day, political complications having prevented the French government and the French people from paying much attention to the exhibition till about six months before it was opened; but the efforts made in April were prodigious, and by June 1st, a month after the opening, the exhibition was complete, and afforded an object-lesson of the recovery of France from the calamities of 1870-1871. The decisions arrived at by the international juries were accompanied by medals of gold, silver and bronze. The expenditure by the United Kingdom was defrayed out of the consolidated revenue, each British colony defraying its own expenses. The display of the United Kingdom was under the control of a royal commission, of which the prince of Wales was president. The number of paying visitors to the exhibition was 13,000,000, and the cost of the enterprise to the French government, which supplied all the funds, was a little less than a million sterling, after allowing for the value of the permanent buildings and the Trocadero Palace, which were sold to the city of Paris. The total number of persons who visited Paris during the time the exhibition was open was 571,702, or 308,974 more than came to the French metropolis during the year 1877, and 46,021 in excess of the visitors during the previous exhibition of 1867. It was stated at the time that, in addition to the impetus given to

the trade of France, the revenue of the Republic and of the city of Paris from customs and octroi duties was increased by nearly three millions sterling as compared with the previous year.

Exhibitions on a scale of considerable magnitude were held at Sydney and Melbourne in 1879 and 1880, and many continental and American manufacturers took advantage of them in order to bring the products of their industry directly under the notice of Australian consumers, who had previously purchased their supplies through the instrumentality of British merchants. The United Kingdom and India made an excellent display at both cities, but the effect of the two great Australian exhibitions was to give a decided impetus to German, American, French and Belgian trade. One of the immediate results was that lines of steamers to Melbourne and Sydney commenced to run from Marseilles and Bremen; another, that for the first time in the history of the Australian colonies, branches of French banks were opened in the two principal cities. The whole cost of these exhibitions was defrayed by the local governments.

Exhibitions were held at Turin and Brussels during 1880, and smaller ones at Newcastle, Milan, Lahore, Adelaide, Perth, Moscow, Ghent and Lille during 1881 and 1882, and at Zürich, Bordeaux and Caraccas in Venezuela during 1883. The next of any importance was held at Amsterdam in the latter year. On that occasion a new departure in exhibition management was made. The government of the Netherlands was to a certain extent responsible for the administration of the exhibition, but the funds were obtained from private sources, and a charge was made to each nation represented for the space it occupied. The United Kingdom, India, Victoria and New South Wales took part in the exhibition, but there was no official representation of the mother country. Exhibitions on somewhat similar lines were held at Nice and Calcutta in the winter of 1883 and 1884, and at Antwerp in 1895.

A series of exhibitions, under the presidency of the then prince of Wales, and managed by Sir Cunliffe Owen, was commenced at South Kensington in 1883. The first was devoted to a display of the various industries connected with fishing; the second, in 1884, to objects connected with hygiene; the third, in 1885, to inventions; and the fourth, in 1886, to the British Colonies and India. These exhibitions attracted a large number of visitors and realized a substantial profit. They might have been continued indefinitely if it had not been that the buildings in which they were held had become very dilapidated, and that the ground covered by them was required for other purposes. There was no examination of the exhibits by juries, but a tolerably liberal supply of instrumental music was supplied by military and civil bands. The Crystal Palace held a successful International Exhibition in 1884, and there was an Italian Exhibition at Turin, and a Forestry Exhibition at Edinburgh, during the same year. A World’s Industrial Fair was held at New Orleans in 1884-1885, and there were universal Exhibitions at Montenegro and Antwerp in 1885, at Edinburgh in 1886, Liverpool, Adelaide, Newcastle and Manchester in 1887, and at Glasgow, Barcelona and Brussels in 1888. Melbourne held an International Exhibition in 1888-1889 to celebrate the Centenary of Australia. Great Britain, Germany, France, Austria and the United States were officially represented, and an expenditure of £237,784 was incurred by the local government.

The Paris Exhibition of 1889 marked an important change in the policy which had previously characterized the management of these gatherings. The funds were contributed partly by the state, which voted 17,000,000 francs, and by the municipality of Paris, which gave 8,000,000. A guarantee fund amounting to 23,124,000 francs was raised, and on this security a sum of 18,000,000 francs was obtained and paid into the coffers of the administration. The bankers who advanced this sum recouped themselves by the issue of 1,200,000 “bons,” each of 25 francs, Every bon contained 25 admissions, valued at 1 franc, and certain privileges in the shape of participation in a lottery, the grand prix being £20,000. The calculations of the promoters were tolerably accurate. The attendances reached the then unprecedented number of 32,350,297, of whom 25,398,609 paid in entrance tickets and 2,723,366 entered by season tickets. A sum of 2,307,999 francs was obtained by concessions for restaurants and “side-shows,” upon which the administration relied for much of the attractiveness of the exhibition. The total expenditure was 44,000,000 francs, and there was a small surplus. The space covered in the Champ de Mars, the Trocadero, the Palais d’Industrie, the Invalides and the Quai d’Orsay was 72 acres, as compared with 66 acres in 1878 and 41 acres in 1867. Amongst the novelties was the Eiffel Tower, 1000 ft. in height, and a faithful reproduction of a street in Cairo. The system of international juries was continued, but instead of gold, silver and copper medals, diplomas of various merits were granted, each entitling the holder to a uniform medal of bronze. Some of the “side-shows,” although perhaps pecuniary successes, did not add to the dignity

of the exhibition. The date at which it was held, the Centenary of the French Revolution, did not commend it to several European governments. Austria, Hungary, Belgium, China, Egypt, Spain, Great Britain, Italy, Luxemburg, Holland, Peru, Portugal, Rumania and Russia took part, but not officially, while Germany, Sweden, Turkey and Montenegro were conspicuous by their absence. On the other hand, Argentina, Bolivia, Chile, the United States, Greece, Guatemala, Morocco, Mexico, Nicaragua, Norway, Paraguay, Salvador, the South African Republic, Switzerland, Uruguay and Venezuela sent commissioners, who were accredited to the government of the French Republic. The total number of exhibitors was 61,722, of which France contributed 33,937, and the rest of the world 27,785. The British and colonial section was under the management of the Society of Arts, which obtained a guarantee fund of £16,800, and, in order to recoup itself for its expenditure, made a charge to exhibitors of 5s. per sq. ft. for the space occupied. There were altogether 1149 British exhibitors, of whom 429 were in the Fine Arts section. One of the features of the exhibition was the number of congresses and conferences held in connexion with it.

During the year 1890 there was a Mining Exhibition at the Crystal Palace, and a Military Exhibition in the grounds of Chelsea Hospital; in 1891 a Naval Exhibition at Chelsea and an International at Jamaica. In 1891-1892 there were exhibitions at Palermo and at Launceston in Tasmania; in 1892, a Naval Exhibition at Liverpool, and one of Electrical Appliances at the Crystal Palace. A series of small national exhibitions under private management was held at Earl’s Court between 1887 and 1891. The first of the series was that of the United States—Italy followed in 1888, Spain in 1889, France in 1890 and Germany in 1891.

The next exhibition of the first order of magnitude was at Chicago in 1893, and was held in celebration of the 400th anniversary of the discovery of America by Columbus. The financial arrangements were undertaken by a company, with a capital of £2,000,000. The central government at Washington allotted £20,000 for the purposes of foreign exhibits, and £300,000 for the erection and administration of a building for exhibits from the various government departments. The exhibition was held at Jackson Park, a place for public recreation, 580 acres in extent, situated on the shore of Lake Michigan, on the southern side of the city, with which it was connected by railways and tramways. Special provision was made for locomotion in the grounds themselves by a continuous travelling platform and an elevated electric railway. The proximity of the lake, and of some artificial canals which had been constructed, rendered possible the service of electric and steam launches; The exhibition remained open from the 1st of May to the 30th of October, and was visited by 21,477,212 persons, each of whom paid half a dollar (about 2s. 1d.) for admission. The largest number of visitors on any one day was 716,881. In addition to its direct vote of £320,000, Congress granted £500,000 to the exhibition in a special coinage, which sold at an enhanced price. The receipts from admissions were £2,120,000; from concessions, £750,000; and the miscellaneous receipts, £159,000: total, £3,029,000. The total expenses were £5,222,000. Of the sums raised by the Company, £400,000 was returned to the subscribers. Speaking roughly, it may be said that the total outlay on the Chicago Exhibition was six millions sterling, of which three millions were earned by the Fair, two millions subscribed by Chicago and a million provided by the United States government. The sums expended by the participating foreign governments were estimated at £1,440,000. The total area occupied by buildings at Chicago was as nearly as possible 200 acres, the largest building, that devoted to manufactures, being 1687 ft. by 787, and 30.5 acres. The funds for the British commission, which was under the control of the Society of Arts, were provided by the imperial government, which granted £60,000. The number of British exhibitors was 2236, of whom 597 were Industrial, 501 Fine Arts and 1138 Women’s work. In this total were included 18 Indian exhibitors. The space occupied by Great Britain was 306,285 sq. ft.; and, in addition, separate buildings were erected in the grounds. These were Victoria House, the headquarters of the British commission; the Indian Pavilion, erected by the Indian Tea Association; the Kiosk of the White Star Steamship Company; and the structure set up by the Maxim-Nordenfelt Company. Canada and New South Wales had separate buildings, which covered 100,140 and 50,951 sq. ft. respectively; and Cape Colony occupied 5250, Ceylon 27,574, British Guiana 3367, Jamaica 4250, Trinidad 3400 and India 3584, sq. ft. in the several buildings. The total space occupied by the British Colonies was therefore 193,660 sq. ft. The system of awards was considered extremely unsatisfactory. Instead of international juries, a single judge was appointed for each class, and the recompenses were all of one grade, a bronze medal and a diploma, on which was stated the reasons which induced the judge to make his decision. Some judges took a high standard, and refused to make awards except to a small proportion of selected exhibits; others took a low one, and gave awards indiscriminately. About 1183 awards were made to British exhibitors. The French refused to accept any awards. The value of the British goods exhibited was

estimated, exclusive of Fine Arts, at £430,000, and the expenses of showing them at £200,000. A large expenditure was incurred in the erection of buildings, which were more remarkable for their beauty and grandeur than for their suitableness to the purposes for which they were intended. Considerable areas were devoted to “side-shows,” and the Midway Plaisance, as it was termed, resembled a gigantic fair. Every country in the world contributed something. There were sights and shows of every sort from everywhere. The foreign countries represented were Argentina, Austria, Belgium, Bolivia, Brazil, Bulgaria, Chile, Colombia, Costa Rica, Cuba, Curaçoa, Denmark, Danish West Indies, Ecuador, France, Germany, Greece, Guatemala, Honduras, Hayti, Japan, Johore, Korea, Liberia, Mexico, Monaco, Netherlands, Norway, Orange Free State, Paraguay, Persia, Portugal, Russia, Siam, Spain, Sweden, Turkey, United Kingdom and Colonies, Uruguay and Venezuela.

Exhibitions were held at Antwerp, Madrid and Bucharest in 1894; Hobart in 1894-1895; Bordeaux, 1895; Nizhni Novgorod, Berlin and Buda-Pest in 1896; Brussels and Brisbane in 1897. A series of exhibitions, under the management of the London Exhibitions Company, commenced at Earl’s Court in 1895 and continued in successive years.

The Paris Exhibition of 1900 was larger than any which had been previously held in Europe. The buildings did not cover so much ground as those at Chicago, but many of those at Paris had two or more floors. In addition to the localities occupied in 1889, additional space was obtained at the Champs Elysées, the park of Vincennes, on the north bank of the Seine between the Place de la Concorde, and at the Trocadero. The total superficial area occupied was as follows: Champ de Mars, 124 acres; Esplanade des Invalides, 30 acres; Trocadero Gardens, 40 acres; Champs Elysées, 37 acres; quays on left bank of Seine, 23 acres; quays on right bank of Seine, 23 acres; park at Vincennes, 270 acres: total, 549 acres. The space occupied by buildings and covered in amounted to 4,865,328 sq. ft., 111½ acres. The French section covered 2,691,000 sq. ft., the foreign 1,829,880, and those at the park of Vincennes 344,448 sq. ft. About one hundred French and seventy-five foreign pavilions and detached buildings were erected in the grounds in addition to the thirty-six official pavilions, which were for the most part along the Quai d’Orsay. Funds were raised upon the same system as that adopted in 1889. The French government granted £800,000, and a similar sum was contributed by the municipality of Paris. £2,400,000 was raised by the issue of 3,250,000 “bons,” each of the value of 20 francs, and containing 20 tickets of admission to the exhibition of the face value of one franc each, and a document which gave its holder a right either to a reduced rate for admission to the different “side-shows” or else to a diminution in the railway fare to and from Paris, together with a participation in the prizes, amounting to six million francs, drawn at a series of lotteries. Permission to erect restaurants, and to open places of amusement in buildings erected for that purpose, were sold at high prices, and for these privileges, which only realised 2,307,999 francs in 1889, the concessionaires agreed to pay 8,864,442 francs in 1900. The results did not justify the expectations which had been formed, and the administration finally consented to receive a much smaller sum. The administration calculated that they would have 65,000,000 paying visitors, though there were only 13,000,000 in 1878 and 25,398,609 in 1889. A very few weeks after the opening day, April 15th, it became evident that the estimated figures would not be reached, since a large number of holders of “bons” threw them on the market, and the selling price of an admission ticket declined from the par value of one franc to less than half that amount, or from 30 to 50 centimes. The proprietors of the restaurants and “side-shows” discovered that they had paid too much for their concessions, that the buildings they had erected were far too handsome and costly to be profitable, and that the public preferred the exhibition itself to the so-called attractions. The exhibition was largely visited by foreigners, but various causes kept away many persons of wealth and position. Although many speculators were ruined, the exhibition itself was successful. The attendance was unprecedentedly large, and during the seven months the exhibition was open, 39,000,000 persons paid for admission with 47,000,000 tickets, since from two to five tickets were demanded at certain times of the day and on certain occasions. The entries of exhibitors, attendants and officials totalled 9,000,000. The receipts were 114,456,213 francs (£4,578,249), and the expenditure 116,500,000 (£4,660,000), leaving a deficiency of rather more than two millions of francs (£80,000). It was calculated that the expenditure of the foreign nations which took part in the exhibition was six millions sterling, and of the French exhibitors and concessionaires three millions sterling.

A new plan of classifying exhibits was adopted at Paris, all being displayed according to their nature, and not according to their country of origin, as had been the system at previous exhibitions. One-half the space in each group was allotted to France, so that the exhibitors of that nation were enabled to overwhelm their rivals by the number and magnitude of the

objects displayed by them. All the agricultural implements, whatever their nationality, were in one place, all the ceramics in another, so that there was no exclusively British and no exclusively German court. The only exception to this rule was in the Trocadero, where the French, British, Dutch, and Portuguese Colonies, Algeria, Tunis, Siberia, the South African Republic, China and Japan were allowed to erect at their own cost separate pavilions. The greater number of the nationalities represented had palaces of their own in the rue des Nations along the Quai d'Orsay, in which thoroughfare were to be seen the buildings erected by Italy, Turkey, the United States, Denmark, Portugal, Austria, Bosnia, Herzegovina, Peru, Hungary, the United Kingdom, Persia, Belgium, Norway, Luxemburg, Finland, Germany, Spain, Bulgaria, Monaco, Sweden, Rumania, Greece, Servia and Mexico. Scattered about the grounds, in addition to those in the Trocadero, were the buildings of San Marino, Morocco, Ecuador and Korea. Nearly every civilized country in the world was represented at the exhibition, the most conspicuous absentees being Argentina, Brazil, Chile, and some other South and Central American Republics, and a number of the British colonies. The most noteworthy attractions of the exhibition were the magnificent effects produced by electricity in the palace devoted to it in the Chateau d'Eau and in the Hall of Illusions, the two palaces of the Fine Arts in the Champs Elysées, and the Bridge over the Seine dedicated to the memory of Alexander II. These permanent Fine Art palaces were devoted, the one to modern painting and sculpture, the other to the works of French artists and art workmen who flourished from the dawn of French art up to the end of the 18th century.

The United Kingdom was well but not largely represented both in Fine Arts and Manufactures, the administration of the section being in the hands of a royal commission, presided over by the prince of Wales. The British pavilion contained an important collection of paintings of the British school, chiefly by Reynolds, Gainsborough and their contemporaries, and by Turner and Burne-Jones. Special buildings had been erected by the British colonies and by British India. Canada, West Australia and Mauritius occupied the former, India and Ceylon the latter. For the first time since the war of 1870 Germany took part in a French International Exhibition, and the exhibits showed the great industrial progress which had been made since the foundation of the empire in 1870. The United States made a fine display, and fairly divided the honours with Germany. Remarkable progress was manifested in the exhibits of Canada and Hungary. France maintained her superiority in all the objects in which good taste was the first consideration, but the more utilitarian exhibits were more remarkable for their number than their quality, except those 71
connected with electrical work and display, automobiles and iron-work. The number of exhibitors in the industrial section from the British empire, including India and the colonies, was 1250, who obtained 1647 awards, as many persons exhibited in several classes. There were, in addition, 465 awards for "collaborateurs," that is, assistants, engineers, foremen, craftsmen and workmen who had co-operated in the production of the exhibits. In the British Fine Arts section there were 429 exhibits by 282 exhibitors and 175 awards.

In later years, important international exhibitions have been held at Glasgow, and at Buffalo, New York, in 1901, at St Louis (commemorating the Louisiana purchase) in 1904, at Liége in 1905, at Milan in 1906, at Dublin in 1907, and in London (Franco-British), 1908. In the artistic taste and magnificence of their buildings and the interest of their exhibits these took their cue from the great Paris Exhibition, and even in some cases went beyond it, notably at Buffalo (*q.v.*), St Louis (*q.v.*) and London. And it might well be thought that the evolution of this type of public show had reached its limits.

(G. C. L.)

1 An "exhibition," in the sense of a minor scholarship, or annual payment to a student from the funds of a school or college, is a modern survival from the obsolete meaning of "maintenance" or "endowment" (cf. Late Lat. *exhibitio et tegumentum*, *i.e.* food and raiment).

EXHUMATION (from Med. Lat. *exhumare*; *ex*, out of, and *humus*, ground), the act of digging up and removing an object from the ground. The word is particularly applied to the removal of a dead body from its place of burial. For the offence of exhuming a body without legal authority, and the process of obtaining such authority, see Burial and Burial Acts.

EXILARCH, in Jewish history, “Chief or Prince of the Captivity.” The Jews of Babylonia, after the fall of the first temple, were termed by Jeremiah and Ezekiel the people of the “Exile.” Hence the head of the Babylonian Jews was the exilarch (in Aramaic *Resh Galutha*). The office was hereditary and carried with it considerable power. Some traditions regarded the last king of Davidic descent (Jehoiachin) as the first exilarch, and all the later holders of the dignity claimed to be scions of the royal house of Judah. Under the Arsacids and Sassanids the office continued. In the 6th century an attempt was made to secure by force political autonomy for the Jews, but the exilarch who led the movement (Mar Zutra) was executed. For some time thereafter the office was in abeyance, but under Arabic rule there was a considerable revival of its dignity. From the middle of the 7th till the 11th centuries the exilarchs were all descendants of Bostanai, through whom “the splendour of the office was renewed and its political position made secure” (Bacher). The last exilarch of importance was David, son of Zakkai, whose contest with Seadiah (*q.v.*) had momentous consequences. Hezekiah (*c.* 1040) was the last Babylonian exilarch, though the title left its traces in later ages. Benjamin of Tudela (*Itinerary*, p. 61) names an exilarch Daniel b. Hisdai in the 12th century. Petahiah (*Travels*, p. 17) records that this Daniel’s nephew succeeded to the office jointly with a R. Samuel. The latter, according to Petahiah, had a learned daughter who “gave instruction, through a window, remaining in the house while the disciples were below, unable to see her.”

Our chief knowledge of the position and function of the exilarch concerns the period beginning with the Arabic rule in Persia. In the age succeeding the Mahommedan conquest the exilarch was noted for the stately retinue that accompanied him, the luxurious banquets given at his abode, and the courtly etiquette that prevailed there. A brilliant account has come down of the ceremonies at the installation of a new exilarch. Homage was paid to him by the rabbinical heads of the colleges (each of whom was called Gaon, *q.v.*); rich gifts were presented; he visited the synagogue in state, where a costly canopy had been erected over his seat. The exilarch then delivered a discourse, and in the benediction or doxology (*Qaddish*) his name was inserted. Thereafter he never left his house except in a carriage of state and in the company of a large retinue. He would frequently have audiences of the king, by whom he was graciously received. He derived a revenue from taxes which he was empowered to exact. The exilarch could excommunicate, and no doubt had considerable jurisdiction over the Jews. A spirited description of the glories of the exilarch is given in D’Israeli’s novel *Alroy*.

See Neubauer, *Mediaeval Jewish Chronicles*, ii. 68 seq.; Zacuto, *Yuhasin*; Graetz, *Geschichte*, vols. iv.-vi.; Benjamin of Tudela, *Itinerary*, ed. Adler, pp. 39 seq.; Bacher, *Jewish Encyclopaedia*, vol. v. 288.

(I. A.)

EXILE (Lat. *exsilium* or *exilium*, from *exsul* or exul, which is derived from *ex*, out of, and the root *sal*, to go, seen in *salire*, to leap, *consul*, &c. ; the connexion with *solum*, soil, country is now generally considered wrong), banishment from one’s native country by the compulsion of authority. In a general sense exile is applied to prolonged absence from one’s country either through force of circumstances or when undergone voluntarily. Among the Greeks, in the Homeric age, banishment (φυγή) was sometimes inflicted as a punishment by the authorities for crimes affecting the general interests, but is chiefly known in connexion with cases of homicide. With these the state had nothing to do; the punishment of the murderer was the duty and privilege of the relatives of the murdered man. Unless the relatives could be induced to accept a money payment by way of compensation (ποινή, weregeld; see especially Homer, *Iliad*, xviii. 497), in which case the murderer was allowed to remain in the country, his only means of escaping punishment was flight to a foreign land. If, during his self-imposed exile, the relatives expressed their willingness to accept the indemnity, he was at liberty to return and resume his position in society.

In later times banishment is (1) a legal punishment for particular offences; (2) voluntary.

1. Banishment for life with confiscation of property was inflicted upon those who destroyed or uprooted the sacred olives at Athens; upon those who remained neutral during a sedition (by a law of Solon, which subsequently fell into abeyance); upon those who gave refuge to or received on board ship a man who had fled to avoid punishment; upon those

who wounded with intent to kill and those who prompted them to such an act (it is uncertain whether in this case exile was for life or temporary); upon any one who wilfully murdered an alien; for impiety. Certain political crimes were also similarly punished—treason, laconism, sycophancy (see SYCOPHANT), attempts to subvert existing decrees. For the peculiar form of banishment called OSTRACISM, see separate article.

In cases of voluntary homicide the punishment was death; but (except in cases of parricide) the murderer could leave the country unmolested after the first day of the trial. He was bound to remain outside Attica, and when on foreign soil was not allowed to appear at the public games, to enter the temples or take part in sacrifices; but provided that he adhered to the prescribed regulations, he was accorded a certain amount of protection. Even when a general amnesty was proclaimed, he was not allowed to return; if he did so, he might at once be put to death.

Temporary exile (the period of which is uncertain) without confiscation, was the punishment for involuntary homicide. As soon as the relatives of the deceased became reconciled to the man who had slain him, the latter was permitted to return; further, since banishment was only temporary, it is reasonable to suppose that the law insisted upon such reconciliation.

2. Citizens sometimes voluntarily left the country for other reasons (debt, inability to pay a fine). Since extradition was only demanded in cases of high treason or other serious offences against the state, the fugitive was not interfered with. He was at liberty to return after a certain time had elapsed.

Little is known about exile as it affected Sparta and other Greek towns, but it is probable that the same conditions prevailed as at Athens.

At Rome, in early times, exile was not a punishment, but rather a means of escaping punishment. Before judgment had been finally pronounced it was open to any Roman citizen condemned to death to escape the penalty by voluntary exile (*solum vertere exsilii causa*). To prevent his return, he was interdicted from the use of fire and water; if he broke the interdict and returned, any one had the right to put him to death. The *aquae et ignis* (to which *et tecti* "shelter" is sometimes added) *interdictio* is variously explained as exclusion from the necessaries of life, from the symbols of civic communion, or from "the marks of a pure society, which the criminal would defile by his further use of them." Subsequently (probably at the time of the Gracchi) it became a recognized legal penalty, practically equivalent to "exile," taking the place of capital punishment. The criminal was permitted to withdraw from the city *after* sentence was pronounced; but in order that this withdrawal might as far as possible bear the character of a punishment, his departure was sanctioned by a decree of the people which declared his exile permanent. Authorities are not agreed whether this exile by interdiction entailed loss of *civitas*; according to some this did not ensue until (as in earlier times) the criminal had assumed the citizenship of the state in which he had taken refuge and thereby lost his rights as a citizen of Rome, while others hold that it was not until the time of Tiberius (A.D. 23) that *capitis deminutio media* became the direct consequence of trial and conviction. *Interdictio* was the punishment for treason, murder, arson and other serious offences which came under the cognizance of the *quaestiones perpetuae* (permanent judicial commissions for certain offences); confiscation of property was only inflicted in extreme cases.

Under the Empire *interdictio* gradually fell into disuse and a new form of banishment, introduced by Augustus, called *deportatio*, generally *in insulam*, took its place. For some time the two probably existed side by side. *Deportatio* consisted in transportation for life to an island (or some place prescribed on the mainland, not of Italy), accompanied by loss of *civitas* and all civil rights, and confiscation of property. The most dreaded places of exile were the islands of Gyarus, Sardinia, an oasis in the desert (*quasi in insulam*) of Libya; Crete, Cyprus and Rhodes were considered more tolerable. Large bodies of persons were also transported in this manner; thus Tiberius sent 4000 freedmen to Sardinia for Jewish or Egyptian superstitious practices. *Deportatio* was originally inflicted upon political criminals, but in course of time became more particularly a means of removing those whose wealth and popularity rendered them objects of suspicion. It was also a punishment for the following offences: adultery, murder, poisoning, forgery, embezzlement, sacrilege and certain cases of immorality.

Relegatio was a milder form of *deportatio*. It either excluded the person banished from one specified district only, with permission to choose a residence elsewhere, or the place of exile was fixed. *Relegatio* could be either temporary or for life, but it did not in either case carry with it loss of *civitas* or property, nor was the exile under military surveillance, as in

the case of *deportatio*. Thus, Ovid, when in exile at Tomi, says (*Tristia*, v. ii): "he (*i.e.* the emperor) has not deprived me of life, nor of wealth, nor of the rights of a citizen ... he has simply ordered me to leave my home." He calls himself *relegatus*, not *exsul*.

In later writers the word *exsilium* is used in the sense of all its three forms—*aquae et ignis interdictio*, *deportatio* and *relegatio*.

In England the first enactment legalizing banishment dates from the reign of Elizabeth (39 Eliz. c. 4), which gave power to banish from the realm "such rogues as are dangerous to the inferior people." A statute of Charles II. (18 Car. II. c. 3) gave power to execute or to transport to America for life the mosstroopers of Cumberland and Northumberland. Banishment or transportation for criminal offences was regulated by an act of 1824 (5 Geo. IV. s. 84) and finally abolished by the Penal Servitude Acts 1853 and 1857 (see further DEPORTATION). The word exile has sometimes, though wrongly, been applied to the sending away from a country of those who are not natives of it, but who may be temporary or even permanent residents in it (see ALIEN; EXPATRIATION; EXPULSION).

BIBLIOGRAPHY.—J.J. Thonissen, *Le Droit pénal de la république athénienne* (Brussels, 1875); G.F. Schömann, *Griechische Altertümer* (4th ed., 1897), p. 46; T. Mommsen, *Rönmisches Strafrecht* (1899), pp. 68, 964, and *Römisches Staatsrecht* (1887), iii. p. 48; L.M. Hartmann, *De exilio apud Rumanos* (Berlin, 1887); F. von Holtzendorff-Vietmansdorf, *Die Deportationsstrafe im römischen Alterthum* (Leipzig, 1859); articles in Smith's *Dict. of Greek and Roman Antiquities* (3rd ed., 1890) and Daremberg and Saglio's *Dict. des antiquités* (C. Lécrivain and G. Humbert).

EXILI, an Italian chemist and poisoner in the 17th century. His real name was probably Nicolo Egidi or Eggidio. Few authentic details of his life exist. Tradition, however, credits him with having been originally the salaried poisoner at Rome of Olympia Maidalchina, the mistress of Pope Innocent X. Subsequently he became a gentleman in waiting to Queen Christina of Sweden, whose taste for chemistry may have influenced this appointment. In 1663 his presence in France aroused the suspicions of the French government, and he was imprisoned in the Bastille. Here he is said to have made the acquaintance of Godin de Sainte-Croix, the lover of the marquise de Brin-villiers (*q.v.*). After three months' imprisonment, powerful influences secured Exili's release, and he left France for England. In 1681 he was again in Italy, where he married the countess Fantaguzzi, second cousin of Duke Francis of Modena.

EXMOOR FOREST, a high moorland in Somersetshire and Devonshire, England. The uplands of this district are bounded by the low alluvial plain of Sedgemoor on the east, by the lower basin of the Exe on the south, by the basin of the Taw (in part) on the west, and by the Bristol Channel on the north. The area thus defined, however, includes not only Exmoor but the Brendon and Quantock Hills east of it. Excluding these, the total area in the district lying at an elevation exceeding 1000 ft. is about 120 sq. m. The geological formation is Devonian. The ancient forest had an area of about 20,000 acres, and was enclosed in 1815. Large tracts are still uncultivated; and the wild red deer and native Exmoor pony are characteristic of the district. The highest point is Dunkery Beacon in the east (1707 ft.), but Span Head in the south-west is 1618 ft., and a height of 1500 ft. is exceeded at several points. The Exe, Barle, Lyn and other streams, traversing deep picturesque valleys except in their uppermost courses, are in favour with trout fishermen. The few villages, such as Exford, Withypool and Simonsbath, with Lynton and Lynmouth on the coast, afford centres for tourists and sportsmen. Exmoor is noted for its stag hunting. The district has a further fame through Richard Blackmore's novel, *Lorna Doone*.

EXMOUTH, EDWARD PELLEW, 1ST VISCOUNT (1757-1833), English admiral, was descended from a family which came originally from Normandy, but had for many centuries been settled in the west of Cornwall. He was born at Dover, on the 19th of April 1757. At the age of thirteen he entered the navy, and even then his smartness and activity, his feats of daring, and his spirit of resolute independence awakened remark, and pointed him out as one specially fitted to distinguish himself in his profession. He had, however, no opportunity of active service till 1776, when, at the battle of Lake Champlain, his gallantry, promptitude and skill, not only saved the "Carleton"—whose command had devolved upon him during the progress of the battle—from imminent danger, but enabled her to take a prominent part in sinking two of the enemy's ships. For his services on this occasion he obtained a lieutenant's commission, and the command of the schooner in which he had so bravely done his duty. The following year, in command of a brigade of seamen, he shared in the hardships and perils of the American campaign of General Burgoyne. In 1782, in command of the "Pelican," he attacked three French privateers inside the Île de Batz, and compelled them to run themselves on shore—a feat for which he was rewarded by the rank of post-captain. On the outbreak of the French War in 1793, he was appointed to the "Nymphe," a frigate of 36 guns; and, notwithstanding that for the sake of expedition she was manned chiefly by Cornish miners, he captured, after a desperate conflict, the French frigate "La Cléopâtre," a vessel of equal strength. For this act he obtained the honour of knighthood. In 1794 he received the command of the "Arethusa" (38), and in a fight with the French frigate squadron off the Île de Batz he compelled the "Pomona" (44) to surrender. The same year the western squadron was increased and its command divided, the second squadron being given to Sir Edward Pellew in the "Indefatigable" (44). While in command of this squadron he, on several occasions, performed acts of great personal daring; and for his bravery in boarding the wrecked transport "Dutton," and his promptitude and resolution in adopting measures so as to save the lives of all on board, he was in 1796 created a baronet. In 1798 he joined the channel fleet, and in command of the "Impétueux" (74) took part in several actions with great distinction. In 1802 Sir Edward Pellew was elected member of parliament for Dunstable, and during the time that he sat in the Commons he was a strenuous supporter of Pitt. In 1804 he was made rear-admiral of the blue, and appointed commander-in-chief in India, where, by his vigilance and rapidity of movement, he entirely cleared the seas of French cruisers, and secured complete protection to English commerce. He returned to England in 1809, and in 1810 was appointed commander-in-chief in the North Sea, and in 1811 commander-in-chief in the Mediterranean. In 1814 he was created Baron Exmouth of Canonteign, and in the following year was made K.C.B., and a little later G.C.B. When the dey of Algiers, in 1816, violated the treaty for the abolition of slavery, Exmouth was directed to attack the town. Accordingly, on the 26th of August, he engaged the Algerine battery and fleet, and after a severe action of nine hours' duration, he set on fire the arsenal and every vessel of the enemy's fleet, and shattered the sea defences into ruins. At the close of the action the dey apologized for his conduct, and agreed to a renewal of the treaty, at the same time delivering up over three thousand persons of various nationalities who had been Algerine slaves. For this splendid victory Exmouth was advanced to the dignity of viscount. Shortly before his death, which took place on the 23rd of January 1833, he was made vice-admiral.

He had married Susan (d. 1837), daughter of James Frowde of Knoyle, Wiltshire, who bore him four sons and two daughters. His eldest son, Pownoll Bastard Pellew (1786-1833), became 2nd Viscount Exmouth, and his descendant, Edward Addington Hargreaves Pellew (b. 1890), became the 5th viscount in 1899.

Exmouth's second son, Sir Fleetwood Broughton Reynolds Pellew (1789-1861), was like his father an admiral. The third son was George Pellew (1793-1866), author and divine, who married Frances (d. 1870), daughter of the prime minister, Lord Sidmouth, and wrote his father-in-law's life (*The Life and Correspondence of Henry Addington, 1st Viscount Sidmouth*, 1847).

Exmouth had a brother, Sir Israel Pellew (1758-1832), also an admiral, who was present at the battle of Trafalgar.

A *Life* of the 1st viscount, by Edward Osler, was published in 1835.

EXMOUTH, a market-town, seaport and watering-place in the Honiton parliamentary division of Devonshire, England, at the mouth of the river Exe, 10½ m. S.E. by S. of Exeter by the London & South-Western railway. Pop. of urban district (1901) 10,485. In the 18th century it consisted of a primitive fishing village at the base of Beacon Hill, a height commanding fine views over the estuary and the English Channel. After its more modern terraces were built up the hillside, Exmouth became the first seaside resort in Devon. Its excellent bathing and the beauty of its coast and moorland scenery attract many visitors in summer, while it is frequented in winter by sufferers from pulmonary disease. The climate is unusually mild, as a range of hills shelters the town on the east. A promenade runs along the sea wall; there are golf links and public gardens, and the port is a favourite yachting centre, a regatta being held annually. Near the town is a natural harbour called the Bight. The local industries include fishing, brick-making and the manufacture of Honiton lace. Exmouth was early a place of importance, and in 1347 contributed 10 vessels to the fleet sent to attack Calais. It once possessed a fort or “castelet,” designed to command the estuary of the Exe. This fort, which was garrisoned for the king during the Civil War, was blockaded and captured by Colonel Shapcoate in 1646.

EXODUS, BOOK OF, in the Bible, a book of the Old Testament which derives its name, through the Greek, from the event which forms the most prominent feature of the history it narrates, viz. the deliverance of Israel from Egypt. Strictly speaking, however, this title is applicable to the first half only, the historical portion of the book, and takes no account of those chapters which describe the giving of the Law on Mt. Sinai, nor of those which deal with the Tabernacle and its furniture. By the Jews it is usually styled after its opening words ואלה שמות (*We’ēleh Shĕmōth*) or, more briefly, שמות (*Shĕmōth*).

In its present form the book sets forth (*a*) the oppression of the Israelites in Egypt (ch. i.), (*b*) the birth and education of Moses, and his flight to the land of Midian (ch. ii.), (*c*) the theophany at Mt. Horeb (the Burning Bush), and the subsequent commission of Moses and Aaron (iii. 1-iv. 17), (*d*) the return of Moses to Egypt, and his appeal to Pharaoh which results in the further oppression of Israel (iv. 18-vii. 7), (*e*) the plagues of Egypt (vii. 8-xi. 10), (*f*) the institution of the Passover and of the Feast of Unleavened Cakes, the last plague, and Israel’s departure from Egypt (xii. 1-xiii. 16), (*g*) the crossing of the Red Sea and the discomfiture of the Egyptians, the Song of Triumph, the sending of the manna and other incidents of the journeying through the wilderness (xiii. 17-xviii. 27), (*h*) the giving of the Law, including the Decalogue and the so-called Book of the Covenant, on Sinai-Horeb (xix.-xxiv.), (*i*) directions for the building of the Tabernacle and for the consecration of the priests (xxv.-xxxi.), (*j*) the sin of the Golden Calf, and another earlier version of the first legislation (xxxii.-xxxiv.), (*k*) the construction of the Tabernacle and its erection (xxxv.-xl.). The book of Exodus, however, like the other books of the Hexateuch, is a composite work which has passed, so to speak, through many editions; hence the order of events given above cannot lay claim to any higher authority than that of the latest editor. Moreover, the documents from which the book has been compiled belong to different periods in the history of Israel, and each of them, admittedly, reflects the standpoint of the age in which it was written. Hence it follows that the contents of the book are not of equal historical value; and though the claim of a passage to be considered historical is not necessarily determined by the age of the source from which it is derived, yet, in view of the known practice of Hebrew writers, greater weight naturally attaches to the earlier documents in those cases in which the sources are at variance with one another. Any attempt, therefore, at restoring the actual course of history must be preceded by an inquiry into the source of the various contents of the book.

The sources from which the book of Exodus has been compiled are the same as those which form the basis of the book of Genesis, while the method of composition is very similar. Here, too, the strongly marked characteristics of P, or the Priestly Document, as opposed to JE, enable us to determine the extent of that document with comparative ease; but the absence, in some cases, of conclusive criteria prevents any final judgment as to the exact limits of the two strands which have been united in the composite JE. The latter statement applies especially to the legislative portions of the book: in the historical sections the separation of the two sources gives rise to fewer difficulties. It does not, however, lie within the scope of the present article to examine the various sources underlying the narrative with

any minuteness, but rather to sum up those results of modern criticism which have been generally accepted by Old Testament scholars. To this end it will be convenient to treat the subject-matter of the book under three main heads: (*a*) the historical portion (ch. i.-xviii.), (*b*) the sections dealing with the giving of the Law (xix.-xxiv., xxxii.-xxxiv.), and (*c*) the construction of the Tabernacle and its furniture (xxv.-xxxi., xxxv.-xl.).

(*a*) *Israel in Egypt and the Exodus* (ch. i.-xviii.). (1) i. 1-vii. 13.—The analysis of these chapters shows that the history, in the main, has been derived from the two sources J and E, chiefly the former, and that a later editor has included certain passages from P, besides introducing a slight alteration of the original order and other redactional changes. The combined narrative of JE sets forth the rise of a new king in Egypt, who endeavoured to check the growing strength of the children of Israel; it thus prepares the way for the birth of Moses, his early life in Egypt, his flight to Midian and marriage with Zipporah, the theophany at Mt. Horeb, and his divine commission to deliver Israel from Egypt.

At the very outset the two sources betray their divergent origin and point of view. According to J (i. 6, 8-12, 20*b*) the Israelites dwell apart in the province of Goshen, and their numbers become so great as to call for severe measures of repression, the method employed being that of forced labour. E, on the other hand (i. 15-20*a*, 21, 22), represents them as living among the Egyptians, and so few in number that two midwives satisfy their requirements. It is to this latter source that we owe the account of the birth of Moses and of his education at the court of Pharaoh (ii. 1-10). On reaching manhood Moses openly displays his sympathy with his brethren by slaying an Egyptian, and has, in consequence, to flee to Midian, where he marries Zipporah, the daughter of the priest of Midian (ii. 11-22). In this section the editor has undoubtedly made use of the parallel narrative of J, though it is impossible to determine the exact point at which J's account is introduced: certainly ii. 15*b*-22 belong to that source.[1] The narrative of the call of Moses is by no means uniform, and shows obvious traces of twofold origin (J iii. 2-4*a*, 5, 7, 8, 16-18; iv. 1-12 (13-16), 29-31; E iii. 1, 4*b*, 6, 9-14, 21, 22; iv. 17, 18, 20*b*, 27, 28). These two sources present striking points of difference, which reappear in the subsequent narrative. According to E, Moses with Aaron is to demand from Pharaoh the release of Israel, which will be effected in spite of his opposition; in assurance thereof the promise is given that they shall serve God upon this mountain; moreover, the people on their departure are to borrow raiment and jewels from their Egyptian neighbours. According to J, on the other hand, the spokesmen are to be Moses and the elders; and their request is for a temporary departure only, viz. "three days' journey into the wilderness"; their departure from Egypt is a hurried one. Yet another difficulty, which disappears as soon as the composite character of the narrative is recognized, is that of the signs. In J three signs are given for the purpose of reassuring Moses, only one of which is wrought with the rod (iv. 1-9), but in iv. 17 (E) the reference is clearly to entirely different signs, probably the plagues of Egypt, which according to E were invariably wrought by "the rod of God." Further, it is questionable if the passage iv. 13-16 really forms part of the original narrative of J, and is not rather to be ascribed to the redactor of JE. The name of Aaron has certainly been introduced by a later hand in J's account of the plague of frogs (viii. 12), and the only passage in J in which Aaron is represented as taking an active part is iv. 29-31, where the mention of his name causes no little difficulty.[2] In E, on the other hand, Aaron is sent by God to meet Moses at Mt. Horeb, after the latter had taken leave of Jethro, and, later on, accompanies him into the presence of Pharaoh. The succeeding narrative (v. 1-vi. 1) is mainly taken from J, though E's account of the first interview with Pharaoh has been partially retained in v. 1, 2, 4. Moses and the elders ask leave to go three days' journey into the wilderness to sacrifice to Yahweh, a request which is met by an increase of the burdensome work of brick-making: henceforward the Israelites have to provide their own straw. The people complain bitterly to Moses, who appeals to Yahweh and is assured by him of the future deliverance of Israel "by a strong hand."

With the exception of the genealogical list (i. 1-5) and the brief notices of the increase of Israel (i. 7) and of its oppression at the hands of the Egyptians (i. 13, 14; ii. 23*b*-25), the narrative so far exhibits no traces of P[3]. But in vi. 2-vii. 13 we are confronted with a narrative which carries us back to ii. 23*b*-25 and gives practically a parallel account to that of JE in ch. iii.-v. Thus the revelation of the divine name, vi. 2f., finds its counterpart in iii. 10f., the message to be delivered to Israel (vi. 6f.) is very similar to that of ch. iii. 16f., while the demand which is to be addressed to Pharaoh is identical with that which had been already refused in ch. v. No allusion, however, is made by Moses to this previous demand; he merely urges the same objection as that put forward in iv. 10f. With the resumption[4] of the story in vi. 28f. Moses reiterates his objection, and is told that Aaron shall be his "prophet" and speak for him, and shall also perform the sign of the rod (cf. iv. 2-4). The sign, however, has no effect on Pharaoh (vii. 13), and we thus reach the same point in the narrative as at vi. 1. Apart from the literary characteristics which clearly differentiate this narrative from the

preceding accounts of J and E, the following points of variation are worthy of consideration: (1) The people refuse to listen to Moses; (2) Aaron is appointed to be Moses' spokesman, not with the *people*, but with Pharaoh; (3) *one* sign is given (not *three*) and performed before Pharaoh; (4) the rod is turned into a reptile (*tannīn*), not a serpent (*nāhāsh*).

(2) vii. 14-xi. 10. *The First Plagues of Egypt.*—In this section the analysis again reveals three main sources, which are clearly marked off from one another both by their linguistic features and by their difference of representation. The principal source is J, from which are derived six plagues, viz. killing of the fish in the river (vii. 14, 16, 17*a*, 18, 21*a*, 24, 25), frogs (viii. 1-4, 8-150), insects (viii. 20-32), murrain (ix. 1-7), hail (ix. 13-18, 23*b*, 24*b*, 25b-34), locusts (x. 1*a*, 3-11, 13*b*, 14*b*, 15*a*, *c*-19, 24-26, 28, 29), the threat to slay all the first-born (xi. 4-8). The most striking characteristic of this narrative is that the plagues are represented as mainly due to natural causes and follow a natural sequence. Thus Yahweh smites the river so that the fish die and render the water undrinkable. This is succeeded by a plague of frogs. The swarms of flies and insects, which next appear, are the natural outcome of the decaying masses of frogs, and these, in turn, would form a natural medium for the spread of cattle disease. Destructive hailstorms, again, though rare, are not unknown in Egypt, while the locusts are definitely stated to have been brought by a strong east wind. Other distinctive features of J's narrative are: (1) Moses alone is bidden to interview Pharaoh (vii. 14 f.; viii. 1 f., 20 f.; ix. 1 f., 13 f.; x. 1 f.); (2) on each occasion he makes a formal demand; (3) on Pharaoh's refusal the plague is announced, and takes place at a fixed time without any human intervention; (4) when the plague is sent, Pharaoh sends for Moses and entreats his intercession, promising in most cases to accede in part to his request; when the plague is removed, however, the promise is left unfulfilled, the standing phrase being "and Pharaoh's heart was heavy (כבד)," or "and Pharaoh made heavy (הכביד) his heart"; (5) the plagues do not affect the children of Israel in Goshen. E's account (water turned into blood, vii. 15, 17*b*, 20*b*, 23; hail, ix. 22, 23*a*, 24*a*, 25*a*, 35; locusts, x. 12, 13*a*, 14*a*, 15*b*) is more fragmentary, having been doubtless superseded in most cases by the fuller and more graphic narrative of J, but the plague of darkness (x. 20-23, 27) is found only in this source. As contrasted with J the narrative emphasizes the miraculous character of the plagues. They are brought about by "the rod of God," which Moses wields, the effect being instantaneous and all-embracing. The Israelites are represented as living among the Egyptians, and enjoy no immunity from the plagues, except that of darkness. Their departure from Egypt is deliberate; the people have time to borrow raiment and jewels from their neighbours. E regularly uses the phrase "and Pharaoh's heart was strong (חזק)," or "and Yahweh made strong (חיזק) Pharaoh's heart" and "he would not let the children of Israel (or, them) go." In the priestly narrative (P) the plagues assume the form of a trial of skill between Aaron, who acts at Moses' command, and the Egyptian magicians, and thus connect with vii. 8-13. The magicians succeed in turning the Nile water into blood (vii. 19, 20*a*, 21*b*, 22), and in bringing up frogs (viii. 5-7), but they fail to bring forth lice (viii. 15*b*-19), and are themselves smitten with boils (ix. 8-12): the two last-named plagues have no parallel either in J or E. Throughout the P sections Aaron is associated with Moses, and the regular command given to the latter is "Say unto Aaron": no demand is ever made to Pharaoh, and the description of the plague is quite short. The formula employed by P is "and Pharaoh's heart was strong (חזק)," or, "and Pharaoh made strong (חיזק) his heart," as in E, but it is distinguished from E's phrase by the addition of "and he hearkened not unto them as Yahweh had spoken."

(3) xii. i-xiii. 16. *The Last Plague, the Deliverance from Egypt, the Institution of the Passover and of the Feast of Unleavened Cakes, the Consecration of the First-born.*—This section presents the usual phenomena of a composite narrative, viz. repetitions and inconsistencies. Thus J's regulations for the Passover (xii. 21-23, 27*b*) seem at first sight simply to repeat the commands given to Moses and Aaron in xii. 1-13 (P), but in reality they are a parallel and divergent account. In *vv.* 1-13 the choice of the lamb and the manner in which it is to be eaten constitute the essential feature, the smearing with the blood being quite secondary; in *vv.* 21 f. the latter point is all-important, and no regulations are given for the paschal meal (which, possibly, formed no part of J's original account). Similarly the institution of the Feast of *Mazzoth*, or Unleavened Cakes (xiii. 3-10J), does not form the sequel to the regulations laid down in xii. 14-20 (P), but is independent of them: it omits all reference to the "holy convocations" and to the abstinence from labour, and is obviously simpler and more primitive. J's account, again, makes important exceptions (xiii. 11-13) to the severe enactment of P with reference to the first-born (xiii. 1). The description of the smiting of the first-born of Egypt is derived from J (xii. 29-34, 37-39), who clearly sees in the Feast of *Mazzoth* a perpetual reminder of the haste with which the Israelites fled from Egypt; the editor of JE, however, has included some extracts from E (xii. 31, 35, 36), which point to a more deliberate departure. The section has been worked over by a Deuteronomistic editor, whose hand can be clearly traced in the additions xii. 24-27*a*; xiii. 3*b*, 5, 8, 9, 14-16.

(4) xiii. 17-xv. 21. *The Crossing of the Red Sea.*—According to J the children of Israel

departed from Egypt under the guidance of Yahweh, who leads them by day in a pillar of cloud and by night in a pillar of fire (xiii. 21, 22). On hearing of their flight Pharaoh at once starts in pursuit. The Israelites, terrified by the approach of the Egyptians, upbraid Moses, who promises them deliverance by the hand of Yahweh (xiv. 5, 6,-7*b*, 10*a*, 11-14, 19*b*). Yahweh then causes a strong east wind to blow all that night, which drives back the waters from the shallows, and so renders it possible for the host of Israel to cross over. The Egyptians follow, but the progress of their chariots is hindered by the soft sand, and in the morning they are caught by the returning waters (xiv. 21*b*, 24, 25, 27*b*, 28*b*, 30). The story, however, has been combined with the somewhat different account of E, which doubtless covered the same ground, and also with that of P. According to the former, Elohim did not permit the Israelites to take the shorter route to Canaan by the Mediterranean coast, for fear of the Philistines, but led them southwards to the Red Sea, whither they were pursued by the Egyptians (xiii. 17-19). The remainder of E's account has only been preserved in a fragmentary form (xiv. 7*aa*, 10*b*, 15*a*, 19*a*, 20*a*), from which it may be gathered that Moses divided the waters by stretching out his rod, thus presupposing that the crossing took place by day, and that the dark cloud which divided the two hosts was miraculously caused by the angel of God. P also represents the sea as divided by means of Moses' rod, but heightens the effect by describing the crossing as taking place between walls of water (xiii. 20; xiv. 1-4, 8, 9, 15*b*, 16*b*-18, 21*a*, *c*, 22, 23, 26, 27*a*, 28*a*, 29).

J's version of the Song of Moses probably does not extend beyond xv. 1, and has its counterpart in the very similar song of Miriam (E), in *vv.* 20, 21. The rest of the song (*vv.* 2-18) is probably the work of a later writer; for these verses set forth not only the deliverance from Egypt, but also the entrance of Israel into Canaan (*vv.* 13-17), and further presuppose the existence of the temple (*vv.* 13*b*, 17*b*). These phenomena have been explained as due to later expansion, but the poem has all the appearance of being a unity, and the language, style and rhythm all point to a later age. Verse 19 is probably the work of the redactor (R^P) who inserted the song.

(5) xv. 22-xviii. 27. *Incidents in the Wilderness.*—The narrative of the first journeying in the wilderness (xv. 22-xvii. 7) presents a series of difficulties which probably owe their origin to the editorial activity of R^P, who appears to have transferred to the beginning of the wanderings a number of incidents which rightly belong to the end. The concluding verses of ch. xv. contain J's account of the sweetening of the waters of Marah, with which has been incorporated a fragment of E's story of Massah (xv. 25*b*) and a Deuteronomic expansion in v. 26. Then follows (ch. xvi.) P's version of the sending of the manna and quails. In its present form, this narrative contains a number of conflicting elements, which can only be the result of editorial activity. Thus *vv.* 6, 7 must originally have preceded vv. 11, 12, though the redactor has attempted to evade the difficulty by inserting v. 8. Again, the account of the quails, which is obviously incomplete, is undoubtedly derived from Num. xi.; but the latter account, which admittedly belongs to JE, places the incident at the end of the wanderings. Closer examination also of P's narrative of the manna shows that its true-position is *after* the departure from Mt. Sinai; cf. the expressions used in *vv.* 9, 10, 33, 34, implying the existence of the ark and the tabernacle. P's account of the manna, however, can hardly have stood originally in close juxtaposition with his account of the quails (cf. Num. xi. 6), but the two narratives were probably combined by R^P before they were transferred to their present position. The same redactor doubtless added v. 8 (and possibly *vv.* 17, 18) by way of explanation, and *vv.* 5 and 22-30, which imply that the law of the Sabbath was already known, and introduce a fresh element into the story. A plausible explanation of R^P's action is supplied by the theory that an earlier account of the giving of the manna already existed at this point of the narrative. We know from Deuteronomy viii. 2 f., 16 that JE contained an account of the manna, which included the explanation of Ex. xvi. 15, and also emphasized, as the motive for the gift, Yahweh's desire "to prove thee (*i.e.* test thy disposition) ... whether thou wouldst keep his commandments, or no." Fragments of this early story of Massah (testing) were incorporated by R^P in his story of the manna and the quails, viz. xv. 25*b*; xvi. 4, 15, 16*a*, 19*b*-21. These verses must be assigned to E, for in xvii. 3, 2c (wherefore do ye tempt the Lord?), 7*a* (to *Massah*), *c* (because they tempted ..., &c.), we find yet another version (J) of the same incident, according to which the people tempted (tested) Yahweh. It was owing to the combination of this latter account with E's further description of the striving of the people for water at Meribah that the double name Massah-Meribah arose, xvii. 1*b*-7 (1a belongs to P), though Deut. xxxiii. 8 makes it clear that Massah and Meribah were separate localities (cf. Deut. ix. 22, 2 f., 16, where Massah occurs alone): P's version of striving at Meribah, in which traces of J's account have been preserved, is given at Num. xx. 1-13.

xvii. 8-16. *The Battle with Amalek at Rephidim.*—This incident is derived from E, but is clearly out of place in its present context. Its close connexion with the end of the wanderings is shown by (*a*) the description of Moses as an infirm old man; (*b*) the rôle played by Joshua in contrast with xxiv. 13, xxxiii. 11, where he is introduced as a young man and Moses'

minister; and (*c*) the references elsewhere to the home of the Amalekites: according to Num. xiii. 29, xiv. 25, xliii. 45, they dwelt in the S. or S.W. of Judah near Kadesh (cf. 1 Sam. xv. 6 f., 30; Gen. xiv. 7; xxxvi. 12).

Ch. xviii. *The visit of Jethro to Moses and the appointment of judges.*—This story, like the preceding one, is mainly derived from E and is also out of place. Allusions in the chapter itself point unmistakably to a time just before the departure from Sinai-Horeb, and this date is confirmed both by Deut. i. 9-16 and by the parallel account of J in Num. x. 29-32. The narrative, however, displays signs of compilation, and it is not improbable that R^{JE} has incorporated in vv. 7-11 part of J's account of the visit of Moses' father-in-law (cf. the use of Yahweh).

(*b*) Ch. xix.-xxiv., xxxii., xxxiv.—The contents of these chapters, which, owing to their contents, form the most important section in the book of Exodus, may be briefly analysed as follows. In ch. xix. we have a twofold description of the theophany on Mt. Sinai (or Horeb), followed by the Decalogue in xx. 1-17. Alongside of this code we find another, dealing in part with the civil and social (xxi. 2-xxii. 17), in part with the religious life of Israel, the so-called Book of the Covenant, xx. 22-xxiii. 19. Ch. xxiv. contains a composite narrative of the ratification of the covenant. In chs. xxxii. and xxxiii. we have again two narratives of the sin of the people and of Moses' intercession, while in ch. xxxiv. we are confronted with yet another early code, which is practically identical with the religious enactments of xx. 22-26; xxii. 29, 30; xxiii. 10-19.

With but few exceptions the *provenance* of the individual sections may be said to have been finally determined by the labours of the critics, but even a cursory examination of their contents makes it evident that the sequence of events, which they now present, cannot be original, but is rather the outcome of a long process of revision, during which the text has suffered considerably from alterations, omissions, dislocations and additions. Yet owing to the method of composition employed by Hebrew editors, or revisers, it is possible in this case, as in others, not only to determine the source of each individual passage, but also to trace with considerable confidence the various stages in the process by which it reached its final form and position. It must, however, be admitted that the evidence at our disposal is, in some cases, capable of more than one interpretation. Hence a final conclusion can hardly be expected, but with certain modifications in detail the following solution of the problem may be accepted as representing the point of view of recent criticism.

Ch. xix. contains two parallel accounts of the theophany on Horeb-Sinai, from E and J respectively, which differ materially from one another. According to the former, Moses is instructed by God (Elohim) to sanctify the *people* against the third day (*vv.* 9*a*, 10, 11*a*). This is done and the people are brought by Moses to the foot of the mountain (Horeb), where they hear the divine voice (14-17, 19). A noticeable feature of this narrative, of which xx. 18-21 forms a natural continuation, is the fact that the theophany is addressed to the *people*, who are too frightened to remain near the mountain itself. In J, on the other hand, it is the *priests* who are sanctified, and great care must be taken to prevent the people from "breaking through to gaze" (20-22). In this account the mountain is called "Sinai" throughout, and "Yahweh" appears instead of "Elohim" (11*b*, 18, 20 f.). Moreover, Moses and Aaron and the priests are summoned to the top of the mount (in v. 24b render "thou and Aaron with thee, and the priests: but let not the people," &c.). *Vv.* 3*b*-8, which have been expanded by a Deuteronomic editor, have been transferred from their original context after xx. 21; the introductory verses 1, 2*a* form part of P's itinerary.

Of the succeeding legislation in xx.-xxiii., xxxii.-xxxiv., undoubtedly the earlier sections are xx. 22-26; xxii. 29, 30; xxiii. 10-19, and xxxiv. 10-26, which contain regulations with regard to worship and religious festivals, and form the basis of the covenant made by Yahweh with Israel on Sinai-Horeb, as recorded by E and J respectively. The narrative which introduces the covenant laws of J has been preserved partly in its present context, ch. xxxiv., partly in xxiv. 1, 2, 9-11; the narrative of E, on the other hand, has in part disappeared owing to the interpolation of later material, in part has been retained in xxiv. 3-8. J's narrative xxiv. 1 f., 9-11 clearly forms the continuation of xix. 20 f., 11*b*, 13, 25, but the introductory words of *v.* 1, "and unto Moses he said," point to some omission. Originally, no doubt, it included the recital of the divine instructions to the people in accordance with xix. 21 f., 11*b*-13, the statement that Yahweh came down on the third day, and that a long blast was blown on the trumpet (or ram's horn [יבל, as opposed to שפר E]). From xxiv. 1 f. we learn that Moses and Aaron, Nadab and Abihu, and seventy of the elders were summoned to the top of the mountain, but that Moses alone was permitted to approach Yahweh. Then followed the theophany, and, as the text stands, the sacrificial meal (9-11).[5] The conclusion of J's narrative is given in ch. xxxiv.,[6] which describes how Moses hewed two tables of stone at Yahweh's command, and went up to the top of the mountain, where he received the words of the covenant and wrote them on the tables. As it stands, however, this chapter represents the legislation which it contains as a renewal of a former covenant, also written on tables of

stone, which had been broken (1*b*, 4*a*). But the document from which the chapter, as a whole, is derived, is certainly J, while the previous references to tables of stone and to Moses' breaking them belong to the parallel narrative of E. Moreover, the covenant here set forth (*v.* 10 f.) is clearly a new one, and contains no hint of any previous legislation, nor of any breach of it by the people. In view of these facts we are forced to conclude that 1*b* ("like unto the first ... brakest"), 4*a* ("and he hewed ... the first") and *v.* 28 ("the ten words") formed no part of the original narrative,[7] but were inserted by a later Deuteronomic redactor. In the view of this editor the Decalogue alone formed the basis of the covenant at Sinai-Horeb, and in order to retain J's version, he represented it as a renewal of the tables of stone which Moses had broken.[8]

The legislation contained in xxxiv. 10-26, which may be described as the oldest legal code of the Hexateuch, is almost entirely religious. It prohibits the making of molten images (*v.* 17), the use of leaven in sacrifices (25*a*), the retention of the sacrifice until the morning (25*b*),[9] and the seething of a kid in its mother's milk (26*b*); and enjoins the observance of the three annual feasts and the Sabbath (18*a*, 21-23), and the dedication of the first-born (19, 20, derived from xiii. 11-13) and of the first-fruits (26*a*).

The parallel collection of E is preserved in xx. 24-26, xxiii. 10-19, to which we should probably add xxii. 29-31 (for which xxiii. 19*a* was afterwards substituted). The two collections resemble one another so closely, both in form and extent, that they can only be regarded as two versions of the same code. E has, however, preserved certain additional regulations with regard to the building of altars (xx. 24-26) and the observance of the seventh year (xxiii. 10, 11), and omits the prohibition of molten images (xx. 22, 23, appear to be the work of a redactor); xxiii. 20-33, the promises attached to the observance of the covenant, probably formed no part of the original code, but were added by the Deuteronomic redactor; cf. especially *vv.* 23-25*a*, 27, 28, 31*b*-33. The narrative of E relative to the delivery of these laws has disappeared,[10] but xxiv. 3-8 (which manifestly have no connexion with their immediate context) clearly point back to some such narrative. These verses describe how Moses wrote all the words of the Lord in a book and recited them to the *people* (*v.* 7) as the basis of a covenant, which was solemnly ratified by the sprinkling of the blood of the accompanying sacrifices.

In the existing text the covenant laws of E (xx. 24-26, xxii. 29-31, xxiii. 10-19) are combined with a mass of civil and other legislation; hence the title "Book of the Covenant" (referred to above, xxiv. 7) has usually been applied to the whole section, xx. 22-xxiii. 33. But this section includes three distinct elements: (*a*) the "words" (הדברים) found in xx. 24-26, xxii. 29-31, xxiii. 1-10; (*b*) the "judgments" (המשפטים), xxi. 2-xxii. 17; and (*c*) a group of moral and ethical enactments, xxii. 18-28, xxiii. 1-9; and an examination of their contents makes it evident that, though the last two groups are unmistakably derived from E, they cannot have formed part of the original "Book of the Covenant"; for the "judgments," which are expressed in a hypothetical form, consist of a number of legal decisions on points of civil law. The cases dealt with fall into five divisions: (1) The rights of slaves, xxi. 2-11; (2) capital offences, xxi. 12-16 (*v.* 17 has probably been added later); (3) injuries inflicted by man or beast, xxi. 18-32; (4) losses incurred by culpable negligence or theft, xxi. 33-xxii. 6; (5) cases arising out of deposits, loans, seduction, xxii. 7-17. It is obvious, from their very nature, that these legal precedents could not have been included in the covenant which the *people* (xxiv. 3) promised to observe, and it is now generally admitted that the words "and the judgments" (which are missing in c. 1 *b*) have been inserted in xxiv. 3*a* by the redactor to whom the present position of the "judgments" is due.[11] The majority of critics, therefore, adopt Kuenen's conjecture that the "judgments" were originally delivered by Moses on the borders of Moab, and that when D's revised version of Ex. xxi.-xxiii. was combined with JE, the older code was placed alongside of E's other legislation at Horeb. The third group of laws (xxii. 18-28, xxiii. 1-9) appears to have been added somewhat later than the bulk of xxi.-xxiii. Some of the regulations are couched in hypothetical form, but their contents are of a different character to the "judgments," *e.g.* xxii. 25 f., xxiii. 4 f.; others, again, are of a similar nature, but differ in form, *e.g.* xxii. 18 f. Lastly, xxii. 20-24, xxiii. 1-3 set forth a number of moral injunctions affecting the individual, which cannot have found place in a civil code. At the same time, these additions must for the most part be prior to D, since many of them are included in Deut. xii.-xxvi., though there are traces of Deuteronomic revision.

Now it is obvious that the results obtained by the foregoing analysis of J and E have an important bearing on the history of the remaining section of E's legislation, viz. the Decalogue (*q.v.*), Ex. xx. 1-17 (= Deut. v. 6-21). At present the "Ten Words" stand in the forefront of E's collection of laws, and it is evident that they were already found in that position by the author of Deuteronomy, who treated them as the sole basis of the covenant at Horeb. The evidence, however, afforded (*a*) by the parallel version of Deuteronomy and (*b*) by the literary analysis of J and E not only fails to support this tradition, but excites the gravest suspicions as to the originality both of the *form* and of the *position* in which the

Decalogue now appears. For when compared with Ex. xx. 1-17 the parallel version of Deut. v. 6 ff. is found to exhibit a number of variations, and, in particular, assigns an entirely different reason for the observance of the Sabbath. But these variations are practically limited to the explanatory comments attached to the 2nd, 4th, 5th and 10th commandments; and the majority of critics are now agreed that these comments were added at a later date, and that all the commandments, like the 1st and the 6th to the 9th, were originally expressed in the form of a single short sentence. This view is confirmed by the fact that the additions, or comments, bear, for the most part, a close resemblance to the style of D. They can scarcely, however, have been transferred from Deuteronomy to Exodus (or vice versa), owing to the variations between the two versions: we must rather regard them as the work of a Deuteronomic redactor. But the expansion and revision of the Decalogue were not limited to the Deuteronomic school. Literary traces of J and E in the 2nd, 3rd, 4th and 10th commandments point to earlier activity on the part of R^{JE}, while the addition of *v.* 11, which bases the observance of the Sabbath on P 's narrative of the Creation (Gen. ii. 1-3), can only be ascribed to a priestly writer: its absence from Deut. v. 6 ff. is otherwise inexplicable. Thus the Decalogue, as given in Exodus, would seem to have passed through at least three stages before it assumed its present form. But even in its original form it could hardly have formed part of E's Horeb legislation; for (*a*) both J and E have preserved a different collection of laws (or "words") inscribed by Moses, which are definitely set forth as the basis of the covenant at Sinai-Horeb (Ex. xxxiv. 10, xxiv. 3 f.), and (*b*) the further legislation of E in ch. xx.-xxiii. affords close parallels to all the commandments (except the 7th and the 10th), and a comparison of the two leaves no doubt as to which is the more primitive. Hence we can only conclude that the Decalogue, in its original short form, came into existence during the period after the completion of E, but before the promulgation of Deuteronomy. Its present position is, doubtless, to be ascribed to a redactor who was influenced by the same conception as the author of Deuteronomy. This redactor, however, did not limit the Horeb covenant to the Decalogue, but retained E's legislation alongside of it. The insertion of the Decalogue, or rather the point of view which prompted its insertion, naturally involved certain consequential changes of the existing text. The most important of these, viz. the harmonistic additions to ch. xxxiv., by means of which J's version of the covenant was represented as a renewal of the Decalogue, has already been discussed; other passages which show traces of similar revision are xxiv. 12-15*a*, 18*b*, and xxxiv. 1-6.

The confusion introduced into the legislation by later additions, with the consequent displacement of earlier material, has not been without effect on the narratives belonging to the different sources. Hence the sequence of events after the completion of the covenant on Sinai-Horeb is not always easy to trace, though indications are not wanting in both J and E of the probable course of the history. The two main incidents that precede the departure of the children of Israel from the mountain (Num. x. 29 ff.) are (1) the sin of the people, and (2) the intercession of Moses, of both of which a double account has been preserved.

(1) *The Sin of the People.*—According to J (xxxii. 25-29) the people, during the absence of Moses, "break loose," *i.e.* mutiny. Their behaviour excites the anger of Moses on his return, and in response to his appeal the sons of Levi arm themselves and slay a large number of the people: as a reward for their services they are bidden to consecrate themselves to Yahweh. The fragmentary form of the narrative—we miss especially a fuller account of the "breaking loose"—is doubtless due to the latter editor, who substituted the story of the golden calf (xxxii. 1-6, 15-24, 35), according to which the sin of the people consisted in direct violation of the 2nd commandment. At the instigation of the people Aaron makes a molten calf out of the golden ornaments brought from Egypt; Moses and Joshua, on their return to the camp, find the people holding festival in honour of the occasion; Moses in his anger breaks the tables of the covenant which he is carrying: he then demolishes the golden calf, and administers a severe rebuke to Aaron. The punishment of the people is briefly recorded in *v.* 35. This latter narrative, which is obviously inconsistent with the story of J, shows unmistakable traces of E. In its present form, however, it can hardly be original, but must have been revised in accordance with the later Deuteronomic conception which represented the sin committed by the people as a breach of the 2nd commandment. Possibly *vv.* 7-14 are also to be treated as a Deuteronomic expansion (cf. Deut. ix. 12-14). Though they show clear traces of J, it is extremely difficult to fit them into that narrative in view of Moses' action in *vv.* 25-29 and of his intercession in ch. xxxiii.; in any case, *vv.* 8 and 13 must be regarded as redactional.

(2) *Moses' Intercession.*—The time for departure from the Sacred Mount had now arrived, and Moses is accordingly bidden to lead the people to the promised land. Yahweh himself refuses to accompany Israel owing to their disobedience, but in response to Moses' passionate appeal finally consents to let his presence go with them. The account of Moses' intercession has been preserved in J, though the narrative has undergone considerable dislocation. The true sequence of the narrative appears to be as follows: Moses is commanded to lead the people to Canaan (xxxiii. 1-3); he pleads that he is unequal to the task (Num. xi. 10*c*, 11, 12, 14, 15), and, presumably, asks for assistance, which is promised

(omitted). Moses then asks for a fuller knowledge of Yahweh and his ways (xxxiii. 12, 13): this request also is granted (*v.* 17), and he is emboldened to pray that he may see the glory of Yahweh; Yahweh replies that his prayer can only be granted in part, for "man shall not see me and live"; a partial revelation is then vouchsafed to Moses (xxxiii. 18-23, xxxiv. 6-8): finally, Moses beseeches Yahweh to go in the midst of his people, and is assured that Yahweh's presence shall accompany them (xxxiv. 9, xxxiii. 14-16). The passage from Numbers xi., which is here included, is obviously out of place in its present context (the story of the quails), and supplies in part the necessary antecedent to Ex. xxxiii. 12, 13; the passage is now separated from Ex. xxxiii. by Ex. xxxiv. (J), which has been wrongly transferred to the close of the Horeb-Sinai incidents (see above), and by the priestly legislation of Ex. xxxv.-xl., Leviticus and Num. i.-x.; but originally it must have stood in close connexion with that chapter. A similar displacement has taken place with regard to Ex. xxxiv. 6-9, which clearly forms the sequel to xxxiii. 17-23. The latter passage, however, can hardly represent the conclusion of the interview, which is found more naturally in xxxiii. 14-16. E's account of Moses' intercession seems to have been retained, in part, in xxxii. 30-34, but the passage has probably been revised by a later hand; in any case its position *before* instead of *after* the dismissal would seem to be redactional.

It is a plausible conjecture that the original narratives of J and E also contained directions for the construction of an ark,[12] as a substitute for the personal presence of Yahweh, and also for the erection of a "tent of meeting" outside the camp, and that these commands were omitted by R^P in favour of the more elaborate instructions given in ch. xxv.-xxix. (P). The subsequent narrative of J (Num. x. 33-36, xiv. 44) implies an account of the making of the ark, while the remarkable description in Ex. xxxiii. 7-11 (E) of Moses' practice in regard to the "tent of meeting" points no less clearly to some earlier statement as to the making of this tent.

The history of Exodus in its original form doubtless concluded with the visit of Moses' father-in-law and the appointment of judges (ch. xviii.), the departure from the mountain and the battle with Amalek (xvii. 8-16).

(*c*) *The Construction of the Tabernacle and its Furniture* (ch. xxv.-xxxi., xxxv.-xl.).—It has long been recognized that the elaborate description of the Tabernacle and its furniture, and the accompanying directions for the dress and consecration of the priests, contained in ch. xxv.-xxxi., have no claim to be regarded as an historical presentment of the Mosaic Tabernacle and its service. The language, style and contents of this section point unmistakably to the hand of P; and it is now generally admitted that these chapters form part of an ideal representation of the post-exilic ritual system, which has been transferred to the Mosaic age. According to this representation, Moses, on the seventh day after the conclusion of the covenant, was summoned to the top of the mountain, and there received instructions with regard to (*a*) the furniture of the sanctuary, viz. the ark, the table and the lamp-stand (ch. xxv.); (*b*) the Tabernacle (ch. xxvi.); (*c*) the court of the Tabernacle and the altar of burnt-offering (ch. xxvii.); (*d*) the dress of the priests (ch. xxviii.); (*e*) the consecration of Aaron and his sons (xxix. 1-37); and (*f*) the daily burnt-offering (xxix. 38-42): the section ends with a formal conclusion (xxix. 43-46). The two following chapters contain further instructions relative to the altar of incense (xxx. 1-10), the payment of the half-shekel (11-16), the brazen laver (17-21), the anointing oil (22-33), the incense (34-38), the appointment of Bezaleel and Oholiab (xxxi. 1-11) and the observance of the Sabbath (12-17). It is hardly doubtful, however, that these two chapters formed no part of P's original legislation, but were added by a later hand.[13] For (1) the altar of incense is here mentioned for the first time, and was apparently unknown to the author of ch. xxv.-xxix. Had he known of its existence, he could hardly have failed to include it with the rest of the Tabernacle furniture in ch. xxvi., and must have mentioned it at xxvi. 34 f., where the relative positions of the contents of the Tabernacle are defined: further, the ritual of the Day of Atonement (Lev. xvi. referred to in xxx. 10) ignores this altar, and mentions only *one* altar (cf. "*the* altar," xxvii. 1), viz. that of burnt-offering; (2) the command as to the half-shekel presupposes the census of Num. i., and appears to have been unknown in the time of Nehemiah (Neh. x. 32) (Heb. 33); (3) the instructions as to the brazen laver would naturally be expected alongside of those for the altar of burnt-offering in ch. xxvii.; (4) the following section relating to the anointing oil presupposes the altar of incense (*v.* 28), and further extends the ceremony of anointing to Aaron's sons, though, elsewhere, the ceremony is confined to Aaron (xxix. 7, Lev. viii. 12), cf. the title "anointed priest" applied to the high priest (Lev. iv. 3, &c.); (5) the directions for compounding the incense connect naturally with xxx. 1-10, while (6) the appointment of Bezaleel and Oholiah cannot be separated from the rest of ch. xxx.-xxxi. The concluding section on the Sabbath (xxxi. 12-17) shows marks of resemblance to H (Lev. xvii.-xxvi.), especially in *vv.* 12-14*a*, which appear to have been expanded, very possibly by the editor who inserted the passage. The continuation of P's narrative is given in xxxiv. 29-35, which describe Moses' return from the mount. The subsequent chapters (xxxv.-xl.), however, can hardly belong to the original stratum of P, if

only because they presuppose ch. xxx., xxxi., and were probably added at a later stage than the latter chapters. They narrate how the commands of ch. xxv.-xxxi. were carried out, and practically repeat the earlier chapters *verbatim*, merely the tenses being changed, the most noticeable omissions being xxvii. 20 f. (oil for the lamps), xxviii. 30 (Urim and Thummim), xxix. 1-37 (the consecration of the priests, which recurs in Lev. viii.) and xxix. 38-42 (the daily burnt-offering). Apart from the omissions the most striking difference between the two sections is the variation in order, the different sections of ch. xxv.-xxxi. being here set forth in their natural sequence. The secondary character of these concluding chapters receives considerable confirmation from a comparison of the Septuagint text. For this version exhibits numerous cases of variation, both as regards *order* and *contents*, from the Hebrew text; moreover the translation, more particularly of many technical terms, differs from that of ch. xxv.-xxxi., and seems to be the work of different translators. Hence it is by no means improbable that the final recension of these chapters had not been completed when the Alexandrine version was made.

Authorities.—In addition to the various English and German commentaries on Exodus included under the head of the Pentateuch, the following English works are especially worthy of mention: S.R. Driver, *Introd. to the Literature of the O.T.*, and "Exodus" in the *Camb. Bible*; B.W. Bacon, *The Triple Tradition of the Exodus* (Hartford, U.S.A., 1894), and A.H. McNeile, *The Book of Exodus* (Westminster Commentaries) (1908); also the articles on "Exodus" by G. Harford-Battersby (Hastings, *Dict. Bib.* vol. i.) and by G.F. Moore, *Ency. Biblica*, vol. ii.

(J. F. St.)

---

1 The fact that the father-in-law of Moses is called Reuel in v. 18, as contrasted with the name Jethro, which occurs in iii. 1 f. and in all subsequent passages from E, cannot be taken as conclusive on this point, since critics are agreed that "Reuel" in this verse is a later addition: had it been original we should have expected the name to be given at v. 16 rather than at v. 18. But, if no argument can be based on the discrepancy between the two names, we may at least assume that the namelessness of the priest in v. 16 f. points to a different source for those verses from that of iii. 1 f. Elsewhere J speaks of "Hobab, the son of Reuel the Midianite, Moses' father-in-law" (Num. x. 29); the addition, "the priest of Midian," only occurs in the (secondary) passages iii. 1, xviii. 1 (E). Probably RJE omitted the name in ii. 16 and added "the priest of Midian" in iii. 1, xviii 1, from harmonizing motives. Further, vv. 15^{B}-22 speak of *one* son being born to Moses at this period, a statement which is borne out by iv. 20, 25 ("sons" in iv. 20 is obviously a correction), whereas ch. xviii. (E) mentions *two* sons.

The original order of events in J seems to have been as follows: after the death of Pharaoh (ii. 23*a*; the Septuagint repeats this notice before iv. 19) Moses returns to Egypt with his wife and son (iv. 19, 20) in obedience to Yahweh's command. On the way he is seized with a sudden illness, which Zipporah attributes to the fact that he has not been circumcised and seeks to avert by circumcising her son (iv. 24-26). The scene of the theophany, therefore, according to J, is to be placed on the way from Midian to Goshen. Probably the displacement of iv. 19, 20, 24-26 is due to the editor of JE, who was thus enabled to combine the two narratives of the theophany.

2 Cf. iv. 30; Aaron had received no command to do the signs, and the words "and he did the signs" are most naturally referred to Moses.

3 The expansion in iii. 8c, 15, 17b; iv. 22, 23, are probably the work of a Deuteronomistic redactor.

4 The genealogy of Moses and Aaron (vv. 14-27) appears to be a later addition.

5 Unless we follow Riedel and read simply "and worshipped" (וישתחוו) instead of "and drank" (וישתו), treating "and ate" (ויאכלו) as a later addition; cf. HDB, extra vol. p. 631 note.

6 Vv. 6-9 are out of place here: they belong to the story of Moses' intercession in ch. xxxiii.

7 This view is confirmed by (*a*) a comparison of v. lb ("and I will write") with vv. 27, 28; according to the latter, *Moses* wrote the words of the covenant; and (*b*) the tardy mention of Moses in 4b; the name would naturally be given at the beginning of the verse.

8 Others suppose that the present position of ch. xxxiv. is due, in the first instance, to RJE, but in view of the other Deuteronomic expansions in vv. 10b-16, 23, 24, it is more probable that J's version was discarded by RJE in favour of E's, and was afterwards restored by RD.

9 Reading "the sacrifice of my feasts" for "the sacrifice of the feast of the Passover."

10 Unless, with Bacon, we are to regard xxiv. 12-14, 18b as original. More probably a later editor has worked up old material of E (of which there are unmistakable traces) in order to include the whole of xx.-xxiii. in the covenant: xxiv. 15-18a are an addition from P.

11 The present text of xxiv. 12 also has probably been transposed in accordance with the view that the "judgment" formed part of the covenant, cf. Deut. v. 31. Originally the latter part of the verse must have run, "That I may give thee the tables of stone which I have written, and may teach thee

the law and the commandment." For further details see Bacon, *Triple Tradition of Exodus*, pp. 111 f., 132 f.

12 According to Deut. x. 1 f., which is in the main a *verbal* excerpt from Ex. xxxiv. 1 f., Yahweh ordered Moses to make an ark of acacia wood *before* he ascended the mountain.

13 To the same hand are to be ascribed also xxvii. 6, 20, 21; xxviii. 41; xxix. 21, 38-41.

EXODUS, THE, the name given to the journey (Gr. ἔξοδος) of the Israelites from Egypt into Palestine, under the leadership of Moses and Aaron, as described in the books of the Bible from Exodus to Joshua. These books contain the great national epic of Judaism relating the deliverance of the people from bondage in Egypt, the overthrow of the pursuing Pharaoh and his army, the divinely guided wanderings through the wilderness and the final entry into the promised land. Careful criticism of the narratives[1] has resulted in the separation of later accretions from the earliest records, and the tracing of the elaboration of older traditions under the influence of developing religious and social institutions. In the story of the Exodus there have been incorporated codes of laws and institutions which were to be observed by the descendants of the Israelites in their future home, and these, really of later origin, have 78 thus been thrown back to the earlier period in order to give them the stamp of authority. So, although a certain amount of the narrative *could* date from the days of Moses, the Exodus story has been made the vehicle for the aims and ideals of subsequent ages, and has been adapted from time to time to the requirements of later stages of thought. The work of criticism has brought to light important examples of fluctuating tradition, singular lacunae in some places and unusual wealth of tradition in others, and has demonstrated that much of that which had long been felt to be impossible and incredible was due to writers of the post-exilic age many centuries after the presumed date of the events.

The book of Genesis closes with the migration of Jacob's family into Egypt to escape the famine in Canaan. Jacob died and was buried in Canaan by his sons, who, however, returned again to the pastures which the Egyptian king had granted them in Goshen. Their brother Joseph on his death-bed promised that God would bring them to the land promised to their forefathers and solemnly adjured them to carry up his bones (Gen. 1.). In the book of Exodus the family has become a people.[2] The Pharaoh is hostile, and Yahweh, the Israelite deity, is moved to send a deliverer; on the events that followed see Exodus, Book of; Moses. It has been thought that dynastic changes occasioned the change in Egyptian policy (*e.g.* the expulsion of the Hyksos), but if the Israelites built Rameses and Pithom (Ex. i. 11), cities which, as excavation has shown, belong to the time of Rameses II. (13th century B.C.), earlier dates are inadmissible. On these grounds the Exodus may have taken place under one of his successors, and since Mineptah or Merneptah (son of Rameses), in relating his successes in Palestine, boasts that *Ysiraal* is desolated, it would seem that the Israelites had already returned. On the other hand, it has been suggested that when Jacob and his family entered Egypt, some Israelite tribes had remained behind and that it is to these that Mineptah's inscription refers. The problem is complicated by the fact that, from the Egyptian evidence, not only was there at this time no remarkable emigration of oppressed Hebrews, but Bedouin tribes were then receiving permission to enter Egypt and to feed their flocks upon Egyptian soil. It might be assumed that the Israelites (or at least those who had not remained behind in Palestine) effected their departure at a somewhat later date, and in the time of Mineptah's successor, Seti II., there is an Egyptian report of the pursuit of some fugitive slaves over the eastern frontier. The value of all such evidence will naturally depend largely upon the estimate formed of the biblical narratives, but it is necessary to observe that these have not yet found Egyptian testimony to support them. Although the information which has been brought to bear upon Egyptian life and customs substantiates the general accuracy of the local colouring in some of the biblical narratives, the latter contain several inherent improbabilities, and whatever future research may yield, no definite trace of Egyptian influence has so far been found in Israelite institutions.

No allusions to Israelites in Egypt have yet been found on the monuments; against the view that the Aperiu (or Apury) of the inscriptions were Hebrews, see S.R. Driver in D.G. Hogarth, *Authority and Archaeology*, pp. 56 sqq.; H.W. Hogg, *Ency. Bib.* col. 1310. The plagues of Egypt have been shown to be those to which the land is naturally subject (R. Thomson, *Plagues of Egypt*), but the description of the relations of Moses and Aaron to the court raises many difficult questions (H.P. Smith, *O.T. Hist.* pp. 57-60). Those who reject Ex.

i. 11 and hold that 480 years elapsed between the Exodus and the foundation of the temple (I Kings vi. 1, see Bible: Chronology) place the former about the time of Tethmosis (Thothmes) III., and suppose that the hostile Ḥabiri (Khabiri) who troubled Palestine in the 15th century are no other than Hebrews (the equation is philologically sound), *i.e.* the invading Israelites.[3] But although the evidence of the Amarna tablets might thus support the biblical tradition in its barest outlines, the view in question, if correct, would necessitate the rejection of a great mass of the biblical narratives as a whole.

In the absence of external evidence the study of the Exodus of the Israelites must be based upon the Israelite records, and divergent or contradictory views must be carefully noticed. Regarded simply as a journey from Egypt into Palestine it is the most probable of occurrences: the difficulty arises from the actual narratives. The first stage is the escape from the land of Goshen (*q.v.*), the district allotted to the family of Jacob (Gen. xlvi. 28-34, xlvii. 1, 4, 6).[4] As to the route taken across the Red Sea (*Yam Sūph*) scholars are not agreed (see W.M. Müller, *Ency. Bib.* col. 1436 sqq.); it depends upon the view held regarding the second stage of the journey, the road to the mountain of Sinai or Horeb and thence to Kadesh. The last-mentioned place is identified with Ain Kadīs, about 50 m. south of Beersheba; but the identification of the mountain is uncertain, and it is possible that tradition confused two distinct places. According to one favourite view, the journey was taken across the Sinaitic peninsula to Midian, the home of Jethro. Others plead strongly for the traditional site Jebel Mūsā or Serbāl in the south of the peninsula (see J.R. Harris, *Dict. Bible*, iv. pp. 536 sqq.; H. Winckler, *Ency. Bib.* col. 4641). The latter view implies that the oppressed Israelites left Egypt for one of its dependencies, and both theories find only conjectural identifications in the various stations recorded in Num. xxxiii. But this list of forty names, corresponding to the years of wandering, is from a post-exilic source, and may be based merely upon a knowledge of caravan-routes; even if it be of older origin, it is of secondary value since it represents a tradition differing notably from that in the earlier narratives themselves, and these on inspection confirm Judg. xi. 16 seq., where the Israelites proceed immediately to Kadesh.

Ex. xvi.-xviii. presuppose a settled encampment and a law-giving, and thus belong to a stage *after* Sinai had been reached (Ex. xix. sqq.). They are closely related, as regards subject matter, &c. , to the narratives in Num. x. 29-xi., xx. 1-13 (Sinai to Kadesh), and the initial step is the recognition that the latter is their original context (see G.F. Moore, *Ency. Bib.* col. 1443 [v.]). Further, internal peculiarities associating events now at Sinai-Horeb with those at Kadesh support the view that Kadesh was their true scene, and it is to be noticed that in Ex. xv. 22 seq. the Israelites already reach the wilderness of Shur and accomplish the three days' journey which had been their original aim (cf. Ex. iii. 18, v. 3, viii. 27). The wilderness of Shur (Gen. xvi. 7, xx. 1; 1 Sam. xv. 7, xxvii. 8) is the natural scene of conflicts with Amalekites (Ex. xvii. 8 sqq.), and its sanctuary of Kadesh or En Mishpat ("well of judgment," Gen. xiv. 7) was doubtless associated with traditions of the giving of statutes and ordinances. The détour to Sinai-Horeb appears to belong to a later stage of the tradition, and is connected with the introduction of laws and institutions of relatively later form. It is foreshadowed by the injunction to avoid the direct way into Palestine (see Ex. xiii. 17-19), since on reaching Kadesh the Israelites would be within reach of hostile tribes, and the conflicts which it was proposed to avoid actually ensued.[5] The forty years of wandering in the wilderness is characteristic of the Deuteronomic and post-exilic narratives; in the earlier sources the fruitful oasis of Kadesh is the centre, and even after the tradition of a détour to Sinai-Horeb was developed, only a brief period is spent at the holy mountain.

From Kadesh spies were sent into Palestine, and when the people were dismayed at their tidings and incurred the wrath of Yahweh, the penalty of the forty years' delay was pronounced (Num. xiii. seq.). Originally Caleb alone was exempt and for his faith received a blessing; later tradition adds Joshua and in Deut. i. 37 seq. alludes to some unknown offence of Moses. According to Num. xxi. 1-3 the Israelites (a generalizing amplification) captured Hormah, on the way to Beersheba, and subsequently the clan Caleb and the Kenites (the clan of Moses' father-in-law) are found in Judah (Judg. i. 16). Although the traditions regard their efforts as part of a common movement (from Gilgal, see below), it is more probable that these (notably Caleb) escaped the punishment which befell the rest of the Israelites, and made their way direct from Kadesh into the south of Palestine.[6] On the other hand, according to the prevailing tradition, the attempt to break northwards was frustrated by a defeat at Hormah (Num. xiv. 40-45), an endeavour to pass Edom failed, and the people turned back to the *Yam Sūph* (here at the head of the Gulf of Akabah) and proceeded up to the east of Edom and Moab. Conflicting views are represented (on which see Moab), but at length Shittim was reached and preparations were made to cross the Jordan into the promised land. This having been effected, Gilgal became the base for a series of operations in which the united tribes took part. But again the representations disagree, and to the

overwhelming campaigns depicted in the book of Joshua most critics prefer the account of the more gradual process as related in the opening chapter of the book of Judges (see Jews: *History*, § 8).

Thus, whatever evidence may be supplied by archaeological research, the problem of the Exodus must always be studied in the light of the biblical narratives. That the religious life of Israel as portrayed therein dates from this remote period cannot be maintained against the results of excavation or against the later history, nor can we picture a united people in the desert when subsequent vicissitudes represent the union as the work of many years, and show that it lasted for a short time only under David and Solomon. During the centuries in which the narratives were taking shape many profound changes occurred to affect the traditions. Developments associated with the Deuteronomic reform and the reorganization of Judaism in post-exilic days can be unmistakably recognized, and it would be unsafe to assume that other vicissitudes have not also left their mark. Allowance must be made for the shifting of boundaries or of spheres of influence (Egypt, Edom, Moab), for the incorporation of tribes and of their own tribal traditions, and in particular for other movements (*e.g.* from Arabia).[7] If certain clans moved direct from Kadesh into Judah, it is improbable that others made the lengthy détour from Kadesh by the Gulf of Akabah, but this may well be an attempt to fuse the traditions of two distinct migrations. Among the Joseph-tribes (Ephraim and Manasseh), the most important of Israelite divisions, the traditions of an ancestor who had lived and died in Egypt would be a cherished possession, but although most writers agree that not all the tribes were in Egypt, it is impossible to determine their number with any certainty. At certain periods, intercourse with Egypt was especially intimate, and there is much in favour of the view that the name Mizraim (Egypt) extended beyond the borders of Egypt proper. Reference has already been made to other cases of geographical vagueness, and one must recognize that in a body of traditions such as this there was room for the inclusion of the most diverse elements which it is almost hopeless to separate, in view of the scantiness of relevant evidence from other sources, and the literary intricacy of the extant narratives. That many different beliefs have influenced the tradition is apparent from what has been said above, and is especially noticeable from a study of the general features. Thus, although the Israelites possessed cattle (Ex. xvii. 3, xix. 13, xxiv. 5, xxxii. 6, xxxiv. 3; Num. xx. 19), allusion is made to their lack of meat in order to magnify the wonders of the journey, and among divinely sent aids to guide and direct the people upon the march not only does Moses require the assistance of a *human* helper (Jethro or Hobab), but the angel, the ark, the pillar of cloud and of fire and the mysterious hornet are also provided.

In addition to the references already given, see J.W. Colenso, *Pentateuch and Book of Joshua* (on internal difficulties); A. Jeremias, *Alte Test. im Lichte d. alt. Orients*[2] (pp. 402 sqq., on later references in Manetho, &c. , with which cf. also R.H. Charles, *Jubilees*, p. 245 seq.); art. "Exodus" in *Ency. Bib.*; Ed. Meyer, *Israëliten* (*passim*); Bönhoff, *Theolog. Stud. u. Krit.* (1907), pp. 159-217; the histories of Israel and commentaries on the book of Exodus. Among the numerous special works, mention may be made of G. Ebers, *Durch Gosen zum Sinai*; E.H. Palmer, *Desert of the Exodus*; O.A. Toffteen, *The Historic Exodus*; fuller information is given in L.B. Paton, *Hist. of Syria and Palestine*, p. 34 (also ch. viii.); and C.F. Kent, *Beginnings of Heb. Hist.* p. 355 seq.

(S. A. C.)

---

1 See the articles on the books in question.

2 There is a lacuna between the oldest traditions in Genesis and those in Exodus: the latter beginning simply "and there arose a new king over Egypt which knew not Joseph." The interval between Jacob's arrival in Egypt and the Exodus is given varyingly as 400 or 430 years (Gen. xv. 13, Ex. xii. 40 seq., Acts vii. 6); but the Samaritan and Septuagint versions allow only 215 years (Ex. loc. cit.), and a period of only four generations is presupposed in Gen. xv. 16 (cf. the length of the genealogies between the contemporaries of Joseph and those of Moses in Ex. vi. 16-20).

3 Sec, *e.g.*, J. Orr, *Problem of the O.T.* pp. 422 sqq.; Ed. Meyer, *Die Israëliten*, pp. 222 sqq. Some, too, find in the Amarna tablets the historical background for Joseph's high position at the Egyptian court (see Cheyne, *Ency. Bib.* art. "Joseph").

4 For the varying traditions regarding the number of the people and their residence (whether settled apart, cf., *e.g.*, Gen. xlvi. 34, Ex. viii. 22, ix. 26, x. 23, or in the midst of the Egyptians) see the recent commentaries.

5 See further J. Wellhausen, *Prolegomena*, pp. 342 sqq.; G.F. Moore, Ency. Bib. col. 1443; S.A. Cook, *Jew. Quart. Rev.* (1906), pp. 741 sqq. (1907), p. 122, and art. Moses. Ex. xiii. 17-19 forbids the compromise which would place Sinai-Horeb in the neighbourhood of Kadesh (A.E. Haynes, *Pal. Explor. Fund, Quart. Statem.* (1896), pp. 175 sqq.; C.F. Kent [see *Lit.* below], p. 381).

6 So B. Stade, Steuernagel, Guthe, G.F. Moore, H.P. Smith, C.F. Kent, &c. See Caleb; Jerahmeel;

JUDAH; KENITES; LEVITES; and JEWS: *History*, §§ 5, 20 (end).

7 An instructive parallel to the last-mentioned is afforded by Dissard's account of the migration of Arab tribes into Palestine in the 18th century A.D. (*Revue biblique*, July 1905).

EXOGAMY (Gr. ἔξω, outside; and γάμος, marriage), the term proposed by J.F. McLennan for the custom compelling marriage "out of the tribe" (or rather "out of the totem"); its converse is endogamy (*q.v.*). McLennan would find an explanation of exogamy in the prevalence of female infanticide, which, "rendering women scarce, led at once to polyandry within the tribe, and the capturing of women from without." Infanticide of girls is, and no doubt ever has been, a very common practice among savages, and for obvious reasons. Among tribes in a primitive stage of social organization girl-children must always have been a hindrance and a source of weakness. They had to be fed and yet they could not take part in the hunt for food, and they offered a temptation to neighbouring tribes. Infanticide, however, is not proved to have been so universal as McLennan suggests, and it is more probable that the reason of exogamy is really to be found in that primitive social system which made the "captured" woman the only wife in the modern sense of the term. In the beginnings of human society children were related only to their mother; and the women of a tribe were common property. Thus no man might appropriate any female or attempt to maintain proprietary rights over her. With women of other tribes it would be different, and a warrior who captured a woman would doubtless pass unchallenged in his claim to possess her absolutely. Infanticide, the evil physical effects of "in-and-in" breeding, the natural strength of the impulse to possess on the man's part, and the greater feeling of security and a tendency to family life and affections on the woman's, would combine to make exogamy increase and marriages within the tribe decrease. A natural impulse would in a few generations tend to become a law or a custom, the violation of which would be looked on with horror. Physical capture, too, as soon as increasing civilization and tribal intercommunication removed the necessity for violence, became symbolic of the more permanent and individual relations of the sexes. An additional explanation of the prevalence of exogamy may be found in the natural tendency of exogamous tribes to increase in numbers and strength at the expense of those communities which moved towards decadence by in-breeding. Thus tradition would harden into a prejudice, strong as a principle of religion, and exogamy would become the inviolable custom it is found to be among many races. In Australia, Sir G. Grey writes: "One of the most remarkable facts connected with the natives is that they are divided into certain great families, all the members of which bear the same name ... these family names are common over a great portion of the continent and a man cannot marry a woman of his own family name." In eastern Africa, Sir R. Burton says: "The Somal will not marry one of the same, or even of a consanguineous family," and the Bakalahari have the same rule. Paul B. du Chaillu found exogamy the rule and blood marriages regarded as an abomination throughout western Equatorial Africa. In India the Khasias, Juangs, Waralis, Otaons, Hos and other tribes are strictly exogamous. The Kalmucks are divided into hordes, and no man may marry a woman of the same horde. Circassians and Samoyedes have similar rules. The Ostiaks regard endogamy (marriage within the clan) as a crime, as do the Yakuts of Siberia. Among the Indians of America severe rules prescribing exogamy prevail. The Tsimsheean Indians of British Columbia are divided into tribes and totems, or "crests which are common to all the tribes," says one writer. "The crests are the whale, the porpoise, the eagle, the coon, the wolf and the frog.... The relationship existing between persons of the same crest is nearer than that between members of the same tribe.... Members of the same tribe may marry, but those of the same crest are not allowed to under any circumstances; that is, a whale may not marry a whale, but a whale may marry a frog, &c." The Thlinkeets, the Mayas of Yucatan and the Indians of Guiana are exogamous, observing a custom which is thus seen to exist throughout Africa, in Siberia, China, India, Polynesia and the Americas.

80

AUTHORITIES.—J.F. McLennan, *Primitive Marriage* (1865), and *Studies in Anc. Hist.* (1896); Lord Avebury, *Origin of Civilization* (1902); Westermarck, *History of Human Marriage* (1894); A. Lang, *Social Origins* (1903); L.H. Morgan, *Ancient Society* (1877); J.G. Frazer, *Totemism and Exogamy* (1910); see also TOTEM.

EXORCISM (Gr. ἐξορκίζειν, to conjure out), the expulsion of evil spirits from persons or places by incantations, magical rites or other means. As a corollary of the animistic theory of diseases and of belief in Possession (*q.v.*), we find widely spread customs whose object is to get rid of the evil influences. These customs may take the form of a general expulsion of evils, either once a year or at irregular intervals; the evils, which are often regarded as spirits, sometimes as the souls of the dead, may be expelled, according to primitive philosophy, either immediately by spells, purifications or some form of coercion; or they may be put on the back of a scapegoat or other material vehicle. Among the means of compelling the evil spirits are assaults with warlike weapons or sticks, the noise of musical instruments or of the human voice, the use of masks, the invocation of more powerful good spirits, &c. ; both fire and water are used to drive them out, and the use of iron is a common means of holding them at bay.

The term exorcism is applied more especially to the freeing of an individual from a possessing or disease-causing spirit; the means adopted are frequently the same as those mentioned above; in the East Indies the sufferer sometimes dances round a small ship, into which the spirit passes and is then set adrift. The patient may be beaten or means may be employed whose efficiency depends largely on their suggestive nature. Among the Dakota Indians the medicine-man chants *hi-le-li-lah!* at the bed of the sick man and accompanies his chant with the rattle; he then sucks at the affected part till the possessing spirit is supposed to come out and take its flight, when men fire guns at it from the door of the tent. The Zulus believe that they can get rid of the souls of the dead, which cause diseases, by sacrifices of cattle, or by expostulating with the spirits; so too the *shaman* or magician in other parts of the world offers the possessing spirit objects or animals.

The professional exorcist was known among the Jews; in Greece the art was practised by women, and it is recorded that the mothers of Epicurus and Aeschines belonged to this class; both were bitterly reproached, the one by the Stoics, the other by Demosthenes, with having taken part in the practices in question. The prominence of exorcism in the early ages of the Christian church appears from its frequent mention in the writings of the fathers, and by the 3rd century there was an order of exorcists (see Exorcist). The ancient rite of exorcism in connexion with baptism is still retained in the Roman ritual, as is also a form of service for the exorcising of possessed persons. The exorcist signs the possessed person with the figure of the cross, desires him to kneel, and sprinkles him with holy water; after which the exorcist asks the devil his name, and abjures him by the holy mysteries of the Christian religion not to afflict the person possessed any more. Then, laying his right hand on the demoniac’s head, he repeats the form of exorcism as follows: “I exorcise thee, unclean spirit, in the name of Jesus Christ; tremble, O Satan, thou enemy of the faith, thou foe of mankind, who hast brought death into the world, who hast deprived men of life, and hast rebelled against justice, thou seducer of mankind, thou root of evil, thou source of avarice, discord and envy.” Houses and other places supposed to be haunted by unclean spirits are likewise to be exorcised with similar rites, and in general exorcism has a place in all the ceremonies for consecrating and blessing persons or things (see Benediction).

See Tylor, *Primitive Culture*; Skeat, *Malay Magic*, p. 427 seq.; Frazer, *Golden Bough*, vol. iii. 189; Krafft, *Ausführliche Historie von Exorcismus*; Koldeweg, *Der Exorcismus im Herzogthum Braunschweig*; Brecher, *Das Transcendentale, Magie, etc. im Talmud*, pp. 195-203: *Zeitschr. für Assyriologie* (Dec. 1893, April 1894); Herzog, *Realencykl., s.v.* “Exorcismus”; Waldmeier, *Autobiography*, p. 64; L.W. King, *Babylonian Magic*; Maury, *La Magie*; R.C. Thompson, *Devils and Evil Spirits of Babylonia*.

EXORCIST (Lat. *exorcista*, Gr. ἐξορκίστης), in the Roman Catholic church, the third grade in the minor orders of the clergy, between those of acolyte and reader. The office, which involves the right of ceremonially exorcising devils (see Exorcism), is actually no more than a preliminary stage of the priesthood. The earliest record of the special ordination of exorcists is the 7th canon of the council of Carthage (A.D. 256). “When they are ordained,” it runs, “they receive from the hand of the bishop a little book in which the exorcisms are written, receiving power to lay hands on the *energumeni*, whether baptized or catechumens.” Whatever its present position, the office of exorcist was, until comparatively recent times, by no means considered a sinecure. “The exorcist a terror to demons” (Paulinus, *Epist.* 24) survived the Reformation among Protestants, with the belief, expressed

by Firmilianus in his epistle to St Cyprian, that “through the exorcists, by the voice of man and the power of God, the devil may be whipped, and burnt and tortured.”

EXOTIC (Gr. ἐξωτικός, foreign, from ἔξω, outside), of foreign origin, or belonging to another country. The term is now used in the restricted sense of something not indigenous or native, and is mostly applied to plants introduced from foreign countries, which have not become acclimatized. Figuratively, “exotic” is used to convey the sense of something rare, delicate or extravagant.

EXPATRIATION (from Late Lat. *expatriare*, to exile, and *patria*, native land), a term used in a general sense for the banishment of a person from his own country. In international law expatriation is the renunciation or change of allegiance to one’s native or adopted country. It may take place either by a voluntary act or by operation of law. Some countries, as France and England, disclaim their subjects if they become naturalized in another country, others, again, passively permit expatriation whether a new nationality has been acquired or not; others, as Germany, make expatriation the consequence of continued absence from their territory. (See ALIEN; ALLEGIANCE; NATURALIZATION.)

EXPERT (Lat. *expertus*, from *experiri*, to try), strictly, skilled, or one who has special knowledge; as used in law, an expert is a person, selected by a court, or adduced by a party to a cause, to give his opinion on some point in issue with which he is peculiarly conversant. In Roman law questions of disputed handwriting were referred to experts; and in France, whenever the court considers that a report by experts is necessary, it is ordered by a judgment clearly setting forth the objects of the *expertise* (Code Proc. Civ. art. 302). Three experts are then to be appointed, unless the parties agree upon one only (art. 303). The experts are required to take an oath (art. 305), but in practice this requirement is frequently dispensed with. They may be challenged on the same grounds as witnesses (art. 310). The necessary documentary and other evidence is laid before them (art. 317), and they make a single report to the court, even if they express different opinions: in that case the grounds only of the different opinions are to be stated, and not the personal opinion of each of the experts (art. 318). If the court is not satisfied with the report, new experts may be appointed (art. 322); the judges are not bound to adopt the opinion of the experts (art. 323). “This procedure in regard to experts is common to both the civil and commercial courts, but it is much more frequently resorted to in the commercial court than in the civil court, and the investigation is usually conducted by special experts officially attached to each of these courts” (Bodington, *French Law of Evidence*, London, 1904, p. 102). A similar system is to be found in force in many other European countries; see *e.g.* Codes of Civil Procedure of Holland, arts. 222 et seq.; Belgium, arts. 302 et seq.; Italy, arts. 252 et seq.; as well as in those colonies where French law has been followed (Codes of Civil Procedure of Quebec, arts. 392 et seq.; St Lucia, arts. 286 et seq.). In Mauritius the articles of the French law, summarized above, are still nominally in force; but in practice each side calls its own expert evidence, as in England.

There is some evidence that in England the courts were in early times in the habit of summoning to their assistance, apparently as assessors, persons specially qualified to advise upon any scientific or technical question that required to be determined. Thus “in an appeal of maihem (*i.e.* wounding) ... the court did not know how to adjudge because the wound was new, and then the defendant took issue and prayed the court that the maihem might be examined, on which a writ was sent to the sheriff to cause to come *medicos chirurgieos de melioribus London, ad informandum dominum regem el curiam de his quae eis ex parte*

domini regis injungerentur" (Year Book, 21 Hen. VII. pl. 30, p. 33). The practice of calling in expert assistance in judicial inquiries was not confined to medico-legal cases. "If matters arise," said Justice Saunders in *Buckley* v. *Rice Thomas* (1554, Plowden, 124 a), "which concern other faculties, we commonly apply for the aid of that science or faculty which it concerns." English procedure, however, being *litigious*, and not, like continental European procedure, *inquisitorial*, in its character, the expert soon became, and still is, simply a witness to speak to matters of opinion.

There is a considerable body of law in England as to expert evidence. Only a few points can be touched upon here. (1) An expert is permitted to refresh his memory in regard to any fact by referring to anything written by himself or under his direction at the time when the fact occurred or at a time when it was fresh in his memory. This is also law generally in the United States (see *e.g.* New York Civil Code, s. 1843). In Scotland, medical and other scientific reports are lodged in process before the trial, and the witness reads them as part of his evidence and is liable to be examined or cross-examined on their contents. (2) In strictness, an expert will not be allowed, in cases of alleged insanity, to say that a litigating or incriminated party is insane or the reverse, and so to usurp the prerogative of the court or jury. But he may be asked whether certain facts or symptoms, *assuming them to be proved*, are or are not indicative of insanity. But in practice this rule is relaxed both in England and in Scotland, and (where it exists) to a still greater extent in America. (3) Foreign law can only be proved in English courts—and the same rule applies in Scotland—(*a*) by obtaining an opinion on the subject from a superior court of the country whose laws are in dispute under the Foreign Law Ascertainment Act 1861 or the British Law Ascertainment Act 1859, or (*b*) by the evidence of a lawyer of the country whose law is in question, or who has studied it *in that country*, or of an official whose position requires, and therefore presumes, a sufficient knowledge of that law. (4) The weight of authority both in England and in America supports the view that an expert is not bound to give evidence as to matters of opinion unless upon an undertaking by the party calling him to pay a reasonable remuneration for his evidence.

Statutory provision has been made in England for the summoning of expert assistance by the legal tribunals in various cases. In the county courts the judge may, if he thinks fit, on the application of either party, call in as assessor one or more persons of skill and experience as to the matters in dispute (County Courts Act 1888, s. 103), and special provision is made for calling in an assessor in employers' liability cases (act of 1880, s. 6) and admiralty matters (see County Courts Admiralty Jurisdiction Acts of 1868 and 1869). In the High Court and court of appeal one or more specially qualified assessors may be called in to assist in the hearing of any cause or matter except a criminal proceeding by the crown (Judicature Acts 1873, s. 56), and a like power is given to both these courts and the judicial committee of the privy council in patent cases (Patents, &c. , Act 1883., s. 28). Maritime causes, whether original or on appeal from county courts, are usually taken in the presence of Elder Brethren of the Trinity House, who advise the judge without having any right to control or any responsibility for his decision (see the "Beryl," 1884, 9 P.D. 1), and on appeal in maritime causes nautical assessories are usually called in by the court of appeal, and may be called in by the House of Lords (Judicature Act 1891, s. 3); a like provision is made as to maritime causes in Scottish courts (Nautical Assessors [Scotland] Act 1894). The judicial committee of the privy council, besides its power to call in assessors in patent cases, is authorized to call them in in ecclesiastical causes (Appellate Jurisdiction Act 1876, s. 14).

In addition to the authorities cited in the text, see Taylor, *Law of Evidence* (9th ed., London, 1895); J.D. Lawson, *Law of Expert and Opinion Evidence* (1900).

EXPLOSIVES, a general term for substances which by certain treatment "explode," *i.e.* decompose or change in a violent manner so as to generate force. From the manner and degree of violence of the decomposition they are classified into "propellants" and "detonators," but this classification is not capable of sharp delimitation. In some cases the same substance may be employed for either purpose under altered external conditions; but there are some substances which could not possibly be employed as propellants, and others which can scarcely be induced to explode in the manner known as "detonation." A propellant may be considered as a substance that on explosion produces such a disturbance that neighbouring substances are thrown to some distance; a detonator or disruptor may

produce an extremely violent disturbance within a limited area without projecting substances to any great distance. Time is an important, perhaps the most important, factor in this action. A propellant generally acts by *burning* in a more or less rapid and regular manner, producing from a comparatively small volume a large volume of gases; during this action heat is also developed, which, being expended mostly on the gaseous products, causes a further expansion. The noise accompanying an explosion is due to an air wave, and is markedly different in the case of a detonator from a real propellant. Some cases of ordinary combustion can be accelerated into explosions by increasing the area of contact between the combustible and the oxygen supplier, for instance, ordinary gas or dust explosions. Neither temperature nor quantity of heat energy necessarily gives an explosive action. Some metals, *e.g.* aluminium and magnesium, will, in oxidizing, produce a great thermal effect, but unless there be some gaseous products no real explosive action.

Explosives may be mechanical mixtures of substances capable of chemical interaction with the production of large volumes of gases, or definite chemical compounds of a peculiar class known as “endothermic,” the decomposition of which is also attended with the evolution of gases in large quantity.

> All chemical compounds are either “endothermic” or “exothermic.” In endothermic compounds energy, in some form, has been taken up in the act of formation of the compound. Some of this energy has become potential, or rather the compound formed has been raised to a higher potential. This case occurs when two elements can be united only under some compulsion such as a very high temperature, by the aid of an electric current, or spark, or as a secondary product whilst some other reactions are proceeding. For example, oxygen and nitrogen combine only under the influence of an electric spark, and carbon and calcium in the electric furnace. The formation of chlorates by the action of chlorine on boiling potash is a good instance of a complex compound (potassium chlorate), being formed in small quantity as a secondary product whilst a large quantity of primary and simpler products (potassium chloride and water) is forming. In chlorate formation the greater part of the reaction represents a running down of energy and formation of exothermic compounds, with only a small yield of an endothermic substance. Another idea of the meaning of endothermic is obtained from acetylene. When 26 parts by weight of this substance are burnt, the heat produced will warm up 310,450 parts of water 1° C. Acetylene consists of 24 parts of carbon and 2 of hydrogen by weight. The 24 parts of carbon will, if in the form of pure charcoal, heat 192,000 parts of water 1°, and the 2 parts of hydrogen will heat 68,000 parts of water 1°, the total heat production being 260,000 heat units. Thus 26 grams of acetylene give an excess of 50,450 units over the amount given by the constituents. This excess of heat energy[1] is due to some form of potential energy in the compound which becomes actual heat energy at the moment of dissolution of the chemical union. The manner in which a substance is endothermic is of importance as regards the practical employment of explosives. Some particular endothermic state or form results from the mode of formation and the consequent internal structure of the molecule. Physical structure alone can be the cause of a relative endothermic state, as in the glass bulbs known as Rupert’s drops, &c. , or even in chilled steel. Rupert’s drops fly in pieces on being scratched or cut to a certain depth. The cause is undoubtedly to be ascribed to the molecular state of the glass brought about by chilling from the melted state. The molecules have not had time to separate or arrange themselves in easy positions. In steel when melted the carbide of iron is no doubt diffused equally throughout the liquid. When cooled slowly some carbide separates out more or less, and the steel is soft or annealed. When chilled the carbides are retained in solid solution. The volume of chilled glass or steel differs slightly from that in the annealed state.
>
> Superfused substances are probably in a similar state of physical potential or strain. Many metallic salts, and organic compounds especially, will exhibit this state when completely melted and then allowed to cool in a clean atmosphere. On touching with a little of the same substance in a solid state the liquids will begin to crystallize, at the same time becoming heated almost up to their melting-points. The metal gallium shows this excellently well, keeping liquid for years until touched with the solid metal, when there is a considerable rise of temperature as solidification takes place.
>
> All carbon compounds, excepting carbon dioxide, and many if not all compounds of nitrogen, are endothermic. Most of the explosives in common use contain nitrogen in some form.
>
> Exothermic compounds are in a certain sense the reverse of endothermic; they are relatively inert and react but slowly or not at all, unless energy be expended upon them from outside. Water, carbon dioxide and most of the common minerals belong to this class.

The explosives actually employed at the present time include mixtures, such as gunpowders and some chlorate compositions, the ingredients of which separately may be

non-explosive; compounds used singly, as guncotton, nitroglycerin (in the form of dynamite), picric acid (as lyddite or melinite), trinitrotoluene, nitrocresols, mercury fulminate, &c. ; combinations of some explosive compounds, such as cordite and the smokeless propellants in general use for military purposes; and, finally, blasting and detonating or igniting compositions, some of which contain inert diluting materials as well as one or more high explosives. Many igniting compositions are examples of the last type, consisting of a high explosive diluted with a neutral substance, and frequently containing in addition a composition which is inflamed by the explosion of the diluted high explosive, the flame in turn igniting the actual propellant.

Explosive Mixtures.—The explosive mixture longest known is undoubtedly gunpowder (*q.v.*) in some form—that is, a mixture of charcoal with sulphur and nitre, the last being the oxygen provider. Besides the nitrates of metals and ammonium nitrate, there is a limited number of other substances capable of serving in a sufficiently energetic manner as oxygen providers. A few chlorates, perchlorates, permanganates and chromates almost complete the list. Of these the sodium, potassium and barium chlorates are best known and have been actually tried, in admixture with some combustible substances, as practical explosives. Most other metallic chlorates are barred from practical employment owing to instability, deliquescence or other property.

Of the chlorates those of potassium and sodium are the most stable, and mixtures of either of these salts with sulphur or sulphides, phosphorus, charcoal, sugar, starch, finely-ground cellulose, coal or almost any kind of organic, *i.e.* carbon, compound, in certain proportions, yield an explosive mixture. In many cases these mixtures are not only fired or exploded by heating to a certain temperature, but also by quite moderate friction or percussion. Consequently there is much danger in manufacture and storage, and however these mixtures have been made up, they are quite out of the question as propellants on account of their great tendency to explode in the manner of a detonator. In addition they are not smokeless, and leave a considerable residue which in a gun would produce serious fouling.

Mixtures of chlorates with aromatic compounds such as the nitro- or dinitro-benzenes or even naphthalene make very powerful blasting agents. The violent action of a chlorate mixture is due first to the rapid evolution of oxygen, and also to the fact that a chlorate can be detonated when alone. A drop of sulphuric acid will start the combustion of a chlorate mixture. In admixture with sulphur, sulphides and especially phosphorus, chlorates give extremely sensitive compositions, some of which form the basis of friction tube and firing mixtures.

Potassium and sodium perchlorates and permanganates make similar but slightly less sensitive explosive mixtures with the above-mentioned substances. Finely divided metals such as aluminium or magnesium give also with permanganates, chlorates or perchlorates sensitive and powerful explosives. Bichromates, although containing much available oxygen, form but feeble explosive mixtures, but some compounds of chromic acid with diazo compounds and some acetylides are extremely powerful as well as sensitive. Ammonium bichromate is a self-combustible after the type of ammonium nitrate, but scarcely an explosive.

Explosive Compounds.—Nearly all the explosive compounds in actual use either for blasting purposes or as propellants are nitrogen compounds, and are obtained more or less directly from nitric acid. Most of the propellants at present employed consist essentially of nitrates of some organic compound, and may be viewed theoretically as nitric acid, the hydrogen of which has been replaced by a carbon complex; such compounds are expressed by $M{\cdot}O{\cdot}NO_2$, which indicates that the carbon group is in some manner united by means of oxygen to the nitrogen group. Guncotton and nitroglycerin are of this class. Another large class of explosives is formed by a more direct attachment of nitrogen to the carbon complex, as represented by $M{\cdot}NO_2$. A number of explosives of the detonating type are of this class. They contain the same proportions of oxygen and nitrogen as nitrites, but are not nitrites. They have been termed nitro-derivatives for distinction. One of the simplest and longest-known members of this group is nitrobenzene, $C_6H_5NO_2$, which is employed to some extent as an explosive, being one ingredient in rack-a-rock and other blasting compositions. The dinitro-benzenes, $C_6H_4(NO_2)_2$, made from it are solids which are somewhat extensively employed as constituents of some sporting powders, and in admixture with ammonium nitrate form a blasting powder of a “flameless” variety which is comparatively safe in dusty or “gassy” coal seams.

Picric acid or trinitrophenol, $C_6H_2{\cdot}OH{\cdot}(NO_2)_3$ is employed as a high explosive for shell, &c. It requires, however, either to be enclosed and heated, or to be started by a powerful

detonator to develop its full effect. Its compounds with metals, such as the potassium salt, $C_6H_2{\cdot}OK{\cdot}(NO_2)_3$, are when dry very easily detonated by friction or percussion and *always* on heating, whereas picric acid itself will burn very quietly when set fire to under ordinary conditions. Trinitrotoluene, $C_6H_2{\cdot}CH_3{\cdot}(NO_2)_3$, is a high explosive resembling picric acid in the manner of its explosion (to which in fact it is a rival), but differs therefrom in not forming salts with metals. The nitronaphthols, $C_{10}H_6{\cdot}OH{\cdot}NO_2$, and higher nitration products may be counted in the list. Their salts with metals behave much like the picrates.

All these nitro compounds can be reduced by the action of nascent hydrogen to substances called amines (*q.v.*), which are not always explosive in themselves, but in some cases can form nitrates of a self-combustible nature. Aminoacetic acid, for instance, will form a nitrate which burns rapidly but quietly, and might be employed as an explosive. By the action of nitrous acid at low temperatures on aromatic amines, *e.g.* aniline, $C_6H_5NH_2$, diazo compounds are produced. These are all highly explosive, and when in a dry state are for the most part also extremely sensitive to friction, percussion or heat. As many of these diazo compounds contain no oxygen their explosive nature must be ascribed to the peculiar state of union of the nitrogen. This state is attempted to be shown by the formulae such as, for instance, $C_6H_5{\cdot}N{:}N{\cdot}X$, which maybe some compound of diazobenzene. Probably the most vigorous high explosive at present known is the substance called hydrazoic acid or azoimide (*q.v.*). It forms salts with metals such as AgN_3, which explode in a peculiar manner. The ammonium compound, NH_4N_3, may become a practical explosive of great value.

Mercuric fulminate, $HgC_2N_2O_2$, is one of the most useful high explosives known. It is formed by the action of a solution of mercurous nitrate, containing some nitrous acid, on alcohol. It is a white crystalline substance almost insoluble in cold water and requiring 130 times its weight of boiling water for solution. It may be heated to 180° C. before exploding, and the explosion so brought about is much milder than that produced by percussion. It forms the principal ingredient in cap compositions, in many fuses and in detonators. In many of these compositions the fulminate is diluted by mixture with certain quantities of inert powders so that its sensitiveness to friction or percussion is just so much lowered, or slowed down, that it will fire another mixture capable of burning with a hot flame. For detonating dynamite, guncotton, &c. , it is generally employed without admixture of a diluent.

Smokeless Propellants.—Gunpowders and all other explosive mixtures or compounds containing metallic salts must form smoke on combustion. The solids produced by the resolution of the compounds are in an extremely finely-divided state, and on being ejected into the atmosphere become more or less attached to water vapour, which is so precipitated, and consequently adds to the smoke. The simplest examples of propellants of the smokeless class are compressed gases. Compressed air was the propellant for the Zalinski dynamite gun. Liquefied carbon dioxide has also been proposed and used to a slight extent with the same idea. It is scarcely practical, however, because when a quantity of a gas liquefied by pressure passes back again into the gaseous state, there is a great absorption of heat, and any remaining liquid, and the containing vessel, are considerably cooled. Steam guns were tried in the American Civil War in 1864; but a steam gun is not smokeless, for the steam escaping from the long tube or gun immediately condenses on expansion, forming white mist or smoke.

At the earliest stage of the development of guncotton the advantage of its smokeless combustion was fully appreciated (see Guncotton). That it did not at once take its position as *the* smokeless propellant, was simply due to its physical state—a fibrous porous mass—which burnt too quickly or even detonated under the pressure required in fire-arms of any kind. In the early eighties of the 19th century it was found that several substances would partly dissolve or at least gelatinize guncotton, and the moment when guncotton proper was obtained as a colloid or jelly was the real start in the matter of smokeless propellants.

Guncotton is converted into a gelatinous form by several substances, such as esters, *e.g.* ethyl acetate or benzoate, acetone and other ketones, and many benzene compounds, most of which are volatile liquids. On contact with the guncotton a jelly is formed which stiffens as the evaporation of the gelatinizing agent proceeds, and finally hardens when the evaporation is complete. Whilst in a stiff pasty state it may be cut, moulded or pressed into any desired shape without any danger of ignition. In fact guncotton in the colloid state may be hammered on an anvil, and, as a rule, only the portion struck will detonate or fire. Guncotton alone makes a very hard and somewhat brittle mass after treatment with the gelatinizing agent and complete drying, and small quantities of camphor, vaseline, castor oil and other substances are incorporated with the gelatinous guncotton to moderate this hard and brittle state.

All the smokeless powders, of which gelatinized guncottons or nitrated celluloses are the base, are moulded into some conveniently shaped grain, *e.g.* tubes, cords, rods, disks or tablets, so that the rate of burning may be controlled as desired. The Vieille powder, invented in 1887 and adopted in France for a magazine rifle, consisted of gelatinized guncotton with a little picric acid. Later a mixture of two varieties of guncotton gelatinized together was used. In addition to guncottons other explosive or non-explosive substances are contained in some of these powders. Guncotton alone in the colloid state burns very slowly if in moderate-sized pieces, and when subdivided or made into thin rods or strips it is still very mild as an explosive, partly from a chemical reason, viz. there is not sufficient oxygen in it to burn the carbon to dioxide. Many mixtures are consequently in use, and many more have been proposed, which contain some metallic salt capable of supplying oxygen, such as barium or ammonium nitrate, &c. , the idea being to accelerate the rate of burning of the guncotton and if possible avoid the production of smoke.

The discovery by A. Nobel that nitroglycerin could be incorporated with collodion cotton to form blasting gelatin (see Dynamite) led more or less directly to the invention of ballistite, which differs from blasting gelatin only in the relative amounts of collodion, or soluble nitrated cotton, and nitroglycerin. Ballistite was adopted by the Italian government in 1890 as a military powder. Very many substances and mixtures have been proposed for smokeless powder, but the two substances, guncotton and nitroglycerin, have for the most part kept the field against all other combinations, and for several reasons. Nitroglycerin contains a slight excess of oxygen over that necessary to convert the whole of the carbon into carbon dioxide; it burns in a more energetic manner than guncotton; the two can be incorporated together in any proportion whilst the guncotton is in the gelatinous state; also all the liquids which gelatinize guncotton dissolve nitroglycerin, and, as these gelatinizing liquids evaporate, the nitroglycerin is left entangled in the guncotton jelly, and then shares more or less its colloidal character. In burning the nitroglycerin is protected from detonation by the gelatinous state of the guncotton, but still adds to the rate of burning and produces a higher temperature.

Desirable Qualities.—Smokelessness is one only of the desirable properties of a propellant. All the present so-called smokeless powders produce a little fume or haze, mainly due to the condensation of the steam which forms one of the combustion products. There is often also a little vapour from the substances, such as oils, mineral jelly, vaseline or other hydrocarbon added for lubrication or to render the finished material pliable, &c. The gases produced should neither be very poisonous nor exert a corrosive action on metals, &c. The powder itself should have good keeping qualities, that is, not be liable to chemical changes within ordinary ranges of temperature or in different climates when stored for a few years. In these powders slight chemical changes are generally followed by noticeable ballistic changes. All the smokeless powders of the present day produce some oxide of nitrogen, traces of which hang about the gun after firing and change rapidly into nitrous and nitric acids. Nitrous acid is particularly objectionable in connexion with metals, as it acts as a carrier of oxygen. The fouling from modern smokeless powders is a slight deposit of acid grease, and the remedy consists in washing out the bore of the piece with an alkaline liquid. The castor oil, mineral jelly or camphor, and similar substances added to smokeless powders are supposed to act as lubricants to some extent. They are not as effective in this respect as mineral salts, and the rifling of both small-arms and ordnance using smokeless powders is severely gripped by the metal of the projectile. The alkaline fouling produced by the black and brown powders acted as a preventive of rusting to some extent, as well as a lubricant in the bore.

Danger in Manufacture.—In the case of the old gunpowders, the most dangerous manufacturing operation was incorporation. With the modern colloid propellants the most dangerous operations are the chemical processes in the preparation of nitroglycerin, the drying of guncotton, &c. After once the gelatinizing solvent has been added, all the mechanical operations can be conducted, practically, with perfect safety. This statement appears to be correct for all kinds of nitrated cellulose powders, whether mixed with nitroglycerin or other substances. Should they become ignited, which is possible by a rise of temperature (to say 180°) or contact with a flame, the mixture burns quickly, but does not detonate.

As a rule naval and military smokeless powders are shaped into flakes, cubes, cords or cylinders, with or without longitudinal perforations. All the modifications in shape and size are intended to regulate the rate of burning. Sporting powders are often coloured for trade distinction. Some powders are blackleaded by glazing with pure graphite, as is done with black powders. One object of this glazing is to prevent the grains or pieces becoming joined by pressure; for rods or pieces of some smokeless powders might possibly unite under considerable pressure, producing larger pieces and thus altering the rate of burning. Most smokeless powders are fairly insensitive to shock. All these gelatinized powders are a little

less easily ignited than black powders. A slightly different cap composition is required for small-arm cartridges, and cannon cartridges generally require a small primer or starter of powdered black gunpowder.

It is desired that a propellant shall produce the maximum velocity with the minimum pressure. The pressure should start gently so that the inertia of the projectile is overcome without any undue local strain on the breech near the powder chamber, and more especially that as more and more space is given to the gases by the movement of the projectile up the gun to the muzzle, gas should be produced with sufficient rapidity to keep the pressure nearly uniform or slightly increasing along the bore. The leading idea for improvements in relation to propellants is to obtain the greatest possible pressure regularly developed, and at the same time the lowest temperatures.

(W. R. E. H.)

Law.—In 1860 an act was passed in England "to amend the law concerning the making, keeping and carriage of gunpowder and compositions of an explosive nature, and concerning the manufacture and use of fireworks" (23 & 24 Vict. c. 139), whereby previous acts on the same subject were repealed, and minute and stringent regulations introduced. Amending acts were passed in 1861 and 1862. In 1875 was passed the Explosives Act (38 & 39 Vict. c. 17), which repealed the former acts, and dealt with the whole subject in a more comprehensive manner. This act, containing 122 sections, and applying to Scotland and Ireland, as well as to England, constitutes, with various orders in council and home office orders, a complete code. The act of 1875 was based on the report of a committee of the House of Commons, public opinion having been greatly excited on the subject by a terrible explosion on the Regent's Canal in 1874. Explosives are thus defined: (1) Gunpowder, nitroglycerin, dynamite, guncotton, blasting powders, fulminate of mercury or of other metals, coloured fires, and every other substance, whether similar to those above-mentioned or not, used or manufactured with a view to produce a practical effect by explosion or a pyrotechnic effect, and including (2) fog-signals, fireworks, fuses, rockets, percussion caps, detonators, cartridges, ammunition of all descriptions, and every adaptation or preparation of an explosive as above defined. Part i. deals with gunpowder, providing that it shall be manufactured only at factories lawfully existing or licensed under the act; that it shall be kept (except for private use) only in existing or new magazines or stores, or in registered premises, licensed under the act. Private persons may keep gunpowder for their own use to the amount of thirty pounds. The act also prescribes rules for the proper keeping of gunpowder on registered premises. Part ii. deals with nitroglycerin and other explosives; part iii. with inspection, accidents, search, &c. ; part iv. contains various supplementary provisions. By order in council the term "explosive" may be extended to any substance which appears to be specially dangerous to life or property by reason of its explosive properties, or to any process liable to explosion in the manufacture thereof, and the provisions of the act then extend to such substance just as if it were included in the term "explosive" in the act. The act lays down minute and stringent regulations for the sale of gunpowder, restricting the sale thereof in public thoroughfares or places, or to any child apparently under the age of thirteen; requiring the sale of gunpowder to be in closed packages labelled; it also lays down general rules for conveyance, &c. The act also gives power by order in council to define, from time to time, the composition, quality and character of any explosive, and to classify explosives, and such orders in council are frequently made including new substances; those in force will be found in the *Statutory Rules and Orders*, tit. "explosive substance." The Merchant Shipping Act 1894 imposes restrictions on the carriage of dangerous goods in a British or foreign vessel, "dangerous goods" meaning aquafortis, vitriol, naphtha, benzine, gunpowder, lucifer matches, nitroglycerin, petroleum and any explosive within the meaning of the Explosives Act 1875. The act is administered by the home office, and an annual report is published containing the proceedings of the inspectors of explosives and an account of the working of the act. Each annual report gives a list of explosives at the time authorized for manufacture or importation, and appendices containing information as to accidents, experiments, &c.

Practically every European country has legislated on the lines of the English act of 1875, Austria taking the lead, in 1877, with an explosives ordinance almost identical with the English act. The United States and the various English colonies also have explosives acts regulating the manufacture, storage and importation of explosives. (See also Petroleum.)

(T. A. I.)

Bibliography.—M. Berthelot, *Sur la force des matières explosives* (Paris, 1883); P.F. Chalon, *Les Explosifs modernes* (Paris, 1886); W.H. Wardell, *Handbook of Gunpowder and Guncotton* (London, 1888); J.P. Cundill, *A Dictionary of Explosives* (London, 1889 and 1897); M. Eissler, *A Handbook of Modern Explosives* (London, 1896, new ed. 1903); J.A. Longridge, *Smokeless Powder and its Influence on Gun Construction* (London, 1890); C. Napier Hake

and W. Macnab, *Explosives and their Power* (London, 1892); G. Coralys, *Les Explosifs* (Paris, 1893); A. Ponteaux, *La Poudre sans fumée et les poudres anciennes* (Paris, 1893); F. Salvati, *Vocabolario di polveri ed explosivi* (Rome, 1893); C. Guttmann, *The Manufacture of Explosives* (London, 1895 and later); S.J. von Romocki, *Geschichte der Sprengstoffchemie, der Sprengtechnik und des Torpedowesens bis zum Beginn der neusten Zeit* (Berlin, 1895); *Geschichte der Explosivstoffe, die rauchschwachen Pulver* (Berlin, 1896); P.G. Sanford, *Nitro-explosives* (London, 1896); L. Gody, *Traité théorique et pratique des matières explosives* (Namur, 1896); R. Wille, *Der Plastomerite* (Berlin, 1898); E. Sarrau, *Introduction à la théorie des explosifs* (1893); *Théorie des explosifs* (1896); O. Guttmann, *Manufacture of Explosives* (London, 1895); E.M. Weaver, *Notes on Military Explosives* (New York, 1906); M. Eissler, *The Modern High Explosives* (New York, 1906); *Treatise on Service Explosives*, published by order of the secretary of state for war (London, 1907). Most of the literature on modern explosives, *e.g.* dynamite, &c. , is to be found in papers contributed to scientific journals and societies. An index to those which have appeared in the *Journal of the Society of Chemical Industry* is to be found in the decennial index (1908) compiled by F.W. Renant.

1 Not necessarily heat energy entirely. A number of substances—acetylides and some nitrogen compounds, such as nitrogen chloride—decompose with extreme violence, but *little heat* is produced.

EXPRESS (through the French from the past participle of the Lat. *exprimere*, to press out, by transference used of representing objects in painting or sculpture, or of thoughts, &c. in words), a word signifying that which is clearly and definitely set forth or represented, explicit, and thus used of a meaning, a law, a contract and the like, being specially contrasted with “implied.” Thus in law, malice, for which there is actual evidence, as apart from that which may be inferred from the acts of the person charged, is known as “express.” The word is most frequently used with the idea of something done with a definite purpose; the term “express train,” now meaning one that travels at a high speed over long distances with few intermediate stoppages, was, in the early days of railways, applied to what is now usually called a “special,” *i.e.* a train not running according to the ordinary time-tables of the railway company, but for some specific purpose, or engaged by a private person. About 1845 this term became used for a train running to a particular place without stopping. Similarly in the British postal service, express delivery is a special and immediate delivery of a letter, parcel, &c. , by an express messenger at a particular increased rate. The system was adopted in 1891.

In the United States of America, express companies for the rapid transmission of parcels and luggage and light goods generally perform the function of the post office or the railways in the United Kingdom and the continent of Europe. Not only do they deliver goods, but by the cash on delivery system (see Cash) the express companies act as agents both for the purchaser and seller of goods. They also serve as a most efficient agency for the transmission of money, the express money order being much more easily convertible than the postal money orders, as the latter can only be redeemed at offices in large and important towns. The system dates back to 1839, when one William Frederick Harnden (1813-1845), a conductor on the Boston and Worcester railway, undertook on his own account the carrying of small parcels and the performance of small commissions. Obliged to leave the company’s service or abandon his enterprise, he started an “express” service between Boston and New York, carrying parcels, executing commissions and collecting drafts and bills. Alvin Adams followed in 1840, also between Boston and New York. From 1840 to 1845 the system was adopted by many others between the more important towns throughout the States. The attempt to carry letters also was stopped by the government as interfering with the post office. In 1854 began the amalgamation of many of the companies. Thus under the name of the Adams Express Company the services started by Harnden and Adams were consolidated. The lines connecting the west and east by Albany, Buffalo and the lakes were consolidated in the American Express Company, under the direction of William G. Fargo (*q.v.*), Henry Wells and Johnston Livingston, while another company, Wells, Fargo & Co., operated on the Pacific coast. The celebrated “Pony Express” was started in 1860 between San Francisco and St Joseph, Missouri, the time scheduled being eight days. The service was carried on by relays of horses, with stations 25 m. apart. The charge made for the service was $2.50 per ½ oz. The completion of the Pacific Telegraph Company line in 1861 was followed by the

discontinuance of the regular service.

The name “express” is applied to a rifle having high velocity, flat trajectory and long fixed-sight ranges; and an “express-bullet” is a light bullet with a heavy charge of powder used in such a rifle (see Rifle).

EXPROPRIATION, the taking away or depriving of property (Late Lat. *expropriare*, to take away, *proprium*, *i.e.* that which is one’s own). The term is particularly applied to the compulsory acquisition of private property by the state or other public authority.

EXPULSION (Lat. *expulsio*, from *expellere*), the act of driving out, or of removing a person from the membership of a body or the holding of an office, or of depriving him of the right of attending a meeting, &c. In the United Kingdom the House of Commons can by resolution expel a member. Such resolution cannot be questioned by any court of law. But expulsion is only resorted to in cases where members are guilty of offences rendering them unfit for a seat in the House, such as being in open rebellion, being guilty of forgery, perjury, fraud or breach of trust, misappropriation of public money, corruption, conduct unbecoming the character of an officer and a gentleman, &c. It is customary to order the member, if absent, to attend in his place, before an order is made for his expulsion (see May, *Parliamentary Practice*, 1906, p. 56 seq.). Municipal corporations or other local government bodies have no express power to expel a member, except in such cases where the law declares the member to have vacated his seat, or where power is given by statute to declare the member’s seat vacant. In the cases of officers and servants of the crown, tenure varies with the nature of the office. Some officials hold their offices *ad vitam aut culpam or dum bene se gesserunt*, others can be dismissed at any time and without reason assigned and without compensation. In the case of membership of a voluntary association (club, &c.) the right of expulsion depends upon the rules, and must be exercised in good faith. Courts of justice have jurisdiction to prevent the improper expulsion of the member of a voluntary association where that member has a right of property in the association. In the case of meetings, where the meeting is one of a public body, any person not a member of the body is entitled to be present only on sufferance, and may be expelled on a resolution of the body. In the case of ordinary public meetings those who convene the meeting stand in the position of licensors to those attending and may revoke the licence and expel any person who creates disorder or makes himself otherwise objectionable.

Expulsion of Aliens.—Under the Naturalization Act of 1870, the last of the civil disqualifications affecting aliens in England was removed. The political disqualifications which remained only applied to electoral rights. In the very exceptional cases in which it was retained in the statute book, expulsion was considered to have fallen into desuetude, but it has been revived by the Aliens Act of 1905 (5 Edw. VII. c. 13). Under this act powers are given to the secretary of state to make an order requiring an alien to leave the United Kingdom within a time fixed by the order and thereafter to remain outside the United Kingdom, subject to certain conditions, provided it is certified to him that the alien has been convicted of any felony or misdemeanour or other offence for which the court has power to impose imprisonment without the option of a fine, &c. , or that he has been sentenced in a foreign country with which there is an extradition treaty, for a crime not being an offence of a political character. There are also provisions applicable within one year, after the alien has entered the United Kingdom in the case of pauper aliens. Precautions are taken to prevent, as far as possible, any abuse of the power of expulsion. Under the French law of expulsion (December 3, 1849) there are no such precautions, the minister of the interior having an absolute discretion to order any foreigner as a measure of public policy to leave French territory and in fact to have him taken immediately to the frontier.

EXTENSION (Lat. *ex*, out; *tendere*, to stretch), in general, the action of straining or stretching out. It is usually employed metaphorically (cf. the phrase an “extension of time,” a period allowed in excess of what has been agreed upon). It is used as a technical term in logic to describe the total number of objects to which a given term may be applied; thus the meaning of the term “King” in “extension” means the kings of England, Italy, Spain, &c. (cf. DENOTATION), while in “intension” it means the attributes which taken together make up the idea of kinghood (see CONNOTATION). In psychology the literal sense of extension is retained, *i.e.* “spread-outness.” The perception of space by the senses of sight and touch, as opposed to semi-spatial perceptions by smell and hearing, is that of “continuous expanse composed of positions separated and connected by distances” (Stout); to this the term “extension” is applied. The perception of separate objects involves position and distance, but these taken together are not extension, which necessarily implies continuity. To move one’s finger along the keys of a piano gives both the position and the distance of the keys; to move it along the frame gives the idea of extension. By expanding this idea we obtain the conception of all space as an extended whole. To this perception are necessary both form and material. It should be observed the actual quality of a stimulus (rough, smooth, dry, &c.) has nothing to do with the spatial perception as such, which is concerned purely with what is known as “local signature.” The elementary undifferentiated sensation excited by the stimuli exerted by a continuous whole is known as its “extensive quantity” or “extensity.” The term has to do not with the kind of object which excites the sensation, but simply with the vague massiveness of the latter. As such it is distinguishable in thought from extension, though it is not easy to say whether and if so how far the quantitative aspect of space can exist apart from spatial order. Extensity as an element in the complex of extension must be carefully distinguished from intensity. Mere increase of pressure implies increase of intensity of sensation; to increase the extensity the *area*, so to speak, of the exciting stimulus must be increased. Thus the extensity (also called “voluminousness,” or “massiveness”) of the sensation produced by a roll of thunder is greater than that produced by a whistle or the bark of a dog. It should be observed that this application of the idea of extensity to sensation in general, rather than to the matter which is the exciting stimulus, is only an analogy, an attempt to explain a common psychic phenomenon by terminology which is intrinsically suitable to the physical. As a natural consequence the term represents different shades of meaning in different treatises, verging sometimes towards the physical, sometimes towards the psychic, meaning.

In connexion with extension elaborate psycho-physical experiments have been devised,.*e.g.* with the object of comparing the accuracy of tactual and visual perception and discovering what are the least differences which each can observe. At a distance two lights appear as one, just as two stars distinguishable through a telescope are one to the naked eye (see VISION): again if the points of a compass are brought close together and pressed lightly on the skin the sensation, though vague and diffused, is a single one.

See PSYCHOLOGY and works there quoted; also SPACE AND TIME.

EXTENUATING CIRCUMSTANCES. This expression is used in law with reference to crimes, to describe cases in which, though an offence has been committed without legal justification or excuse, its gravity, from the point of view of punishment or moral opprobrium, is mitigated or reduced by reason of the facts leading up to or attending the commission of the offence. According to English procedure, the jury has no power to determine the punishment to be awarded for an offence. The sentence, with certain exceptions in capital cases, is within the sole discretion of the judge, subject to the statutory prescriptions as to the kind and maximum of punishment. It is common practice for juries to add to their verdict, guilty or not guilty, a rider recommending the accused to mercy on the ground of grave provocation received, or other circumstances which in their view should mitigate the penalty. This form of rider is often added on a verdict of guilty of wilful murder, a crime as to which the judge has no discretion as to punishment, but the recommendation is sent to the Home Office for consideration in advising as to exercise of the prerogative of mercy. Quite independently of any recommendation by the jury, the judge is entitled to take into account matters proved during the trial, or laid before him after verdict, as a guide to him in determining the quantum of punishment.

Under the French law (*Code d’instruction criminelle*, art. 345), it is the sole right and the

duty of a jury in a criminal case to pronounce whether or not the commission of the offence was attended by extenuating circumstances (*circonstances atténuantes*). They are not bound to say anything about the matter, but the whole or the majority may qualify the verdict by finding extenuation, and if they do, the powers of the court to impose the maximum punishment are taken away and the sentence to be pronounced is reduced in accordance with the scale laid down in art. 463 of the *Code pénal*. The most important result of this rule is to enable a jury to prevent the infliction of capital punishment for murder. In cases of what is termed "crime passionel," French juries, when they do not acquit, almost invariably find extenuation; and a like verdict has become common even in the case of cold-blooded and sordid murders, owing to objections to capital punishment.

EXTERRITORIALITY, a term of international law, used to denominate certain immunities from the application of the rule that every person is subject for all acts done within the boundaries of a state to its local laws. It is also employed to describe the quasi-extraterritorial position, to borrow the phrase of Grotius, of the dwelling-place of an accredited diplomatic agent, and of the public ships of one state while in the waters of another. Latterly its sense has been extended to all cases in which states refrain from enforcing their laws within their territorial jurisdiction. The cases recognized by the law of nations relate to: (1) the persons and belongings of foreign sovereigns, whether incognito or not; (2) the persons and belongings of ambassadors, ministers plenipotentiary, and other accredited diplomatic agents and their suites (but not consuls, except in some non-Christian countries, in which they sometimes have a diplomatic character); (3) public ships in foreign waters. Exterritoriality has also been granted by treaty to the subjects and citizens of contracting Christian states resident within the territory of certain non-Christian states. Lastly, it is held that when armies or regiments are allowed by a foreign state to cross its territory, they necessarily have exterritorial rights. "The ground upon which the immunity of sovereign rulers from process in our courts," said Mr Justice Wills in the case of *Mighell* v. *Sultan of Johore*, 1804, "is recognized by our law, is that it would be absolutely inconsistent with the status of an independent sovereign that he should be subject to the process of a foreign tribunal," unless he deliberately submits to its jurisdiction. It has, however, been held where the foreign sovereign was also a British subject (*Duke of Brunswick* v. *King of Hanover*, 1844), that he is amenable to the jurisdiction of the English Courts in respect of transactions done by him in his capacity as a subject. A "foreign sovereign" may be taken to include the president of a republic, and even a potentate whose independence is not complete. Thus in the case, cited above, of *Mighell* v. *Sultan of Johore*, the sultan was ascertained to have abandoned all right to contract with foreign states, and to have placed his territory under British protection. The court held that he was, nevertheless, a foreign sovereign in so far as immunity from British jurisdiction was concerned. The immunity of a foreign diplomatic agent, as the direct representative of a foreign sovereign (or state), is based on the same grounds as that of the sovereign authority itself. The international practice in the case of Great Britain was confirmed by an act of parliament of the reign of Queen Anne, which is still in force. The preamble to this act states that "turbulent and disorderly persons in a most outrageous manner had insulted the person of the then ambassador of his Czarish Majesty, emperor of Great Russia," by arresting and detaining him in custody for several hours, "in contempt to the protection granted by Her Majesty, contrary to the law of nations, and in prejudice of the rights and privileges which ambassadors and other public ministers, authorized and received as such, have at all times been thereby possessed of, and ought to be kept sacred and inviolable." This preamble has been repeatedly held by our courts to be declaratory of the English common law. The act provides that all suits, writs, processes, against any accredited ambassador or public minister or his domestic servant, and all proceedings and judgments had thereupon, are "utterly null and void," and that any person violating these provisions shall be punished for a breach of the public peace. Thus a foreign diplomatic agent cannot, like the sovereign he represents, waive his immunity by submitting to the British jurisdiction. The diplomatic immunity necessarily covers the residence of the diplomatic agent, which some writers describe as assimilated to territory of the state represented by the agent; but there is no consideration which can justify any extension of the immunity beyond the needs of the diplomatic mission resident within it. It is different with public ships in foreign waters. In their case the exterritoriality attaches to the vessel. Beyond its bulwarks captain and crew

are subject to the ordinary jurisdiction of the state upon whose territory they happen to be. By a foreign public ship is now understood any ship in the service of a foreign state. It was even held in the case of the “Parlement Belge” (1880), a packet belonging to the Belgian government, that the character of the vessel as a public ship was not affected by its carrying passengers and merchandise for hire. In a more recent case an action brought by the owners of a Greek vessel against a vessel belonging to the state of Rumania was dismissed, though the agents of the Rumanian government had entered an appearance unconditionally and had obtained the release of the vessel on bail, on the ground that the Rumanian government had not authorized acceptance of the British jurisdiction (The “Jassy,” 1906, 75 L.J.P. 93).

Writers frequently describe the exterritoriality of both embassies and ships as absolute. There is, however, this difference, that the exterritoriality of the latter not being, like that of embassies, a derived one, there seems to be no ground for limitation of it. It was, nevertheless, laid down by the arbitrators in the “Alabama” case (Cockburn dissenting), that the privilege of exterritoriality accorded to vessels had not been admitted into the law of nations as an absolute right, but solely as a proceeding founded on the principle of courtesy and mutual deference between different nations, and that it could therefore “never be appealed to for the protection of acts done in violation of neutrality.”

The exterritorial settlements in the Far East, the privileges of Christians under the arrangements made with the Ottoman Porte, and other exceptions from local jurisdictions, are subject to the conditions laid down in the treaties by which they have been created. There are also cases in which British communities have grown up in barbarous countries without the consent of any local authority. All these are regulated by orders in council, issued now in virtue of the Foreign Jurisdiction Act 1890, an act enabling the crown to exercise any jurisdiction it may have “within a foreign country” in as ample a manner as if it had been acquired “by cession or conquest of territory.” A very exceptional case of exterritoriality is that granted to the pope under a special Italian enactment.

(T. Ba.)

EXTORTION (Lat. *extorsio*, from *extorquere*, to twist out, to take away by force), in English law the term applied to the exaction by public officers of money or money’s worth not due at all, or in excess of what is due, or before it is due. Such exaction, unless made in good faith (*i.e.* in honest mistake as to the sum properly payable), is a misdemeanour by the common law and is punishable by fine and (or) imprisonment. Besides the punishment above stated, an action for twice the value of the thing extorted lies against officers of the king (1275, 3 Edw. I. c. 26). There are numerous provisions for the punishment of particular officers who make illegal exactions or take illegal fees: *e.g.* sheriffs and their officers (Sheriffs Act 1887), county court bailiffs (County Courts Act 1888), clerks of courts of justice, and gaolers who exact fees from prisoners. A gaoler is also punishable for detaining the corpse of a prisoner as security for debt. The term “public officer” is not limited to offices under the crown; and there are old precedents of criminal proceedings for extortion against churchwardens, and against millers and ferrymen who demand tolls in excess of what is customary under their franchise.

The term extortion is also applied to the exaction of money or money’s worth by menaces of personal violence or by threats to accuse of crime or to publish defamatory matter about another person. These offences fall partly under the head of robbery and partly under blackmail, or what in French is termed *chantage*.

See *Russell on Crimes* (6th ed., vol. i. p. 423; vol. iii. p. 348).

EXTRACT (from Lat. *extrahere*, to draw out), in pharmacy, the name given to preparations formed by evaporating or concentrating solutions of active principles; *tinctures* are solutions which have not been subjected to any evaporation. “Liquid extracts” are those

of a syrupy consistency, and are generally prepared by treating the drug with the solvent (water, alcohol, &c.) and concentrating the solution until it attains the desired consistency. “Ordinary extracts” are thick, tenacious and sometimes even dry preparations; they are obtained by evaporating solutions as obtained above, or the juices expressed from the plants.

Extraction, in chemical technology, is a process for separating one substance from another by taking advantage of the varying solubility of the components in some chosen solvent. The term “lixiviation” is used when water is the solvent. In laboratory practice all the common solvents are employed. With small quantities it may suffice to shake the substance with the solvent, the mixture being heated if necessary, filter and distil or otherwise remove the solvent from the distillate. For larger quantities continuous extraction is advisable. This may be carried out in many forms of apparatus; one of the most convenient is the Soxhlet extractor, in which the extract siphons into the flask containing the solvent, and so maintains the quantity of available solvent practically constant. Continuous extraction is generally the practice in technology. One of the most important applications is in the fat and gelatine industries.

EXTRADITION (Lat. *ex*, out, and *traditio*, handing over), the surrender of an alleged criminal for trial by a foreign state where he has taken refuge, to the state against which the alleged offence has been committed. When a person who has committed an offence in one country escapes to another, what is the duty of the latter with regard to him? Should the country of refuge try him in its own courts according to its own laws, or deliver him up to the country whose laws he has broken? To the general question international law gives no certain answer. Some jurists, Grotius among them, incline to hold that a state is bound to give up fugitive criminals, but the majority appear to deny the obligation as a matter of right, and prefer to put it on the ground of comity. And the universal practice of nations is to surrender criminals only in consequence of some special treaty with the country which demands them.

There are two practical difficulties about extradition which have probably prevented the growth of any uniform rule on the subject. One is the variation in the definitions of crime adopted by different countries. The second is the possibility of the process of extradition being employed to get hold of a person who is wanted by his country, not really for a criminal, but for a political offence. In modern states, and more particularly in England, offences of a political character have always been carefully excluded from the operation of the law of extradition.

1. United Kingdom.—The Extradition Acts 1870-1873 (33 & 34 Vict. cc. 62, and 36 & 37 Vict. c. 60) and the Fugitive Offenders Act 1881 (44 & 45 Vict. c. 69) deal with different branches of the same subject, the recovery and surrender of fugitive criminals. The Extradition Acts apply in the case of countries with which Great Britain has extradition treaties. The Fugitive Offenders Act applies—(1) as between the United Kingdom and any British possession, (2) as between any two British possessions, and (3) as between the United Kingdom or a British possession and certain foreign countries, such as Turkey and China, in which the crown exercises foreign jurisdiction.

Conditions of Surrender.—In spite of some earlier authorities it has long been settled that in English law there is no power to surrender fugitive criminals to a foreign country without express statutory authority. Such authority is now given by the Extradition Acts 1870-1873, but only in the case of the offences therein specified, and with regard to countries with which an arrangement has been entered into, and to which the acts have been applied by order in council. The acts are further to be applied, subject to such “conditions, exceptions and qualifications as may be deemed expedient” (s. 2); and these conditions, &c. , are invariably to be found in the extradition treaty which is set out in the order in council applying the Extradition Acts to a particular country. To support a demand for extradition from Great Britain it is therefore necessary to show that the offence is one of those enumerated in the Extradition Acts, and also in the particular treaty, and that the acts charged amount to the offence according to the laws both of Great Britain and of the state demanding the surrender.

Surrender of Subjects.—A further question arises where a state is called on to surrender

one of its own subjects. Some of the treaties, such as those with France and Germany, stipulate that neither contracting party shall surrender its own subjects, and in such cases a British subject cannot be surrendered by his own country. The treaties with Spain, Switzerland and Luxemburg provide for the surrender by Great Britain of her own subjects, but there is no reciprocity. Other treaties, such as those with Austria, Belgium, Russia and the Netherlands, give each party the option of surrendering or refusing to surrender its own subjects in each particular case. Under such treaties British subjects are surrendered unless the secretary of state intervenes to forbid it. Lastly, some treaties, such as that with the United States, contain no restriction of this kind, and the subjects of each power are freely surrendered to the other. Surrender by Great Britain is also subject to the following restrictions contained in s. 3 of the Extradition Act 1870:—(1) that the offence is not of a political character, and the requisition has not been made with a view to try and punish for an offence of a political character; (2) that the prisoner shall not be liable to be tried for any but the specified extradition offences; (3) that he shall not be surrendered until he has been tried and served his sentence for offences committed in Great Britain; and (4) that he shall not be actually given up until fifteen days after his committal for extradition, so as to allow of an application to the courts.

Political Offences.—The question as to what constitutes a political offence is one of some nicety. It was discussed in *In re Castioni* (1890, 1 Q.B. 149), where it was held, following the opinion of Mr Justice Stephen in his *History of the Criminal Law*, that to give an offence a political character it must be “incidental to and form part of political disturbances.” Extradition was accordingly refused for homicide committed in the course of an armed rising against the constituted authorities. In the more recent case of *In re Meunier* (1894, 2 Q.B. 415), an Anarchist was charged with causing two explosions in Paris—one at the Café Véry resulting in the death of two persons, and the other at certain barracks. It was not contended that the outrage at the cafe was a political crime, but it was argued that the explosion at the barracks came within the description. The court, however, held that to constitute a political offence there must be two or more parties in the state, each seeking to impose a government of its own choice on the other, which was not the case with regard to Anarchist crimes. The party of anarchy was the enemy of all governments, and its effects were directed primarily against the general body of citizens. The test applied in the earlier case is perhaps the more satisfactory of the two.

With regard to the provision that surrender shall not be granted if the requisition has in fact been made with a view to try and punish for an offence of a political character, it, was decided in the case of *Arton* (1896, 1 Q.B. 108) that a mere suggestion, that after his surrender for a non-political crime, the prisoner would be interrogated on political matters (his alleged complicity in the Panama scandal), and punished for his refusal to answer, was not enough to bring him within the provision. The court also held that it had no jurisdiction to entertain a suggestion that the request of the French government for his extradition was not made in good faith and in the interests of justice.

Extradition Offences.—The following is a list of crimes in respect of which extradition may be provided for under the Extradition Acts 1870-1873, and the Slave Trade Act 1873. *Extradition Act* 1870:—(1) Murder; (2) Attempt to murder; (3) Conspiracy to murder; (4) Manslaughter; (5) Counterfeiting and altering money, uttering counterfeit or altered money; (6) Forgery, counterfeiting, and altering and uttering what is forged or counterfeited or altered; (7) Embezzlement and larceny; (8) Obtaining money or goods by false pretences; (9) Crimes by bankrupts against bankruptcy law; (10) Fraud by a bailee, banker, agent, factor, trustee or director, or member or public officer of any company made criminal by any law for the time being in force; (11) Rape; (12) Abduction; (13) Child-stealing; (14) Burglary and housebreaking; (15) Arson; (16) Robbery with violence; (17) Threats by letter or otherwise with intent to extort; (18) Crimes committed at sea: (*a*) Piracy by the law of nations; (*b*) Sinking or destroying a vessel at sea, or attempting or conspiring to do so; (*c*) Assault on a ship on the high seas, with intent to destroy life or to do grievous bodily harm; (*d*) Revolt, or conspiring to revolt, by two or more persons on board a ship on the high seas against the authority of the master; (19) Bribery. *Extradition Act* 1873:-(20) Kidnapping and false imprisonment; (21) Perjury and subornation of perjury. This act also extends to indictable offences under 24 & 25 Vict. cc. 96, 97, 98, 99, 100, and amending and substituted acts. Among such offences included in various extradition treaties are the following:—(22) Obtaining valuable securities by false pretences; (23) Receiving any money, valuable security or other property, knowing the same to have been stolen or unlawfully obtained; (24) Falsification of accounts (see *In re Arton*, 1896, 1 Q.B. 509); (25) Malicious injury to property, if such offence be indictable;. (26) Knowingly making, without lawful authority, any instrument, tool or engine adapted and intended for the counterfeiting of coin of the

realm; (27) Abandoning children; exposing or unlawfully detaining them; (28) Any malicious act done with intent to endanger the safety of any person in a railway train; (29) Wounding or inflicting grievous bodily harm; (30) Assault occasioning actual bodily harm; (31) Assaulting a magistrate or peace or public officer; (32) Indecent assault; (33) Unlawful carnal knowledge, or any attempt to have unlawful carnal knowledge, of a girl under age; (34) Bigamy; (35) Administering drugs or using instruments with intent to procure the miscarriage of women; (36) Any indictable offence under the laws for the time being in force in relation to bankruptcy. *Slave Trade Act* 1873 (36 & 37 Vict. c. 88, s. 27):—(37) Dealing in slaves in such manner as to constitute a criminal offence against the laws of both states.

The United Kingdom has extradition treaties with practically all civilized foreign countries; and though it is not practicable to state which of the statutory extradition offences are included in each, it may be said generally that crimes 1 to 17 inclusive are covered in all, though Rumania has reserved the right to refuse, and Portugal does refuse, to surrender for a crime punishable with death.

The act of 1873 provides for the surrender of accessories before and after the fact to extradition crimes, and most of the treaties contain a clause by which extradition is to be granted for participation in any of the crimes specified in the treaty, provided that such participation is punishable by the laws of both countries. Several of the treaties also contain clauses, providing for optional surrender in respect of any crime not expressly mentioned for which extradition can be granted by the laws of both countries.

It is further to be noted that the restrictions on surrender in the Extradition Acts apply only to surrenders by Great Britain. Foreign countries may surrender fugitives to Great Britain without any treaty, if they are willing to do so and their law allows of it, and such surrenders have not infrequently been made. But when surrendered for an extradition crime, the prisoner cannot be tried in England for any other crime committed before such surrender, until he has been restored, or has had an opportunity of returning, to the foreign state from which he was extradited.

Procedure.—To obtain from a foreign country the extradition of a fugitive from the United Kingdom, it is necessary to procure a warrant for his arrest, and to send it, or a certified copy, to the home secretary together with such further evidence as is required by the treaty with the country in question. In most, cases an information or deposition containing evidence which would justify a committal for trial in Great Britain will be required. The home secretary will then communicate through the foreign secretary and the proper diplomatic channels with the foreign authorities, and in case of urgency will ask them by telegraph for a provisional arrest. For the arrest in the United Kingdom of fugitive criminals whose extradition is requested by a foreign state, two procedures are provided in ss. 7 and 8 of the act of 1870:—(1) On a diplomatic requisition supported by the warrant of arrest and documentary evidence, the home secretary, if he thinks the crime is not of a political character, will order the chief magistrate at Bow Street to proceed; and such magistrate will then issue a warrant of arrest on such evidence as would be required if the offence had been committed in the United Kingdom. (2) More summarily, any magistrate or justice of the peace may issue a provisional warrant of arrest on evidence which would support such a warrant if the crime had been committed within his jurisdiction. In practice a sworn information is required, but this may be based on a telegram from the foreign authorities. The magistrate or justice must then report the issue of the warrant to the home secretary, who may cancel it and discharge the prisoner. When arrested on the provisional warrant, the prisoner will be brought up before a magistrate and remanded to Bow Street, and will then be further remanded until the magistrate at Bow Street is notified that a formal requisition for surrender has been made; and unless such requisition is made in reasonable time the prisoner is entitled to be discharged. The examination of the prisoner prior to his committal for extradition ordinarily takes place at Bow Street. The magistrate is required to hear evidence that the alleged offence is of a political character or is not an extradition crime. If satisfied in these respects, and if the foreign warrant of arrest is duly authenticated, and evidence is given which according to English law would justify a committal for trial, if the prisoner has not yet been tried, or would prove a conviction if he has already been convicted, the magistrate will commit him for extradition. Under the Extradition Act, 1895 the home secretary, if of opinion that removal to Bow Street would be dangerous to the prisoner’s life, or prejudicial to his health, may order the case to be taken by a magistrate at the place where the prisoner was apprehended, or then is, and the magistrate may order the prisoner to be detained in such place. After committal for extradition, every prisoner has fifteen days in which to apply for *habeas corpus*, and after such period, or at the close of the *habeas corpus* proceedings if they are unsuccessful, the

home secretary issues his warrant for surrender, and the prisoner is handed over to the officers of the foreign government.

The Extradition Acts apply to the British colonies, the governor being substituted for the secretary of state. Their operation may, however, be suspended by order in council, as in the case of Canada, where the colony has passed an Extradition Act of its own (see Statutory Rules and Orders).

Fugitive Offenders Act.—There are no extradition treaties with certain countries in which the crown exercises foreign jurisdiction, such as Cyprus, Turkey, Egypt, China, Japan, Corea, Zanzibar, Morocco, Siam, Persia, Somali, &c. In these countries the Fugitive Offenders Act 1881 (44 & 45 Vict. c. 69) has been applied, pursuant to s. 36 of that statute, and the measures for obtaining surrender of a fugitive criminal are the same as in a British colony. The act, however, only applies to persons over whom the crown has jurisdiction in these territories, and generally is expressly restricted to British subjects.

Under this act a fugitive from one part of the king's dominions to another, or to a country where the crown exercises foreign jurisdiction, may be brought back by a procedure analogous to extradition, but applicable only to treason, piracy and offences punishable with twelve months' imprisonment with hard labour or more. The original warrant of arrest must be endorsed by one of several authorities where the offenders happen to be,—in practice by the home secretary in the United Kingdom and by the governor in a colony. Pending the arrival of the original warrant a provisional arrest may be made, as under the Extradition Acts. The fugitive must then be brought up for examination before a local magistrate, who, if the endorsed warrant is duly authenticated, and evidence is produced "which, according to the law administered by the magistrate, raises a strong or probable presumption that the offender committed the offence, and that the act applies to it," may commit him for return. An interval of fifteen days is allowed for *habeas corpus* proceedings, and (s. 10) the court has a large discretion to discharge the prisoner, or impose terms, if it thinks the case frivolous, or that the return would be unjust or oppressive, or too severe a punishment. The next step is for the home secretary in the United Kingdom, and the governor in a colony, to issue a warrant for the return of the prisoner. He must be removed within a month, in the absence of reasonable cause to the contrary. If not prosecuted within six months after arrival, or if acquitted, he is entitled to be sent back free of cost.

In the case of fugitive offenders from one part of the United Kingdom to another, it is enough to get the warrant of arrest backed by a magistrate having jurisdiction in that part of the United Kingdom where the offender happens to be. A warrant issued by a metropolitan police magistrate may be executed, without backing, by a metropolitan police officer anywhere, and there are certain other exceptions, but as a rule a warrant cannot be executed without being backed by a local magistrate.

(J. E. P. W.)

2. United States.—Foreign extradition is purely an affair of the United States, and not for the individual states themselves. Upon a demand upon the United States for extradition, there is a preliminary examination before a commissioner or judge before there can be a surrender to the foreign government (Revised Statutes, Title LXVI.; 22 Statutes at Large, 215). It is enough to show probable guilt (*Ornelas* v. *Ruiz*, 161 United States Reports, 502). An extradition treaty covers crimes previously committed. If a Power, with which the United States have such a treaty, surrenders a fugitive charged with a crime not included in the treaty, he may be tried in the United States for such crime. Inter-state extradition is regulated by act of Congress under the Constitution of the United States (Article IV. s. 2; United States Revised Statutes, s. 5278). A surrender may be demanded of one properly charged with an act which constitutes a crime under the laws of the demanding state, although it be no crime in the other state. A party improperly surrendered may be released by writ of *habeas corpus*, either from a state or United States court (*Robb* v. *Conolly*, 111 U.S. Reports, 624). On his return to the state from which he fled, he is subject to prosecution for any crime, though on a foreign extradition the law is otherwise (*Lascelles* v. *Georgia*, 148 U.S. Reports, 537).

(S. E. B.)

See Sir E. Clarke, *Treatise upon the Law of Extradition* (4th ed., 1904); Biron and Chalmers, *Law and Practice of Extradition* (1903).

EXTRADOS (*extra*, outside, Fr. *dos*, back), the architectural term for the outer boundary of the voussoirs of an arch (*q.v.*).

EXTREME UNCTION, a sacrament of the Roman Catholic Church. In James v. 14 it is ordained that, if any believer is sick, he shall call for the elders of the church; and they shall pray over him, anointing him with oil in the name of the Lord; and the prayer of faith shall save him that is sick, and the Lord shall raise him up; and if he have committed sins, it shall be forgiven him.

Origen reprobated medical art on the ground that the prescription here cited is enough; modern faith-healers and Peculiar People have followed in his wake. The Catholic Church has more wisely left physicians in possession, and elevated the anointing of the sick into a sacrament to be used only in cases of mortal sickness, and even then not to the exclusion of the healing art.

It has been general since the 9th century. The council of Florence A.D. 1439 thus defined it:—

> "The fifth sacrament is extreme unction. Its matter is olive oil, blessed by a bishop. It shall not be given except to a sick person whose death is apprehended. He shall be anointed in the following places: the eyes, ears, nostrils, mouth, hands, feet, reins. The form of the sacrament, is this: Through this anointing of thee and through its most pious mercy, be forgiven all thy sins of sight, &c. ... and so in respect of the other organs. A priest can administer this sacrament. But its effect is to make whole the mind, and, so far as it is expedient, the body as well."

This sacrament supplements that of penance (viz. remission of post-baptismal sin) in the sense that any guilt unconfessed or left over after normal penances imposed by confessors is purged thereby. It was discussed in the 12th century whether this sacrament is indelible like baptism, or whether it can be repeated; and the latter view, that of Peter Lombard, prevailed.

It was a popular opinion in the middle ages that extreme unction extinguishes all ties and links with this world, so that he who has received it must, if he recovers, renounce the eating of flesh and matrimonial relations. A few peasants of Lombardy still believe that one who has received extreme unction ought to be left to die, and that sick people may be starved to death through the withholding of food on superstitious grounds. Such opinions, combated by bishops and councils, were due to the influence of the *consolamentum* of the Cathars (*q.v.*). In both sacraments the death-bed baptism of an earlier age seems to survive, and they both fulfil a deep-seated need of the human spirit.

Some Gnostics sprinkled the heads of the dying with oil and water to render them invisible to the powers of darkness; but in the East generally, where the need to compete with the Cathar sacrament of *Consolatio* was less acutely felt, extreme unction is unknown. The Latinizing Armenians adopted it from Rome in the crusading epoch. At an earlier date, however, it was usual to anoint the dead.

In the Roman Church the bishop blesses the oil of the sick used in extreme unctions on Holy Thursday at the Chrismal Mass,[1] using the following prayer of the sacramentaries of Gelasius and Hadrian:—

> "Send forth, we pray Thee, O Lord, Thy holy spirit, the Paraclete from Heaven, into this fatness of oil, which Thou hast deigned to produce from the green wood for refreshment of mind and body; and through Thy holy benediction may it be for all that anoint, taste, touch, a protection of mind and body, of soul and spirit, unto the easing away of all pain, all weakness, all sickness of mind and body; wherefore Thou hast anointed priest, kings and prophets and martyrs with thy chrism, perfected by Thee, O Lord, blessed and abiding in our bowels in the name of our Lord Jesus Christ."

See L. Duchesne, *Origines du Culte Chrétien* (Paris, 1898).

(F. C. C.)

1 The oil left over from the year before is burnt.

EYBESCHÜTZ, JONATHAN (1690-1764), German rabbi, was from 1750 rabbi in Altona. He was a man of erudition, but he owed his fame chiefly to his personality. Few men of the period so profoundly impressed their mark on Jewish life. He became specially notorious because of a curious controversy that arose concerning the amulets which Eybeschütz was suspected of issuing. These amulets recognized the Messianic claims of Sabbatai Sebi (*q.v.*), and a famous rabbinic contemporary of Eybeschütz, Jacob Emden, boldly accused him of heresy. The controversy was a momentous incident in the Jewish life of the period, and though there is insufficient evidence against Eybeschütz, Emden may be credited with having crushed the lingering belief in Sabbatai current even in some orthodox circles.

(I. A.)

EYCK, VAN, the name of a family of Flemish painters in whose works the rise and mature development of art in western Flanders are represented. Though bred in the valley of the Meuse, they finally established their professional domicile in Ghent and in Bruges; and there, by skill and inventive genius, they changed the traditional habits of the earlier schools, remodelled the primitive forms of Flemish design, and introduced a complete revolution into the technical methods of execution familiar to their countrymen.

1. Hubert (Huybrecht) van Eyck (? 1366-1426) was the oldest and most remarkable of this race of artists. The date of his birth and the records of his progress are lost amidst the ruins of the earlier civilization of the valley of the Meuse. He was born about 1366, at Maeseyck, under the shelter or protection of a Benedictine convent, in which art and letters had been cultivated from the beginning of the 8th century. But after a long series of wars—when the country became insecure, and the schools which had flourished in the towns decayed—he wandered to Flanders, and there for the first time gained a name. As court painter to the hereditary prince of Burgundy, and as client to one of the richest of the Ghent patricians, Hubert is celebrated. Here, in middle age, between 1410 and 1420, he signalized himself as the inventor of a new method of painting. Here he lived in the pay of Philip of Charolais till 1421. Here he painted pictures for the corporation, whose chief magistrates honoured him with a state visit in 1424. His principal masterpiece, the “Worship of the Lamb,” commissioned by Jodocus Vijdts, lord of Pamele, is the noblest creation of the Flemish school, a piece of which we possess all the parts dispersed from St Bavon in Ghent to the galleries of Brussels and Berlin,—one upon which Hubert laboured till he died, leaving it to be completed by his brother. Almost unique as an illustration of contemporary feeling for Christian art, this great composition can only be matched by the “Fount of Salvation,” in the museum of Madrid. It represents, on numerous panels, Christ on the judgment seat, with the Virgin and St John the Baptist at His sides, hearing the songs of the angels, and contemplated by Adam and Eve, and, beneath him, the Lamb shedding His blood in the presence of angels, apostles, prophets, martyrs, knights and hermits. On the outer sides of the panels are the Virgin and the angel annunciate, the sibyls and prophets who foretold the coming of the Lord, and the donors in prayer at the feet of the Baptist and Evangelist. After this great work was finished it was placed, in 1432, on an altar in St Bavon of Ghent, with an inscription on the framework describing Hubert as “maior quo nemo repertus,” and setting forth, in colours as imperishable as the picture itself, that Hubert began and John afterwards brought it to perfection. John van Eyck certainly wished to guard against an error which ill-informed posterity showed itself but too prone to foster, the error that he alone had composed and carried out an altarpiece executed jointly by Hubert and himself. His contemporaries may be credited with full knowledge of the truth in this respect, and the facts were equally well known to the duke of Burgundy or the chiefs of the corporation of Bruges, who visited the painter’s house in state in 1432, and the members of the chamber of rhetoric at Ghent, who reproduced the Agnus Dei as a *tableau vivant* in 1456. Yet a later generation of Flemings forgot the claims of Hubert, and gave the honours that were his due to his brother John exclusively.

The solemn grandeur of church art in the 15th century never found, out of Italy, a nobler exponent than Hubert van Eyck. His representation of Christ as the judge, between the

Virgin and St John, affords a fine display of realistic truth, combined with pure drawing and gorgeous colour, and a happy union of earnestness and simplicity with the deepest religious feeling. In contrast with earlier productions of the Flemish school, it shows a singular depth of tone and great richness of detail. Finished with surprising skill, it is executed with the new oil medium, of which Hubert shared the invention with his brother, but of which no rival artists at the time possessed the secret,—a medium which consists of subtle mixtures of oil and varnish applied to the moistening of pigments after a fashion, only kept secret for a time from gildsmen of neighbouring cities, but unrevealed to the Italians till near the close of the 15th century. When Hubert died on the 18th of September 1426 he was buried in the chapel on the altar of which his masterpiece was placed. According to a tradition as old as the 16th century, his arm was preserved as a relic in a casket above the portal of St Bavon of Ghent. During a life of much apparent activity and surprising successes he taught the elements of his art to his brother John, who survived him.

2. John (Jan) van Eyck (? 1385-1440). The date of his birth is not more accurately known than that of his elder brother, but he was born much later than Hubert, who took charge of him and made him his “disciple.” Under this tuition John learnt to draw and paint, and mastered the properties of colours from Pliny. Later on, Hubert admitted him into partnership, and both were made court painters to Philip of Charolais. After the breaking up of the prince’s household in 1421, John became his own master, left the workshop of Hubert, and took an engagement as painter to John of Bavaria, at that time resident at the Hague as count of Holland. From the Hague he returned in 1424 to take service with Philip, now duke of Burgundy, at a salary of 100 livres per annum, and from that time till his death John van Eyck remained the faithful servant of his prince, who never treated him otherwise than graciously. He was frequently employed in missions of trust; and following the fortunes of a chief who was always in the saddle, he appears for a time to have been in ceaseless motion, receiving extra pay for secret services at Leiden, drawing his salary at Bruges, yet settled in a fixed abode at Lille. In 1428 he joined the embassy sent by Philip the Good to Lisbon to beg the hand of Isabella of Portugal. His portrait of the bride fixed the duke’s choice. After his return he settled finally at Bruges, where he married, and his wife bore him a daughter, known in after years as a nun in the convent of Maeseyck. At the christening of this child the duke was sponsor, and this was but one, of many distinctions by which Philip the Good rewarded his painter’s merits. Numerous altarpieces and portraits now give proof of van Eyck’s extensive practice. As finished works of art and models of conscientious labour they are all worthy of the name they bear, though not of equal excellence, none being better than those which were completed about 1432. Of an earlier period, a “Consecration of Thomas à Becket” has been preserved, and may now be seen at Chatsworth, bearing the date of 1421; no doubt this picture would give a fair representation of van Eyck’s talents at the moment when he started as an independent master, but that time and accidents of omission and commission have altered its state to such an extent that no conclusive opinion can be formed respecting it. The panels of the “Worship of the Lamb” were completed nine years later. They show that John van Eyck was quite able to work in the spirit of his brother. He had not only the lines of Hubert’s compositions to guide him, he had also those parts to look at and to study which Hubert had finished. He continued the work with almost as much vigour as his master. His own experience had been increased by travel, and he had seen the finest varieties of landscape in Portugal and the Spanish provinces. This enabled him to transfer to his pictures the charming scenery of lands more sunny than those of Flanders, and this he did with accuracy and not without poetic feeling. We may ascribe much of the success which attended his efforts to complete the altarpiece of Ghent to the cleverness with which he [reproduced the varied aspect of changing scenery, reminiscent here of the orange groves of Cintra, there of the bluffs and crags of his native valley. In all these backgrounds, though we miss the scientific rules of perspective with which the van Eycks were not familiar, we find such delicate perceptions of gradations in tone, such atmosphere, yet such minuteness and perfection of finish, that our admiration never flags. Nor is the colour less brilliant or the touch less firm than in Hubert’s panels. John only differs from his brother in being less masculine and less sternly religious. He excels in two splendid likenesses of Jodocus Vijdts and his wife Catherine Burluuts. The same vigorous style and coloured key of harmony characterizes the small “Virgin and Child” of 1432 at Ince, and the “Madonna,” probably of the same date, at the Louvre, executed for Rollin, chancellor of Burgundy. Contemporary with these, the male portraits in the National Gallery, and the “Man with the Pinks,” in the Berlin Museum (1432-1434), show no relaxation of power; but later creations display no further progress, unless we accept as progress a more searching delicacy of finish, counterbalanced by an excessive softness of rounding in flesh contours. An unfaltering minuteness of hand and great tenderness of treatment may be found, combined with angularity of drapery and some awkwardness of attitude in the full length portrait couple

(John Arnolfini and his wife) at the National Gallery (1434), in which a rare insight into the detail of animal nature is revealed in a study of a terrier dog. A “Madonna with Saints,” at Dresden, equally soft and minute, charms us by the mastery with which an architectural background is put in. The bold and energetic striving of earlier days, the strong bright tone, are not equalled by the soft blending and tender tints of the later ones. Sometimes a crude ruddiness in flesh strikes us as a growing defect, an instance of which is the picture in the museum of Bruges, in which Canon van der Paelen is represented kneeling before the Virgin under the protection of St George (1434). From first to last van Eyck retains his ability in portraiture. Fine specimens are the two male likenesses in the gallery of Vienna (1436), and a female, the master’s wife, in the gallery of Bruges (1439). His death in 1440/41 at Bruges is authentically recorded. He was buried in St Donat. Like many great artists he formed but few pupils. Hubert’s disciple, Jodocus of Ghent, hardly does honour to his master’s teaching, and only acquires importance after he has thrown off some of the peculiarities of Flemish teaching. Petrus Cristus, who was taught by John, remains immeasurably behind him in everything that relates to art. But if the personal influence of the van Eycks was small, that of their works was immense, and it is not too much to say that their example, taken in conjunction with that of van der Weyden, determined the current and practice of painting throughout the whole of Europe north of the Alps for nearly a century.

See also Waagen, *Hubert and Johann van Eyck* (1822); Voll, *Werke des Jan van Eyck* (1900); L. Kämmerer on the two families in Knackfuss’s *Künstler-Monographien* (1898).

(J. A. C.)

EYE, a market-town and municipal borough in the Eye parliamentary division of Suffolk; England; 94½ m. N.E. from London by the Great Eastern railway, the terminus of a branch from the Ipswich-Norwich line. Pop. (1901) 2004. The church of St Peter and St Paul is mainly of Perpendicular flint work, with Early English portions and a fine Perpendicular rood screen. It was formerly attached to a Benedictine priory. Slight fragments of a Norman castle crown a mound of probably earlier construction. There are a town hall, corn exchange, and grammar school founded in 1566. Brewing is the chief industry. The town is governed by a mayor, 4 aldermen and 12 councillors. Area, 4410 acres.

Eye (*Heya*, *Aye*) was once surrounded by a stream, from which it is said to have derived its name. Leland says it was situated in a marsh and had formerly been accessible by river vessels from Cromer, though the river was then only navigable to Burston, 12 m. from Eye. From the discovery of numerous bones and Roman urns and coins it has been thought that the place was once the cemetery of a Roman camp. William I. gave the lordship of Eye to Robert Malet, a Norman, who built a castle and a Benedictine monastery which was at first subordinate to the abbey of Bernay in Normandy. Eye is a borough by prescription. In 1205 King John granted to the townsmen a charter freeing them from various tolls and customs and from the jurisdiction of the shire and hundred courts. Later charters were granted by Elizabeth in 1558 and 1574, by James I. in 1604, and by William III. in 1697. In 1574 the borough was newly incorporated under two bailiffs, ten chief and twenty-four inferior burgesses, and an annual fair on Whit-Monday and a market on Saturday were granted. Two members were returned to each parliament from 1571 till 1832, when the Reform Act reduced the membership to one. By the Redistribution Act of 1885 the representation was merged in the Eye division of the county. The making of pillow-lace was formerly carried on extensively, but practically ceased with the introduction of machinery.

EYE (O. Eng. *eáge*, Ger. *Auge*); derived from an Indo-European root also seen in Lat. *oculus*, the organ of vision (*q.v.*).

Anatomy.—The eye consists of the eyeball, which is the true organ of sight, as well as of certain muscles which move it, and of the lachrymal apparatus which keeps the front of it in a moist condition. The *eyeball* is contained in the front of the orbit and is a sphere of about an inch (24 mm.) in diameter. From the front of this a segment of a lesser sphere projects

slightly and forms the *cornea* (fig. 1, *co*). There are three coats to the eyeball, an external (protective), a middle (vascular), and an internal (sensory). There are also three refracting media, the aqueous humour, the lens and the vitreous humour or body.

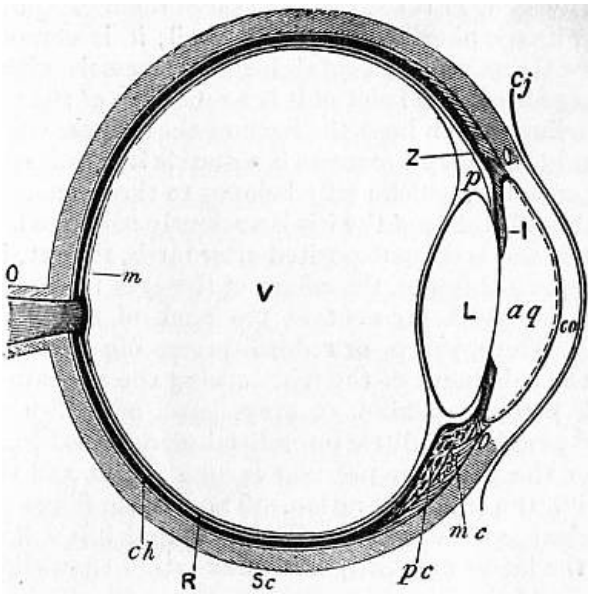


FIG. 1.—Diagrammatic Section through the Eyeball.

cj, Conjunctiva.
co, Cornea.
Sc, Sclerotic.
ch, Choroid.
pc, Ciliary processes.
mc, Ciliary muscle.
O, Optic nerve.
R, Retina.
I, Iris.
aq, Anterior chamber of aqueous humour.
L, Lens.
V, Vitreous body.
Z, Zonule of Zinn, the ciliary process being removed to show it.
p, Canal of Petit.
m, Yellow spot.
The dotted line behind the cornea represents its posterior epithelium.

The protective coat consists of the *sclerotic* in the posterior five-sixths and the cornea in the anterior sixth. The sclerotic (fig. 1, *Sc*) is a firm fibrous coat, forming the "white of the eye," which posteriorly is pierced by the optic nerve and blends with the sheath of that nerve, while anteriorly it is continued into the cornea at the *corneo-scleral junction*. At this point a small canal, known as the *canal of Schlemm*, runs round the margin of the cornea in the substance of the sclerotic (see fig. 1). Between the sclerotic and the subjacent choroid coat is a lymph space traversed by some loose pigmented connective tissue,—the *lamina fusca*. The cornea is quite continuous with the sclerotic but has a greater convexity. Under the microscope it is seen to consist of five layers. Most anteriorly there is a layer of stratified epithelium, then an anterior elastic layer, then the *substantia propria* of the cornea which is fibrous with spaces in which the stellate *corneal corpuscles* lie, while behind this is the posterior elastic layer and then a delicate layer of endothelium. The transparency of the cornea is due to the fact that all these structures have the same refractive index.

The middle or vascular coat of the eye consists of the *choroid*, the *ciliary processes* and the *iris*. The choroid (fig. 1, *ch*) does not come quite as far forward as the corneo-scleral junction: it is composed of numerous blood-vessels and pigment cells bound together by connective tissue and, superficially, is lined by a delicate layer of pigmented connective tissue called the *lamina suprachoroidea* in contact with the already-mentioned perichoroidal lymph space. On the deep surface of the choroid is a structureless basal lamina.

The *ciliary processes* are some seventy triangular ridges, radially arranged, with their apices pointing backward (fig. 1, *pc*), while their bases are level with the corneo-scleral junction. They are as vascular as the rest of the choroid, and contain in their interior the *ciliary muscle*, which consists of radiating and circular fibres. The radiating fibres (fig. 1, *mc*) rise, close to the canal of Schlemm, from the margin of the posterior elastic lamina of the cornea, and pass backward and outward into the ciliary processes and anterior part of

the choroid, which they pull forward when they contract. The circular fibres lie just internal to these and are few or wanting in short-sighted people.

The *iris* (fig. 1, *1*) is the coloured diaphragm of the eye, the centre of which is pierced to form the pupil; it is composed of a connective tissue stroma containing blood-vessels, pigment cells and muscle fibres. In front of it is a reflection of the same layer of endothelium which lines the back of the cornea, while behind both it and the ciliary processes is a double layer of epithelium, deeply pigmented, which really belongs to the retina. The pigment in the substance of the iris is variously coloured in different individuals, and is often deposited after birth, so that, in newly-born European children, the colour of the eyes is often slate-blue owing to the black pigment at the back of the iris showing through. White, yellow or reddish-brown pigment is deposited later in the substance of the iris, causing the appearance, with the black pigment behind, of grey, hazel or brown eyes. In blue-eyed people very little interstitial pigment is formed, while in Albinos the posterior pigment is also absent and the blood vessels give the pink coloration. The muscle fibres of the iris are described as circular and radiating, though it is still uncertain whether the latter are really muscular rather than elastic. On to the front of the iris, at its margin, the posterior layer of the posterior elastic lamina is continued as a series of ridges called the *ligamentum pectinatum iridis*, while between these ridges are depressions known as the *spaces of Fontana*.

The inner or sensory layer of the wall of the eyeball is the *retina*; it is a delicate transparent membrane which becomes thinner as the front of the eye is approached. A short distance behind the ciliary processes the nervous part of it stops and forms a scalloped border called the *ora serrata*, but the pigmented layer is continued on behind the ciliary processes and iris, as has been mentioned, and is known as the *pars ciliaris retinae* and *pars iridica retinae*. Under the microscope the posterior part of the retina is seen to consist of eight layers. In its passage from the lens and vitreous the light reaches these layers in the following order:—(1) Layer of nerve fibres; (2) Layer of ganglion cells; (3) Inner molecular layer; (4) Inner nuclear layer; (5) Outer molecular layer; (6) Outer nuclear layer; (7) Layer of rods and cones; (8) Pigmented layer.

The layer of nerve fibres (fig. 2, *2*) is composed of the axis-cylinders only of the fibres of the optic nerve which pierce the sclerotic, choroid and all the succeeding layers of the retina to radiate over its surface.

The ganglionic layer (fig. 2, *3*) consists of a single stratum of large ganglion cells, each of which is continuous with a fibre of the preceding layer which forms its axon. Each also gives off a number of finer processes (dendrites) which arborize in the next layer.

The inner molecular layer (fig. 2, *4*) is formed by the interlacement of the dendrites of the last layer with those of the cells of the inner nuclear layer which comes next.

The inner nuclear layer (fig. 2, *5*) contains three different kinds of cells, but the most important and numerous are large bipolar cells, which send one process into the inner molecular layer, as has just been mentioned, and the other into the outer molecular layer, where they arborize with the ends of the rod and cone fibres.

The outer molecular layer (fig. 2, *6*) is very narrow and is formed by the arborizations just described. The outer nuclear layer (fig. 2, *7*), like the inner, consists of oval cells, which are of two kinds. The rod granules are transversely striped, and are connected externally with the rods, while internally processes pass into the outer molecular layer to end in a knob around which the arborizations of the inner nuclear cells lie. The cone granules are situated more externally, and are in close contact with the cones; internally their processes form a foot-plate in the outer molecular layer from which arborizations extend.

The layer of rods and cones (fig. 2, *9*) contains these structures, the rods being more numerous than the cones. The rods are spindle-shaped bodies, of which the inner segment is thicker than the outer. The cones are thicker and shorter than the rods, and resemble Indian clubs, the handles of which are directed outward and are transversely striped. In the outer part of the rods the visual purple or rhodopsin is found.

The pigmented layer consists of a single layer of hexagonal cells containing pigment, which is capable of moving towards the rods and cones when the eye is exposed to light and away from them in the dark.

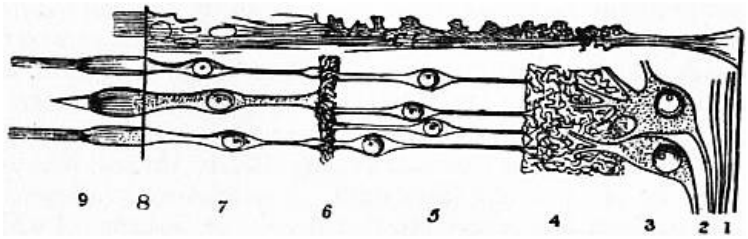


FIG. 2.—Diagrammatic section through the retina to show the several layers, which are numbered as in the text. *Ct*, The radial fibres of the supporting connective tissue.

Supporting the delicate nervous structures of the retina are a series of connective tissue rods known as the *fibres of Müller* (fig. 2, *Ct*); these run through the thickness of the retina at right angles to its surface, and are joined together on the inner side of the layer of nerve fibres to form the *inner limiting membrane*. More externally, at the bases of the rods and cones, they unite again to form the outer limiting membrane.

When the retina is looked at with the naked eye from in front two small marks are seen on it. One of these is an oval depression about 3 mm. across, which, owing to the presence of pigment, is of a yellow colour and is known as the yellow spot (*macula lutea*); it is situated directly in the antero-posterior axis of the eyeball, and at its margin the nerve fibre layer is thinned and the ganglionic layer thickened. At its centre, however, both these layers are wanting, and in the layer of rods and cones only the cones are present. This central part is called the *fovea centralis* and is the point of acutest vision. The second mark is situated a little below and to the inner side of the yellow spot; it is a circular disk with raised margins and a depressed centre and is called the *optic disk*; in structure it is a complete contrast to the yellow spot, for all the layers except that of the nerve fibres are wanting, and consequently, as light cannot be appreciated here, it is known as the “blind spot.” It marks the point of entry of the optic nerve, and at its centre the retinal artery appears and divides into branches. An appreciation of the condition of the optic disk is one of the chief objects of the ophthalmoscope.

The *crystalline lens* (fig. 1, *L*) with its ligament separates the aqueous from the vitreous chamber of the eye; it is a biconvex lens the posterior surface of which is more curved than the anterior. Radiating from the anterior and posterior poles are three faint lines forming a Y, the posterior Y being erect and the anterior inverted. Running from these figures are a series of lamellae, like the layers of an onion, each of which is made up of a number of fibrils called the lens fibres. On the anterior surface of the lens is a layer of epithelial cells, which, towards the margin or equator, gradually elongate into lens fibres. The whole lens is enclosed in an elastic structureless membrane, and, like the cornea, its transparency is due to the fact that all its constituents have the same refractive index.

The ligament of the lens is the thickened anterior part of the hyaloid membrane which surrounds the vitreous body; it is closely connected to the iris at the ora serrata, and then splits into two layers, of which the anterior is the thicker and blends with the anterior part of the elastic capsule of the lens, so that, when its attachment to the ora serrata is drawn forward by the ciliary muscle, the lens, by its own elasticity, increases its convexity. Between the anterior and posterior splitting of the hyaloid membrane is a circular lymph space surrounding the margin of the lens known as the *canal of Petit* (fig. 1, *p*).

The *aqueous humour* (fig. 1, *aq*) is contained between the lens and its ligament posteriorly and the cornea anteriorly. It is practically a very weak solution of common salt (chloride of sodium 1.4%). The space containing it is imperfectly divided into a large anterior and a small posterior chamber by a perforated diaphragm—the iris.

The *vitreous body* or *humour* is a jelly which fills all the contents of the eyeball behind the lens. It is surrounded by the hyaloid membrane, already noticed, and anteriorly is concave for the reception of the lens.

From the centre of the optic disk to the posterior pole of the lens a lymph canal formed by a tube of the hyaloid membrane stretches through the centre of the vitreous body; this is the *canal of Stilling*, which in the embryo transmitted the hyaloid artery to the lens. The composition of the vitreous is practically the same as that of the aqueous humour.

The *arteries of the eyeball* are all derived from the ophthalmic branch of the internal carotid, and consist of the retinal which enters the optic nerve far back in the orbit, the two long ciliaries, which run forward in the choroid and join the anterior ciliaries, from muscular branches of the ophthalmic, in the circulus iridis major round the margin of the iris, and the

six to twelve short ciliaries which pierce the sclerotic round the optic nerve and supply the choroid and ciliary processes.

The *veins of the eyeball* emerge as four or five trunks rather behind the equator; these are called from their appearance *venae vorticosae*, and open into the superior ophthalmic vein. In addition to these there is a retinal vein which accompanies its artery.

Accessory Structures of the Eye.—The *eyelids* are composed of the following structures from in front backward: (1) Skin; (2) Superficial fascia; (3) Orbicularis palpebrarum muscle; (4) *Tarsal plates* of fibrous tissue attached to the orbital margin by the superior and inferior *palpebral ligaments*, and, at the junction of the eyelids, by the external and internal *tarsal ligaments* of which the latter is also known as the *tendo oculi*; (5) *Meibomian glands*, which are large modified sebaceous glands lubricating the edges of the lids and preventing them adhering, and *Glands of Moll*, large sweat glands which, when inflamed, cause a “sty”; (6) the *conjunctiva*, a layer of mucous membrane which lines the back of the eyelids and is reflected on to the front of the globe, the reflection forming the fornix: on the front of the cornea the conjunctiva is continuous with the layer of epithelial cells already mentioned.

The *lachrymal* gland is found in the upper and outer part of the front of the orbit. It is about the size of an almond and has an upper (orbital) and a lower (palpebral) part. Its six to twelve ducts open on to the superior fornix of the conjunctiva.

The *lachrymal canals* (canaliculi) (see fig. 3, *2* and *3*) are superior and inferior, and open by minute orifices (puncta) on to the free margins of the two eyelids near their inner point of junction. They collect the tears, secreted by the lachrymal gland, which thus pass right across the front of the eyeball, continually moistening the conjunctiva. The two ducts are bent round a small pink tubercle called the *caruncula lachrymalis* (fig. 3, *4*) at the inner angle of the eyelids, and open into the *lachrymal sac* (fig. 3, *5*), which lies in a groove in the lachrymal bone. The sac is continued down into the *nasal duct* (fig. 3, *6*), which is about ¾ inch long and opens into the inferior meatus of the nose, its opening being guarded by a valve.

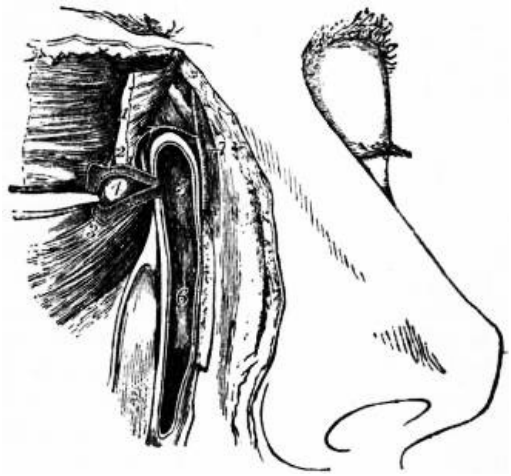


FIG. 3.—Lachrymal Canals and Duct.

1, Orbicular muscle.
2, Lachrymal canal.
3, Punctum.
4, Caruncula.
5, Lachrymal sac.
6, Lachrymal duct.
7, Angular artery.

The orbit contains seven muscles, six of which rise close to the optic foramen. The *levator palpebrae superioris* is the highest, and passes forward to the superior tarsal plate and fornix of the conjunctiva. The *superior* and *inferior recti* are inserted into the upper and lower surfaces of the eyeball respectively; they make the eye look inward as well as up or down. The external and internal recti are inserted into the sides of the eyeball and make it look outward or inward. The superior oblique runs forward to a pulley in the inner and front part of the roof of the orbit, round which it turns to be inserted into the outer and back part of the eyeball. It turns the glance downward and outward. The inferior oblique rises from the inner and front part of the floor of the orbit, and is also inserted into the outer and back part of the eyeball. It directs the glance upward and outward. Of all these muscles the superior oblique is supplied by the fourth cranial nerve, the external rectus by the sixth and the rest by the third.

The posterior part of the eyeball and the anterior parts of the muscles are enveloped in a

lymph space, known as the *capsule of Tenon*, which assists their movements.

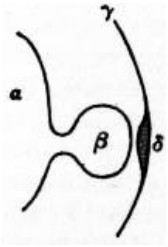


Fig. 4.
Diagram of Developing Eye (1st stage).

α, Forebrain.
β, Optic vesicle.
γ, Superficial ectoderm.
δ, Thickening for lens.

Fig. 5.
Diagram of Developing Eye (2nd stage).

β, Optic cup.
δ, Invagination of lens.
Other letters as in fig. 4.

Embryology.—As is pointed out in the article Brain, the *optic vesicles* grow out from the fore-brain, and the part nearest the brain becomes constricted and elongated to form the optic stalk (see figs. 4 and 5, β). At the same time the ectoderm covering the side of the head thickens and becomes invaginated to form the lens vesicle (see figs. 4 and 5, δ), which later loses its connexion with the surface and approaches the optic vesicle, causing that structure to become cupped for its reception, so that what was the optic vesicle becomes the optic cup and consists of an external and an internal layer of cells (fig. 6 β and δ). Of these the outer cells become the retinal pigment, while the inner form the other layers of the retina. The invagination of the optic cup extends, as the *choroidal fissure* (not shown in the diagrams), along the lower and back part of the optic stalk, and into this slit sinks some of the surrounding mesoderm to form the vitreous body and the hyaloid arteries, one of which persists.[1] When this has happened the fissure closes up. The anterior epithelium of the lens vesicle remains, but from the posterior the lens fibres are developed and these gradually fill up the cavity. The superficial layer of head ectoderm, from which the lens has been invaginated and separated, becomes the anterior epithelium of the cornea (fig. 6, ε), and between it and the lens the mesoderm sinks in to form the cornea, iris and anterior chamber of the eye, while surrounding the optic cup the mesoderm forms the sclerotic and choroid coats (fig. 7, η and ζ). Up to the seventh month the pupil is closed by the *membrana pupillaris*, derived from the capsule of the lens which is part of the mesodermal ingrowth through the choroidal fissure already mentioned. The hyaloid artery remains, as a prolongation of the retinal artery to the lens, until just before birth, but after that its sheath forms the canal of Stilling. Most of the fibres of the optic nerve are centripetal and begin as the axons of the ganglionic cells of the retina; a few, however, are centrifugal and come from the nerve cells in the brain.

The eyelids are developed as ectodermal folds, which blend with one another about the third month and separate again before birth in Man (fig. 7, κ). The lachrymal sac and duct are formed from solid ectodermal thickenings which later become canalized.

It will thus be seen that the optic nerve and retina are formed from the brain ectoderm; the lens, anterior epithelium of the cornea, skin of the eyelids, conjunctiva and lachrymal apparatus from the superficial ectoderm; while the sclerotic, choroid, vitreous and aqueous humours as well as the iris and cornea are derived from the mesoderm.

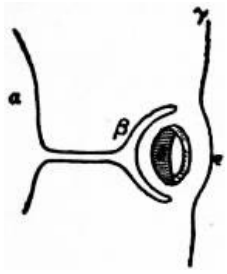


Fig. 6.

Diagram of Developing Eye (3rd stage).

δ, Solid lens.
ε, Corneal epithelium.
Other letters as in figs. 4 and 5.

See *Human Embryology*, by C.S. Minot (New York); Quain's *Anatomy*, vol. i. (1908); "Entwickelung des Auges der Wirbeltiere," by A. Froriep, in *Handbuch der vergleichenden und experimentellen Entwickelungslehre der Wirbeltiere* (O. Hertwig, Jena, 1905).

Comparative Anatomy.—The Acrania, as represented by Amphioxus (the lancelet), have a patch of pigment in the fore part of the brain which is regarded as the remains of a

degenerated eye. In the Cyclostomata the hag (Myxine) and larval lamprey (Ammocoetes) have ill-developed eyes lying beneath the skin and devoid of lens, iris, cornea and sclerotic as well as eye muscles. In the adult lamprey (Petromyzon) these structures are developed at the metamorphosis, and the skin becomes transparent, rendering sight possible. Ocular muscles are developed, but, unlike most vertebrates, the inferior rectus is supplied by the sixth nerve while all the others are supplied by the third. In all vertebrates the retina consists of a layer of senso-neural cells, the rods and cones, separated from the light by the other layers which together represent the optic ganglia of the invertebrates; in the latter animals, however, the senso-neural cells are nearer the light than the ganglia.

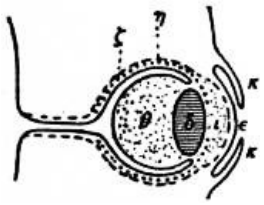


FIG. 7.

Diagram of Developing Eye (4th stage). The mesodermal tissues are dotted.

ζ, Choroid and Iris.
η, Sclerotic and Cornea.
θ, Vitreous.
ε, Aqueous.
κ, Eyelids.

In fishes the eyeball is flattened in front, but the flat cornea is compensated by a spherical lens, which, unlike that of other vertebrates, is adapted for near vision when at rest. The iris in some bony fishes (Teleostei) is not contractile. In the Teleostei, too, there is a process of the choroid which projects into the vitreous chamber and runs forward to the lens; it is known as the *processus falciformis*, and, besides nourishing the lens, is concerned in accommodation. This specialized group of fishes is also remarkable for the possession of a so-called *choroid gland*, which is really a *rete mirabile* (see ARTERIES) between the choroid and sclerotic. The sclerotic in fishes is usually chondrified and sometimes calcified or ossified. In the retina the rods and cones are about equal in number, and the cones are very large. In the cartilaginous fishes (Elasmobranchs) there is a silvery layer, called the *tapetum lucidum*, on the retinal surface of the choroid.

In the Amphibia the cornea is more convex than in the fish, but the lens is circular and the sclerotic often chondrified. There is no processus falciformis or tapetum lucidum, but the class is interesting in that it shows the first rudiments of the ciliary muscle, although accommodation is brought about by shifting the lens. In the retina the rods outnumber the cones and these latter are smaller than in any other animals. In some Amphibians coloured oil globules are found in connexion with the cones, and sometimes two cones are joined, forming double or twin cones.

In Reptilia the eye is spherical and its anterior part is often protected by bony plates in the sclerotic (Lacertilia and Chelonia). The ciliary muscle is striated, and in most reptiles accommodation is effected by relaxing the ciliary ligament as in higher vertebrates, though in the snakes (Ophidia) the lens is shifted as it is in the lower forms. Many lizards have a vascular projection of the choroid into the vitreous, foreshadowing the pecten of birds and homologous with the processus falciformis of fishes. In the retina the rods are scarce or absent.

In birds the eye is tubular, especially in nocturnal and raptorial forms: this is due to a lengthening of the ciliary region, which is always protected by bony plates in the sclerotic. The pecten, already mentioned in lizards, is a pleated vascular projection from the optic disk towards the lens which in some cases it reaches. In Apteryx this structure disappears. In the retina the cones outnumber the rods, but are not as numerous as in the reptiles. The ciliary muscle is of the striped variety.

In the Mammalia the eye is largely enclosed in the orbit, and bony plates in the sclerotic are only found in the monotremes. The cornea is convex except in aquatic mammals, in which it is flattened. The lens is biconvex in diurnal mammals, but in nocturnal and aquatic it is spherical. There is no pecten, but the numerous hyaloid arteries which are found in the embryo represent it. The iris usually has a circular pupil, but in some ungulates and kangaroos it is a transverse slit. In the Cetacea this transverse opening is kidney-shaped, the hilum of the kidney being above. In many carnivores, especially nocturnal ones, the slit is vertical, and this form of opening seems adapted to a feeble light, for it is found in the owl, among birds. The tapetum lucidum is found in Ungulata, Cetacea and Carnivora. The ciliary muscle is unstriped. In the retina the rods are more numerous than the cones, while the macula lutea only appears in the Primates in connexion with binocular vision.

Among the accessory structures of the eye the retractor bulbi muscle is found in amphibians, reptiles, birds and many mammals; its nerve supply shows that it is probably a derivative of the external or posterior rectus. The nictitating membrane or third eyelid is well-developed in amphibians, reptiles, birds and some few sharks; it is less marked in

mammals, and in Man is only represented by the little *plica semilunaris*. When functional it is drawn across the eye by special muscles derived from the retractor bulbi, called the *bursalis* and *pyramidalis*. In connexion with the nictitating membrane the Harderian gland is developed, while the lachrymal gland secretes fluid for the other eyelids to spread over the conjunctiva. These two glands are specialized parts of a row of glands which in the Urodela (tailed amphibians) are situated along the lower eyelid; the outer or posterior part of this row becomes the lachrymal gland, which in higher vertebrates shifts from the lower to the upper eyelid, while the inner or anterior part becomes the Harderian gland. Below the amphibians glands are not necessary, as the water keeps the eye moist.

The lachrymal duct first appears in the tailed amphibians; in snakes and gecko lizards, however, it opens into the mouth.

For literature up to 1900 see R. Wiedersheim's *Vergleichende Anatomie der Wirbeltiere* (Jena, 1902). Later literature is noticed in the catalogue of the Physiological Series of the R. College of Surgeons of England Museum, vol. iii. (London, 1906).

(F. G. P.)

Eye Diseases.—The specially important diseases of the eye are those which temporarily or permanently interfere with sight. In considering the pathology of the eye it may be remembered that (1) it is a double organ, while (2) either eye may have its own trouble.

1. The two eyes act together, under normal conditions, for all practical purposes exactly as if there were but one eye placed in the middle of the face. All impressions made upon either retina, to the one side of a vertical line through the centre, the *fovea centralis*, before giving rise to conscious perception cause a stimulation of the same area in the brain. Impressions formed simultaneously, for instance, on the right side of the right retina and on corresponding areas of the right side of the left retina, are conveyed to the same spots in the right occipital lobe of the brain. Pathological processes, therefore, which are localized in the right or left occipital lobes, or along any part of the course of the fibres which pass from the right or left optic tracts to these "visual centres," cause defects in function of the right or left halves of the two retinae. *Hemianopia*, or half-blindness, arising from these pathological changes, is of very varying degrees of severity, according to the nature and extent of the particular lesion. The blind areas in the two fields of vision, corresponding to the outward projection of the paralysed retinal areas, are always symmetrical both in shape and degree. The central lesion may for instance be very small, but at the same time destructive to the nerve tissue. This will be revealed as a sector-shaped or insular symmetrical complete blindness in the fields of vision to the opposite side. Or a large central area, or an area comprising many or all of the nerve fibres which pass to the visual centre on one side, may be involved in a lesion which causes impairment of function, but no actual destruction of the nerve tissue. There is thus caused a symmetrical weakening of vision (*amblyopia*) in the opposite fields. In such cases the colour vision is so much more evidently affected than the sense of form that the condition has been called *hemiachromatopsia* or half-colour blindness. Hemianopia may be caused by haemorrhage, by embolism, by tumour growth which either directly involves the visual nerve elements or affects them by compression and by inflammation. Transitory hemianopia is rare and is no doubt most frequently of toxic origin.

The two eyes also act as if they were one in accommodating. It is impossible for the two eyes to accommodate simultaneously to different extents, so that where there is, as occasionally happens, a difference in focus between them, this difference remains the same for all distances for which they are adapted. In such cases, therefore, both eyes cannot ever be accurately adapted at the same time, though either may be alone. It often happens as a consequence that the one eye is used to receive the sharpest images of distant, and the other of near objects. Any pathological change which leads to an interference in the accommodating power of one eye alone must have its origin in a lesion which lies peripherally to the nucleus of the third cranial nerve. Such a lesion is usually one of the third nerve itself. Consequently, a unilateral accommodation paresis is almost invariably associated with pareses of some of the oculo-motor muscles. A bilateral accommodation paresis is not uncommon. It is due to a nuclear or more central cerebral disturbance. Unlike a hemianopia, which is mostly permanent, a double accommodation paresis is frequently transitory. It is often a post-diphtheritic condition, appearing alone or associated with other paresis.

Both eyes are also normally intimately associated in their movements. They move in response to a stimulus or a combination of stimuli, emanating from different centres of the brain, but one which is always equally distributed to the corresponding muscles in both

eyes, so that the two lines of fixation meet at the succession of points on which attention is directed. The movements are thus associated in the same direction, to the right or left, upwards or downwards, &c. In addition, owing to the space which separates the two eyes, convergent movements, caused by stimuli equally distributed between the two internal recti, are required for the fixation of nearer and nearer-lying objects. These movements would not be necessary in the case of a single eye. It would merely have to accommodate. The converging movements of the double eye occur in association with accommodation, and thus a close connexion becomes established between the stimuli to accommodation and convergence. All combinations of convergent and associated movements are constantly taking place normally, just as if a single centrally-placed eye were moved in all directions and altered its accommodation according to the distance, in any direction, of the object which is fixed.

Associated and convergent movements may be interfered with pathologically in different ways. Cerebral lesions may lead to their impairment or complete abolition, or they may give rise to involuntary spasmodic action, as the result of paralysing or irritating the centres from which the various co-ordinated impulses are controlled or emanate. Lesions which do not involve the centres may prevent the response to associated impulses in one eye alone by interfering with the functional activity of one or more of the nerves along which the stimuli are conveyed. Paralysis of oculo-motor nerves is thus a common cause of defects of association in the movements of the double eye. The great advantage of simultaneous binocular vision—viz. the appreciation of depth, or stereoscopic vision—is thus lost for some, or it may be all directions of fixation. Instead of seeing singly with two eyes, there is then double-vision (*diplopia*). This persists so long as the defect of association continues, or so long as the habit of mentally suppressing the image of the faultily-directed eye is not acquired.

In the absence of any nerve lesions, central or other, interfering with their associated movements, the eyes continue throughout life to respond equally to the stimuli which cause these movements, even when, owing to a visual defect of the one eye, binocular vision has become impossible. It is otherwise, however, with the proper co-ordination of convergent movements. These are primarily regulated by the unconscious desire for binocular vision, and more or less firmly associated with accommodation. When one eye becomes blind, or when binocular vision for other reasons is lost, the impulse is gradually, as it were, unlearnt. This is the cause of *divergent concomitant squint*. Under somewhat similar conditions a degree of convergence, which is in excess of the requirements of fixation, may be acquired from different causes. This gives rise to *convergent concomitant squint*.

For *Astigmatism*, &c., see the article VISION.

2. Taking each eye as a single organ, we find it to be subject to many diseases. In some cases both eyes may be affected in the same way, *e.g.* where the local disease is a manifestation of some general disturbance. Apart from the fibrous coat of the eye, the sclera, which is little prone to disease, and the external muscles and other adnexa, the eye may be looked upon as composed of two elements, (*a*) the dioptric media, and (*b*) the parts more or less directly connected with perception. Pathological conditions affecting either of these elements may interfere with sight.

The dioptric media, or the transparent portions which are concerned in the transmission of light to, and the formation of images upon, the retina, are the following: the *cornea*, the *aqueous humour*, the *crystalline lens* and the *vitreous humour*. Loss of transparency in any of these media leads to blurring of the retinal images of external objects. In addition to loss of transparency the cornea may have its curvature altered by pathological processes. This necessarily causes imperfection of sight. The crystalline lens, on the other hand, may be dislocated, and thus cause image distortion.

The Cornea.—The transparency of the cornea is mainly lost by imflammation (*keratitis*), which causes either an infiltration of its tissues with leucocytes, or a more focal, more destructive ulcerative process.

Inflammation of the cornea may be primary or secondary, *i.e.* the inflammatory changes met with in the corneal tissue may be directly connected with one or more foci of inflammation in the cornea itself or the focus or foci may be in some other part of the eye. Only the very superficial forms of primary keratitis, those confined to the epithelial layer, leave no permanent change; there is otherwise always a loss of tissue resulting from the inflammation and this loss is made up for by more or less densely intransparent connective tissue (*nebula*, *leucoma*). These according to their site and extent cause greater or less visual disturbance. Primary keratitis may be ulcerative or non-ulcerative, superficial or

deep, diffuse or circumscribed, vascularized or non-vascularized. It may be complicated by deeper inflammations of the eye such as iritis and cyclitis. In some cases the anterior chamber is invaded by pus (*hypopyon*). The healing of a corneal ulcer is characterized by the disappearance of pain where this has been a symptom and by the rounding off of its sharp margins as epithelium spreads over them from the surrounding healthy parts. Ulcers tend to extend either in depth or superficially, rarely in both manners at the same time. A deep ulcer leads to perforation with more or less serious consequences according to the extent of the perforation. Often an eye bears permanent traces of a perforation in adhesion of the iris to the back of a corneal scar or in changes in the lens capsule (capsular cataract). In other cases the ulcerated cornea may yield to pressure from within, which causes it to bulge forwards (*staphyloma*).

The principal causes of primary keratitis are traumata and infection from the conjunctiva. Traumata are most serious when the body causing the wound is not aseptic or when micro-organisms from some other source, often the conjunctiva and tear-sac, effect a lodgment before healing of the wound has sufficiently advanced. In infected cases a complication with iritis is not uncommon owing to the penetration of toxines into the anterior chamber.

Inflammations of the cornea are the most important diseases of the eye, because they are among the most frequent, because of the value of the cornea to vision and because much good can often be done by judicious treatment and much harm result from wrong interference and neglect. The treatment of primary keratitis must vary according to the cause. Generally speaking the aim should be to render the ulcerated portions as aseptic as possible without using applications which are apt to cause a great deal of irritation and thus interfere with healing. On this account it is important to be able to recognize when healing is taking place, for as soon as this is the case, rest, along with frequent irrigation of the conjunctiva with sterilized water at the body temperature, and occasionally mild antiseptic irrigation of the nasal mucous membrane is all that is required. It is a common and dangerous mistake to over treat.

Of local antiseptics which are of use may be mentioned the actual cautery, chlorine water, freshly prepared silver nitrate or protargol, and the yellow oxide of mercury. These different agents are of course not all equally applicable in any given case; it depends upon the severity as well as upon the nature of the inflammation which is the most suitable. For instance, the actual cautery is employed only in the case of the deeper septic or malignant ulcers, in which the destruction of tissue is already considerable and tending to spread further. Again the yellow oxide of mercury should only be used in the more superficial, strumous forms of inflammation. Many other substances are also in use, but need not here be referred to.

Secondary keratitis takes the form of an interstitial deposit of leucocytes between the layers of the cornea as well as often of vascularization, sometimes intense, from the deeper network of vessels (anterior ciliary) surrounding the cornea. The duration of a secondary keratitis is usually prolonged, often lasting many months. More or less complete restoration of transparency is the rule, however, eventually.

No local treatment is called for except the shading of the eyes and in most cases the use of a mydriatic to prevent synechiae when the iris is involved. Often it is advisable to do something for the general health. In young people there is probably nothing better than cod-liver oil and syrup of the iodide of iron. Inherited syphilis, tuberculous and other inflammations are the causes of secondary keratitis.

Neuro-paralytic Keratitis.—When the fifth nerve is paralysed there is a tendency for the cornea to become inflamed. Different forms of inflammation may then occur which all, besides anaesthesia, show a marked slowness in healing. The main cause of neuro-paralytic keratitis lies in the greater vulnerability of the cornea. The prognosis is necessarily bad. The treatment consists in as far as possible protecting the eye from external influences, by keeping it tied up, and by frequently irrigating with antiseptic lotions.

Certain non-inflammatory and degenerative changes are met with in the cornea. Of these may be mentioned *keratoconus* or conical cornea, in which, owing to some disturbance of vitality, the nature of which has not been discovered, the normal curvature of the cornea becomes altered to something more of a hyberboloid of revolution, with consequent impairment of vision: *arcus senilis*, a whitish opacity due to fatty degeneration, extending round the corneal margin, varying in thickness in different subjects and usually only met with in old people: *transverse calcareous film*, consisting of a finely punctiform opacity extending, in a tolerably uniformly wide band, occupying the zone of the cornea which is left uncovered when the lids are half closed.

Tumours of the cornea are not common. Those chiefly met with are dermoids, fibromata, sarcomata and epitheliomata.

Scleritis.—Inflammation of the sclera is confined to its anterior part which is covered by conjunctiva. Scleritis may occur in circumscribed patches or may be diffused in the shape of a belt round the cornea. The former is usually more superficial and uncomplicated, the latter deeper and complicated with corneal infiltration, irido-cyclitis and anterior choroiditis. Superficial scleritis or, as it is often called, *episcleritis*, is a long-continued disease which is associated with very varying degrees of discomfort. The chronic nature of the affection depends mainly upon the tendency that the inflammation has to recur in successive patches at different parts of the sclera. Often only one eye at a time is affected. Each patch lasts for a month or two and is succeeded by another after an interval of varying duration. Months or years may elapse between the attacks. The cicatricial site of a previous patch is rarely again attacked. The scleral infiltration causes a firm swelling, often sensitive to touch, over which the conjunctiva is freely movable. The overlying conjunctiva is always injected. The infiltration itself at the height of the process is densely vascularized. Seen through the conjunctiva its vessels have a darker, more purplish hue than the superficial ones. The swelling caused by the infiltration gradually subsides, leaving a cicatrix to which the overlying conjunctiva becomes adherent. The cicatrix has a slaty porcellanous-looking colour. Superficial scleritis occurs in both sexes with about equal frequency. No definite cause for the inflammation is known. The treatment on the whole is unsatisfactory. Burning down the nodules with the actual cautery, and subsequently a visit to such baths as Harrogate, Buxton, Homburg and Wiesbaden, may be recommended.

Deep scleritis with its attendant complications is altogether a more serious disease. Etiologically it is equally obscure. Both eyes are almost always attacked. It more generally occurs in young people, mostly in young women. Deep scleritis is more persistent and less subject to periods of intermission than episcleritis. The deeper and more wide-spread inflammatory infiltrations of the sclera lead eventually to weakening of that coat, and cause it to yield to the intra-ocular pressure. Vision suffers from extension of the infiltration to the cornea, or from iritis with its attendant synechiae, or from anterior choroiditis, and sometimes also from secondary glaucoma. The treatment is on the whole unsatisfactory. Iridectomy, especially if done early in the process, may be of use.

The Aqueous Humour.—Intransparency of the aqueous humour is always due to some exudation. This comes either from the iris or the ciliary processes, and may be blood, pus or fibrin. An exudation in this situation tends naturally to gravitate to the most dependent part, and, in the case of blood or pus, is known as *kyphaema* or *hypopyon*.

The Crystalline Lens Cataract.—Intransparency of the crystalline lens is technically known as *cataract*. Cataract may be idiopathic and uncomplicated, or traumatic, or secondary to disease in the deeper parts of the eye. The modified epithelial structure of which the lens is composed is always being added to throughout life. The older portions of the lens are consequently the more central. They are harder and less elastic. This arrangement seems to predispose to difficulties of nutrition. In many people, in the absence altogether of general or local disease, the transparency of the lens is lost owing to degeneration of the incompletely-nourished fibres. This idiopathic cataract mostly occurs in old people; hence the term *senile cataract*. So-called *senile* cataract is not, however, necessarily associated with any general senile changes. An idiopathic uncomplicated cataract is also met with as a congenital defect due to faulty development of the crystalline lens. A particular and not uncommon form of this kind of cataract, which may also develop during infancy, is *lamellar* or *zonular cataract*. This is a partial and stationary form of cataract in which, while the greater part of the lens retains its transparency, some of the lamellae are intransparent. Traumatic cataract occurs in two ways: by laceration or rupture of the lens capsule, or by nutritional changes consequent upon injuries to the deeper structures of the eye. The transparency of the lens is dependent upon the integrity of its capsule. Penetrating wounds of the eye involving the capsule, or rupture of the capsule from severe blows on the eye without perforation of its coats, are followed by rapidly developing cataract. Severe non-penetrating injuries, which do not cause rupture of the capsule, are sometimes followed, after a time, by slowly-progressing cataract. Secondary cataract is due to abnormalities in the nutrient matter supplied to the lens owing to disease of the ciliary body, choroid or retina. In some diseases, as diabetes, the altered general nutrition tells in the same way on the crystalline lens. Cataract is then rapidly formed. All cases of cataract in diabetes are not, however, necessarily true diabetic cataracts in the above sense. *Dislocations of the lens* are traumatic or congenital. In old-standing disease of the eye the suspensory ligament may yield in part, and thus lead to lens dislocation. The lens is practically always cataractous

before this takes place.

The Vitreous Humour.—The vitreous humour loses its transparency owing to exudation from the inflamed ciliary body or choroid. The exudation may be fibrinous or purulent; the latter only as a result of injuries by which foreign bodies or septic matter are introduced into the eye or in metastatic choroiditis. Blood may also be effused into the vitreous from rupture of retinal, ciliary or choroidal vessels. The pathological significance of the various effusions into the vitreous depends greatly upon the cause. In many cases effusion and absorption are constantly taking place simultaneously. The extent of possible clearing depends greatly upon the preponderance of the latter process.

Diseases of the Iris and Ciliary Body.—Inflammation of the iris, iritis, arises from different causes. The various idiopathic forms have relations to constitutional disturbances such as rheumatism, gout, albuminuria, tuberculosis, fevers, syphilis, gonorrhoea and others, or they may come from cold alone. Traumatic and infected cases are attributable to accidents, the presence of foreign bodies, operations, &c. In addition, iritis may be secondary to keratitis, scleritis or choroiditis. The beginning of an attack of inflammation of the iris is characterized by alterations in its colour due to hyperaemia and by circumcorneal injection. Later on, exudation takes place into the substance of the iris, causing thickening and also a loss of gloss of its surface. According to the nature and severity of the exudation there may be deposits formed on the back of the cornea, attachments between the iris and lens capsule (synechiae), or even gelatinous-looking coagulations or pus in the anterior chamber.

The subjective symptoms to which the inflammation may give rise are dread of light (*photophobia*), pain, generally most severe at night and often very great, also more or less impairment of sight. Along with the pain and photophobia there is lacrymation. An acute attack of iritis usually lasts about six weeks. Some cases become chronic and last much longer. Others are chronic from the first, and in one clinical type of iritis, in which the ciliary body is also at the same time affected, viz. *iritis serosa*, there is usually comparatively little injection of the eye or pain, so that the patient’s attention may only be directed to the eye owing to the gradual impairment of sight which results. In some cases, and more particularly in men, there is a tendency to the recurrence at longer or shorter intervals of attacks of iritis (*recurrent iritis*). In these cases, as well as in all cases of plastic iritis which have not been properly treated, serious consequences to sight are apt to follow from the binding down of the iris to the lens capsule and the occlusion of the pupil by exudation.

Inflammation of the ciliary body, *cyclitis*, is frequently associated with iritis. This association is probable in all cases where there are deposits on the posterior surface of the cornea. It is certain where there are changes in the intra-ocular tension. Often in cyclitis there is a very marked diminution in tension. Cyclitis is also present when the degree of visual disturbance is greater than can be accounted for by the visible changes in the pupil and anterior chamber. The exudation may, as in iritis, be serous, plastic or purulent. It passes from the two free surfaces of the ciliary body into the posterior aqueous, and into the vitreous, chambers. This produces, what is a constant sign of cyclitis, more or less intransparency of the vitreous humour. Where there has been excessive exudation into the vitreous, subsequent shrinking and liquefaction take place, leading to detachment of the retina and consequent blindness.

The treatment of iritis necessarily differs to some extent according to the cause. The general treatment applicable to all cases need only be here considered. What should be aimed at, at the time of the inflammation, is to put the eye as far as possible at rest, to prevent the formation of synechiae and alleviate the pain. An attempt should be made to get the pupil thoroughly dilated with atropine. The dilatation should be kept up as long as any circumcorneal injection lasts. If a case of iritis be left to itself or treated without the use of a mydriatic, posterior synechiae almost invariably form. Some fibrinous exudation may even organize into a membrane stretching across, and more or less completely occluding, the pupil. Synechiae, though not of themselves causing impairment of vision, increase the risk that the eye runs from subsequent attacks of iritis. It should however be remembered that as the main call for a mydriatic is to prevent synechiae, the *raison d’être* for its use no longer exists when, having been begun too late, the pupil cannot properly be dilated by it. Under these conditions it may even do harm. The eyes should also be kept shaded from the light by the use of a shade or neutral-tinted glasses. During an attack any use of the eyes for reading or sewing or work of any kind calling for accommodation must be prohibited. This applies equally to the case of inflammation in one eye alone and in both.

Pain is best relieved by hot fomentations, cocain, and in many cases the internal use of salicin or phenacetin. The treatment sometimes required for cases of old iritis is iridectomy.

The operation is called for in two different classes of cases. In the first place, to improve vision where the pupil is small, and to a great extent occluded, though the condition has not so far led to serious nutritive changes; and in the second place, with the object as well of preventing the complete destruction of vision which either the existing condition or the danger of recurrence of the inflammation has threatened. Iridectomy for iritis should be performed when the inflammation has entirely subsided. The portion of iris excised should be large. The operation is urgently called for where the condition of *iris bombans* exists.

Iris tumours, either simple or malignant, are of rare occurrence.

A frequent result of a severe blow on the eye is a separation of a portion of the iris from its peripheral attachment (*iridodialysis*). Of congenital anomalies the most commonly met with are coloboma and more or less persistence of the foetal pupillary membrane. The most serious form of irido-cyclitis is that which may follow penetrating wounds of the eye. Under certain conditions this leads to a similar inflammation in the other eye. This so-called *sympathetic ophthalmitis* is of a malignant type, causing destruction of the sympathizing eye.

The Retina.—Choroidal inflammations are generally patchy, various foci of inflammation being scattered over the choroid. These patches may in course of time become more or less confluent. The effect upon vision depends upon the extent to which the external or percipient elements of the retina become involved. It is especially serious when the more central portions of the retina, are thus affected (*choroido-retinitis centralis*).

A peculiar and grave pathological condition of the eye is what is known as *glaucoma*. A characteristic of this condition is increase of the intra-ocular tension, which has a deleterious effect on the optic nerve end and its ramifications in the retina. The cause of the rise of tension is partly congestive, partly mechanical. The effect of glaucoma, when untreated, is to cause ever-increasing loss of sight, although the time occupied by the process before it leads to complete blindness varies within such extraordinary wide limits as from a few hours to many years. The uveal tract may be the site of *sarcoma*.

The retina is subject to inflammation, to detachment from the choroid, to haemorrhages from the blood-vessels and to tumour. Retinal inflammation may primarily affect either the nerve elements or the connective tissue framework. The former is usually associated with some general disease such as albuminuria or diabetes and is bilateral. The tissue changes are oedema, the formation of exudative patches, and haemorrhage. Where the connective tissue elements are primarily affected, the condition is a slow one, similar to *sclerosis* of the central nervous system. The gradual blindness which this causes is due to compression of the retinal nerve elements by the connective tissue hyperplasia, which is always associated with characteristic changes in the disposition of the retinal pigment. This retinal sclerosis is consequently generally known as *retinitis pigmentosa*, a disease to which there is a hereditary predisposition. Besides occurring during inflammation, haemorrhages into the retina are met with in phlebitis of the central retinal vein, which is almost invariably unilateral, and in certain conditions of the blood, as pernicious anaemia, when they are always bilateral.

The optic nerve is subject to inflammation (optic neuritis) and atrophy. Double optic neuritis, affecting, however, only the intra-ocular ends of the nerves, is an almost constant accompaniment of brain tumour. Unilateral neuritis has a different causation, depending upon an inflammation, mainly perineuritic, of the nerve in the orbit. It is analogous to peripheral inflammation of other nerves, such as the third, fourth, sixth and seventh cranial nerves.

Diseases of the Conjunctiva.—These are the most frequent diseases of the eye with which the surgeon has to deal. They generally lead to more or less interference with the functional activity of the eye and often indeed to great impairment of vision owing to the tendency which there is for the cornea to become implicated.

Many different micro-organisms are of pathogenetic importance in connexion with the conjunctiva. Microbes exist in the normal conjunctival sac. These are mostly harmless, though it is usual to find at any rate a small proportion of others which are known to be pyogenetic. This fact is of great importance in connexion both with problems of etiology and the practical question of operations on the eye.

Hyperaemia.—When the conjunctiva becomes hyperaemic its colour is heightened and its transparency lessened. Sometimes too it becomes thickened and its surface altered in appearance. The often marked heightening of colour is due to the very superficial position of

the dilated vessels. This is specially the case with that part of the membrane which forms the transition fold between the palpebral and the ocular conjunctiva. Consequently it is there that the redness is most marked, while it is seen to diminish towards the cornea. An important diagnostic mark is thus furnished between purely conjunctival hyperaemia and what is called circumcorneal congestion, which is always an indication of more deep-seated vascular dilatation. It also differs materially from a scleral injection, in which there is a visible dilatation of the superficial scleral vessels.

When a conjunctival hyperaemia has existed for some time the papillae become swollen, and small blebs form on the surface of the membrane: sometimes too, lymph follicles begin to show. The enlargement and compression of adjacent papillae give rise to a velvety appearance of the surface.

Hyperaemia of the conjunctiva where not followed by inflammation causes more or less lacrymation but no alteration in the character of its secretion. The hyperaemia may be acute and transitory or chronic. Much depends upon the cause as well as upon the persistence of the irritation which sets it up.

Traumata, the presence of foreign bodies in the conjunctival sac, or the irritations of superficial chalky infarcts in the Meibomian ducts, cause more or less severe transitory congestion. Continued subjection to irritating particles such as flour, stones, dust, &c. , causes a more continued hyperaemia which is often circumscribed and less pronounced. Bad air in schools, barracks, workhouses, &c. , also causes a chronic hyperaemia in which it is common to find a follicular hyperplasia. Long exposure to too intense light, astigmatism and other ocular defects which cause asthenopia lead also to chronic hyperaemia. Anaemic individuals are often subject to discomfort from hyperaemia of this nature.

The treatment of conjunctival hyperaemia consists first in the removal of the cause when it can be discovered. Often this is difficult. In addition the application of hot sterilized water is useful and soothing.

Conjunctivitis.—When the conjunctiva is actually inflamed the congested membrane is brought into a condition of heightened secreting action. The secretions become more copious and more or less altered in character. A sufficiently practical though by no means sharply defined clinical division of cases of conjunctivitis is arrived at by taking into consideration the character of the secretion from the inflamed membrane and the visible tissue alterations which the membrane undergoes. The common varieties of conjunctivitis which may thus be distinguished are the following: (α) Catarrhal conjunctivitis, (β) Purulent conjunctivitis, (γ) Phlyctenular conjunctivitis, (δ) Granular conjunctivitis and (ε) Diphtheritic conjunctivitis.

However desirable a truly etiological classification might appear to be, it is doubtful whether such could satisfactorily be made. So much is certain at all events, that not only can identically the same clinical appearance result from the actions of quite different pathogenetic organisms, but that various concomitant circumstances may lead to very different clinical signs being set up by one and the same microbe. As regards *contagion* there is no doubt that the secretion in the case of a true conjunctivitis (*i.e.* not merely a hyperaemia) is always more or less contagious. The degree of virulence varies not only in different cases, but the effect of contagion from the same source may be different in different individuals. Healthy conjunctivae may thus react differently, not only as regards the degree of severity, but even according to different clinical types, when infected by secretion from the same source. There are no doubt different reasons for this, such as the stage at which the inflammation has arrived in the eye from which the secretion is derived, differences in the surroundings and in the susceptibility of the infected individuals, the presence of dormant microbes of a virulent type in the healthy conjunctiva which has been infected, &c. Many points in this connexion are very difficult to investigate and much remains to be elucidated. Contagion usually takes place directly and not through the air. Often in this way one eye is first affected and may in some cases, when sufficient care is afterwards taken, be the only one to suffer.

The treatment in all severer forms of conjunctivitis should be undertaken with the primary object in view of preventing any implication of the cornea.

Catarrhal conjunctivitis, which is characterized by an increased mucoid secretion accompanying the hyperaemia, is usually bilateral and may be either acute or chronic. Acute conjunctivitis lasts as a rule only for a week or two: the chronic type may persist, with or without occasional exacerbations, for years. The subjective symptoms vary in intensity with the severity of the inflammation. There is always more or less troublesome “burning” in the

eyes with a tired heavy feeling in the lids. This is aggravated by reading, which is most distressing in a close or smoky atmosphere and by artificial light. In acute cases, indeed, reading is altogether impossible. In all cases of catarrhal conjunctivitis the symptoms are also more marked if the eyes have been tied up, even though this may produce a temporary relief.

A curious variety of acute catarrhal conjunctivitis, in which the hyperaemia and lacrymation are the predominant features, is the so-called *hay-fever*. In this condition the mucous membrane of the nose and throat are similarly affected, and there is at the same time more or less constitutional disturbance. Hay-fever is due to irritation from the pollen of many plants, but principally from that of the different grasses. Some people are so susceptible to it that they invariably suffer every year during the early summer months. Here it is difficult to remove the cause, but many cases can be cured and almost all are alleviated be means of a special antitoxin applied locally.

Other ectogenetic causes of catarrhal conjunctivitis which have been studied are mostly microbic. Of these the most common are the Morax-Axenfeld and the Koch-Weeks conjunctivitis.

The Morax-Axenfeld bacillus sets up a conjunctivitis which affects individuals of all ages and conditions and which is contagious. The inflammation is usually chronic, at most subacute. It is often sufficiently characteristic to be recognized without a microscopical examination of the secretions. In typical cases the lid margin, palpebral conjunctiva, and it may be a patch of ocular conjunctiva at the outer or inner angle are alone hyperaemic: the secretion is not copious and is mostly found as a greyish coagulum lying at the inner lid-margin. The subjective symptoms are usually slight. Complications with other varieties of catarrhal conjunctivitis are not uncommon. This mild form of conjunctivitis generally lasts for many months, subject to more or less complete disappearance followed by recurrences. It can be rapidly cured by the use of an oxide of zinc ointment, which should be continued for some time after the appearances have altogether passed off.

The conjunctivitis caused by the Koch-Weeks microbe is still more common. It is a more acute type, affects mostly children, and is very contagious and often epidemic. Here the hyperaemia involves both the ocular and the palpebral conjunctiva, and usually there is considerable swelling of the lids and a copious secretion. Both eyes are always affected. Occasionally the engorged conjunctival vessels give way, causing numerous small extravasations (ecchymoses). Complications with phlyctenulae (*vide infra*) are common in children. The acute symptoms last for a week or ten days, after which the course is more chronic. Treatment with nitrate of silver in solution is generally satisfactory. Other less frequent microbic causes of catarrhal conjunctivitis yield to the same treatment.

A form of *epidemic muco-purulent conjunctivitis* is not uncommon, in which the swelling of the conjunctival folds and lids is much more marked and the secretions copious. It is less amenable to treatment and also apt to be complicated by corneal ulceration. The microbe which gives rise to this condition has not been definitely established. This inflammation is also known as *school ophthalmia*. This is extremely contagious, so that isolation of cases becomes necessary. The treatment with weak solutions of sub-acetate of lead during the acute stage, provided there be no corneal complication, and subsequently with a weak solution of tannic acid, may be recommended.

Purulent Conjunctivitis.—Some of the severer forms of catarrhal conjunctivitis are accompanied not only by a good deal of swelling of both conjunctiva and lids but also by a decidedly muco-purulent secretion. Nevertheless there is a sufficiently sharply-defined clinical difference between the catarrhal and purulent types of inflammation. In purulent conjunctivitis the oedema of the lids is always marked, often excessive, the hyperaemia of the whole conjunctiva is intense: the membrane is also infiltrated and swollen (chemosis), the papillae enlarged and the secretion almost wholly purulent. Although this variety of conjunctivitis is principally due to infection by gonococci, other microbes, which more frequently set up a catarrhal type, may lead to the purulent form.

All forms are contagious, and transference of the secretion to other eyes usually sets up the same type of severe inflammation. The way in which infection mostly takes place is by direct transference by means of the hands, towels, &c. , of secretions containing gonococci either from the eye or from some other mucous membrane. The poison may also sometimes be carried by flies. The dried secretion loses its virulence.

In new-born children (*ophthalmia neonatorum*) infection takes place from the maternal passages during birth. Notwithstanding the great changes which occur during the progress

of a purulent conjunctivitis, there is on recovery a complete *restitutio ad integrum* so far as the conjunctiva is concerned. Owing to the tendency to severe ulceration of the cornea, more or less serious destructions of that membrane, and consequently more or less interference with sight, may result before the inflammation has passed off. This is a special danger in the case of adults. For this reason when only one eye is affected the first point to be attended to in the treatment is to secure the second eye from contagion by efficient occlusion. The appliance known as Buller's shield, a watch-glass strapped down by plaster, is the best for this purpose. It not only admits of the patient seeing with the sound eye, but allows the other to remain under direct observation. The treatment otherwise consists in frequent removal of the secretions from the affected eye, and the use of nitrate of silver solution as a bactericide applied directly to the conjunctival surface; sometimes it is necessary to cut away the chemotic conjunctiva immediately surrounding the cornea. When the cornea has become affected efforts may be made with the thermo-cautery or otherwise to limit the area of destruction and thus admit of something being done to improve the vision after all inflammation has subsided. The greatest cleanliness as well as proper antiseptic precautions should of course be observed by every one in any way connected with the treatment of such cases.

Phlyctenular conjunctivitis is an acute inflammation of the ocular conjunctiva, in which little blebs or phlyctenules form, more particularly in the vicinity of the corneal margin, as well as on the epithelial continuation of the conjunctiva which covers the cornea. The inflammation is characterized by being distributed in little circumscribed foci and not diffused as in all other forms of conjunctivitis. In it the conjunctival secretion is not altered, unless there should exist at the same time a complication with some other form of conjunctivitis. This condition is most frequent in children, particularly such as are ill-nourished or are recovering from some illness, *e.g.* measles. The susceptibility occurs in fact mainly where there exists what used to be called a "strumous" diathesis. In many cases, therefore, there is some kind of tubercular basis for the manifestations. This basis has to do with the susceptibility only, at all events to begin with. The local changes are not tuberculous; their exact origin has not been clearly established. They are in all probability produced by staphylococci.

Many children suffering from phlyctenular conjunctivitis get after a short time an eczematous excoriation of the skin of the nostrils. This excoriated, scabby area contains crowds of staphylococci which find a nidus here, where the copious tear-flow down the nostrils has excoriated and irritated the skin. Lacrymation is indeed a very common concomitant of phlyctenular conjunctivitis. Another frequently distressing symptom is a pronounced dread of light (*photophobia*), which often leads to convulsive and very persistent closing of the lids (*blepharospasm*). Indeed the relief of the photophobia is often the most important point to be considered in the treatment of phlyctenular conjunctivitis. The photophobia may be very severe when the local changes are slight. The eyes should be shaded but not bandaged. Cocain may be freely used. The best local application is the yellow oxide of mercury used as an ointment.

Phlyctenular conjunctivitis, and the corneal complications with which it is so often associated, constitute a large proportion (from ¼ to ⅓) of all eye affections with which the surgeon has to deal.

Granular Conjunctivitis.—This disease, which also goes by the name of *trachoma*, is characterized by an inflammatory infiltration of the adenoid tissue of the conjunctiva. The inflammation is accompanied by the formation of so-called *granules*, and at the same time by a hyperplasia of the papillae. The changes further lead in the course of time to cicatricial transformations, so that a gradual and progressive atrophy of the conjunctiva results. The disease takes its origin most frequently in the conjunctival fold of the upper lid, but eventually as a rule involves the corna and the deeper tissues of the lid, particularly the tarsus.

The etiology of trachoma is unknown. Though a perfectly distinctive affection when fully established, the differential diagnosis from other forms of conjunctivitis, particularly those associated with much follicular enlargement or which have begun as purulent inflammation, may be difficult. Trachoma is mostly chronic. When occurring in an acute form it is more amenable to treatment and less likely to end in cicatricial changes. Fully half the cases of trachoma which occur are complicated by *pannus*, which is the name given to the affection when it has spread to the cornea. Pannus is a superficial vascularized infiltration of the cornea. The veiling which it produces causes more or less defect of sight.

Various methods of treatment are in use for trachoma. Expression by means of roller-

forceps or repeated grattage are amongst the more effective means of surgical treatment, while local applications of copper sulphate or of alum are certainly useful in suitable cases.

Diphtheritic conjunctivitis is characterized by an infiltration into the conjunctival tissues which, owing to great coagulability, rapidly interferes with the nutrition of the invaded area and thus leads to necrosis of the diphtheritic membrane. Conjunctival diphtheria may or may not be associated with diphtheria of the throat. It is essentially a disease of early childhood, not more than 10% of all cases occurring after the age of four. The cornea is exposed to great risk, more particularly during the first few days, and may be lost by necrosis. Subsequent ulceration is not uncommon, but may often be arrested before complete destruction has taken place. The disease is generally confined to one eye, and complicated by swelling of the preauricular glands of that side. It may prove fatal. In true conjunctival diphtheria the exciting cause is the Klebs-Löffler bacillus. The inflammation occurs in very varying degrees of severity. The secretion is at first thin and scant, afterwards purulent and more copious. In severe cases there is great chemosis with much tense swelling of the lids, which are often of an ashy-grey colour. A streptococcus infection produces somewhat similar and often quite as disastrous results.

The treatment must be both general with antitoxin and local with antiseptics. Of rarer forms of conjunctivitis may be mentioned Parinaud's conjunctivitis and the so-called spring catarrh.

Non-inflammatory Conjunctival Affections.—These are of less importance than conjunctivitis, either on account of their comparative infrequency or because of their harmlessness. The following conditions may be shortly referred to.

Amyloid degeneration, in which waxy-looking masses grow from the palpebral conjunctiva of both lids, often attaining very considerable dimensions. The condition is not uncommon in China and elsewhere in the East.

Essential Shrinking of the Conjunctiva.—This is the result of pemphigus, in which the disease has attacked the conjunctiva and led to its atrophy.

Pterygium is a hypertrophic thickening of the conjunctiva of triangular shape firmly attached by its apex to the superficial layers of the cornea. It is a common condition in warm climates owing to exposure to sun and dust, and often calls for operative interference.

Tumours of the Conjunctiva.—These may be malignant or benign, also syphilitic and tubercular.

(G. A. Be.)

---

1 Some embryologists regard the vitreous body as formed from the ectoderm (see Quain's *Anatomy*, vol. i., 1908).

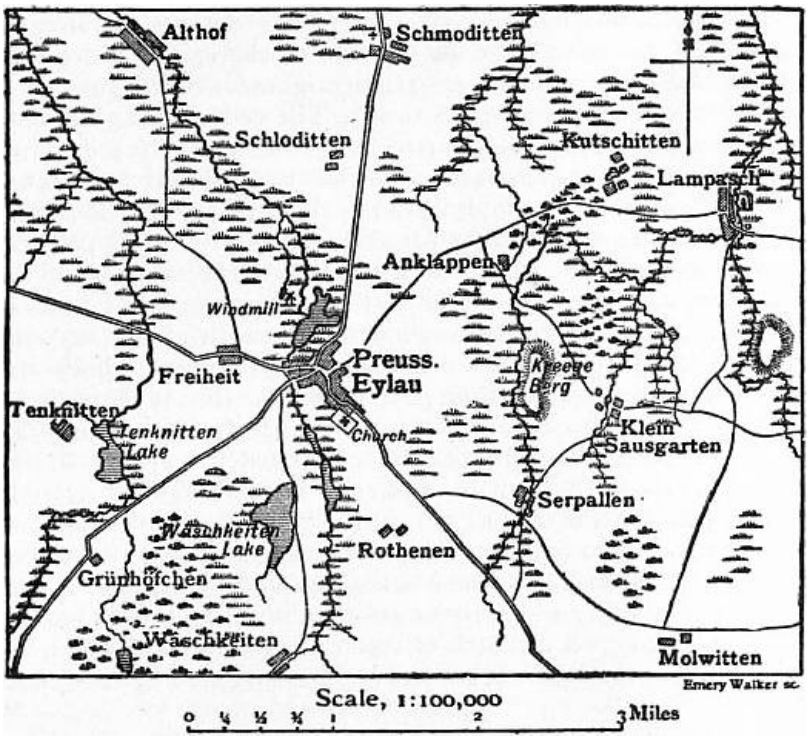
EYEMOUTH, a police burgh of Berwickshire, Scotland. Pop. (1901) 2436. It is situated at the mouth of the Eye, 7½ m. N.N.W. of Berwick-on-Tweed by the North British railway via Burnmouth. Its public buildings are the town hall, library and masonic hall. The main industry is the fishing and allied trades. The harbour was enlarged in 1887, and the bay is easily accessible and affords good anchorage. Owing to the rugged character of the coast and its numerous ravines and caves the whole district was once infested with smugglers. The promontory of St Abb's Head is 3 m. to the N.W.

EYLAU (*Preussisch-Eylau*), a town of Germany, in east Prussia, on the Pasmar, 23 m. S. by E. of Königsberg by rail on the line Pillau-Prostken. It has an Evangelical church, a teachers' seminary, a hospital, foundries and saw mills. Pop. 3200. Eylau was founded in 1336 by Arnolf von Eilenstein, a knight of the Teutonic Order. It is famous as the scene of a battle between the army of Napoleon and the Russians and Prussians commanded by General Bennigsen, fought on the 8th of February 1807.

The battle was preceded by a severe general engagement on the 7th. The head of Napoleon's column (cavalry and infantry), advancing from the south-west, found itself opposed at the outlet of the Grünhöfchen defile by a strong Russian rearguard which held the (frozen) lakes on either side of the Eylau road, and attacked at once, dislodging the enemy after a sharp conflict. The French turned both wings of the enemy, and Bagration, who commanded the Russian rearguard, retired through Eylau to the main army, which was now arrayed for battle east of Eylau. Barclay de Tolly made a strenuous resistance in Eylau itself, and in the churchyard, and these localities changed hands several times before remaining finally in possession of the French. It is very doubtful whether Napoleon actually ordered this attack upon Eylau, and it is suggested that the French soldiers were encouraged to a premature assault by the hope of obtaining quarters in the village. There is, however, no reason to suppose that this attack was prejudicial to Napoleon's chance of success, for his own army was intended to pin the enemy in front, while the outlying "masses of manoeuvre" closed upon his flanks and rear (see Napoleonic Campaigns). In this case the vigour of the "general advanced guard" was superfluous, for Bennigsen stood to fight of his own free will.

The foremost line of the French bivouacs extended, from Rothenen to Freiheit, but a large proportion of the army spent the night in quarters farther back. The Russian army on the other hand spent the night bivouacked in order of battle, the right at Schloditten and the left at Serpallen. The cold was extreme, 2° F. being registered in the early morning, and food was scarce in both armies. The ground was covered at the time of battle with deep snow, and all the lakes and marshes were frozen, so that troops of all arms could pass everywhere, so far as the snow permitted. Two of Napoleon's corps (Davout and Ney) were still absent, and Ney did not receive his orders until the morning of the 8th. His task was to descend upon the Russian right, and also to prevent a Prussian corps under Lestocq from coming on to the battlefield. Davout's corps advancing from the south-east on Mollwitten was destined for the attack of Bennigsen's left wing about Serpallen and Klein Sausgarten. In the meantime Napoleon with his forces at and about Eylau made the preparations for the frontal attack. His infantry extended from the windmill, through Eylau, to Rothenen, and the artillery was deployed along the whole front; behind each infantry corps and on the wings stood the cavalry. The Guard was in second line south of Eylau, and an army reserve stood near the Waschkeiten lake. Bennigsen's army was drawn up in line from Schloditten to Klein Sausgarten, the front likewise covered by guns, in which arm he was numerically much superior. A detachment occupied Serpallen.

The battle opened in a dense snowstorm. About 8 A.M. Bennigsen's guns opened fire on 101
Eylau, and after a fierce but undecided artillery fight the French delivered an infantry attack from Eylau. This was repulsed with heavy losses, and the Russians advanced towards the windmill in force. Thereupon Napoleon ordered his centre, the VII. corps of Augéreau to move forward from the church against the Russian front, the division of St Hilaire on Augéreau's right participating in the attack. If we conceive of this first stage of the battle as the action of the "general advanced guard," Augéreau must be held to have overdone his part. The VII. corps advanced in dense masses, but in the fierce snowstorm lost its direction. St Hilaire attacked directly and unsupported; Augéreau's corps was still less fortunate. Crossing obliquely the front of the Russian line, as if making for Schloditten, it came under a *feu d'enfer* and was practically annihilated. In the confusion the Russian cavalry charged with the utmost fury downhill and with the wind behind them. Three thousand men only out of about fourteen thousand appeared at the evening parade of the corps. The rest were killed, wounded, prisoners or dispersed. The marshal and every senior officer was amongst the killed and wounded, and one regiment, the 14th of the Line, cut off in the midst of the Russians and refusing to surrender, fell almost to a man. The Russian counterstroke penetrated into Eylau itself and Napoleon himself was in serious danger. With the utmost coolness, however, he judged the pace of the Russian advance and ordered up a battalion of the Guard at the exact moment required. In the streets of Eylau the Guard had the Russians at their mercy, and few escaped. Still the situation for the French was desperate and the battle had to be maintained at all costs. Napoleon now sent forward the cavalry along the whole line. In the centre the charge was led by Murat and Bessières, and the Russian horsemen were swept off the field. The Cuirassiers under D'Hautpoult charged through the Russian guns, broke through the first line of infantry and then through the second, penetrating to the woods of Anklappen.



The shock of a second wave of cavalry broke the lines again, and though in the final retirement the exhausted troopers lost terribly, they had achieved their object. The wreck of Augéreau's and other divisions had been reformed, the Guard brought up into first line, and, above all, Davout's leading troops had occupied Serpallen. Thence, with his left in touch with Napoleon's right (St Hilaire), and his right extending gradually towards Klein Sausgarten, the marshal pressed steadily upon the Russian left, rolling it up before him, until his right had reached Kutschitten and his centre Anklappen. By that time the troops under Napoleon's immediate command, pivoting their left on Eylau church, had wheeled gradually inward until the general line extended from the church to Kutschitten. The Russian army was being driven westward, when the advance of Lestocq gave them fresh steadiness. The Prussian corps had been fighting a continuous flank-guard action against Marshal Ney to the north-west of Althof, and Lestocq had finally succeeded in disengaging his main body, Ney being held up at Althof by a small rearguard, while the Prussians, gathering as they went the fugitives of the Russian army, hastened to oppose Davout. The impetus of these fresh troops led by Lestocq and his staff-officer Scharnhorst was such as to check even the famous divisions of Davout's corps which had won the battle of Auerstädt single-handed. The French were now gradually forced back until their right was again at Sausgarten and their centre on the Kreege Berg.

Both sides were now utterly exhausted, for the Prussians also had been marching and fighting all day against Ney. The battle died away at nightfall, Ney's corps being unable effectively to intervene owing to the steadiness of the Prussian detachment left to oppose him, and the extreme difficulty of the roads. A severe conflict between the Russian extreme right and Ney's corps which at last appeared on the field at Schloditten ended the battle. Bennigsen retreated during the night through Schmoditten, Lestocq through Kutschitten. The numbers engaged in the first stage of the battle may be taken as—Napoleon, 50,000, Bennigsen, 67,000, to which later were added on the one side Ney and Davout, 29,000, on the other Lestocq, 7000. The losses were roughly, 15,000 men to the French, 18,000 to the Allies, or 21 and 27% respectively of the troops actually engaged. The French lost 5 eagles and 7 other colours, the Russians 16 colours and 24 guns..

EYRA (*Felis eyra*), a South American wild cat, of weasel-like build, and uniform coloration, varying in different individuals from reddish-yellow to chestnut. It is found in Brazil, Guiana and Paraguay, and extends its range to the Rio del Norte, but is rare north of the isthmus of Panama. Little is known of its habits in a wild state, beyond the fact that it is a forest-

dweller, active in movement and fierce in disposition. Several have been exhibited in the London Zoological Gardens, and some have grown gentle in captivity. Don Felix de Azara wrote of one which he kept on a chain that it was “as gentle and playful as any kitten could be.” The name is sometimes applied to the jaguarondi.

EYRE, EDWARD JOHN (1815-1901), British colonial governor, the son of a Yorkshire clergyman, was born on the 5th of August 1815. He was intended for the army, but delays having arisen in producing a commission, he went out to New South Wales, where he engaged in the difficult but very necessary undertaking of transporting stock westward to the new colony of South Australia, then in great distress, and where he became magistrate and protector of the aborigines, whose interests he warmly advocated. Already experienced as an Australian traveller, he undertook the most extensive and difficult journeys in the desert country north and west of Adelaide, and after encountering the greatest hardships, proved the possibility of land communication between South and West Australia. In 1845 he returned to England and published the narrative of his travels. In 1846 he was appointed lieutenant-governor of New Zealand, where he served under Sir George Grey. After successively governing St Vincent and Antigua, he was in 1862 appointed acting-governor of Jamaica and in 1864 governor. In October 1865 a negro insurrection broke out and was repressed with laudable vigour, but the unquestionable severity and alleged illegality of Eyre’s subsequent proceedings raised a storm at home which induced the government to suspend him and to despatch a special commission of investigation, the effect of whose inquiries, declared by his successor, Sir John Peter Grant, to have been “admirably conducted,” was that he should not be reinstated in his office. The government, nevertheless, saw nothing in Eyre’s conduct to justify legal proceedings; indictments preferred by amateur prosecutors at home against him and military officers who had acted under his direction, resulted in failure, and he retired upon the pension of a colonial governor. As an explorer Eyre must be classed in the highest rank, but opinions are always likely to differ as to his action in the Jamaica rebellion. He died on the 30th of November 1901.

EYRE, SIR JAMES (1734-1799), English judge, was the son of the Rev. Thomas Eyre, of Wells, Somerset. He was educated at Winchester College and at St John’s College, Oxford, which, however, he left without taking a degree. He was called to the bar at Gray’s Inn in 1755, and commenced practice in the lord mayor’s and sheriffs’ courts, having become by purchase one of the four counsel to the corporation of London. He was appointed recorder of London in 1763. He was counsel for the plaintiff in the case of *Wilkes* v. *Wood*, and made a brilliant speech in condemnation of the execution of general search warrants. His refusal to voice the remonstrances of the corporation against the exclusion of Wilkes from parliament earned him the recognition of the ministry, and he was appointed a judge of the exchequer in 1772. From June 1792 to January 1793 he was chief commissioner of the great seal. In 1793 he was made chief justice of the common pleas, and presided over the trials of Horne Tooke, Thomas Crosfield and others, with great ability and impartiality. He died on the 1st of July 1799 and was buried at Ruscombe, Berkshire.

See Howell, *State Trials*, xix. (1154—1155); Foss, *Lives of the Judges*.

EYRIE, the alternative English form of the words Aerie or Aery, the lofty nest of a bird of prey, especially of an eagle, hence any lofty place of abode; the term is also used of the brood of the bird. The word derives from the Fr. *aire*, of the same meaning, which comes from the Lat. *area*, an open space, but was early connected with *aërius*, high in the air, airy,

a confusion that has affected the spelling of the word. The forms “eyrie” or “eyry” date from a 17th century attempt to derive the word from the Teutonic *ey*, an egg.

EZEKIEL (יחזקאל, “God strengthens” or “God is strong”; Sept. Ἰεζεκιήλ; Vulg. Ezechiel), son of Buzi, one of the most vigorous and impressive of the older Israelite thinkers. He was a priest of the Jerusalem temple, probably a member of the dominant house of Zadok, and doubtless had the literary training of the cultivated priesthood of the time, including acquaintance with the national historical, legal and ritual traditions and with the contemporary history and customs of neighbouring peoples. In the year 597 (being then, probably, not far from thirty years of age) he was carried off to Babylonia by Nebuchadrezzar with King Jehoiachin and a large body of nobles, military men and artisans, and there, it would seem, he spent the rest of his life. His prophecies are dated from this year (“our captivity,” xl. 1), except in i. 1, where the meaning of the date “thirtieth year” is obscure; it cannot refer to his age (which would be otherwise expressed in Hebrew), or to the reform of Josiah, 621 (which is not elsewhere employed as an epoch); possibly the reference is to the era of Nabopolassar (626 according to the Canon of Ptolemy), if chronological inexactness be supposed (34 or 33 years instead of 30), a supposition not at all improbable. That the word “thirtieth” is old, appears from the fact that a scribe has added a gloss (*vv.* 2, 3) to bring this statement into accord with the usual way of reckoning in the book: the “thirtieth” year, he explains, is the fifth year of the captivity of Jehoiachin. The exiles dwelt at Tell-abib (“Hill of the flood”), one of the mounds or ruins made by the great floods that devastated the country,[1] near the “river” Chebar (Kebar), probably a large canal not far south of the city of Babylon. Here they had their own lands, and some form of local government by elders, and appear to have been prosperous and contented; probably the only demand made on them by the Babylonian government was the payment of taxes.

Ezekiel was married (xxiv. 18), had his own house, and comported himself quietly as a Babylonian subject. But he was a profoundly interested observer of affairs at home and among the exiles: as patriot and ethical teacher he deplored alike the political blindness of the Jerusalem government (King Zedekiah revolted in 588) and the immorality and religious superficiality and apostasy of the people. He, like Jeremiah, was friendly to Nebuchadrezzar, regarding him as Yahweh’s instrument for the chastisement of the nation. Convinced that opposition to Babylonian rule was suicidal, and interpreting historical events, in the manner of the times, as indications of the temper of the deity, he held that the imminent political destruction of the nation was proof of Yahweh’s anger with the people on account of their moral and religious depravity; Jerusalem was hopelessly corrupt and must be destroyed (xxiv.). On the other hand, he was equally convinced that, as his predecessors had taught (Hos. xi. 8, 9; Isa. vii. 3 *al.*), Yahweh’s love for his people would not suffer them to perish utterly—a remnant would be saved, and this remnant he naturally found in the exiles in Babylonia, a little band plucked from the burning and kept safe in a foreign land till the wrath should have passed (xi. 14 ff.). This conception of the exiles as the kernel of the restored nation he further set forth in the great vision of ch. i., in which Yahweh is represented as leaving Jerusalem and coming to take up his abode among them in Babylonia for a time, intending, however, to return to his own city (xliii. 7).

This, then, was Ezekiel’s political creed—destruction of Jerusalem and its inhabitants, restoration of the exiles, and meantime submission to Babylon. His arraignment of the Judeans is violent, almost malignant (vi. xvi. *al.*). The well-meaning but weak king Zedekiah he denounces with bitter scorn as a perjured traitor (xvii). He does not discuss the possibility of successful resistance to the Chaldeans; he simply assumes that the attempt is foolish and wicked, and, like other prophets, he identifies his political programme with the will of God. Probably his judgment of the situation was correct; yet, in view of Sennacherib’s failure at Jerusalem in 701 and of the admitted strength of the city, the hope of the Jewish nobles could not be considered wholly unfounded, and in any case their patriotism (like that of the national party in the Roman siege) was not unworthy of admiration. The prophet’s predictions of disaster continued, according to the record, up to the investment of the city by the Chaldean army in 588 (i.-xxiv.); after the fall of the city (586) his tone changed to one of consolation (xxxiii.-xxxix.)—the destruction of the wicked mass accomplished, he turned to the task of reconstruction. He describes the safe and happy establishment of the people in their own land, and gives a sketch of a new constitution, of which the main point is the

absolute control of public religion by the priesthood (xl.-xlviii.).

The discourses of the first period (i.-xxiv.) do not confine themselves to political affairs, but contain much interesting ethical and religious material. The picture given of Jerusalemite morals is an appalling one. Society is described as honeycombed with crimes and vices; prophets, priests, princes and the people generally are said to practise unblushingly extortion, oppression, murder, falsehood, adultery (xxii.). This description is doubtless exaggerated. It may be assumed that the social corruption in Jerusalem was such as is usually found in wealthy communities, made bolder in this case, perhaps, by the political unrest and the weakness of the royal government under Zedekiah. No such charges are brought by the prophet against the exiles, in whose simple life, indeed, there was little or no opportunity for flagrant violation of law. Ezekiel's own moral code is that of the prophets, which insists on the practice of the fundamental civic virtues. He puts ritual offences, however, in the same category with offences against the moral law, and he does not distinguish between immorality and practices that are survivals of old recognized customs: in ch. xxii. he mentions "eating with the blood"[2] along with murder, and failure to observe ritual regulations along with oppression of the fatherless and the widow; the old customary law permitted marriage with a half-sister (father's daughter), with a daughter-in-law, and with a father's wife (Gen. xx. 12, xxxviii. 26; 2 Sam. xvi. 21, 22), but the more refined feeling of the later time frowned on the custom, and Ezekiel treats it as adultery.[3] 103
However, notwithstanding the insistence on ritual, natural in a priest, his moral standard is high; following the prescription of Ex. xxii. 21 [20] he regards oppression of resident aliens (a class that had not then received full civil rights) as a crime (xxii. 7), and in his new constitution (xlvii. 22, 23) gives them equal rights with the homeborn. His strongest denunciation is directed against the religious practices of the time in Judea—the worship of the Canaanite local deities (the Baals), the Phoenician Tammuz, and the sun and other Babylonian and Assyrian gods (vi., viii., xvi., xxiii.); he maintained vigorously the prophetic struggle for the sole worship of Yahweh. Probably he believed in the existence of other gods, though he does not express himself clearly on this point; in any case he held that the worship of other deities was destructive to Israel. His conception of Yahweh shows a mingling of the high and the low. On the one hand, he regards him as supreme in power, controlling the destinies of Babylonia and Egypt as well as those of Israel, and as inflexibly just in dealing with ordinary offences against morality. But he conceives of him, on the other hand, as limited locally and morally—as having his special abode in. the Jerusalem temple, or elsewhere in the midst of the Israelite people, and as dealing with other nations solely in the interests of Israel. The bitter invectives against Ammon, Moab, Edom, Philistia, Tyre, Sidon and Egypt, put into Yahweh's mouth, are based wholly on the fact that these peoples are regarded as hostile and hurtful to Israel; Babylonia, though nowise superior to Egypt morally, is favoured and applauded because it is believed to be the instrument for securing ultimately the prosperity of Yahweh's people. The administration of the affairs of the world by the God of Israel is represented, in a word, as determined not by ethical considerations but by personal preferences. There is no hint in Ezekiel's writings of the grandiose conception of Isa. xl.-lv., that Israel's mission is to give the knowledge of religious truth to the other nations of the world; he goes so far as to say that Yahweh's object in restoring the fortunes of Israel is to establish his reputation among the nations as a powerful deity (xxxvi. 20-23, xxxvii. 28, xxxix. 23). The prophet regards Yahweh's administrative control as immediate: he introduces no angels or other subordinate supernatural agents—the cherubs and the "men" of ix. 2 and xl. 3 are merely imaginative symbols or representations of divine activity. His high conception of God's transcendence, it may be supposed, led him to ignore intermediary agencies, which are common in the popular literature, and later, under the influence of this same conception of transcendence, are freely employed.

The relations between the writings of Ezekiel and those of Jeremiah is not clear. They have so much in common that they must have drawn from the same current bodies of thought, or there must have been borrowing in one direction or the other. In one point, however,—the attitude toward the ritual—the two men differ radically. The finer mind of the nation, represented mainly by the prophets from Amos onward, had denounced unsparingly the superficial non-moral popular cult. The struggle between ethical religion and the current worship became acute toward the end of the 7th century. There were two possible solutions of the difficulty. The ritual books of our Pentateuch were not then in existence, and the sacrificial cult might be treated with contempt as not authoritative. This is the course taken by Jeremiah, who says boldly that God requires only obedience (Jer. vii. 21 ff.). On the other hand the better party among the priests, believing the ritual to be necessary, might undertake to moralize it; of such a movement, begun by Deuteronomy, Ezekiel is the most eminent representative. Priest and prophet, he sought to unify the national religious

consciousness by preserving the sacrificial cult, discarding its abuses and vitalizing it ethically. The event showed that he judged the situation rightly—the religious scheme announced by him, though not accepted in all its details, became the dominant policy of the later time, and he has been justly called "the father of Judaism." He speaks as a legislator, citing no authority; but he formulates, doubtless, the ideas and perhaps the practices of the Jerusalem priesthood. His ritual code (xliii.-xlvi.), which in elaborateness stands midway between that of Deuteronomy and that of the middle books of the Pentateuch (resembling most nearly the code of Lev. xvii.-xxvi.) shows good judgment. Its most noteworthy features are two. Certain priests of idolatrous Judean shrines (distinguished by him as "Levites") he deprives of priestly functions, degrading them to the rank of temple menials; and he takes from the civil ruler all authority over public religion, permitting him merely to furnish material for sacrifices. He is, however, much more than a ritual reformer. He is the first to express clearly the conception of a sacred nation, isolated by its religion from all others, the guardian of divine law and the abode of divine majesty. This kingdom of God he conceives of as moral: Yahweh is to put his own spirit into the people,[4] creating in them a disposition to obey his commandments, which are moral as well as ritual (xxxvi. 26, 27). The conception of a sacred nation controlled the whole succeeding Jewish development; if it was narrow in its exclusive regard for Israel, its intensity saved the Jewish religion to the world.

Text and Authorship.—The Hebrew text of the book of Ezekiel is not in good condition—it is full of scribal inaccuracies and additions. Many of the errors may be corrected with the aid of the Septuagint (*e.g.* the 430—390 + 40—of iv. 5, 6 is to be changed to 190), and none of them affect the general thought. The substantial genuineness of the discourses is now accepted by the great body of critics. The Talmudic tradition (*Baba Bathra* 14*b*) that the men of the Great Synagogue "wrote" Ezekiel, may refer to editorial work by later scholars.[5] There is no validity in the objections of Zunz (*Gottesdienstl. Vortr.*) that the specific prediction concerning Zedekiah (xii. 12 f.) is non-Prophetic, and that the drawing-up of a new constitution soon after the destruction of the city and the mention of Noah, Daniel, Job and Persia are improbable. The prediction in question was doubtless added by Ezekiel after the event; the code belongs precisely in his time, and the constitution was natural for a priest; Noah, Daniel and Job are old legendary Hebrew figures; and it is not probable that the prophet's "Paras" is our "Persia." Havet's contention (in *La Modernité des prophètes*) that Gog represents the Parthians (40 B.C.) has little or nothing in its support. There are additions made *post eventum*, as in the case mentioned above and in xxix. 17-20, and the description of the commerce of Tyre (xxvii. 9*b*-25*a*), which interrupts the comparison of the city to a ship, looks like an insertion whether by the prophet or by some other; but there is no good reason to doubt that the book is substantially the work of Ezekiel. Ezekiel's style is generally impetuous and vigorous, somewhat smoother in the consolatory discourses (xxxiv., xxxvi., xxxvii.); he produces a great effect by the cumulation of details, and is a master of invective; he is fond of symbolic pictures, proverbs and allegories; his "visions" are elaborate literary productions, his prophecies show less spontaneity than those of any preceding prophet (he receives his revelations in the form of a book, ii. 9), and in their present shape were hardly pronounced in public—a fact that seems to be hinted at in the statement that he was "dumb" till the fall of Jerusalem (iii. 26, xxxiii. 22); in private interviews the people did not take him seriously (xxxiii. 30-33). His book was accepted early as part of the sacred literature: Ben-Sira (*c.* 180 B.C.) mentions him along with Isaiah and Jeremiah (Ecclus. xlix. 8); he is not quoted directly in the New Testament, but his imagery is employed largely in the Apocalypse and elsewhere. His divergencies from the Pentateuchal code gave rise to serious doubts, but, after prolonged study, the discrepancies were explained, and the book was finally canonized (Shab. 13*b*). According to Jerome (Preface to *Comm. on Ezek.*) the Jewish youth were forbidden to read the mysterious first chapter (called the *markaba*, the "chariot") and the concluding section (xl.-xlviii.) till they reached the age of thirty years.

The book divides itself naturally into three parts: the arraignment of Jerusalem (i.-xxiv.); denunciation of foreign enemies (xxv.-xxxii.); consolatory construction of the future (xxxiii.-xlviii.). The opening "vision" (i.), an elaborate symbolic picture, is of the nature of a general preface, and was composed probably late in the prophet's life. Out of the north (the Babylonian sacred mountain) comes a bright cloud, wherein appear four Creatures (formed on the model of Babylonian composite figures), each with four faces (man, lion, bull, eagle) and attended by a wheel; the wheels are full of eyes, and move straight forward, impelled by the spirit dwelling in the Creatures (the spirit of Yahweh). Supported on their heads is something like a crystalline firmament, above which is a form like a sapphire throne (cf. Ex. xxiv. 10), and on the throne a man-like form (Yahweh) surrounded by a rainbow brightness. The wheels symbolize divine omniscience and control, and the whole vision represents the coming of Yahweh to take up his abode among the exiles. The prophet then receives his call

(ii., iii.) in the shape of a roll of a book, which he is required to eat (an indication of the literary form now taken by prophecy). He is informed that the people to whom he is sent are rebellious and stiff-necked (this indicates his opinion of the people, and gives the keynote of the following discourses); he is appointed watchman to warn men when they sin, and is to be held responsible for the consequences if he fail in this duty. To this high conception of a preacher's function the prophet was faithful throughout his career. Next follow minatory discourses (iv.-vii.) predicting the siege and capture of Jerusalem-perhaps revised after the event. There are several symbolic acts descriptive of the siege. One of these (iv. 4 ff.) gives the duration of the national punishment in loose chronological reckoning: 40 years (a round number) for Judah, and 150 more (according to the corrected text) for Israel, the starting-point, probably, being the year 722, the date of the capture of Samaria; the procedure described in *v.* 8 is not to be understood literally. In vi. the idolatry of the nation is pictured in darkest colours. Next follows (viii.-xi.) a detailed description, in the form of a vision, of the sin of Jerusalem: within the temple-area elders and others are worshipping beast-forms, Tammuz and the sun (probably actual cults of the time); [6] men approach to defile the temple and slay the inhabitants of the city (ix.). In ch. x. the imagery of ch. i. reappears, and the Creatures are identified with the cherubs of Solomon's temple. This appears to be an independent form of the vision, which has been brought into connexion with that of i. by a harmonizing editor. There follow a symbolic prediction of the exile (xii.) and a denunciation of non-moral prophets and prophetesses (xiii.)—though Yahweh deceive a prophet, yet he and those who consult him will be punished; and so corrupt is the nation that the presence of a few eminently good men will not save it (xiv.).[7] After a comparison of Israel to a worthless wild vine (xv.) come two allegories, one portraying idolatrous Jerusalem as the unfaithful spouse of Yahweh (xvi.), the other describing the fate of Zedekiah (xvii.). The fine insistence on individual moral responsibility in xviii. (cf. Deut. xxiv. 16, Jer. xxxi. 29 f.), while it is a protest against a superficial current view, is not to be understood as a denial of all moral relations between successive generations. This latter question had not presented itself to the prophet's mind; his object was simply to correct the opinion of the people that their present misfortunes were due not to their own faults but to those of their predecessors. A more sympathetic attitude appears in two elegies (xix.), one on the kings Jehoahaz and Jehoiachin, the other on the nation. These are followed by a scathing sketch of Israel's religious career (xx. 1-26), in which, contrary to the view of earlier prophets, it is declared that the nation had always been disobedient. From this point to the end of xxiv. there is a mingling of threat and promise.[8] The allegory of xxiii. is similar to that of xvi., except that in the latter Samaria is relatively treated with favour, while in the former it (Aholah) is involved in the same condemnation as that of Jerusalem. At this point is introduced (xxv.-xxxii.) the series of discourses directed against foreign nations. The description of the king of Tyre (xxviii. 11-19) as dwelling in Eden, the garden of God, the sacred mountain, under the protection of the cherub, bears a curious resemblance to the narrative in Gen. ii., iii., of which, however, it seems to be independent, using different Babylonian material; the text is corrupt. The section dealing with Egypt is one of remarkable imaginative power and rhetorical vigour: the king of Egypt is compared to a magnificent cedar of Lebanon (in xxxi. 3 read: "there was a cedar in Lebanon") and to the dragon of the Nile, and the picture of his descent into Sheol is intensely tragic. Whether these discourses were all uttered between the investment of Jerusalem and its fall, or were here inserted by Ezekiel or by a scribe, it is not possible to say. In xxxiii. the function of the prophet as watchman is described at length (expansion of the description in iii.) and the news of the capture of the city is received. The following chapters (xxxiv.-xxxix.) are devoted to reconstruction: Edom, the detested enemy of Israel, is to be crushed; the nation, politically raised from the dead, with North and South united (xxxvii.), is to be established under a Davidide king; a final assault, made by Gog, is to be successfully met,[9] and then the people are to dwell in their own land in peace for ever; this Gog section is regarded by some as the beginning of Jewish apocalyptic writing. In the last section (xl.-xlviii.), put as a vision, the temple is to be rebuilt, in dimensions and arrangements a reproduction of the temple of Solomon (cf. I Kings vi., vii.), the sacrifices and festivals and the functions of priests and prince are prescribed, a stream issuing from under the temple is to vivify the Dead Sea and fertilize the land (this is meant literally), the land is divided into parallel strips and assigned to the tribes. The prophet's thought is summed up in the name of the city: *Yahweh Shammah*, "Yahweh is there," God dwelling for ever in the midst of his people.

LITERATURE.—For the older works see the *Introductions* of J.G. Carpzov (1757) and C.H.H. Wright (1890). For *legends*: Pseud.-Epiphan., *De vit. prophet.*; Benjamin of Tudela, Itin.; Hamburger, *Realencycl.*; *Jew. Encycl.* On the Hebrew text; C.H. Cornill, *Ezechiel* (1886) (very valuable for text and ancient versions); H. Graetz, *Emendationes* (1893).; C.H. Toy, "Text of Ezek." (1899) in Haupt's *Sacred Books of the Old Test.* Commentaries: F. Hitzig (1847); H. Ewald (1868); E. Reuss (French ed., 1876; Germ, ed., 1892); Currey (1876) in *Speaker's Comm.*; R. Smend (revision of Hitzig) (1880) in *Kurzgefasst. exeget. Handbuch*; A.B. Davidson (1882) in Cambr. *Bible for Schools*; J. Skinner (1895) in *Expos. Bible*; A.

Bertholet (1897) in Marti's *Kurz. Hand-Comm.*; C.H. Toy (1899) in Haupt's *Sacr. Bks.* (Eng. ed.); R. Kraetzschmar (1900) in W. Nowack's *Handkommentar*. See also Duhm, *Theol. d. Propheten* (1875); A. Kuenen, *Prophets and Prophecy* (1877); Gautier, *La Mission du prophète Ezéchiel* (1891); Montefiore, *Hibbert Lectures* (1892); A. Bertholet, *Der Verfassungsentwurf des Hesekiel* (1896); articles in Herzog-Hauck, *Realencykl.*; Hastings, *Bibl. Dict.*; Cheyne, *Encycl. Bibl., Jew. Encycl.*; F. Bleek, *Introd.* (Eng. tr., 1875), and Bleek-Wellhausen (Germ.) (1878); Wildeboer, *Letterkunde d. Oud. Verbonds* (1893), and Germ, transl., *Litt. d. Alt. Test.*; Perrot and Chipiez, *Hist. de l'art*, &c. , in which, however, the restoration of Ezekiel's temple (by Chipiez) is probably untrustworthy.

(C. H. T.*)

---

1 The Assyrian term *abubu* is used of the great primeval deluge (in the Gilgamesh epic), and also of the local floods common in the country.

2 So we must read (as Robertson Smith has pointed out) in xxii. 9 and xviii. 6, instead of "eating on the mountains."

3 The stricter marriage law is formulated in Lev. xviii. 8-15, xx. 11 ff.

4 Yahweh's spirit, thought of as Yahweh's vital principle, as man's spirit is man's vital principle, is to be breathed into them, as, in Gen. ii. 7, Yahweh breathes his own breath into the lifeless body. The spirit in the Old Testament is a refined material thing that may come or be poured out on men.

5 The "Great Synagogue" is semi-mythical.

6 In viii. 17 the unintelligible expression "they put the branch to their nose" is the rendering of a corrupt Hebrew text; a probable emendation is: "they are sending a stench to my nostrils."

7 The legendary figure of Daniel (xiv. 14) is later taken by the author of the book of Daniel as his hero.

8 For a reconstruction of the poem in xxi. 10, 11, see the English Ezekiel in Haupt's *Sacred Books*.

9 Gog probably represents a Scythian horde (though such an invasion never took place)—certainly not Alexander the Great, who would have been called "king of Greece," and would have been regarded not as an enemy but as a friend.

EZRA (from a Hebrew word meaning "help"), in the Bible, the famous scribe and priest at the time of the return of the Jews in the reign of the Persian king Artaxerxes I. (458 B.C.). His book and that of Nehemiah form one work (see EZRA AND NEHEMIAH, BOOKS OF), apart from which we have little trustworthy evidence as to his life. Even in the beginning of the 2nd century B.C., when Ben Sira praises notable figures of the exilic and post-exilic age (Zerubbabel, Jeshua and Nehemiah), Ezra is passed over (Ecclesiasticus xlix. 11-13), and he is not mentioned in a still later and somewhat fanciful description of Nehemiah's work (2 Macc. i. 18-36). Already well known as a scribe, Ezra's labours were magnified by subsequent tradition. He was regarded as the father of the scribes and the founder of the Great Synagogue. According to the apocryphal fourth book of Ezra (or 2 Esdras xiv.) he restored the law which had been lost, and rewrote all the sacred records (which had been destroyed) in addition to no fewer than seventy apocryphal works. The former theory recurs elsewhere in Jewish tradition, and may be associated with the representation in Ezra-Nehemiah which connects him with the law. But the story of his many literary efforts, like the more modern conjecture that he closed the canon of the Old Testament, rests upon no ancient basis.

See BIBLE, sect. Old Testament (Canon and Criticism); JEWS (history, §21 seq.). The apocryphal books, called 1 and 2 Esdras (the Greek form of the name) in the English Bible, are dealt with below as EZRA, THIRD BOOK OF, and EZRA, FOURTH BOOK OF, while the canonical book of Ezra is dealt with under EZRA AND NEHEMIAH.

EZRA, THIRD BOOK OF [1 *Esdras*]. The titles of the various books of the Ezra literature are very confusing. The Greek, the Old Latin, the Syriac, and the English Bible from 1560 onwards designate this book as 1 Esdras, the canonical books Ezra and Nehemiah being 2 Esdras in the Greek. In the Vulgate, however, our author was, through the action of Jerome, degraded into the third place and called 3 Esdras, whereas the canonical books *Ezra* and *Nehemiah* (see EZRA AND NEHEMIAH, BOOKS OF, below) were called 1 and 2 Esdras, and the Apocalypse of Ezra 4 Esdras. Thus the nomenclature of our book follows, and possibly wrongly, the usage of the Vulgate.[1] In the Ethiopic version a different usage prevails. The Apocalypse is called 1 Esdras, our author 2 Esdras, and Ezra and Nehemiah 3 Esdras, or 3 and 4 Esdras. Throughout this article we shall use the best attested designation of this book, *i.e.* 1 Esdras.

Contents.—With the exception of one original section, namely, that of Darius and the three young men, our author contains essentially the same materials as the canonical Ezra and some sections of 2 Chronicles and Nehemiah. To the various explanations of this phenomenon we shall recur later. The book may be divided as follows (the verse division is that of the Cambridge LXX):—

Chap. i. = 2 Chron. xxxv. 1-xxxvi. 21.—Great passover of Josiah; his death at Megiddo. His successors down to the destruction of Jerusalem and the Captivity. (Verses i. 21-22 are not found elsewhere, though the LXX of 2 Chron. xxxv. 20 exhibits a very distant parallel.)

Chap. ii. 1-14 = Ezra i.—The edict of Cyrus. Restoration of the sacred vessels through Sanabassar to Jerusalem.

Chap. ii. 15-25 = Ezra iv. 6-24.—First attempt to rebuild the Temple: opposition of the Samaritans. Decree of Artaxerxes: work abandoned till the second year of Darius.

Chap. iii. 1-v. 6.—This section is peculiar to our author. The contest between the three pages waiting at the court of Darius and the victory of the Jewish youth "Zerubbabel," to whom as a reward Darius decrees the return of the Jews and the restoration of the Temple and worship. Partial list of those who returned with "Joachim, son of Zerubbabel."

Chap. v. 7-70 = Ezra ii.-iv. 5.—List of exiles who returned with Zerubbabel. Work on the Temple begun. Offer of the Samaritans' co-operation rejected. Suspension of the work through their intervention till the reign of Darius.

Chap. vi. 1-vii. 9 = Ezra v. 1-vi. 18.—Work resumed in the second year of Darius. Correspondence between Sisinnes and Darius with reference to the building of the Temple. Darius' favourable decree. Completion of the work by Zerubbabel.

Chap. vii. 10-15 =Ezra vi. 19-22.—Celebration of the completion of the Temple.

Chap. viii. 1-ix. 36 = Ezra vii.-x.—Return of the exiles under Ezra. Mixed marriages forbidden.

Chap. ix. 37-55 = Nehemiah vii. 73-viii. 12.—The reading of the Law.

Thus, apart from iii. 1-v. 3, which gives an account of the pages' contest, the contents of the book are doublets of the canonical Ezra and portions of 2 Chronicles and Nehemiah. The beginning of the book seems imperfect, with its abrupt opening "And Josiah held the passover": its conclusion is mutilated, as it breaks off in the middle of a sentence. As Thackeray suggests, it probably continued the history of the feast of Tabernacles described in Neh. viii.—a view that is supported by Joseph. *Ant.* xi. 5. 5, "who describes that feast using an Esdras word ἐπανόρθωσις and ... having hitherto followed Esdras as his authority passes on to the Book of Nehemiah."

Claims to Canonicity.—It would seem that even greater value was attached to 1 Esdras than to the Hebrew Ezra. (1) For in the best MSS. (BA) it stands before 2 Esdras—the verbal translation of the Hebrew Ezra and Nehemiah. (2) It is used by Josephus, who in fact does not seem aware of the existence of 2 Esdras. (3) 1 Esdras is frequently quoted by the Greek fathers—Clem. Alex., Origen, Eusebius, and by the Latin—Tertullian, Cyprian, Augustine. The adverse judgment of the church is due to Jerome, who, from his firm attachment to the Hebrew Old Testament, declined to translate the "dreams" of 3 and 4 Esdras. This judgment influenced alike the Council of Trent and the Lutheran church in Germany; for Luther also refused to translate Esdras and the Apocalypse of Ezra.

Origin and Relation to the Canonical Ezra.—Various theories have been given as to the relation of the book and the canonical Ezra.

1. Some scholars, as Keil, Bissell and formerly Schürer, regarded 1 Esdras as a free compilation from the Greek of 2 Esdras (2 Chron. and Ezra-Nehemiah). This theory has now

given place to others more accordant with the facts of the case.

2. Others, as Ewald, *Hist. of Isr.* v. 126-128, and Thackeray in Hastings' *Bible Dictionary*, assume a lost Greek version of Chronicles, Ezra and Nehemiah, from which were derived 1 Esdras—a free redaction of the former and 2 Esdras. Thackeray claims that we have "a satisfactory explanation of the coincidences in translation and deviation from the Hebrew in 1 Esdras and 2 Esdras, if we suppose both are to some extent dependent on a lost Greek original." But later in the same article Thackeray is compelled to modify this view and admit that 1 Esdras is not a mere redaction of a no longer extant version of the canonical books, but shows not only an independent knowledge of the Hebrew text but also of a Hebrew text superior in not a few passages to the Massoretic text, where 2 Esdras gives either an inaccurate version or a version reproducing the secondary Massoretic text.

3. Others like Michaelis, Trendelenburg, Pohlmann, Herzfeld, Fritzsche hold it to be a direct and independent translation of the Hebrew. There is much to be said in favour of this view. It presupposes in reality two independent recensions of the Hebrew text, such as we cannot reasonably doubt existed at one time of the Book of Daniel. Against this it has been urged that the story of the three pages was written originally in Greek (Ewald, Schürer, Thackeray). The only grounds for this theory are the easiness of the Greek style and the paronomasia in iv. 62 ἄνεσιν καὶ ἄφεσιν. But the former is no real objection, and the latter may be purely accidental. On the other hand there are several undoubted Semiticisms. Thus we have two instances Of the split relative οὗ ... αὐτοῦ iii. 5; οὗ ... ἐπ᾽ αὐτῷ iv. 63 and the phrase pointed out by Fritzsche τὰ δίκαια ποιεῖ ἀπὸ πάντων = מן משפט עשה. It must, however, be admitted that there are fewer Hebraisms in this section of the book than in the rest.

4. Sir H.H. Howorth in the treatises referred to at the close of this article has shown cogent grounds for regarding 1 Esdras as the original and genuine Septuagint translation, and 2 Esdras as probably that of Theodotion. For this view he adduces among others the following grounds: (i.) Its use by Josephus, who apparently was not acquainted with 2 Esdras. (ii.) Its precedence of 2 Esdras in the great uncials. (iii.) Its origin at a time when Chronicles, Ezra and Nehemiah formed a single work. (iv.) Its preservation of a better Hebrew text in many instances than 2 Esdras. (v.) The fact that 1 Esdras and the Septuagint of Daniel go back to one and the same translator, as Dr Gwynn (*Dict. Christ. Biog.* iv. 977) has pointed out (cf. 1 Esdr. vi. 31, and Dan. ii. 5).

This contention of Howorth has been accepted by Nestle, Cheyne, Bertholet, Ginsburg and other scholars, though they regard the question of an Aramaic original of chapters iii. 1-v. 6 as doubtful. Howorth's further claim that he has established the historical credibility of the book as a whole and its chronological accuracy as against the canonical Ezra has not as yet met with acceptance; but his arguments have not been fairly met and answered.

5. Volz (*Encyc. Bibl.* ii. 1490) thinks that the solution of the problem is to be found in a different direction. The text is of unequal value, and the inequalities are so great as to exclude the supposition that the Greek version was produced *aus einem Guss.* iii. 1-v. 3 is an independent narrative written originally in Greek and itself a composite production, the praise of truth being an addition, vi. 1-vii. 15, ii. 15-25*a* is a fragment of an Aramaic narrative. Some in Josephus (*Ant.* xi. 4. 9) an account of Samaritan intrigues is introduced immediately after 1 Esdras vii. 15, it is natural to infer that something of the same kind has 106
fallen out between vi. and ii. 15-25. The Aramaic text behind 1 Esdras here is better than that behind the canonical Ezra. Next, viii.-ix. is from the Ezra document (= Ezra vii.-x.; Neh. vii. 73, viii. 1 sqq.), though implying a different Hebrew text. ii. 1-15; v. 7-73; vii. 2-4, 6-15 are from the Chronicles: likewise i. is from 2 Chron. xxxv.-vi., 2 Esdras being at the same time before the translator.

Date.—The book must be placed between 300 B.C. and A.D. 100, when it was used by Josephus. It is idle to attempt any nearer limits until definite conclusions have been reached on the chief problems of the book.

MSS. and Versions.—The book is found in B and A. The latter seems to have preserved the more ancient form of the text, as it is generally that followed by Josephus. The Old Latin in two recensions is published by Sabatier, *Bibliorum sacrorum Latinae versiones antiquae*, iii. Another Latin translation is given in Lagarde (*Septuag. Studien*, ii., 1892). In Syriac the text is found only in the Syro-Hexaplar of Paul of Tella (A.D. 616). See Walton's Polyglott. There is also an Ethiopic version edited by Dillmann (*Bibl. Vet. Test. Aeth.* v., 1894) and an Armenian.

LITERATURE.—Exegesis: Fritzsche, *Exeget. Handb. zu den Apokr.* (1851); Zöckler, *Die Apokryphen*, 155-161 (1891); Bissell in Lange-Schaff's *Comm.* (1880); Lupton in *Speaker's*

Comm. (1888); Ball, notes to 1 Esdr. in the *Variorum Apocrypha*. Introduction and critical Inquiries: Trendelenburg, "Apocr. Esra," in Eichhorn's *Allgem. Bibl. der bibl. Litt.* i. 178-232 (1787); Pohlmann, "Über das Ansehen der apokr. dritten Buchs Esras," in *Tübingen Theol. Quartalschrift*, 257-275 (1859); Sir H. Howorth, "Character and Importance of 1 Esdras," in the *Academy* (1893), pp. 13, 60, 106, 174, 326, 524; and further studies entitled "Some Unconventional Views on the Text of the Bible," in the *Proceedings of the Society of Biblical Archaeology*, 1901, pp. 147-159; 306-330, 1902, June and November.

(R. H. C.)

---

1 "At the Council of Trent (when the Septuagint Canon was virtually accepted as authoritative), by a most curious aberration, Esdras iii. and iv. and the Epistle of Manasseh were alone excluded from the canon and remitted to our appendix."—Howorth, "Unconventional Views on the Text of the Bible," in the *P.S.B.A.*, 1901, p. 149.

EZRA, FOURTH BOOK (or Apocalypse) **OF**. This is the most profound and touching of the Jewish Apocalypses. It stands in the relation of a sister work to the Apocalypse of Baruch, but though the relation is so close, they have many points of divergence. Thus, whereas the former represents the ordinary Judaism of the 1st century of the Christian era, the teaching of 4 Ezra on the Law, Works, Justification, Original Sin and Free Will approximates to the school of Shammai and serves to explain the Pauline doctrines on those subjects; but to this subject we shall return.

Original Language and Versions.—In the Latin version our book consists of sixteen chapters, of which, however, only iii.-xiv. are found in the other versions. To iii.-xiv., accordingly, the present notice is confined. After the example of most of the Latin MSS. we designate the book 4 Ezra (see Bensly-James, *Fourth Book of Ezra*, pp. xxiv-xxvii). In the First Arabic and Ethiopic versions it is called 1 Ezra; in some Latin MSS. and in the English Authorized Version it is 2 Ezra, and in the Armenian 3 Ezra. Chapters i.-ii. are sometimes called 3 Ezra, and xv.-xvi. 5 Ezra. All the versions go back to a Greek text. This is shown by the late Greek apocalypse of Ezra (Tischendorf, *Apocalypses Apocryphae*, 1866, pp. 24-33), the author of which was acquainted with the Greek of 4 Ezra; also by quotations from it in Barn, iv. 4; xii. 1 = 4 Ezra xii. 10 sqq., v. 5; Clem. Alex. *Strom*. iii. 16 (here first expressly cited) = 4 Ezra v. 35, &c. (see Bensly-James, *op. cit.* pp. xxvii-xxxviii). The derivation of the Latin version from the Greek is obvious when we consider its very numerous Graecisms. Thus the genitive is found after the comparative (v. 13) *horum majora*; xi. 29 *duorum capitum majus*, even the genitive absolute as in x. 9, the double negative, *de* and *ex* with the genitive. Peculiar genders can only be accounted for by the influence of the original forms in Greek, as x. 23 *signaculum* (σφραγίς) . . . *tradita est*; xi. 4 *caput* (κεφαλή) ... *sed et ipsa*. In vi. 25 we have the Greek attraction of the relative—*omnibus istis quibus praedixi tibi*. In his *Messias Judaeorum* (1869), pp. 36-110, Hilgenfeld has given a reconstruction of the Greek text. Till 1896 only Ewald believed that 4 Ezra was written originally in Hebrew. In that year Wellhausen (*Gött. Gel. Anz.* pp. 12-13) and Charles (*Apoc. Bar*. p. lxxii) pointed out that a Hebrew original must be assumed on various grounds; and this view the former established in his *Skizzen u. Vorarbeiten*, vi. 234-240 (1899). Of the numerous grounds for this assumption it will be necessary only to adduce such constructions as "de quo me interrogas de eo," iv. 28, and xiii. 26, "qui per semet ipsum liberabit" (= אשר-בו) = "through whom he will deliver," or to point to such a mistranslation as vii. 33, "longanimitas congregabitur," where for "congregabitur" (= יאסף) we require "evanescet," which is another and the actual meaning of the Hebrew verb in this passage. The same mistranslation is found in the Vulgate in Hosea iv. 3. Gunkel has adopted this view in his German translation of the book in Kautzsch's *Apok. und Pseud, des A. Testaments*, ii. 332-333, and brought forward in confirmation the following remarkable instance in viii. 23, where though the Latin, Syriac, Ethiopic, Arabic and Armenian Versions read *testificatur*, the Second Arabic version and the Apostolic Constitutions have μένει εἰς τὸν αἰῶνα, which are to be explained as translations of עמדת לעד (לע). Another interesting case is found in xiv. 3, where the Latin and all other versions but Arabic[2] read *super rubum* and the Arabic[2] *in monte Sinai*. Here there is a corruption of סנה "bush" into סיני "Sinai."

Latin Version.—All the older editions of this version, as those of Fabricius, Sabatier, Volkmar, Hilgenfeld, Fritzsche, as well as in the older editions of the Bible, are based ultimately on only one MS., the Codex Sangermanensis (written A.D. 822), as Gildemeister

proved in 1865 from the fact that the large fragment between verses 36 and 37 in chapter vii., which is omitted in all the above editions, originated through the excision of a leaf in this MS. A splendid edition of this version based on MSS. containing the missing fragment, which have been subsequently discovered, has been published by Bensly-James, *op. cit.* This edition has taken account of all the important MSS. known, save one at Leon in Spain.

Syriac Version.—This version, found in the Ambrosian Library in Milan, was translated into Latin by Ceriani, *Monumenta sacra et profana*, II. ii. pp. 99-124 (1866). Two years later this scholar edited the Syriac text, *op. cit.* V. i. pp. 4-111, and in 1883 reproduced the MS. by photo-lithography (*Translatio Syra Peshitto V.T.* II. iv. pp. 553-572). Hilgenfeld incorporated Ceriani's Latin translation in his *Messias Judaeorum*. This translation needs revision and correction.

Ethiopic Version.—First edited and translated by Laurence, *Primi Ezrae libri versio Aethiopica* (1820). Laurence's Latin translation was corrected by Praetorius and reprinted in Hilgenfeld's *Messias Judaeorum*. In 1894 Dillmann's text based on ten MSS. was published —*V.T. Aeth. libri apocryphi*, v. 153-193.

Arabic Versions.—The First Arabic version was translated from a MS. in the Bodleian Library into English by Ockley (in Whiston's Primitive Christianity, vol. iv. 1711). This was done into Latin and corrected by Steiner for Hilgenfeld's *Mess. Jud.* The Second Arabic version, which is independent of the first, has been edited from a Vatican MS. and translated into Latin by Gildemeister, 1877.

Armenian Version.—First printed in the Armenian Bible (1805). Translated into Latin by Petermann for Hilgenfeld's Mess. Jud.; next with Armenian text and English translation by Issaverdens in the *Uncanonical Writings of the Old Testament*, pp. 488 sqq. (Venice, 1901).

Georgian Version.—According to F.C. Conybeare an accurate Georgian version made from the Greek exists in an 11th-century MS. at Jerusalem.

Relation of the above Versions.—These versions stand in the order of worth as follows: Latin, Syriac, Ethiopic. The remaining versions are paraphrastic and less accurate, and are guilty of additions and omissions. All the versions, save the Second Arabic one, go back to the same Greek version. The Second Arabic version presupposes a second Greek version.

Modern Versions.—All the English versions are now antiquated, except those in the Variorum Apocrypha and the Revised Version of the Apocrypha, and even these are far from satisfactory. Similarly, all the German versions are behindhand, except the excellent version of Gunkel in *Apok. u. Pseud.* ii. 252-401, which, however, needs occasional correction.

Contents.—The book (iii.-xiv.) consists of seven visions or parts, like the apocalypse of Baruch. They are: (1) iii. 1-v. 19; (2) v. 20-vi. 34; (3) vi. 35-ix. 25; (4) ix. 26-x. 60; (5) xi. 1-xii. 51; (6) xiii.; (7) xiv. These deal with (1) religious problems and speculations and (2) eschatological questions. The first three are devoted to the discussion of religious problems affecting in the main the individual. The presuppositions underlying these are in many cases the same as those in the Pauline Epistles. The next three visions are principally concerned with eschatological problems which relate to the nation. The seventh vision is a fragment of the Ezra Saga recounting the rewriting of the Scriptures, which had been destroyed. This has no organic connexion with what precedes.

First Vision. iii.-v. 19.—"In the thirtieth year after the ruin of the city I Salathiel (the same is Ezra) was in Babylon and lay troubled upon my bed." In a long prayer Ezra asks how the desolation of Sion and the prosperity of Babylon can be in keeping with the justice of God. The angel Uriel answers that God's ways are unsearchable and past man's understanding. When Ezra asks when the end will be and what are the signs of it, the angel answers that the end is at hand and enumerates the signs of it.

Second Vision. v. 14-vi. 34.—Phaltiel, chief of the people, reproaches Ezra for forsaking his flock. Ezra fasts, and in his prayer asks why God had given up his people into the hands of the heathen. Uriel replies: "Lovest thou that people better than He that made them?" Man cannot find out God's judgment. The end is at hand; its signs are recounted.

Third Vision. vi. 35-ix. 25.—Ezra recounts the works of creation, and asks why Israel does not possess the world since the world was made for Israel. The answer is that the present state is a necessary stage to the coming one. Then follows an account of the Messianic age and the resurrection: the punishment of the wicked and the blessings of the righteous. There can be no intercession for the departed. Few will be saved—only as it were a grape out of a cluster or a plant out of a forest.

Fourth Vision. ix. 26-x. 60.—Ezra eats of herbs in the field of Ardat, and sees in a vision a woman mourning for her only son. Ezra reminds her of the greater desolation of Sion.

Suddenly she is transfigured and vanishes, and in her place appears a city. The woman, Uriel explains, represents Sion.

Fifth Vision. xi. i-xii. 39.—Vision of an eagle with three heads, twelve wings and eight winglets, which is rebuked by a lion and destroyed. The eagle is the fourth kingdom seen by Daniel, and the lion is the Messiah.

Sixth Vision. xiii.—Vision of a man (*i.e.* the Messiah) arising from the sea, who destroys his enemies who assemble against him, and gathers to him another multitude, *i.e.* the lost Ten Tribes.

Seventh Vision. xiv.—Ezra is told of his approaching translation. He asks for the restoration of the Law, and is enabled by God to dictate in forty days ninety-four books (the twenty-four canonical books of the Old Testament that were lost, and seventy secret books for the wise among the people).

Ezra's translation is found in the Canon only in the Oriental Versions. In the Latin it was omitted when xv.-xvi. were added.

Integrity.—According to Gunkel (*Apok. u. Pseud.* ii. 335-352) the whole book is the work of one writer. Thus down to vii. 16 he deals with the problem of the origin of suffering in the world, and from vii. 17 to ix. 25 with the question who is worthy to share in the blessedness of the next world. As regards the first problem the writer shows, in the first vision, that suffering and death come from sin—no less truly on the part of Israel than of all men, for God created man to be immortal; that the end is nigh, when wrongs will be righted; God's rule will then be recognized. In the second he emphasizes the consolation to be found in the coming time, and in the third he speaks solely of the next world, and then addresses himself to the second problem. The fourth, fifth and sixth visions are eschatological. In these the writer turns aside from the religious problems of the first three visions and concerns himself only with the future national supremacy of Israel. Zion's glory will certainly be revealed (vision four), Israel will destroy Rome (five) and the hostile Gentiles (six). Then the book is brought to a close with the legend of Ezra's restoration of the lost Old Testament Scriptures.

In the course of the above work there are many inconsistencies and contradictions. These Gunkel explains by admitting that the writer has drawn largely on tradition, both oral and written, for his materials. Thus he concedes that eschatological materials in v. 1-13, vi; 18-28, vii. 26 sqq., also ix. 1 sqq., are from this source, and apparently from an originally independent work, as Kabisch urges, but that it is no longer possible to separate the borrowed elements from the text. Again, in the four last visions he is obliged to make the same concession on a very large scale. Vision four is based on a current novel, which the author has taken up and put into an allegorical form. Visions five and six are drawn from oral or written tradition, and relate only to the political expectations of Israel, and seven is a reproduction of a legend, for the independent existence of which evidence is furnished by the quotations in Bensly-James pp. xxxvii-xxxviii. Thus the chief champion of the unity of the book makes so many concessions as to its dependence on previously existing sources that, to the student of eschatology, there is little to choose between his view and that of Kabisch. In fact, if the true meaning of the borrowed materials is to be discovered, the sources must be disentangled. Hence the need of some such analysis as that of Kabisch (*Das vierte Buck Ezra*, 1889): S = an Apocalypse of Salathiel, *c.* A.D. 100, preserved in a fragmentary condition, iii. 1-31, iv. 1-51, v. 13*b*-vi. 10, 30-vii. 25, vii. 45-viii. 62, ix. 13-x. 57, xii. 40-48, xiv. 28-35. E = an Ezra Apocalypse, *c.* 31 B.C., iv. 52-v. 13a, vi. 13-28, vii. 26-44, viii. 63-ix. 12. A = an Eagle Vision, *c.* A.D. 90, x. 60-xii. 35. M = a Son-of-Man Vision, xiii. E^2 = an Ezra fragment, *c.* A.D. 100, xiv. 1-17*a*, 18-27, 36-47. All these, according to Kabisch, were edited by a Zealot, *c.* 120, who supplied the connecting links and made many small additions. In the main this analysis is excellent. If we assume that the editor was also the author of S, and that such a vigorous stylist, as he shows himself to be, recast to some extent the materials he borrowed, there remains but slight difference between the views of Kabisch and Gunkel. Neither view, however, is quite satisfactory, and the problem still awaits solution. Other attempts, such as Ewald's (*Gesch. d. Volkes Israel*[3], vii. 69-83) and De Faye's (*Apocalypses juives*, 155-165), make no contribution.

School of the Author.—The author or final redactor of the book was a pessimist, and herein his book stands in strong contrast with the Apocalypse of Baruch. Thus to the question propounded in the New Testament—"Are there few that be saved?" he has no hesitation in answering, "There be many created, but few that be saved" (viii. 3): "An evil heart hath grown up in us which hath led us astray ... and that not a few only but wellnigh all that have been created" (vii. 48). In the Apocalypse of Baruch on the other hand it is definitely maintained that not a few shall be saved (xxi. 11). Moreover, the sufferings of the

wicked are so great in the next world it were better, according to 4 Ezra (as also to the school of Shammai), that man had not been born. “It is much better (for the beasts of the field) than for us; for they expect not a judgment and know not of torments” (vii. 66): yet “it would have been best not to have given a body to Adam, or that being done, to have restrained him from sin; for what profit is there that man should in the present life live in heaviness and after death look for punishment” (vii. 116, 117). In iv. 12 the nexus of life, sin and suffering just referred to, is put still more strongly: “It were better we had not been at all than that we should be born and sin and suffer.”[1] The different attitude of these two writers towards this question springs from their respective views on the question of free will. The author of Baruch declares (iv. 15, 19): “For though Adam sinned and brought untimely death upon all, yet of those who were born from him each one of them prepared for his own soul torment to come, and again each one of them has chosen for himself glories to come ... each one of us has been the Adam of his own soul,” Though the writer of Ezra would admit the possibility of a few Israelites attaining to salvation through the most strenuous endeavour, yet he holds that man is all but predoomed through his original evil disposition or through the fall of Adam (vii. 118). “O Adam, what hast thou done: for though it was thou that sinned, the evil is not fallen on thee alone, but upon all of us that come of thee.”

Another contrast between the two books is that while Baruch shows some mercy to the Gentiles (lxxii. 4-6) in the Messianic period, none according to 4 Ezra and the Shammaites (Toseph. *Sanh.* xiii. 2) will be extended to them, (iii. 30, ix. 22 sq., xii. 34, xiii. 37 sq.).

On the above grounds it is not unreasonable to conclude that whereas the Apocalypse of Baruch owes its leading characteristics to a pupil of Hillel’s school, 4 Ezra shows just as clearly its derivation from that of Shammai. Kohler (*Jewish Encyc.* v. 221) points out that the 108
view of 4 Ezra that the Ten Tribes will return was held by the Shammaites, whereas it was denied by Aqiba. The Apocalypse of Baruch is silent on this point.

Time and Place.—The work was written towards the close of the 1st century (iii. 1, 29), and somewhere in the east.

LITERATURE.—In addition to the authorities mentioned above, see Dillmann, Herzog’s *Real-Encyk.*[2] xii. 353 sqq.; Schürer, *Gesch. des jüd. Volkes*[3], iii. 246 sqq.; and the articles on 4 Esdras in Hastings’ *Bible Dictionary* and the *Encyclopaedia Biblica* by Thackeray and James respectively.

(R. H. C.)

1 In the Apocalypse of Baruch, x. 6, we find a similar expression: “Blessed is he who was not born, or being born has died.” But here death is said to be preferable to witnessing the present woes of Jerusalem.

EZRA AND NEHEMIAH, BOOKS OF, in the Old Testament. The two canonical books entitled Ezra and Nehemiah in the English Bibie[1] correspond to the 1 and 2 Esdras of the Vulgate, to the 2 Esdras of the Septuagint, and to the Ezra and Nehemiah of the Massoretic (Hebrew) text. Though for many centuries they have thus been treated as separate compositions, we have abundant evidence that they were anciently regarded as forming but one book, and a careful examination proves that together with the book of Chronicles they constitute one single work. The two books may therefore be conveniently treated together.

1. *Position and Date.*—Origen (Euseb, *H.E.* vi. 25), expressly enumerating the twenty-two books of the old covenant as acknowledged by the Jews and accepted by the Christian church, names “the First and Second Ezra in one book”; Melito of Sardis (Euseb. *H.E.* iv. 26) in like manner mentions the book of Ezra only. So also the Talmud (in *Bābā bathrā*, 14. 2), nor can it be supposed that Josephus in his enumeration (*c. Ap.* i. 8) reckoned Nehemiah as apart from Ezra. That the Jews themselves recognized no real separation is shown by the fact that no Massoretic notes are found after Ezra x., but at the end of Nehemiah the contents of both are reckoned together, and it is stated that Neh. iii. 22 is the middle verse of the book. Their position in the Hebrew Bible *before* the book of Chronicles is, however, illogical. The introductory verses of Ezra i. are identical with the conclusion of 2 Chron. xxxvi., whilst in the version of 1 Esdras no less than two chapters (2 Chron. xxxv. sq.) overlap. The cause of the separation is probably to be found in the late reception of Chronicles into the Jewish canon. Further proof of the unity of the three is to be found in the

general similarity of style and treatment. The same linguistic criteria recur, and the interest in lists and genealogies, in priests and Levites, and in the temple service point unmistakably to the presence of the same hand (the so-called "chronicler") in Chronicles-Ezra-Nehemiah. See BIBLE (sect. *Canon*); CHRONICLES.

The period of history covered by the books of Ezra and Nehemiah extends from the return of the exiles under Zerubbabel in 537-536 B.C. to Nehemiah's second visit to Jerusalem in 432 B.C. In their present form, however, the books are considerably later, and allusions to Nehemiah in the past (Neh. xii. 26, 47), to the days of Jaddua (the grandson of Nehemiah's contemporary Joiada; *ib.* xii. 11), to Darius (Nothus 423 B.C. or rather Codomannus 336 B.C., *ib. v.* 22), and the use of the term "king of Persia," as a distinctive title after the fall of that empire (332 B.C.), are enough to show that, as a whole, they belong to the same age as the book of Chronicles.

2. *Contents.*—Their contents may be divided into four parts:—

(*a*) The events preceding the mission of Ezra (i.-vi.).—In the first year of his reign Cyrus was inspired to grant a decree permitting the Jews to return to build the temple in Jerusalem (i.); a list of families is given (ii.). The altar of burnt-offering was set up, and in the second year of the return the foundations of the new temple were laid with great solemnity (iii.). The "adversaries of Judah and Benjamin" offered to assist but were repulsed, and they raised such opposition to the progress of the work that it ceased until the second year of Darius (521-520 B.C.). Aroused by the prophets Haggai and Zechariah the building was then resumed, and despite fresh attempts to hinder the work it was completed, consecrated and dedicated in the sixth year of that king (vi.). The event was solemnized by the celebration of the Passover (cf. 2 Chron. xxx., Hezekiah; xxxv. Josiah).

(*b*) An interval of fifty-eight years is passed over in silence, and the rest of the book of Ezra comprises his account of his mission to Jerusalem (vii.-x.). Ezra, a scribe of repute, well versed in the laws of Moses, returns with a band of exiles in order to reorganize the religious community. A few months after his arrival (seventh year of Artaxerxes, 458 B.C.) he instituted a great religious reform, viz. the prohibition of intermarriage with the heathen of the land (cf. already vi. 21). In spite of some opposition (x. 15 obscurely worded) the reform was accepted, and the foundations of a new community were laid.

(*c*) Twelve years elapse before the return of Nehemiah, whose description of his work is one of the most interesting pieces of Old Testament narrative (Neh. i.-vi.). In the twentieth year of Artaxerxes (445 B.C.), Nehemiah the royal cup-bearer at Shushan (Susa, the royal winter palace) was visited by friends from Judah and was overcome with grief at the tidings of the miserable condition of Jerusalem and the pitiful state of the Judaean remnant which had escaped the captivity. He obtained permission to return, and on reaching the city made a secret survey of the ruins and called upon the nobles and rulers to assist in repairing them. Much opposition was caused by Sanballat the Horonite (*i.e.* of the Moabite Horonaim or Beth-horon, about 15 m. N.W. of Jerusalem), Tobiah the Ammonite, Geshem (or Gashmu) the Arabian, and the Ashdodites, whose virulence increased as the rebuilding of the walls continued. But notwithstanding attempts upon the city and upon the life of Nehemiah, and in spite of intrigues among certain members of the Judaean section, in fifty-two days the city walls were complete (Neh. vi. 15). The hostility, however, did not cease, and measures were taken to ensure the safety of the city (vi. 16-vii. 4). A valuable account is given of Nehemiah's economical reforms, illustrating the internal social conditions of the period and the general character of the former governors who had been placed in charge (v., cf. the laws codified in Lev. xxv. 35 sqq.).

(*d*) The remaining chapters carry on the story of the labours of *both* Ezra, and Nehemiah. The list of those who returned under the decree of Cyrus is repeated (Neh. vii.), and leads up to the reading of the Law by Ezra, a great national confession of guilt, and a solemn undertaking to observe the new covenant, the provisions of which are detailed (x. 28-39). After sundry lists of the families dwelling in Jerusalem and its neighbourhood (xi. 1 sqq., apparently a sequel to vii. 1-4),[2] and of various priests and Levites, an account is given of the dedication of the walls (xii. 27-43), the arrangements for the Levitical organization (*vv.* 44-47), and a fresh separation from the heathen (Moabites and Ammonites, xiii. 1-3; cf. Deut. xxiii. 3 seq.). The book concludes with another extract from Nehemiah's memoirs dealing with the events of a second visit, twelve years later (xiii. 4-31). On this occasion he vindicated the sanctity of the temple by expelling Tobiah, reorganized the supplies for the Levites, took measures to uphold the observance of the Sabbath, and protested energetically against the foreign marriages. In the course of his reforms he thrust out a son of Joiada (son of Eliashib, the high-priest), who had married the daughter of Sanballat, an incident which

had an important result (see Samaritans).

That these books are the result of compilation (like the book of Chronicles itself) is evident from the many abrupt changes; the inclusion of certain documents written in an Aramaic dialect (Ezr. iv. 8-vi. 18, vii. 12-26)[3]; the character of the name-lists; the lengthy gaps in the history; the use made of two distinct sources, attributed to Ezra and Nehemiah respectively, and from the varying form in which the narratives are cast. The chronicler's hand can usually be readily recognized. There are relatively few traces of it in Nehemiah's memoirs and in the Aramaic documents, but elsewhere the sources are largely coloured, if not written from the standpoint of his age. Examples of artificial arrangement appear notably in Ezr. ii.-iii. 1 compared with Neh. vii. 6-viii. 1 (first clause); in the present position of Ezr. iv. 6-23; and in the dislocation of certain portions of the two memoirs in Neh. viii.-xiii. (see below). It should be noticed that the present order of the narratives involves the theory that some catastrophe ensued after Ezr. x. and before Neh. i.; that the walls had been destroyed and the gates burnt down; that some external opposition (with which, however, Ezra did not have to contend) had been successful; that the main object of Ezra's mission was delayed for twelve years, and, finally, that only through Nehemiah's energy was the work of social and religious reorganization successful. These topics raise serious historical problems (see Jews: *History*, § 21).

3. *Criticism of Ezra i.-vi.*—The chronicler's account of the destruction of Jerusalem, the seventy years' interval (2 Chron. xxxvi. 20 sq.; cf. Jer. xxv. 11, xxix. 10, also Is. xxiii. 17), and the return of 42,360 of the exiles (Ezr. ii. 64 sqq.) represent a special view of the history of the period. The totals, as also the detailed figures, in Ezr., Neh. and 1 Esdr. v. vary considerably; the number is extremely large (contrast Jer. lii. 30); it includes the common people (contrast 2 Kings xxiv. 14, xxv. 12), and ignores the fact that Judah was not depopulated, that the Jews were carried off to other places besides Babylon and that many remained behind in Babylon. According to this view, Judah and Jerusalem were practically deserted until the return. The list in Ezr. ii. is that of families which returned "every man unto his city" under twelve leaders (including Nehemiah, Azariah [cf. Ezra], Zcrubbabel and Jeshua); it recurs with many variations in a different and apparently more original context in Neh. vii., and in 1 Esdr. v. is ascribed to the time of Darius. The families (to judge from the northwards extension of Judaean territory) are probably those of the population in the later Persian period, hardly those who returned to the precise homes of their ancestors (see C.F. Kent, Israel's *Hist. and Biogr. Narratives*, p. 379). The offerings which are for the temple-service in Neh. vii. 70-72 (cf. 1 Chron. xxix. 6-8) are for the building of the temple in Ezr. ii. 68-70; and since the walls are not yet built, the topographical details in Neh. viii. 1 (see 1 Esdr. v. 47) are adjusted, and the event of the seventh month is not the reading of the Law amid the laments of the people (Neh. viii.; see *vv.* 9-11) but the erection of the altar by Jeshua and Zerubbabel under inauspicious circumstances (cf. Ezr. iii. 3 with 1 Esdr. v. 50).

The chronologically misplaced account of the successful opposition in the time of Ahasuerus (*i.e.* Xerxes) and Artaxerxes (the son and grandson of Darius respectively) breaks the account of the *temple* under Cyrus and Darius, and is concerned with the city walls (iv. 6-23)[4]; there is some obscurity in *vv.* 7-9: Rehum and Shimshai evidently take the lead, Tabeel may be an Aramaized equivalent of Tobiah. A recent return is implied (iv. 12) and the record hints that a new decree may be made (*v.* 21). The account of the unsuccessful opposition to the *temple* in the time of Darius (v. sq.; for another account see Jos. *Ant.* xi. 4, 9) is independent of iv. 7-23, and throws another light upon the decree of Cyrus (vi. 3-5, contrast i. 2-4). It implies that Sheshbazzar, who had been sent with the temple vessels in the time of Cyrus, had laid the foundations and that the work had continued without cessation (v. 16, contrast iv. 5, 24). The beginning of the reply of Darius is wanting (vi. 6 sqq.), and the decree which had been sought in Babylon is found at Ecbatana. Chap. vi. 15 sqq. follow more naturally upon v. 1-2, but *v.* 14 with its difficult reference to Artaxerxes now seems to presuppose the decree in iv. 21 and looks forward to the time of Ezra or Nehemiah. As regards this section (Ezr. i.-vi.) as a whole, there is little doubt that i. iii. 1-iv. 5, vi. 15-22 are from the chronicler, whose free treatment of his material is seen in the use he has made of ch. ii. Notwithstanding the unimpeachable evidence for the tolerant attitude of Persian kings and governors towards the religion of subject races, it is probable that the various decrees incorporated in the book (cf. also 1 Esdr. iv. 42 sqq.) have been reshaped from a Jewish standpoint. A noteworthy example appears in the account of the unique powers entrusted to Ezra (vii. 11-26), the introduction to whose memoirs, at all events, is quite in the style of the chronicler.

4. *Memoirs of Nehemiah and Ezra.*—The memoirs of Ezra and Nehemiah do not appear to have been incorporated without some adjustment. The lapse of time between Neh. i. 1 and ii.

1 is noteworthy, and with the prayer in i. 5-11 cf. Ezr. ix. 6-15, Dan. ix. 4 sqq. (also parallels in Deuteronomy); chap. i. in its present form may be a compiler's introduction. The important topographical list in ch. iii. is probably from another source; the styie is different, Nehemiah is absent, and the high-priest is unusually prominent.[5] Chap, v., where Nehemiah reviews his *past* conduct as governor, turns aside to economic reforms and scarcely falls within the fifty-two days of the building of the walls. The chapter is closely associated with the contents of xiii. and breaks the account of the opposition. Anticipated already in ii. 10, the hostility partly arises from the repudiation of Samaritan religious claims (ii. 20; cf. Ezr. iv. 3) and is partly political. It is difficult to follow its progress clearly, and the account ceases abruptly in. vi. 17-19 with the notice of the conspiracy of Tobiah and the nobles of Judah. The chronicler's style can be recognized in vii. 1-5 (in its present form), where steps are taken to protect and to people Jerusalem; the older sequel is now found in ch. xi. Whilst the account of the dedication of the walls is marked by the use of the pronoun "I" (xii. 31, 38, 40), it is probably now due as a whole to the chronicler, and when the more trustworthy memoirs of Nehemiah are resumed (xiii. 4 sqq.) the episodes, although placed twelve years later (ver. 6), are intimately connected with the preceding reforms (cf. xii. 44-xiii. 3 with xiii. 10 sqq., 23 sqq.).[6] Nehemiah's attitude towards intermarriage is markedly moderate in contrast to the drastic measures of Ezra, whose mission and work the simpler and perhaps earlier narratives of Nehemiah originally ignored, and the relation between the two is complicated further by the literary character of the memoir of Ezra.

To the last mentioned are prefixed (*a*) the scribe's genealogy, which traces him back to Aaron and names as his immediate ancestor, Seraiah, who had been slain 130 years previously (Ezr. vii. 1-5), and (*b*) an independent account of the return (*vv.* 6-10) with a reference to Ezra's renown, obviously not from the hand of Ezra himself. Whatever the original prelude to Ezra's thanksgiving may have been (vii. 27 seq.), we now have the essentially Jewish account of the letter of Artaxerxes with its unusual concessions.[7] The list of those who returned amounts to the moderate total of 1496 males (viii., but 1690 in 1 Esdr. viii. 30 sqq.). Ezra's mission was obviously concerned with the Law and Temple service (vii. 6, 10, 14 sqq., 25; viii. 17, 24-30, 33 sq.), but four months elapse between his return in the fifth month (vii. 9) and the preparations for the marriage reforms in the ninth (x. 9), and there is a delay of twelve years before the Law is read (Neh. viii.). The Septuagint version (1 Esdr. ix.; cf. Josephus, *Antiq.* xi. 5. 5 and some modern scholars) would place the latter after Ezr. x., but more probably this event (dated in the seventh month) should precede the great undertaking in Ezr. ix.[8] That the adjustment was attended with considerable revision of the passages appears from a careful comparison of Neh. viii. sq. with Ezr. ix. sq. With Ezra's confession (ix. 6 sqq.) compare the prayer in Neh. ix. 5 sqq., which the Septuagint ascribes to him. In Ezr. x. (written in the third person) the number of those that had intermarried with the heathen is relatively small considering the general trend of the preliminaries, and the list bears a marked resemblance to that in ch. ii. It ends abruptly and obscurely (x. 44; cf. 1 Esdr. ix. 36), and whilst as a whole the memoirs of Ezra point to ideas later than those of Nehemiah, the present close literary connexion between them is seen in the isolated reference to Johanan the son of Eliashib in Ezra x. 6, which seems to be connected with Neh. xiii. 7, and (after W.R. Smith) in the suitability of *ib.* xiii. 1, 2 between Ezr. x. 9 and 10. The list of signatories in Neh. x. 1-27 should be compared with the names in xii. and 1 Chron. xxiv.; the true connexion of ix. 38 is very obscure, and the relation to Ezr. ix. seq. is complicated by the reference to the separation from the heathen in Neh. ix. 2. The description of the covenant (Neh. x. 28 sqq., marked by the use of "we") is closely connected with xii. 43-xiii. 3 (from the same or an allied source), and anticipates the parallel though somewhat preliminary measures detailed in the more genuine memoirs (Neh. xiii. 4 sqq.). Finally, the specific allusion in xiii. 1-3 to Ammon and Moab is possibly intended as an introduction to the references to Tobiah and Sanballat respectively (*vv.* 4 seq., 28).

5. *Summary.*—The literary and historical criticism of Ezra-Nehemiah is closely bound up with that of Chronicles, whose characteristic features it shares. Although the three formed a unit at one stage it may seem doubtful whether two so closely related chapters as 1 Chron. ix. and Neh. xi. would have appeared in one single work, while the repetition of Neh. vii. 6-viii. 1 in Ezr. ii.-iii. 1 is less unnatural if they had originally appeared in distinct sources. Thus other hands apart from the compiler of Chronicles may have helped to shape the narratives, either before their union with that book or after their separation.[9] The present intricacy is also due partly to specific historical theories regarding the post-exilic period. Here the recension in 1 Esdras especially merits attention for its text, literary structure and for its variant traditions.[10] Its account of a return in the time of Darius scarcely arose *after* Ezr. i.-iii. (Cyrus); the reverse seems more probable, and the possibility of some confusion or of an intentional adjustment to the earlier date is emphasized by the relation between the

popular feeling in Ezr. iii. 12 (Cyrus) and Hag. ii. 3 (Darius), and between the grant by Cyrus in iii. 7 (it is not certain that he held Phoenicia) and the permit of Darius in 1 Esdr. iv. 47-57 (see *v.* 48). To the latter context belongs the list of names which reappears in Ezr. ii. (Cyrus). But from the independent testimony of Haggai and Zechariah it is doubtful whether the chronicler's account of the return under Cyrus is at all trustworthy. The list in 1 Esdr. v., Ezr. ii., as already observed, appears to be in its more original context in Neh. vii., *i.e.* in the time of Artaxerxes, and it is questionable whether the earliest of the surviving detailed traditions in Ezra-Nehemiah went back before this reign. It is precisely at this age that there is evidence for a return, apparently other than that of Ezra or Nehemiah (see Ezr. iv. 12), yet no account seems to be preserved unless the records were used for the history of earlier periods (cf. generally Ezr. iii. 12 sq. with Neh. viii. 9-11; Ezr. iii. 7 with the special favour enlisted on behalf of the Jews in vi. 7 sq., 13, vii. 21; Neh. ii. 7 sq.). But the account of the events in the reign of Artaxerxes is extremely perplexing. Since the building of the walls of Jerusalem must have begun early in the fifth month (Neh. vi. 15), an allowance of three days (ii. 11) makes the date of Nehemiah's arrival practically the anniversary of Ezra's return (Ezr. vii. 9, viii. 32). Considering the close connexion between the work of the two men this can hardly be accidental. The compiler, however, clearly intends Neh. vi. 15 (25th of sixth month) to be the prelude to the events in Neh. vii. 73, viii. (seventh month), but the true sequence of Neh. vi. sqq. is uncertain, and the possibility of artificiality is suggested by the unembellished statement of Josephus that the building of the walls occupied, not fifty-two days, but two years four months (*Ant.* xi. 5. 8). The present chronological order of Nehemiah's work is confused (cf. §4, n. 3), and the obscure interval of twelve years in his work corresponds very closely to that which now separates the records of Ezra's labours. However, both the recovery of the compilers' aims and attempted reconstructions are precluded from finality by the scantiness of independent historical evidence. (See further JEWS: *History*, §21 seq.)

BIBLIOGRAPHY.—S.R. Driver, *Lit. of the O.T.* (1909), pp. 540 sqq. and the commentaries of H.E. Ryle (*Camb. Bible*, 1893), C. Siegfried (1901), A. Bertholet (1902), and T.W. Davies (*Cent. Bible*, 1909). Impetus to recent criticism of these books starts with Van Hoonacker (*Neh. et Esd.* [1890]; see also *Expos. Times* [1897], pp. 351-354, and M.-J. Lagrange, *Rev. biblique*, iii. 561-585 [1894], iv. 186-202 [1895]) and W.H. Kosters (Germ. ed., *Wiederherstellung Israëls*, 1895). The latter's important conclusions (for which see his article with Cheyne's additions in *Ency. Bib.* col. 1473 sqq., 3380 sqq.) have been adversely criticized, especially by J. Wellhausen (*Nachrichten* of the Univ. of Göttingen, 1895, pp. 166-186), E. Meyer (*Entstehung d. Judentums*, 1896), J. Nikel (*Wiederherstellung d. jüd. Gemein.*, 1900), and S. Jampel in *Monatsschrift f. Gesch. u. Wissens. d. Judentums*, vols. xlvi.-xlvii. (1902-1903). The negative criticisms of Kosters have, however, been strengthened by his replies (in the Dutch *Theolog. Tijdschrift*), and by the discussions of C.C. Torrey and C.F. Kent (*op. cit*) and of G. Jahn (*Esra u. Neh.* pp. i-lxxviii; 1909), and his general position appears to do more justice to the biblical evidence as a whole.

(S. A. C.)

---

1 References to 1 Esdras in this article are to the book discussed above as EZRA, THIRD BOOK OF.

2 With Neh. xi. 4-19 cf. 1 Chron. ix. 3-17; with the list xii. 1-7 cf. *vv.* 12-21 and x. 3-9; and with xii. 10 sq. cf. 1 Chron. vi. 3-13 (to which it forms the sequel). See further Smend, *Listen d. Esra u. Neh.* (1881).

3 Sometimes wrongly styled Chaldee (*q.v.*); see SEMITIC LANGUAGES.

4 Its real position in the history of this period is not certain. Against the supposition that the names refer to Cambyses and Pseudo-Smerdis who reigned after Cyrus and before Darius, see H.E. Ryle, *Camb. Bible*, "Ezra and Neh.," p. 65 sq. Against the view that Darius is D. ii. Nothus of 423-404 B.C., see G.A. Smith, *Minor Prophets*, ii. 191 sqq. The ignorance of the compiler regarding the sequence of the kings finds a parallel in that of the author of the book of Daniel (*q.v.*); see C.C. Torrey, *Amer. Journ. of Sem. Lang.* (1907), p. 178, n. 1.

5 See further H.G. Mitchell, *Journ. of Bibl. Lit.* (1903), pp. 88 sqq.

6 The chronological difficulties will be seen from xiii. 6 ("before this"), which would imply that the dedication of the walls was on the occasion of Nehemiah's later visit (see G.A. Smith, *Expositor*, July 1906, p. 12). His previous departure is perhaps foreshadowed in vii. 2.

7 See *Ency. Bib.* col. 1480. Papyri from a Jewish colony in Elephantine (407 B.C.) clearly show the form which royal permits could take, and what the Jews were prepared to give in return; the points of resemblance are extremely interesting, but compared with the biblical documents the papyri reveal some striking differences.

8 C.C. Torrey, *Comp. and Hist. Value of Ezra-Neh.* (Beihefte of *Zeit. f. alttest. Wissens.*, 1896), pp. 30-34; C.F. Kent, *Israel's Hist. and Biog. Narratives*, pp. 32, 369. Since Neh. vii. 70-73 is closely

joined to viii., the suggested transposition would place its account of the contributions to the temple in a more appropriate context (cf. Ezr. viii. 24-30, 33 sq.).

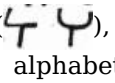
9 For linguistic evidence reference should be made to J. Geissler, *Die litterarischen Beziehungen d. Esrarnemoiren* (Chemnitz, 1899).

10 See especially Sir Henry Howorth, *Proc. of Society of Bibl. Arch.* (1901-1904), *passim*; C.C. Torrey, *Ezra Studies* (Chicago, 1910). For the text, see A. Klostermann, *Real-Ency. f. prot. Theol.* v. 501 sqq.; H. Guthe in Haupt's *Sacred Books of Old Testament* (1899); and S.A. Cook in R.H. Charles, *Apocrypha and Pseudepigrapha*.

EZZO, or Ehrenfried (*c.* 954-1024), count palatine in Lorraine, was the son of a certain Hermann (d. *c.* 1000), also a count palatine in Lorraine who had possessions in the neighbourhood of Bonn. Having married Matilda (d. 1025), a daughter of the emperor Otto II., Ezzo came to the front during the reign of his brother-in-law, the emperor Otto III. (983-1002); his power was increased owing to the liberal grant of lands in Thuringia and Franconia which he received with his wife, and some time later his position as count palatine was recognized as an hereditary dignity. Otto's successor, the emperor Henry II., was less friendly towards the powerful count palatine, though there was no serious trouble between them until 1011; but some disturbances in Lorraine quickly compelled the emperor to come to terms, and the assistance of Ezzo was purchased by a gift of lands. Henceforward the relations between Henry and his vassal appear to have been satisfactory. Very little is known about Ezzo's later life, but we are told that he died at a great age at Saalfeld on the 21st of March 1024. He left three sons, among them being Hermann, who was archbishop of Cologne from 1036 to 1056, and Otto, who was for a short time duke of Swabia; and seven daughters, six of whom became abbesses. Ezzo founded a monastery at Brauweiler near Cologne, the place where his marriage had been celebrated. This was dedicated in 1028 by Piligrim, archbishop of Cologne, and here both Ezzo and his wife were buried.

EZZOLIED, or Anegenge, an old German poem, written by Ezzo, a scholar of Bamberg. It was written about 1060, but not, as one authority asserts, composed while the author was making a pilgrimage to Jerusalem. The subject of the poem is the life of Christ. Very popular during the later middle ages, the *Ezzolied* had a great influence on the poetry of south Germany, and is valuable as a monument of the poetical literature of the time.

The text is printed in the *Denkmäler deutscher Poesie und Prosa aus dem 8-12. Jahrhundert* (Berlin, 1892) of C.V. Müllenhoff and W. Scherer.

F This is the sixth letter of the English alphabet as it was of the Latin. In the ordinary Greek alphabet the symbol has disappeared, although it survived far into historical times in many Greek dialects as Ϝ, the digamma, the use of which in early times was inductively proved by Bentley, when comparatively little was known of the local alphabets and dialects of Greece. The so-called *stigma* ς, which serves for the numeral 6, is all that remains to represent it. This symbol derives its name from its resemblance in medieval MSS. to the abbreviation for στ. The symbol occupying the same position in the Phoenician alphabet was Vau (), which seems to be represented by the Greek Y, the Latin V, at the end of the early alphabet. Many authorities therefore contend that F is only a modification of the preceding symbol E and has nothing to do with the symbol Vau. In some early Latin inscriptions F is represented by |⁞, as E is by ||. It must be admitted that the resemblance between the sixth symbol of the Phoenician alphabet and the corresponding symbol of the European alphabet is not striking. But the position of the limbs of symbols in early alphabets

often varies surprisingly. In Greek, besides  we find for *f* in Pamphylia (the only Greek district in Asia which possesses the symbol)  , and in Boeotia, Thessaly, Tarentum, Cumae and on Chalcidian vases of Italy the form  , though except at Cumae and on the vases the form exists contemporaneously with or even earlier. At the little town of Falerii (Civita Castellana), whose alphabet is undoubtedly of the same origin as the Latin, takes the form . Though uncertain, therefore, it seems not impossible that the original symbol of the Phoenician alphabet, which was a consonant like the English *w*, may have been differentiated in Greek into two symbols, one indicating the consonant value *w* and retaining the position of the Phoenician consonant Vau, the other having the vowel value *u*, which ultimately most dialects changed to a modified sound like French *u* or German *ü*. Be this as it may, the value of the symbol in Greek was *w*, a bilabial voiced sound, not the labio-dental unvoiced sound which we call *f*. When the Romans adopted the Greek alphabet they took over the symbols with their Greek values. But Greek had no sound corresponding to the Latin *f*, for φ was pronounced *p-h*, like the final sound of *lip* in ordinary English or the initial sound of *pig* in Irish English. Consequently in the very old inscription on a gold fibula found at Praeneste and published in 1887 (see Alphabet) the Latin *f* is represented by . Later, as Latin did not use for the consonant written as *v* in *vis*, &c. , was dropped and received a new special value in Latin as representative of the unvoiced labio-dental spirant. In the Oscan and Umbrian dialects, whose alphabet was borrowed from Etruscan, a special form appears for *f*, viz. , the old form being kept for the other consonant *v* (*i.e.* English *w*). The has generally been asserted to be developed out of the second element in the combination , its upper and lower halves being first converted into lozenges, , which naturally changed to when inscribed without lifting the writing or incising implement. Recent discoveries, however, make this doubtful (see Alphabet).

(P. Gi.)

FABBRONI, ANGELO (1732-1803), Italian biographer, was born at Marradi in Tuscany on the 25th of September 1732. After studying at Faenza he entered the Roman college founded for the education of young Tuscans. On the conclusion of his studies he continued his stay in Rome, and having been introduced to the celebrated Jansenist Bottari, received from him the canonry of Santa Teresa in Trastevere. Some time after this he was chosen to preach a discourse in the pontifical chapel before Benedict XIV. and made such a favourable impression that the pontiff settled on him an annuity, with the possession of which Fabbroni was able to devote his whole time to study. He was intimate with Leopold I., grand-duke of Tuscany, but the Jesuits disliked him on account of his Jansenist views. Besides his other literary labours he began at Pisa in 1771 a literary journal, which he continued till 1796. About 1772 he made a journey to Paris, where he formed the acquaintance of Condorcet, Diderot, d'Alembert, Rousseau and most of the other eminent Frenchmen of the day. He also spent four months in London. He died at Pisa on the 22nd of September 1803.

The following are his principal works:—*Vitae Italorum doctrina excellentium qui saeculis XVII. et XVIII. floruerunt* (20 vols., Pisa, 1778-1799, 1804-1805), the last two vols., published posthumously, contain a life of the author; *Laurentii Medicei Magnifici Vita* (2 vols., Pisa, 1784), a work which served as a basis for H. Roscoe's *Life of Lorenzo dei Medici*; *Leonis X. pontificis maximi Vita* (Pisa, 1797); and *Elogi di Dante Alighieri, di Angelo Poliziano, di Lodovico Ariosto, e di Torq. Tasso* (Parma, 1800).

FABER, the name of a family of German lead-pencil manufacturers. Their business was founded in 1760 at Stein, near Nuremberg, by Kaspar Faber (d. 1784). It was then inherited by his son Anton Wilhelm (d. 1819). Georg Leonhard Faber succeeded in 1810 (d. 1839), and the business passed to Johann Lothar von Faber (1817-1896), the great-grandson of the founder. At the time of his assuming control about twenty hands were employed, under old-fashioned conditions, and owing to the invention of the French *crayons Contés* of Nicolas Jacques Conté (*q.v.*) competition had reduced the entire Nuremberg industry to a low ebb (see Pencil). Johann introduced improvements in machinery and methods, brought his

factory to the highest state of efficiency, and it became a model for all the other German and Austrian manufacturers. He established branches in New York, Paris, London and Berlin, and agencies in Vienna, St Petersburg and Hamburg, and made his greatest *coup* in 1856, when he contracted for the exclusive control of the graphite obtained from the East Siberian mines. Faber had also branched out into the manufacture of water-colour and oil paints, inks, slates and slate-pencils, and engineers' and architects' drawing instruments, and built additional factories to house his various industries at New York and at Noisy-le-Sec, near Paris, and had his own cedar mills in Florida. For his services to German industry he received a patent of nobility and an appointment as councillor of state. After the death of his widow (1903) the business was inherited by his grand-daughter Countess Otilie von Faber-Castell and her husband, Count Alexander.

FABER, BASIL (1520—*c.* 1576), Lutheran schoolmaster and theologian, was born at Sorau, in lower Lusatia, in 1520. In 1538 he entered the university of Wittenberg, studying as *pauper gratis* under Melanchthon. Choosing the schoolmaster's profession, he became successively rector of the schools at Nordhausen, Tennstadt (1555), Magdeburg (1557) and Quedlinburg (1560). From this last post he was removed in December 1570 as a Crypto-Calvinist. In 1571 he was appointed to the Raths-gymnasium at Erfurt, not as rector, but as director (*Vorsteher*). In this situation he remained till his death in 1575 or 1576. His translation of the first twenty-five chapters of Luther's commentary on Genesis was published in 1557; in other ways he promoted the spread of Lutheran views. He was a contributor to the first four of the *Magdeburg Centuries*. He is best known by his *Thesaurus eruditionis scholasticae* (1571; last edition, improved by J.H. Leich, 1749, folio, 2 vols.); this was followed by his *Libellus de disciplina scholastica* (1572).

See Wagenmann and G. Müller in Herzog-Hauck's *Realencyklopädie* (1898).

(A. Go.*)

FABER, FREDERICK WILLIAM (1814-1863), British hymn writer and theologian, was born on the 28th of June 1814 at Calverley, Yorkshire, of which place his grandfather, Thomas Faber, was vicar. He attended the grammar school of Bishop Auckland for a short time, but a large portion of his boyhood was spent in Westmorland. He afterwards went to Harrow and to Balliol College, Oxford. In 1835 he obtained a scholarship at University College; and in 1836 he gained the Newdigate prize for a poem on "The Knights of St John," which elicited special praise from Keble. Among his college friends were Dean Stanley and Roundell Palmer, 1st earl of Selborne. In January 1837 he was elected fellow of University College. Meanwhile he had given up the Calvinistic views of his youth, and had become an enthusiastic follower of John Henry Newman. In 1841 a travelling tutorship took him to the continent; and on his return a book appeared called *Sights and Thoughts in Foreign Churches and among Foreign Peoples* (London, 1842), with a dedication to his friend the poet Wordsworth. He accepted the rectory of Elton in Huntingdonshire, but soon after went again to the continent, in order to study the methods of the Roman Catholic Church; and after a prolonged mental struggle he joined the Roman Catholic communion in November 1845. He founded a religious community at Birmingham, called Wilfridians, which was ultimately merged in the oratory of St Philip Neri, with John Henry Newman as Superior. In 1849 a branch of the oratory—subsequently independent—was established in London, first in King William Street, and afterwards at Brompton, over which Faber presided till his death on the 26th of September 1863. In spite of his weak health, an almost incredible amount of work was crowded into those years. He published a number of theological works, and edited the *Oratorian Lives of the Saints*. He was an eloquent preacher, and a man of great charm of character. It is mainly as a hymn-writer, however, that Faber is remembered. Among his best-known hymns are:—"The Greatness of God," "The Will of God," "The Eternal Father," "The God of my Childhood," "Jesus is God," "The Pilgrims of the Night," "The Land beyond the Sea," "Sweet Saviour, bless us ere we go," "I was wandering and weary," and "The Shadow of the Rock." The hymns are largely used in Protestant collections. In addition to

many pamphlets and translations, Faber published the following works: *All for Jesus*; *The Precious Blood*; *Bethlehem*; *The Blessed Sacrament*; *The Creator and the Creature*; *Growth of Holiness; Spiritual Conferences*; *The Foot of the Cross* (8 vols., London, 1853-1860).

See his *Life and Letters*, by Father J.E. Bowden (London, 1869), and *A Brief Sketch of the Early Life of the late F.W. Faber*, D.D., by his brother the Rev. F.A. Faber (London, 1869).

FABER, Fabri or Fabry (surnamed Stapulensis), **JACOBUS** [Jacques Lefèvre d'Étaples] (*c.* 1455—*c.* 1536), a pioneer of the Protestant movement in France, was born of humble parents at Étaples, in Pas de Calais, Picardy, about 1455. He appears to have been possessed of considerable means. He had already been ordained priest when he entered the university of Paris for higher education. Hermonymus of Sparta was his master in Greek. He visited Italy before 1486, for he heard the lectures of Argyropulus, who died in that year; he formed a friendship with Paulus Aemilius of Verona. In 1492 he again travelled in Italy, studying in Florence, Rome and Venice, making himself familiar with the writings of Aristotle, though greatly influenced by the Platonic philosophy. Returning to Paris, he became professor in the college of Cardinal Lemoine. Among his famous pupils were F.W. Vatable and Farel; his connexion with the latter drew him to the Calvinistic side of the movement of reform. At this time he began the publication, with critical apparatus, of Boëtius (*De Arithmetica*), and Aristotle's *Physics* (1492), *Ethics* (1497), *Metaphysics* (1501) and *Politics* (1506). In 1507 he took up his residence in the Benedictine Abbey of St Germain des Prés, near Paris; this was due to his connexion with the family of Briçonnet (one of whom was the superior), especially with William Briçonnet, cardinal bishop of St Malo (Meaux). He now began to give himself to Biblical studies, the first-fruit of which was his *Quintuplex Psalterium: Gallicum, Romanum, Hebraicum, Vetus, Conciliatum* (1509); the *Conciliatum* was his own version. This was followed by *S. Pauli Epistolae xiv. ex vulgata editione, adjecta intelligentia ex Graeco cum commentariis* (1512), a work of great independence and judgment. His *De Maria Magdalena et triduo Christi disceptatio* (1517) provoked violent controversy and was condemned by the Sorbonne (1521). He had left Paris during the whole of 1520, and, removing to Meaux, was appointed (May 1, 1523) vicar-general to Bishop Briçonnet, and published his French version of the New Testament (1523). This (contemporary with Luther's German version) has been the basis of all subsequent translations into French. From this, in the same year, he extracted the versions of the Gospels and Epistles "à l'usage du diocèse de Meaux." The prefaces and notes to both these expressed the view that Holy Scripture is the only rule of doctrine, and that justification is by faith alone. He incurred much hostility, but was protected by Francis I. and the princess Margaret. Francis being in captivity after the battle of Pavia (February 25, 1525), Faber was condemned and his works suppressed by commission of the parlement; these measures were quashed on the return of Francis some months later. He issued *Le Psautier de David* (1525), and was appointed royal librarian at Blois (1526); his version of the Pentateuch appeared two years later. His complete version of the Bible (1530), on the basis of Jerome, took the same place as his version of the New Testament. Margaret (now queen of Navarre) led him to take refuge (1531) at Nérac from persecution. He is said to have been visited (1533) by Calvin on his flight from France. He died in 1536 or 1537.

See C.H. Graf, *Essai sur la vie et les écrits* (1842); G. Bonet-Maury, in A. Herzog-Hauck's *Realencyklopädie* (1898).

(A. Go.*)

FABER (or Lefèvre), **JOHANN** (1478-1541), German theologian, styled from the title of one of his works "Malleus Haereticorum," son of one Heigerlin, a smith (*faber*), was born at Leutkirch, in Swabia, in 1478. His early life is obscure; the tradition that he joined the Dominicans is untenable. He studied theology and canon law at Tübingen and at Freiburg im Breisgau, where he matriculated on the 26th of July 1509, and graduated M.A. and doctor of canon law. He was soon appointed vicar of Lindau and Leutkirch, and shortly afterwards canon of Basel. In 1518 Hugo von Landenberg, bishop of Constance, made him one of his

vicars-general, and Pope Leo X. appointed him papal protonotary. He was an advocate of reforms, in sympathy with Erasmus, and corresponded (1519-1520) with Zwingli. While he defended Luther against Eck, he was as little inclined to adopt the position of Luther as of Carlstadt. His journey to Rome in the autumn of 1521 had the result of estranging him from the views of the Protestant leaders. He published *Opus adversus nova quaedam dogmata Lutheri* (1522), and appeared as a disputant against Zwingli at Zürich (1523). Then followed his *Malleus in haeresin Lutheranam* (1524). Among his efforts to stem the tide of Protestant innovation was the establishment of a training-house for the maintenance and instruction of popular preachers, drawn from the lower ranks, to compete with the orators of reform. In 1526 he became court preacher to the emperor Ferdinand, and in 1527 and 1528 was sent by him as envoy to Spain and England. He approved the death by burning of Balthasar Hubmeier, the Baptist, at Vienna on the 10th of March 1528. In 1531 he was consecrated bishop of Vienna, and combined with this (till 1538) the administration of the diocese of Neustadt. He died at Vienna on the 21st of May 1541. His works were collected in three volumes, 1537, 1539 and 1541.

See C.E. Kettner, *Diss. de J. Fabri Vita Scriptisque* (1737); Wagenmann and Egli in Herzog-Hauck's *Realencyklopädie* (1898).

(A. Go.*)

FABERT, ABRAHAM DE (1599-1660), marshal of France, was the son of Abraham Fabert, seigneur de Moulins (d. 1638), a famous printer who rendered great services, civil and military, to Henry IV. At the age of fourteen he entered the *Gardes françaises*, and in 1618 received a commission in the Piedmont regiment, becoming major in 1627. He distinguished himself repeatedly in the constant wars of the period, notably in La Rochelle and at the siege of Exilles in 1630. His bravery and engineering skill were again displayed in the sieges of Avesnes and Maubeuge in 1637, and in 1642 Louis XIII. made him governor of the recently-acquired fortress of Sedan. In 1651 he became lieutenant-general, and in 1654 at the siege of Stenay he introduced new methods of siegecraft which anticipated in a measure the great improvements of Vauban. In 1658 Fabert was made a marshal of France, being the first commoner to attain that rank. He died at Sedan on the 17th of May 1660.

See *Histoire du maréchal de Fabert* (Amsterdam, 1697); P. Barre, *Vie de Fabert* (Paris, 1752); A. Feillet, *Le Premier Maréchal de France plébéien* (Paris, 1869); Bourelly, *Le Maréchal Fabert* (Paris, 1880).

FABIAN [Fabianus], **SAINT** (d. 250), pope and martyr, was chosen pope, or bishop of Rome, in January 236 in succession to Anteros. Eusebius (*Hist. Eccl.* vi. 29) relates how the Christians, having assembled in Rome to elect a new bishop, saw a dove alight upon the head of Fabian, a stranger to the city, who was thus marked out for this dignity, and was at once proclaimed bishop, although there were several famous men among the candidates for the vacant position. Fabian was martyred during the persecution under the emperor Decius, his death taking place on the 20th of January 250, and was buried in the catacomb of Calixtus, where a memorial has been found. He is said to have baptized the emperor Philip and his son, to have done some building in the catacombs, to have improved the organization of the church in Rome, to have appointed officials to register the deeds of the martyrs, and to have founded several churches in France. His deeds are thus described in the *Liber Pontificalis*: "Hic regiones dividit diaconibus et fecit vii subdiacones, qui vii notariis imminerent, ut gestas martyrum integro fideliter colligerent, et multas fabricas per cymiteria fieri praecepit." Although there is very little authentic information about Fabian, there is evidence that his episcopate was one of great importance in the history of the early church. He was highly esteemed by Cyprian, bishop of Carthage; Novatian refers to his *nobilissimae memoriae*, and he corresponded with Origen. One authority refers to him as Flavian.

See the article on "Fabian" by A. Harnack in Herzog-Hauck's *Realencyklopädie*, Band v.

(Leipzig, 1898).

FABIUS, the name of a number of Roman soldiers and statesmen. The Fabian gens was one of the oldest and most distinguished patrician families of Rome. Its members claimed descent from Hercules and a daughter of the Arcadian Evander. From the earliest times it played a prominent part in Roman history, and was one of the two gentes exclusively charged with the management of the most ancient festival in Rome—the Lupercalia (Ovid, *Fasti*, ii. 375). The chief family names of the Fabian gens or clan, in republican times, were Vibulanus, Ambustus, Maximus, Buteo, Pictor, Dorso, Labeo; with surnames Verrucosus, Rullianus, Gurges, Aemilianus, Allobrogicus (all of the Maximus branch). The most important members of the family are the following:—

1. Marcus Fabius Ambustus, pontifex maximus in the year of the capture of Rome by the Gauls (390). His three sons, Quintus, Numerius and Caeso, although they had been sent as ambassadors to the Gauls when they were besieging Clusium, subsequently took part in hostilities (Livy v. 35). The Gauls thereupon demanded their surrender, on the ground that they had violated the law of nations; the Romans, by way of reply, elected them consular tribunes in the following year. The result was the march of the Gauls upon Rome, the battle of the Allia, and the capture of the city (Livy vi. 1).

2. Q. Fabius Maximus, surnamed *Rullianus* or *Rullus*, master of the horse in the second Samnite War to L. Papirius Cursor, by whom he was degraded for having fought the Samnites contrary to orders (Livy viii. 30), in spite of the fact that he gained a victory. In 315, when dictator, he was defeated by the Samnites at Lautulae (Livy ix. 23). In 310 he defeated the Etruscans at the Vadimonian Lake. In 295, consul for the fifth time, he defeated, at the great battle of Sentinum, the combined forces of the Etrurians, Umbrians, Samnites and Gauls (see Rome: *History*, II. “The Republic”). As censor (304) he altered the arrangement of Appius Claudius Caecus, whereby the freedmen were taken into all the tribes, and limited them to the four city tribes. For this he is said to have received the title of *Maximus*, as the deliverer of the comitia from the rule of the mob (Livy ix. 46), but there is reason to think that this title was first conferred on his grandson. It is probable that his achievements are greatly exaggerated by historians favourable to the Fabian house.

3. Quintus Fabius Maximus, surnamed *Verrucosus* (from a wart on his lip), *Ovicula* (“the lamb,” from his mild disposition), and *Cunctator* (“the delayer,” from his cautious tactics in the war against Hannibal), grandson of the preceding. He served his first consulship in Liguria (233 B.C.), was censor (230) and consul for the second time (228). In 218 he was sent to Carthage to demand satisfaction for the attack on Saguntum (Livy xxi. 18). According to the well-known story, he held up a fold of his toga and offered the Carthaginians the choice between peace and war. When they declared themselves indifferent, he let fall his toga with the words, “Then take war.” After the disastrous campaign on the Trebia, and the defeat on the banks of the Trasimene Lake, Fabius was named dictator (Livy calls him pro-dictator, since he was nominated, not by the consul, but by the people) in 217, and began his tactics of “masterly inactivity.” Manœuvring among the hills, where Hannibal’s cavalry were useless, he cut off his supplies, harassed him incessantly, and did everything except fight. His steady adherence to his plan caused dissatisfaction at Rome and in his own camp, and aroused the suspicion that he was merely endeavouring to prolong his command. Minucius Rufus, his master of the horse, seized the opportunity, during the absence of Fabius at Rome, to make an attack upon the enemy which proved successful. The people, more than ever convinced that a forward movement was necessary, divided the command between Minucius and Fabius (Livy xxii. 15. 24; Polybius iii. 88). Minucius was led into an ambuscade by Hannibal, and his army was only saved by the opportune arrival of Fabius. Minucius confessed his mistake and henceforth submitted to the orders of Fabius (Livy xxiii. 32). At the end of the legal time of six months Fabius resigned the dictatorship and the war was carried on by the consuls. The result of the abandonment of Fabian tactics was the disaster of Cannae (216). In 215 and 214 (as consul for the third and fourth times) he was in charge of the operations against Hannibal together with Claudius Marcellus (Livy xxiii. 39). He laid siege to Capua, which had gone over to Hannibal after Cannae, and captured the important position of Casilinum; in his fifth consulship (209) he retook Tarentum, which had been occupied by Hannibal for three years (Livy xxvii. 15; Polybius xiii. 4; Plutarch, *Fabius*). He died in 203. Fabius was a strenuous opponent of the new aggressive policy, and did all he

could to prevent the invasion of Africa by Scipio. He was distinguished for calmness and prudence, while by no means lacking in courage when it was required. In his later years, however, he became morose, and showed jealousy of rising young men, especially Scipio (*Life* by Plutarch; Livy xx.-xxx.; Polybius iii. 87-106).

4. Q. Fabius Maximus Aemilianus, eldest son of L. Aemilius Paullus, adopted by Fabius Cunctator. He served in the last Macedonian War (168), and, as consul, defeated Viriathus in Spain (Livy, *Epit.* 52). He was the pupil and patron of Polybius (Polybius xviii., xxix. 6, xxxii. 8-10; Livy xliv. 35).

5. Q. Fabius Maximus Allobrogicus, son of the above, consul 121 in Gaul. He obtained his surname from his victory over the Allobroges and Arverni in that year (Vell. Pat. ii. 10; Eutropius iv. 22). As censor (108) he erected the first triumphal arch.

6. Q. Fabius Vibulanus, with his brothers Caeso and Marcus, filled the consulship for seven years in succession (485-479 B.C.). In the last year there was a reaction against the family, in consequence of Caeso espousing the cause of the plebeians. Thereupon the Fabii—to the number, it is said, of 306 patricians, with some 5000 dependents—emigrated from Rome under the leadership of Caeso, and settled on the banks of the Cremera, a few miles above Rome. For two years the exiles continued to be the city's chief defence against the Veientes, until at last they were surprised and cut off. The only survivor of the gens was Quintus, the sen of Marcus, who apparently took no part in the battle. The story that he had been left behind at Rome on account of his youth cannot be true, as he was consul ten years afterwards. This Quintus was consul in 467, 465 and 459, and a member of the second decemvirate in 450, on the fall of which he went into voluntary exile (Livy ii. 42, 48-50, iii. 1, 9, 41, 58, vi. 1; Dion. Halic. viii. 82-86, ix. 14-22: Ovid, *Fasti*, ii. 195).

The Fabian name is met with as late as the 2nd century A.D. A complete list of the Fabii will be found in de Vit's *Onomasticon*; see also W.N. du Rieu, *Disputatio de Gente Fabia* (1856), containing an account of 57 members of the family.

FABIUS PICTOR, QUINTUS, the father of Roman history, was born about 254 B.C. He was the grandson of Gaius Fabius, who received the surname *Pictor* for his painting of the temple of Salus (302). He took an active part in the subjugation of the Gauls in the north of Italy (225), and after the battle of Cannae (216) was employed by the Romans to proceed to Delphi in order to consult the oracle of Apollo. He was the earliest prose writer of Roman history. His materials consisted of the *Annales Maximi*, *Commentarii Consulares*, and similar records; the chronicles of the great Roman families; and his own experiences in the Second Punic War. He is also said to have made much use of the Greek historian Diodes of Peparethus. His work, which was written in Greek, began with the arrival of Aeneas in Italy, and ended with the Hannibalic war. Although Polybius and Dionysius of Halicarnassus frequently find fault with him, the first uses him as his chief authority for the Second Punic War. A Latin version of the work was in existence in the time of Cicero, but it is doubtful whether it was by Fabius Pictor or by a later writer with whom he was confused—Q. Fabius Maximus Servilianus (consul 142); or there may have been two annalists of the name of Fabius Pictor.

Fragments in H. Peter, *Historicorum Romanorum Fragmenta* (1883); see also Annalists and Livy, and Teuffel-Schwabe, *History of Roman Literature*, § 116.

FABLE (Fr. *fable*, Lat. *fabula*). With certain restrictions, the necessity of which will be shown in the course of the article, we may accept the definition of "fable" which Dr Johnson proposes in his *Life of Gay*: "A *fable* or *apologue* seems to be, in its genuine state, a narrative in which beings irrational, and sometimes inanimate (*arbores loquuntur, non tantum ferae*), are, for the purpose of moral instruction, feigned to act and speak with human interests and passions." The description of La Fontaine, the greatest of fabulists, is a poetic rendering of Johnson's definition:

"Fables in sooth are not what they appear;
Our moralists are mice, and such small deer.
We yawn at sermons, but we gladly turn
To moral tales, and so amused we learn."

The fable is distinguished from the myth, which grows and is not made, the spontaneous and unconscious product of primitive fancy as it plays round some phenomenon of natural or historical fact. The literary myth, such as, for instance, the legend of Pandora in Hesiod or the tale of Er in the *Republic* of Plato, is really an allegory, and differs from the fable in so far as it is self-interpreting; the story and the moral are intermingled throughout. Between the parable and the fable there is no clear line of demarcation, and theologians like Trench have unwarrantably narrowed their definition of a parable to fit those of the New Testament. The soundest distinction is drawn by Neander. In the fable human passions and actions are attributed to beasts; in the parable the lower creation is employed only to illustrate the higher life and never transgresses the laws of its kind. But whether Jotham's apologue of the trees choosing a king, perhaps the first recorded in literature, should be classed as a fable or a parable is hardly worth disputing. Lastly, we may point out the close affinity between the fable and the proverb. A proverb is often a condensed or fossilized fable, and not a few fables are amplified or elaborated proverbs.

The history of the fable goes back to the remotest antiquity, and Aesop has even less claim to be reckoned the father of the fable than has Homer to be entitled the father of poetry. The fable has its origin in the universal impulse of men to express their thoughts in concrete images, and is strictly parallel to the use of metaphor in language. It is the most widely diffused if not the most primitive form of literature. Though it has fallen from its high place it still survives, as in J. Chandler Harris's *Uncle Remus* and Rudyard Kipling's *Jungle Book*. The Arab of to-day will invent a fable at every turn of the conversation as the readiest form of argument, and in the *Life* of Coventry Patmore it is told how an impromptu fable of his about the pious dormouse found its way into Catholic books of devotion.

With the fable, as we know it, the moral is indispensable. As La Fontaine puts it, an apologue is composed of two parts, body and soul. The body is the story, the soul the morality. But if we revert to the earliest type we shall find that this is no longer the case. In the primitive beast-fable, which is the direct progenitor of the Aesopian fable, the story is told simply for its own sake, and is as innocent of any moral as the fairy tales of Little Red Riding-Hood and Jack and the Beanstalk. Thus, in a legend of the Flathead Indians, the Little Wolf found in cloud-land his grandsires the Spiders with their grizzled hair and long crooked nails, and they spun balls of thread to let him down to earth; when he came down and found his wife the Speckled Duck, whom the Old Wolf had taken from him, she fled in confusion, and this is why she lives and dives alone to this very day. Such animal myths are as common in the New World as in the Old, and abound from Finland and Kamtchatka to the Hottentots and Australasians. From the story invented, as the one above quoted, to account for some peculiarity of the animal world, or told as a pure exercise of the imagination, just as a sailor spins a yarn about the sea-serpent, to the moral apologue the transition is easy; and that it has been effected by savages unaided by the example of higher races seems sufficiently proved by the tales quoted by E.B. Tylor (*Primitive Culture*, vol. i. p. 411). From the beast-fables of savages we come next to the Oriental apologues, which we still possess in their original form. The East, the land of myth and legend, is the natural home of the fable, and Hindustan was the birthplace, if not of the original of these tales, at least of the oldest shape in which they still exist. The *Pancha Tantra* (2nd century B.C.), or fables of the Brahma Vishnu Sarman, have been translated from Sanskrit into almost every language and adapted by most modern fabulists. The *Kalilah* and *Dimna* (names of two jackals), or fables of Bidpai (or Pilpai), passed from India to western Europe through the successive stages of Pahlavi (ancient Persian), Arabic, Greek, Latin. By the end of the 16th century there were Italian, French and English versions. There is an excellent Arabic edition (Paris, 1816) with an introduction by Sylvestre de Sacy. The *Hitopadesa*, or "friendly instruction," is a modernized form of the same work, and of it there are three translations into English by Dr Charles Wilkins, Sir William Jones and Professor F. Johnson. The *Hitopadesa* is a complete chaplet of fables loosely strung together, but connected so as to form something of a continuous story, with moral reflections freely interspersed, purporting to be written for the instruction of some dissolute young princes. Thus, in the first fable a flock of pigeons see the grains of rice which a fowler has scattered, and are about to descend on them, when the king of the pigeons warns them by telling the fable of a traveller who being greedy of a bracelet was devoured by a tiger. They neglect his warning and are caught in the net, but are afterwards delivered by the king of the mice, who tells the story of the Deer, the Jackal and the Crow, to

show that no real friendship can exist between the strong and the weak, the beast of prey and his quarry, and so on to the end of the volume. Another book of Eastern fables is well worthy of notice, *Buddhaghosha's Parables*, a commentary on the *Dhammapada* or *Buddha's Paths of Virtue*. The original is in Pali, but an English translation of the Burmese version was made by Captain T. Rogers, R.E.

From Hindustan the Sanskrit fables passed to China, Tibet and Persia; and they must have reached Greece at an early age, for many of the fables which passed under the name of Aesop are identical with those of the East. Aesop to us is little more than a name, though, if we may trust a passing notice in Herodotus (ii. 134), he must have lived in the 6th century B.C. Probably his fables were never written down, though several are ascribed to him by Xenophon, Aristotle, Plutarch and other Greek writers, and Plato represents Socrates as beguiling his last days by versifying such as he remembered. Aristophanes alludes to them as merry tales, and Plato, while excluding the poets from his ideal republic, admits Aesop as a moral teacher. Of the various versions of *Aesop's Fables*, by far the most trustworthy is that of Babrius or Babrias, a Greek probably of the 3rd century A.D., who rendered them in choliambic verse. These, which were long known in fragments only, were recovered in a MS. found by M. Minas in a monastery on Mount Athos in 1842, now in the British Museum.[1] An inferior version of the same in Latin iambics was made by Phaedrus, a slave of Thracian origin, brought to Rome in the time of Augustus and manumitted by him. Phaedrus professes to polish in senarian verse the rough-hewn blocks from Aesop's quarry; but the numerous allusions to contemporary events, as, for example, his hit at Sejanus in the Frogs and the Sun, which brought upon the author disgrace and imprisonment, show that many of them are original or free adaptations. For some time scholars doubted as to the genuineness of Phaedrus's fables, but their doubts have been lately dispelled by a closer examination of the MSS. and by the discovery of two verses of a fable on a tomb at Apulum in Dacia. Phaedrus's style is simple, clear and brief, but dry and unpoetical; and, as Lessing has pointed out, he often falls into absurdities when he deserts his original. For instance, in Aesop the dog with the meat in his mouth sees his reflection in the water as he passes over a bridge; Phaedrus makes him see it as he swims across the river.

To sum up the characteristics of the Aesopian fable, it is artless, simple and transparent. It affects no graces of style, and we hardly need the text with which each concludes, ὁ μῦθος δηλοῖ ὅτι, κ.τ.λ. The moral inculcated is that of *Proverbial Philosophy* and *Poor Richard's Almanacks*. Aesop is no maker of phrases, but an orator who wishes to gain some point or induce some course of action. It is the Aesopian type that Aristotle has in view when he treats of the fable as a branch of rhetoric, not of poetry.

The Latin race was given to moralizing, and the language lent itself to crisp and pointed narrative, but they lacked the free play of fancy, the childlike "make-believe," to produce a national body of fables. With the doubtful exception of Phaedrus, we possess nothing but solitary examples, such as the famous apologue of Menenius Agrippa to the Plebs and the exquisite Town Mouse and Country Mouse of Horace's *Satires*.

The fables of the rhetorician Aphthonius about A.D. 400 in Greek prose, and those in Latin elegiac verse by Avianus, used for centuries as a text-book in schools, form in the history of the apologue a link between classical and medieval times. In a Latin dress, sometimes in prose, sometimes in regular verse, and sometimes in rhymed stanzas, the fable contributed, with other kinds of narratives, to make up the huge mass of stories which has been bequeathed to us by the monastic libraries. These served more uses than one. They were at once easier and safer reading than the classics. To the lazy monk they stood in place of novels; to the more industrious and gifted they furnished an exercise on a par with Latin verse composition in our public schools; the more original transformed them into *fabliaux*, or embodied them in edifying stories, as in the *Gesta Romanorum*. It is not in the *Speculum Doctrinale* of Vincent de Beauvais, a Dominican of the 12th century, nor in the collection of his contemporary Odo de Cerinton, an English Cistercian, nor in Planudes of the 14th century, whose one distinction is to have added to the fables a life of Aesop, that the direct lineage of La Fontaine must be traced. It is the *fabliaux* that inspired some of his best fables —the Lion's Court, the Young Widow, the Coach and the Fly.

As the supremacy of Latin declined and modern languages began to be turned to literary uses, the fable took a new life. Not only were there numerous adaptations of Aesop, known as Ysopets, but Marie de France in the 13th century composed many original fables, some rivalling La Fontaine's in simplicity and gracefulness. Later, also, fables were not wanting, though not numerous, in the English tongue. Chaucer has given us one, in his Nonne Preste's Tale, which is an expansion of the fable *Don Coc et don Werpil* of Marie de France; another is Lydgate's tale of The Churl and the Bird.

Several of Odo's tales, like Chaucer's story, can be ultimately traced to the History of Reynard the Fox. This great beast-epic has been referred by Grimm as far back as the 10th century, and is known to us in three forms, each with independent episodes, but all woven upon a common basis. The Latin form is probably the earliest, and the poems *Reinardus* and *Ysengrinus* date from the 10th or 11th century. Next come the German versions. The most ancient, that of a minnesinger Heinrich der Glichesaere (probably a Swabian), was analysed and edited by Grimm in 1840. The French poem of more than 30,000 lines, the *Roman du Rénard*, belongs probably to the 13th century. In 1498 appeared *Reynke de Voss*, almost a literal version in Low Saxon of the Flemish poem of the 12th century, *Reinaert de Vos*. Hence the well-known version of Goethe into modern German hexameters was taken. The poem has been well named "an unholy world Bible." In it the Aesopian fable received a development which was in several respects quite original. We have here no short and unconnected stories. Materials, partly borrowed from older apologues, but in a much greater proportion new, are worked up into one long and systematic tale. The moral, so prominent in the fable proper, shrinks so far into the background, that the epic might be considered a work of pure fiction, an animal romance. The attempts to discover in it personal satire have signally failed; some critics deny even the design to represent human conduct at all; and we can scarcely get nearer to its signification than by regarding it as being, in a general way, what Carlyle has called "a parody of human life." It represents a contest maintained successfully, by selfish craft and audacity, against enemies of all sorts, in a half-barbarous and ill-organized society. With his weakest foes, like Chaunteclere the Cock, Reynard uses brute-force; over the weak who are protected, like Kiward the Hare and Belin the Ram, he is victorious by uniting violence with cunning; Bruin, the dull, strong, formidable Bear, is humbled by having greater power than his own enlisted against him; and the most dangerous of all the fox's enemies, Isengrim, the obstinate, greedy and implacable Wolf, after being baffled by repeated strokes of malicious ingenuity, forces Reynard to a single combat, but even thus is not a match for his dexterous adversary. The knavish fox has allies worthy of him in Grimbart the watchful badger, and in his own aunt Dame Rukenawe, the learned She-ape; and he plays at his pleasure on the simple credulity of the Lion-King, the image of an impotent feudal sovereign. The characters of these and other brutes are kept up with a rude kind of consistency, which gives them great liveliness; many of the incidents are devised with much force of humour; and the sly hits at the weak points of medieval polity and manners and religion are incessant and palpable.

It is needless to trace the fable, or illustrations borrowed from fables, that so frequently occur as incidental ornaments in the older literature of England and other countries. It has appeared in every modern nation of Europe, but has nowhere become very important, and has hardly ever exhibited much originality either of spirit or of manner. In English, Prior transplanted from France some of La Fontaine's ease of narration and artful artlessness, while Gay took as his model the *Contes* rather than the *Fables*. Gay's fables are often political satires, but some, like the Fox on his Deathbed, have the true ring, and in the Hare with many Friends there is genuine pathos. To Dryden's spirited remodellings of old poems, romances and *fabliaux*, the name of fables, which he was pleased to give them, is quite inapplicable. In German, Hagedorn and Gellert, both famous in their day and the latter extolled by Goethe, are quite forgotten; and even Lessing's fables are read by few but schoolboys. In Spanish, Yriarte's fables on literary subjects are sprightly and graceful, but the critic is more than the fabulist. A spirited version of the best appeared in *Blackwood's Magazine*, 1839. Among Italians Pignotti is famous for versatility and command of rhythm, as amongst Russians is Kriloff for his keen satire on Russian society. He has been translated into English by Ralston.

France alone in modern times has attained any pre-eminence in the fable, and this distinction is almost entirely owing to one author. Marie de France in the 13th century, Gilles Corrozet, Guillaume Haudent and Guillaume Gueroult in the 16th, are now studied mainly as the precursors of La Fontaine, from whom he may have borrowed a stray hint or the outline of a story. The unique character of his work has given a new word to the French language: other writers of fables are called *fabulistes*, La Fontaine is named *le fablier*. He is a true poet; his verse is exquisitely modulated; his love of nature often reminds us of Virgil, as do his tenderness and pathos (see, for instance, The Two Pigeons and Death and the Woodcutter). He is full of sly fun and delicate humour; like Horace he satirizes without wounding, and "plays around the heart." Lastly, he is a keen observer of men. The whole society of the 17th century, its greatness and its foibles, its luxury and its squalor, from *Le grand monarque* to the poor *manant*, from his majesty the lion to the courtier of an ape, is painted to the life. To borrow his own phrase, La Fontaine's fables are "une ample comédie à cent actes divers." Rousseau did his best to discredit the *Fables* as immoral and corruptors

of youth, but in spite of *Émile* they are studied in every French school and are more familiar to most Frenchmen than their breviary. Among the successors of La Fontaine the most distinguished is Florian. He justly estimates his own merits in the pretty apologue that he prefixed to his *Fables*. He asks a sage whether a fabulist writing after La Fontaine would not be wise to consign his work to the flames. The sage replies by a question: “What would you say did some sweet, ingenuous Maid of Athens refuse to let herself be seen because there was once a Helen of Troy?”

The fables of Lessing represent the reaction against the French school of fabulists. “With La Fontaine himself,” says Lessing, “I have no quarrel, but against the imitators of La Fontaine I enter my protest.” His attention was first called to the fable by Gellert’s popular work published in 1746. Gellert’s fables were closely modelled after La Fontaine’s, and were a vehicle for lively railings against the fair sex, and hits at contemporary follies. Lessing’s early essays were in the same style, but his subsequent study of the history and theory of the fable led him to discard his former model as a perversion of later times, and the “Fabeln,” published in 1759, are the outcome of his riper views. Lessing’s fables, like all that he wrote, display his vigorous common sense. He has, it is true, little of La Fontaine’s *curiosa felicitas*, his sly humour and lightness of touch; and Frenchmen would say that his criticism of La Fontaine is an illustration of the fable of the sour grapes. On the other hand, he has the rare power of looking at both sides of a moral problem; he holds a brief for the stupid and the feeble, the ass and the lamb; and in spite of his formal protest against poetical ornament, there is in not a few of his fables a vein of true poetry, as in the Sheep (ii. 13) and Jupiter and the Sheep (ii. 18). But the monograph which introduced the *Fabeln* is of more inportance than the fables themselves. According to Lessing the ideal fable is that of Aesop. All the elaborations and refinements of later authors, from Phaedrus to La Fontaine, are perversions of this original. The fable is essentially a moral precept illustrated by a single example, and it is the lesson thus enforced which gives to the fable its unity and makes it a work of art. The illustration must be either an actual occurrence or represented as such, because a fictitious case invented *ad hoc* can appeal but feebly to the reader’s judgment. Lastly, the fable requires a story or connected chain of events. A single fact will not make a fable, but is only an emblem. We thus arrive at the following definition:—“A fable is a relation of a series of changes which together form a whole. The unity of the fable consists herein, that all the parts lead up to an end, the end for which the fable was invented being the moral precept.”

We may notice in passing a problem in connexion with the fable which had long been debated, but never satisfactorily resolved till Lessing took it in hand—Why should animals have been almost universally chosen as the chief *dramatis personae*? The reason, according to Lessing, is that animals have distinct characters which are known and recognized by all. The fabulist who writes of Britannicus and Nero appeals to the few who know Roman history. The Wolf and the Lamb comes home to every one whether learned or simple. But, besides this, human sympathies obscure the moral judgment; hence it follows that the fable, unlike the drama and the epos, should abstain from all that is likely to arouse our prejudices or our passions. In this respect the Wolf and the Lamb of Aesop is a more perfect fable than the Rich Man and the Poor Man’s Ewe Lamb of Nathan.

Lessing’s analysis and definition of the fable, though he seems himself unconscious of the scope of his argument, is in truth its death-warrant. The beast-fable arose in a primitive age when men firmly believed that beasts could talk and reason, that any wolf they met might be a were-wolf, that a peacock might be a Pythagoras in disguise, and an ox or even a cat a being worthy of their worship. To this succeeded the second age of the fable, which belongs to the same stage of culture as the Hebrew proverbs and the gnomic poets of Greece. That honesty is the best policy, that death is common to all, seemed to the men of that day profound truths worthy to be embalmed in verse or set off by the aid of story or anecdote. Last comes an age of high literary culture which tolerates the trite morals and hackneyed tales for the sake of the exquisite setting, and is amused at the wit which introduces topics and characters of the day under the transparent veil of animal life. Such an artificial product can be nothing more than the fashion of a day, and must, like pastoral poetry, die a natural death. A serious moralist would hardly choose that form to inculcate, like Mandeville in his *Fable of the Bees*, a new doctrine in morals, for the moral of the fable must be such that he who runs may read. A true poet will not care to masquerade as a moral teacher, or show his wit by refurbishing some old-world maxim. Yet Taine in France, Lowell in America, and J.A. Froude in England have proved that the fable as one form of literature is not yet extinct, and is capable of new and unexpected developments.

BIBLIOGRAPHY.—*Pantschatantrum*, ed. Kosegarten (Bonn, 1848); *Hitopadesa*, ed. Max Müller

(1864); Silvestre de Sacy, *Calilah et Dimna, ou Fables de Bidpai, en Arabe, précédées d'un mémoire sur l'origine de ce livre* (Paris, 1816), translated by the Rev. Wyndham Knatchbull (Oxford, 1819); Comparetti, *Ricerche intorno al Libro di Sindebād* (Milan, 1869); Max Müller, "Migration of Fables," *Chips from a German Workshop*, vol. iv. (1875); Keller, *Untersuchungen über die Geschichte der griechischen Fabel* (Leipzig, 1862); *Babrius*, ed. W.G. Rutherford, with excursus on Greek fables (1883); L. Hervieux, *Les Fabuiistes latins* (1884); Jakob Grimm, *Reinhart Fuchs* (Berlin, 1834); A.C.M. Robert, *Fables inédites des XII^{e}, XIII^{e}, et XIV^{e} siècles*, &c. (Paris, 1825); Taine, *Essai sur les fables de La Fontaine* (1853); Saint-Marc Girardin, *La Fontaine et les fabulistes* (Paris, 1867).

(F. S.)

1 M. Minas professed to have discovered under the same circumstances another collection of ninety-four fables by Babrius. This second part was accepted by Sir G.C. Lewis, but J. Conington conclusively proved it spurious, and probably a forgery. See Babrius.

FABLIAU. The entertaining tales in eight-syllable rhymed verse which form a marked section of French medieval literature are called *fabliaux*, the word being derived by Littré from *fablel*, a diminutive of *fable*. It is a mistake to suppose, as is frequently done, that every legend of the middle ages is a fabliau. In a poem of the 12th century a clear distinction is drawn between songs of chivalry, war or love, and *fabliaux*, which are recitals of laughter. A fabliau always related an event; it was usually brief, containing not more than 400 lines; it was neither sentimental, religious nor supernatural, but comic and gay. MM. de Montaiglon and Raynaud, who have closely investigated this class of literature, consider that about 150 fabliaux have come down to us more or less intact; a vast number have doubtless disappeared. It appears from a phrase in the writings of the trouvère, Henri d'Andeli, that the fabliau was not thought worthy of being copied out on parchment. The wonder, then, is that so many of these ephemeral compositions have been preserved. Arguments brought forward by M. Joseph Bédier, however, tend to show that we need not regret the disappearance of the majority of the fabliaux, as those which were copied into MSS. were those which were felt to be of the greatest intrinsic value. As early as the 8th century fabliaux must have existed, since the faithful are forbidden to take pleasure in these *fabulas inanes* by the *Paenitentiale* of Egbert. But it appears that all the early examples are lost.

In the opinion of the best scholars, the earliest surviving fabliau is that of *Richeut*, which dates from 1159. This is a rough and powerful study of the coarse life of the day, with little plot, but engaged with a realistic picture of manners. Such poems, but of a more strictly narrative nature, continued to be produced, mainly in the north and north-east of France, until the middle of the 14th century. Much speculation has been expended on the probable sources of the tales which the trouvères told. The Aryan theory, which saw in them the direct influence of India upon Europe, has now been generally abandoned. It does not seem probable that any ancient or exotic influences were brought to bear upon the French jongleurs, who simply invented or adapted stories of that universal kind which springs unsown from every untilled field of human society. More remarkable than the narratives themselves is the spirit in which they are told. This is full of the national humour and the national irony, the true *esprit gaulois*. A very large section of these popular poems deals satirically with the pretensions of the clergy. Such are the famous *Prêtre aux mûres*, the *Prêtre qui dit la Passion* and *Les Perdrix*. Some of these are innocently merry; others are singularly depraved and obscene. Another class of fabliaux is that which comprises jests against the professions; in this, the most prominent example is *Le Vilain Mire*, a satire on doctors, which curiously predicts the *Médecin malgré lui* of Molière. There are also tales whose purpose is rather voluptuous than witty, and whose aim is to excuse libertinage and render marriage ridiculous. Among these are prominent *Court Mantel* and *Le Dit de Berenger*. Yet another class repeated, with a strain of irony or oddity, such familiar classical stories as those of Narcissus, and Pyramus and Thisbe. It is rarely that any elevation of tone raises these poems above a familiar and even playful level, but there are some that are almost idealistic. Among these the story of a sort of Sisyphus errant, *Le Chevalier de Barizel*, offers an ethical interest which lifts it in certain respects above all other surviving fabliaux. An instance of the pathetic fabliau is *Housse Partie*, a kind of primitive version of the story of King Lear.

In composing these pieces, of very varied character, the jongleurs have practised an art

which was in many respects rudimentary, but sincere and simple. The student of language finds the rich vocabulary of the fabliaux much more attractive to him than the conventionality of the serious religious and amatory poems of the same age. The object of the writers was the immediate amusement of their audience; by reference to familiar things, they hoped to arouse a quick and genuine merriment. Hence their incorrectness and their negligence are balanced by a delightful ease and absence of pedantry, and in the fabliaux we get closer than elsewhere to the living diction of medieval France. It is true that if we extend too severe a judgment to these pieces, we may find ourselves obliged to condemn them altogether. An instructed French critic, vexed with their faults, has gone so far as to say that "the subjects of these tales are degrading, their inspiration nothing better than flat and cruel derision, their distinguishing features rascality, vulgarity and platitude of style." From one point of view, this condemnation of the fabliau is hardly too severe. But such scholars as Gaston Paris and Paul Meyer have not failed to emphasize other sides to the question. They have praised, in the general laxity of style and garrulity of the middle ages, the terseness of the jongleurs; in the period of false ornament, their fidelity to nature; in a time of general vagueness, the sharp and picturesque outlines of their art. One feature of the fabliaux, however, cannot be praised and yet must not be overlooked. In no other section of the world's literature is the scorn and hatred of women so prominent. It is difficult to account for the anti-feminine rage which pervades the fabliaux, and takes hideous shapes in such examples as *Le Valet aux deux femmes*, *Le Pêcheur de Pont-sur-Seine* and *Chicheface et Bigorne*. Probably this was a violent reaction against the extravagant cult of woman as expressed in the contemporary *lais* as well as in the legends of saints. The exaggeration was not greater in the one case than in the other, and it is probable that the exaltation was made endurable to those who listened to the trouvères by the corresponding degradation. We must remember, too, that those who listened were not nobles or clerks, they were the common people. The fabliaux were *fabellae ignobilium*, little stories told to amuse persons of low degree, who were irritated by the moral pretensions of their superiors.

The names of about twenty of the authors of fabliaux have been preserved, although in most cases nothing is known of their personal history. The most famous poet of this class of writing is the man whose name, or more probably pseudonym, was Rutebeuf. He wrote *Frère Denyse* and *Le Sacristain*, while to him is attributed the *Dit d'Aristote*, in the course of which Aristotle gives good advice to Alexander. Fabliaux, however, form but a small part of the work of Rutebeuf, who was a satirical poet of wide accomplishment and varied energy. Most of the jongleurs who wrote these merry and indecent tales in octosyllabic verse were persons of less distinction. Henri d'Andeli was an ecclesiastic, attached, it is supposed, to the cathedral of Rouen. Jean de Condé, who flourished in the court of Hainaut from 1310 to 1340, and who is the latest of the genuine writers of fabliaux, lived in comfort and security, but most of the professional jongleurs seem to have spent their years in a Bohemian existence, wandering among the clergy and the merchant class, alternately begging for money and food and reciting their mocking verses.

The principal authorities for the fabliaux are MM. Anatole de Montaiglon and Gaston Raynaud, who published the text, in 6 vols., between 1872 and 1890. This edition corrected and supplemented the very valuable labours of Méon (1808-1823) and Jubinal (1839-1842). The works of Henri d'Andeli were edited by M.A. Héron in 1880, and those of Rutebeuf were made the subject of an exhaustive monograph by M. Léon Clédat in 1891. See also the editions of separate fabliaux by Gaston Paris, Paul Meyer, Ebeling, August Schéler and other modern scholars. M. Joseph Bedier's *Les Fabliaux* (1895) is a useful summary of critical opinion on the entire subject.

(E. G.)

FABRE, FERDINAND (1830-1898), French novelist, was born at Bédarieux, in Hérault, a very picturesque district of the south of France, which he made completely his own in literature. He was the son of a local architect, who failed in business, and Ferdinand was brought up by his uncle, the Abbé Fulcran Fabre, at Camplong among the mulberry woods. Of his childhood and early youth he has given a charming account in *Ma Vocation* (1889). He was destined to the priesthood, and was sent for that purpose to the seminary of St Pons de Thomières, where, in 1848, he had, as he believed, an ecstatic vision of Christ, who warned him "It is not the will of God that thou shouldst be a priest." He had now to look about for a profession, and, after attempting medicine at Montpellier, was articled as a lawyer's clerk in

Paris. In 1853 he published a volume of verses, *Feuilles de lierre*, broke down in health, and crept back, humble and apparently without ambition, to his old home at Bédarieux. After some eight or nine years of country life he reappeared in Paris, with the MS. of his earliest novel, *Les Courbezon* (1862), in which he treated the subject which was to recur in almost all his books, the daily business of country priests in the Cevennes. This story enjoyed an immediate success with the literary class of readers; George Sand praised it, Sainte-Beuve hailed in its author "the strongest of the disciples of Balzac," and it was crowned by the French Academy. From this time forth Fabre settled down to the production of novels, of which at the time of his death he had published about twenty. Among these the most important were *Le Chevrier* (1868), unique among his works as written in an experimental mixture of Cevenol patois and French of the 16th century; *L'Abbé Tigrane, candidat à la papauté* (1873), by common consent the best of all Fabre's novels, a very powerful picture of unscrupulous priestly ambition; *Mon Oncle Célestin* (1881), a study of the entirely single and tender-hearted country abbé; and *Lucifer* (1884), a marvellous gallery of serious clerical portraits. In 1883 Fabre was appointed curator of the Mazarin Library, with rooms in the Institute, where, on 11th February 1898, he died after a brief attack of pneumonia. Ferdinand Fabre occupies in French literature a position somewhat analogous to that of Mr Thomas Hardy amongst English writers of fiction. He deals almost exclusively with the population of the mountain villages of Hérault, and particularly with its priests. He loved most of all to treat of the celibate virtues, the strictly ecclesiastical passions, the enduring tension of the young soul drawn between the spiritual vocation and the physical demands of nature. Although never a priest, he preserved a comprehension of and a sympathy with the clerical character, and he always indignantly denied that he was hostile to the Church, although he stood just outside her borders. Fabre possessed a limited and a monotonous talent, but within his own field he was as original as he was wholesome and charming.

See also J. Lemaître, *Les Contemporains*, vol. ii.; G. Pellissier, *Études de littérature contemporaine* (1898); E.W. Gosse, *French Profiles* (1905).

(E. G.)

FABRE D'ÉGLANTINE, PHILIPPE FRANÇOIS NAZAIRE (1750-1794), French dramatist and revolutionist, was born at Carcassonne on the 28th of July 1750. His real name was simple Fabre, the "d'Églantine" being added in commemoration of his receiving the golden eglantine of Clémence Isaure from the academy of the floral games at Toulouse. After travelling through the provinces as an actor, he came to Paris, and produced an unsuccessful comedy entitled *Les Gens de lettres, ou le provincial à Paris* (1787). A tragedy, *Augusta*, produced at the *Théâtre Français*, was also a failure. One only of his plays, *Philinte, ou la suite du Misanthrope* (1790), still preserves its reputation. It professes to be a continuation of Molière's *Misanthrope*, but the hero of the piece is of a different character from the nominal prototype—an impersonation, indeed, of pure and simple egotism. On its publication the play was introduced by a preface, in which the author mercilessly satirizes the *Optimiste* of his rival J.F. Collin d'Harleville, whose *Châteaux en Espagne* had gained the applause which Fabre's *Présomptueux* (1789) had failed to win. The character of Philinte had much political significance. Alceste received the highest praise, and evidently represents the citizen patriot, while Philinte is a dangerous aristocrat in disguise. Fabre was president and secretary of the club of the Cordeliers, and belonged also to the Jacobin club. He was chosen by Danton as his private secretary, and sat in the National Convention. He voted for the king's death, supporting the *maximum* and the law of the suspected, and he was a bitter enemy of the Girondins. After the death of Marat he published a *Portrait de l'Ami du Peuple*. On the abolition of the Gregorian calendar he sat on the committee entrusted with the formation of the republican substitute, and to him was due a large part of the new nomenclature, with its poetic *Prairial and Floréal*, its prosaic *Primidi* and *Duodi*. The report which he made on the subject, on the 24th of October, has some scientific value. On the 12th of January 1794 he was arrested by order of the committee of public safety on a charge of malversation and forgery in connexion with the affairs of the Compagnie des Indes. Documents still existing prove that the charge was altogether groundless. During his trial Fabre showed the greatest calmness and sang his own well-known song of *Il pleut, il pleut, bergère, rentre tes blancs moutons*. He was guillotined on the 5th of April 1794. On his way to the scaffold he distributed his manuscript poems to the people.

A posthumous play, *Les Précepteurs*, steeped with the doctrines of Rousseau's *Émile*, was

performed on the 17th of September 1794, and met with an enthusiastic reception. Among Fabre's other plays are the gay and successful *Convalescent de qualité* (1791), and *L'Intrigue épistolaire* (1791). In the latter play Fabre is supposed to have drawn a portrait of the painter Jean Baptiste Greuze.

The author's *Œuvres mêlées et posthumes* were published at Paris 1802, 2 vols. See Albert Maurin, *Galerie hist. de la Révolution française*, tome 11; Jules Janin, *Hist. de la litt. dram.*; Chénier, *Tableau de la litt. française*; F.A. Aulard in the *Nouvelle Revue* (July 1885).

FABRETTI, RAPHAEL (1618-1700), Italian antiquary, was born in 1618 at Urbino in Umbria. He studied law at Cagli and Urbino, where he took the degree of doctor at the age of eighteen. While in Rome he attracted the notice of Cardinal Lorenzo Imperiali, who employed him successively as treasurer and auditor of the papal legation in Spain, where he remained thirteen years. Meanwhile, his favourite classical and antiquarian studies were not neglected; and on his return journey he made important observations of the relics and monuments of Spain, France and Italy. At Rome he was appointed judge of appellation of the Capitol, which post he left to be auditor of the legation at Urbino. After three years he returned to Rome, on the invitation of Cardinal Carpegna, vicar of Innocent XI., and devoted himself to antiquarian research, examining with minute care the monuments and inscriptions of the Campagna. He always rode a horse which his friends nicknamed "Marco Polo," after the Venetian traveller. By Innocent XII. he was made keeper of the archives of the castle St Angelo, a charge which he retained till his death. He died at Rome on the 7th of January 1700. His collection of inscriptions and monuments was purchased by Cardinal Stoppani, and placed in the ducal palace at Urbino, where they may still be seen.

His work *De Aquis et Aquae-ductibus veteris Romae* (1680), three dissertations on the topography of ancient Latium, is inserted in Graevius's *Thesaurus*, iv. (1677). His interpretation of certain passages in Livy and other classical authors involved him in a dispute with Gronovius, which bore a strong resemblance to that between Milton and Salmasius, Gronovius addressing Fabretti as *Faber Rusticus*, and the latter, in reply, speaking of *Grunnovius* and his *titivilitia*. In this controversy Fabretti used the pseudonym Iasitheus, which he afterwards took as his pastoral name in the Academy of the Arcadians. His other works, *De Columna Trajani Syntagma* (Rome, 1683), and *Inscriptionum Antiquarum Explicatio* (Rome, 1699), throw much light on Roman antiquity. In the former is to be found his explication of a bas-relief, with inscriptions, now in the Capitol at Rome, representing the war and taking of Troy, known as the Iliac table. Letters and other shorter works of Fabretti are to be found in publications of the time, as the *Journal des Savants*.

See Crescimbeni, *Le Vite degli Arcadi illustri*; Fabroni, *Vitae Italorum*, vi. 174; Niceron, iv. 372; J. Lamius, *Memorabilia Italorum eruditione praestantium* (Florence, 1742-1748).

FABRIANI, SEVERINO (1792-1849), Italian author and teacher, was born at Spilamberto, Italy, on the 7th of January 1792. Entering the Church, he took up educational work, but in consequence of complete loss of voice he resolved to devote himself to teaching deaf mutes, and founded a small school specially for them. This school the duke of Modena made into an institute, and by a special authority from the pope a teaching staff of nuns was appointed. Fabriani's method of instruction is summed up in his *Logical Letters on Italian Grammar* (1847). He died on the 27th of April 1849.

FABRIANO, a town of the Marches, Italy, in the province of Ancona, from which it is 44 m. S.W. by rail, 1066 ft. above sea-level. Pop. (1901) town 9586, commune 22,996. It has

been noted since the 13th century for its paper mills, which still produce the best paper in Italy. A school of painting arose here, one of the early masters of which is Allegretto Nuzi (1308-1385); and several of the churches contain works by him and other local masters. His pupil, Gentile da Fabriano (1370-1428), was a painter of considerably greater skill and wider knowledge; but there are no important works of his at Fabriano. The sacristy of S. Agostino also contains some good frescoes by Ottaviano Nelli of Gubbio. The municipal picture gallery contains a collection of pictures, and among them are some primitive frescoes, attributable to the 12th century, which still retain traces of Byzantine influence. The Archivio Comunale contains documents on watermarked paper of local manufacture going back to the 13th century. The Ponte dell' Acra, a bridge of the 15th century, is noticeable for the ingenuity and strength of its construction. The hospital of S. Maria Buon Gesu is a fine work of 1456, attributed to Rossellino.

See A. Zonghi, *Antiche Carte Fabrianesi*.

(T. As.)

FABRICIUS, GAIUS LUSCINUS (*i.e.* "the one-eyed"), Roman general, was the first member of the Fabrician gens who settled in Rome. He migrated to Rome from Aletrium (Livy ix. 43), one of the Hernican towns which was allowed to retain its independence as a reward for not having revolted. In 285 he was one of the ambassadors sent to the Tarentines to dissuade them from making war on the Romans. In 282 (when consul) he defeated the Bruttians and Lucanians, who had besieged Thurii (Livy, *Epit.* 12). After the defeat of the Romans by Pyrrhus at Heraclea (280), Fabricius was sent to treat for the ransom and exchange of the prisoners. All attempts to bribe him were unsuccessful, and Pyrrhus is said to have been so impressed that he released the prisoners without ransom (Plutarch, *Pyrrhus*, 18). The story that Pyrrhus attempted to frighten Fabricius by the sight of an elephant is probably a fiction. In 278 Fabricius was elected consul for the second time, and was successful in negotiating terms of peace with Pyrrhus, who sailed away to Sicily. Fabricius afterwards gained a series of victories over the Samnites, the Lucanians and the Bruttians, and on his return to Rome received the honour of a triumph. Notwithstanding the offices he had filled he died poor, and provision had to be made for his daughter out of the funds of the state (Val. Max. iv. 4, 10). Fabricius was regarded by the Romans of later times as a model of ancient simplicity and incorruptible integrity.

FABRICIUS, GEORG (1516-1571), German poet, historian and archaeologist, was born at Chemnitz in upper Saxony on the 23rd of April 1516, and educated at Leipzig. Travelling in Italy with one of his pupils, he made an exhaustive study of the antiquities of Rome. He published the results in his *Roma* (1550), in which the correspondence between every discoverable relic of the old city and the references to them in ancient literature was traced in detail. In 1546 he was appointed rector of the college of Meissen, where he died on the 17th of July 1571. In his sacred poems he affected to avoid every word with the slightest savour of paganism; and he blamed the poets for their allusions to pagan divinities.

Principal works: editions of Terence (1548) and Virgil (1551); *Poëmatum sacrorum libri xxv.* (1560); *Poëtarum veterum ecclesiasticorum opera Christiana* (1562); *De Re Poëtica libri septem* (1565); *Rerum Misnicarum libri septem* (1569); (posthumous) *Originum illustrissimae stirpis Saxonicae libri septem* (1597); *Rerum Germaniae magnae et Saxoniae universae memorabilium mirabiliumque volumina duo* (1609). A life of Georg Fabricius was published in 1839 by D.C.W. Baumgarten-Crusius, who in 1845 also issued an edition of Fabricius's *Epistolae ad W. Meurerum et alios aequales*, with a short sketch *De Vita Ge. Fabricii et de gente Fabriciorum*; see also F. Wachter in Ersch and Gruber's *Allgemeine Encyclopädie*.

FABRICIUS, HIERONYMUS [Fabrizio, Geronimo] (1537-1619), Italian anatomist and embryologist, was surnamed Acquapendente from the episcopal city of that name, where he was born in 1537. At Padua, after a course of philosophy, he studied medicine under G. Fallopius, whose successor as teacher of anatomy and surgery he became in 1562. From the senators of Venice he received numerous honours, and an anatomical theatre was built by them for his accommodation. He died at Venice on the 21st of May 1619. His works include *De visione, voce et auditu* (1600), *De formato foetu* (1600), *De venarum ostiolis* (1603), *De formatione ovi et pulli* (1621). His collected works were published at Leipzig in 1687 as *Opera omnia Anatomica et Physiologica*, but the Leiden edition, published by Albinus in 1738, is preferred as containing a life of the author and the prefaces of his treatises. (See Anatomy; Embryology.)

FABRICIUS, JOHANN ALBERT (1668-1736), German classical scholar and bibliographer, was born at Leipzig on the 11th of November 1668. His father, Werner Fabricius, director of music in the church of St Paul at Leipzig, was the author of several works, the most important being *Deliciae Harmonicae* (1656). The son received his early education from his father, who on his death-bed recommended him to the care of the theologian Valentin Alberti. He studied under J.G. Herrichen, and afterwards at Quedlinburg under Samuel Schmid. It was in Schmid's library, as he afterwards said, that he found the two books, F. Barth's *Adversaria* and D.G. Morhof's *Polyhistor Literarius*, which suggested to him the idea of his *Bibliothecae*, the works on which his great reputation was founded. Having returned to Leipzig in 1686, he published anonymously (two years later) his first work, *Scriptorum recentiorum decas*, an attack on ten writers of the day. His *Decas Decadum, sive plagiariorum et pseudonymorum centuria* (1689) is the only one ot his works to which be signs the name Faber. He then applied himself to the study of medicine, which, however, he relinquished for that of theology; and having gone to Hamburg in 1693, he proposed to travel abroad, when the unexpected tidings that the expense of his education had absorbed his whole patrimony, and even left him in debt to his trustee, forced him to abandon his project. He therefore remained at Hamburg in the capacity of librarian to J.F. Mayer. In 1696 he accompanied his patron to Sweden; and on his return to Hamburg, not long afterwards, he became a candidate for the chair of logic and philosophy. The suffrages being equally divided between Fabricius and Sebastian Edzardus, one of his opponents, the appointment was decided by lot in favour of Edzardus; but in 1699 Fabricius succeeded Vincent Placcius in the chair of rhetoric and ethics, a post which he held till his death, refusing invitations to Greifswald, Kiel, Giessen and Wittenberg. He died at Hamburg on the 30th of April 1736.

Fabricius is credited with 128 books, but very many of them were only books which he had edited. One of the most famed and laborious of these is the *Bibliotheca Latina* (1697, republished in an improved and amended form by J.A. Ernesti, 1773). The divisions of the compilation are—the writers to the age of Tiberius; thence to that of the Antonines; and thirdly, to the decay of the language; a fourth gives fragments from old authors, and chapters on early Christian literature. A supplementary work was *Bibliotheca Latina mediae et infimae Aetatis* (1734-1736; supplementary volume by C. Schöttgen, 1746; ed. Mansi, 1754). His *chef-d'œuvre*, however, is the *Bibliotheca Graeca* (1705-1728, revised and continued by G.C. Harles, 1790-1812), a work which has justly been denominated *maximus antiquae eruditionis thesaurus*. Its divisions are marked off by Homer, Plato, Christ, Constantine, and the capture of Constantinople in 1453, while a sixth section is devoted to canon law, jurisprudence and medicine. Of his remaining works we may mention: —*Bibliotheca Antiquaria*, an account of the writers whose works illustrated Hebrew, Greek, Roman and Christian antiquities (1713); *Centifolium Lutheranum*, a Lutheran bibliography (1728); *Bibliotheca Ecclesiastica* (1718). His *Codex Apocryphus* (1703) is still considered indispensable as an authority on apocryphal Christian literature.

The details of the life of Fabricius are to be found in *De Vita et Scriptis J.A. Fabricii Commentarius*, by his son-in-law, H.S. Reimarus, the well-known editor of Dio Cassius, published at Hamburg, 1737; see also C.F. Bähr in Ersch and Gruber's *Allgemeine Encyclopädie*, and J.E. Sandys, *Hist. Class. Schol.* iii. (1908).

FABRICIUS, JOHANN CHRISTIAN (1745-1808), Danish entomologist and economist, was born at Tondern in Schleswig on the 7th of January 1745. After studying at Altona and Copenhagen, he was sent to Upsala, where he attended the lectures of Linnaeus. He devoted his attention professionally to political economy, and, after lecturing on that subject in 1769, was appointed in 1775 professor of natural history, economy and finance at Kiel, in which capacity he wrote various works, chiefly referring to Denmark, and of no special interest. He also published a few other works on general and natural history, botany and travel (including *Reise nach Norwegen*, 1779), and, although his professional stipend was small, he extended his personal researches into every town in northern and central Europe where a natural history museum was to be found. It is as an entomologist that his memory survives, and for many years his great scientific reputation rested upon the system of classification which he founded upon the structure of the mouth-organs instead of the wings. He had a keen eye for specific differences, and possessed the art of terse and accurate description. He died on the 3rd of March 1808.

A complete list of his entomological publications (31) will be found in Hagen's *Bibliotheca Entomologiae*; the following are the chief:—*Systema Entomologiae* (1775); *Genera Insectorum* (1776); *Philosophia Entomologica* (1778); *Species insectorum* (1781); *Mantissa Insectorum* (1787); *Entomologia Systematica* (1792-1794), with a supplement (1798); *Systema Eleutheratorum* (1801), *Rhyngotorum* (1803), *Piezatorum* (1804), and *Antliatorum* (1805). Full particulars of his life will be found, with a portrait, in the *Transactions of the Entomological Society of London* (1845), 4, pp. i-xvi, where his autobiography is translated from the Danish.

FABRIZI, NICOLA (1804-1885), Italian patriot, was born at Modena on the 4th of April 1804. He took part in the Modena insurrection of 1831, and attempted to succour Ancona, but was arrested at sea and taken to Toulon, whence he proceeded to Marseilles. Afterwards he organized with Mazzini the ill-fated Savoy expedition. Taking refuge in Spain, he fought against the Carlists, and was decorated for valour on the battlefield (18th July 1837). At the end of the Carlist War he established a centre of conspiracy at Malta, endeavoured to dissuade Mazzini from the Bandiera enterprise, but aided Crispi in organizing the Sicilian revolution of 1848. With a company of volunteers he distinguished himself in the defence of Venice, afterwards proceeding to Rome, where he took part in the defence of San Pancrazio. Upon the fall of Rome he returned to Malta, accumulating arms and stores; which he conveyed to Sicily; after having, in 1859, worked with Crispi to prepare the Sicilian revolution of 1860. While Garibaldi was sailing from Genoa towards Marsala Fabrizi landed at Pizzolo, and, after severe fighting, joined Garibaldi at Palermo. Under the Garibaldian Dictatorship he was appointed governor of Messina and minister of war. Returning to Malta after the Neapolitan plebiscite, which he had vainly endeavoured to postpone, he was recalled to aid Cialdini in suppressing brigandage. While on his way to Sicily in 1862, to induce Garibaldi to give up the Aspromonte enterprise, he was arrested at Naples by Lamarmora. During the war of 1866 he became Garibaldi's chief of staff, and in 1867 fought at Mentana. In parliament he endeavoured to promote agreement between the chiefs of the Left, and from 1878 onwards worked to secure the return of Crispi to power, but died on the 31st of March 1885, two years before the realization of his object. His whole life was characterized by ardent patriotism and unimpeachable integrity.

(H. W. S.)

FABROT, CHARLES ANNIBAL (1580-1659), French jurisconsult, was born at Aix in Provence on the 15th of September 1580. At an early age he made great progress in the ancient languages and in the civil and the canon law; and in 1602 he received the degree of doctor of law, and was made avocat to the parlement of Aix. In 1609 he obtained a professorship in the university of his native town. He is best known by his translation of the *Basilica*, which may be said to have formed the code of the Eastern empire till its destruction. This work was published at Paris in 1647 in 7 vols. fol., and obtained for its

author a considerable pension from the chancellor, Pierre Seguier, to whom it was dedicated. Fabrot likewise rendered great service to the science of jurisprudence by his edition of Cujas, which comprised several treatises of that great jurist previously unpublished. He also edited the works of several Byzantine historians, and was besides the author of various antiquarian and legal treatises. He died at Paris on the 16th of January 1659.

FABYAN, ROBERT (d. 1513), English chronicler, belonged to an Essex family, members of which had been connected with trade in London. He was a member of the Drapers company, alderman of Farringdon Without, and served as sheriff in 1493-1494. In 1496 he was one of those appointed to make representations to the king on the new impositions on English cloth in Flanders. Next year he was one of the aldermen employed in keeping watch at the time of the Cornish rebellion. He resigned his aldermanry in 1502, on the pretext of poverty, apparently in order to avoid the expense of mayoralty. He had, however, acquired considerable wealth with his wife Elizabeth Pake, by whom he had a numerous family. He spent his latter years on his estate of Halstedys at Theydon Garnon in Essex. He died on the 28th of February 1513 (*Inquisitiones post mortem for London*, p. 29, edited by G.S. Fry, 1896); his will, dated the 11th of July 1511, was proved on the 12th of July 1513. Fabyan's Chronicle was first published by Richard Pynson in 1516 as *The new chronicles of England and of France*. In this edition it ends with the reign of Richard III., and this probably represents the work as Fabyan left it, though with the omission of an autobiographical note and some religious verses, which form the *Envoi* of his history. The note and verses are first found in the second edition, printed by John Rastell in 1533 with continuations down to 1509. A third edition appeared in 1542, and a fourth in 1559 with additions to that year. The only modern edition is that of Sir Henry Ellis, 1811.

In the note above mentioned Fabyan himself says: "and here I make an ende of the vii. parte and hole werke, the vii. day of November in the yere of our Lord Jesu Christes Incarnacion M. vc. and iiij." This seems conclusive that in 1504 he did not contemplate any extension of his chronicles beyond 1485. The continuations printed by Rastell are certainly not Fabyan's work. But Stow in his *Collections* (ap. *Survey of London*, ii. 305-306, ed. C.L. Kingsford) states that Fabyan wrote "a Chronicle of London, England and of France, beginning at the creation and endynge in the third year of Henry VIII., which both I have in written hand." In his *Survey of London* (i. 191, 209, ii. 55, 116) Stow several times quotes Fabyan as his authority for statements which are not to be found in the printed continuations of Rastell. Some further evidence may be found in other notes of Stow's (ap. *Survey of London*, ii. 280, 283, 365-366), and in the citation by Hakluyt of an unprinted work of Fabyan as the authority for his note of Cabot's voyages. That Fabyan had continued his Chronicle to 1511 may be accepted as certain, but no trace of the manuscript can now be found.

It is only the seventh part of Fabyan's Chronicle, from the Norman Conquest onwards, that possesses any historical value. For his French history he followed chiefly the *Compendium super Francorum gestis* of Robert Gaguin, printed at Paris in 1497. For English history his best source was the old *Chronicles of London*, from which he borrowed also the arrangement of his work in civic form. From 1440 to 1485 he follows, as a rule with great fidelity, the original of the London Chronicle in Cotton MS. Vitellius A. XVI. (printed in *Chronicles of London*, 1905, pp. 153-264).

Fabyan's own merits are little more than those of an industrious compiler, who strung together the accounts of his different authorities without any critical capacity. He says expressly that his work was "gaderyd without understandynge," and speaks of himself as "of cunnynge full destitute." Nevertheless he deserves the praise which he has received as an early worker, and for having made public information which through Hall and Holinshed has become the common property of later historians, and has only recently been otherwise accessible. Bale alleges that the first edition was burnt by order of Cardinal Wolsey because it reflected on the wealth of the clergy; this probably refers to his version of the Lollards Bill of 1410, which Fabyan extracted from one of the London Chronicles.

See further Ellis' *Introduction*; W. Busch, *England under the Tudors* (trans. A.M. Todd, 1895), i. 405-410; and C.L. Kingsford, *Chronicles of London*, pp. xxvi-xxxii (1905).

FAÇADE, a French architectural term signifying the external face of a building, but more generally applied to the principal front.

FACCIOLATI, JACOPO (1682-1769), Italian philologist, was born at Torriglia, in the province of Padua, in 1682. He owed his admission to the seminary of Padua to Cardinal Barberigo, who had formed a high opinion of the boy's talents. As professor of logic, and regent of the schools, Facciolati was the ornament of the Paduan university during a period of forty-five years. He published improved editions of several philological works, such as the *Thesaurus Ciceronianus* of Nizolius, and the polyglot vocabulary known under the name of Calepino. The latter work, in which he was assisted by his pupil Egidio Forcellini, he completed in four years—1715 to 1719. It was written in seven languages, and suggested to the editor the idea of his *opus magnum*, the *Tolius Latinitatis Lexicon*, which was ultimately published at Cardinal Priole's expense, 4 vols. fol., Padua, 1771 (revised ed. by de Vit, 1858-1887). In the compilation of this work the chief burden seems to have been borne by Facciolati's pupil Forcellini, to whom, however, the lexicographer allows a very scanty measure of justice. Perhaps the best testimony to the learning and industry of the compiler is the well-known observation that the whole body of Latinity, if it were to perish, might be restored from this lexicon. Facciolati's mastery of Latin style, as displayed in his epistles, has been very much admired for its purity and grace. In or about 1739 Facciolati undertook the continuation of Papadopoli's history of the university of Padua, carrying it on to his own day. Facciolati was known over all Europe as one of the most enlightened and zealous teachers of the time; and among the many flattering invitations which he received, but always declined, was one from the king of Portugal, to accept the directorship of a college at Lisbon for the young nobility. He died in 1769. His history of the university was published in 1757, under the name *Fasti Gymnasii Patavini*. In 1808 a volume containing nine of his Epistles, never before published, was issued at Padua.

See J.E. Sandys, *Hist. Class. Schol.* ii. (1908).

FACE (from Lat. *facies*, derived either from *facere*, to make, or from a root *fa-*, meaning "appear"; cf. Gr. φαίνειν), a word whose various meanings of surface, front, expression of countenance, look or appearance, are adaptations of the application of the word to the external part of the front portion of the head, usually taken to extend from the top of the forehead to the point of the chin, and from ear to ear (see Anatomy: *Superficial and Artistic*; and Physiognomy).

FACTION (through the French, from Lat. *factio*, a company of persons combined for action, *facere*, to do; from the other French derivative *façon* comes "fashion"), a term, used especially with an opprobrious meaning, for a body of partisans who put their party aims and interests above those of the state or public, and employ unscrupulous or questionable means; it is thus a common term of reciprocal abuse between parties. In the history of the Roman and Later Roman empires the factions (*factiones*) of the circus and hippodrome, at Rome and Constantinople, played a prominent part in politics. The *factiones* were properly

the four companies into which the charioteers were divided, and distinguished by the colours they wore. Originally at Rome there were only two, white (*albata*) and red (*russata*), when each race was open to two chariots only; on the increase to four, the green (*prasina*) and blue (*veneta*) were added. At Constantinople the last two absorbed the red and white factions.

For a brilliant description of the factions at Constantinople under Justinian, and the part they played in the celebrated Nika riot in January 532, see Gibbon's *Decline and Fall*, ch. xl.; and J.B. Bury's *Appendix* 10 in vol. iv. of his edition (1898), for a discussion of the relationship between the *factiones* and the demes of Constantinople.

FACTOR (from Lat. *facere*, to make or do), strictly "one who makes"; thus in ordinary parlance, anything which goes to the composition of anything else is termed one of its "factors," and in mathematics the term is used of those quantities which, when multiplied together, produce a given product. In a special sense, however—and that to which this article is devoted—"factor" is the name given to a mercantile agent (of the class known as "general agents") employed to buy or sell goods for a commission. When employed to sell, the possession of the goods is entrusted to him by his principal, and when employed to buy it is his duty to obtain possession of the goods and to consign them to his principal. In this he differs from a broker (*q.v.*), who has not such possession, and it is this distinguishing characteristic which gave rise in England to the series of statutes known as the Factors Acts. By these acts, consolidated and extended by the act of 1889, third parties buying or taking pledges from factors are protected as if the factor were in reality owner; but these enactments have in no way affected the contractual relations between the factor and his employer, and it will be convenient to define them before discussing the position of third parties as affected by the act.

I. Factor and Principal

A factor is appointed or dismissed in the same way as any other agent. He may be employed for a single transaction or to transact all his principal's business of a certain class during a limited period or till such time as his authority may be determined. A factor's duty is to sell or buy as directed; to carry out with care, skill and good faith any instructions he may receive; to receive or make payment; to keep accounts, and to hand over to his principal the balance standing to his principal's credit, without any deduction save for commission and expenses. All express instructions he must carry out to the full, provided they do not involve fraud or illegality. On any point not covered by his express instructions he must follow the usual practice of his particular business, if not inconsistent with his instructions or his position as factor. Many usages of businesses in which factors are employed have been proved in court, and may now be regarded as legally established. For instance, he may, unless otherwise directed, sell in his own name, give warranties as to goods sold by him, sell by sample (in most businesses), give such credit as is usual in his business, receive payment in cash or as customary; and give receipts in full discharge, sell by indorsement of bills of lading; and insure the goods. It is his duty to clear the goods at the customs, take charge of them and keep them safely, give such notices to his principal and others as may be required, and if necessary take legal proceedings for the protection of the goods. On the other hand, he has not authority to delegate his employment, or to barter; and as between himself and his principal he has no right to pledge the goods, although as between the principal and the pledgee, an unauthorized pledge made by the factor may by virtue of the Factors Act 1889 be binding upon the principal. It is, moreover, inconsistent with his employment as agent that he should buy or sell on his own account from or to his principal. A factor has no right to follow any usage which is inconsistent with the ordinary duties and authority of a factor unless his principal has expressly or impliedly given his consent.

On the due performance of his duties the factor is entitled to his commission, which is usually a percentage on the value of the goods sold or bought by him on account of his principal, regulated in amount by, the usages of each business. Sometimes the factor makes himself personally responsible for the solvency of the persons with whom he deals, in order that his principal may avoid the risk entailed by the usual trade credit. In such a case the factor is said to be employed on *del credere* terms, and is entitled to a higher rate of

commission, usually 2½% extra. Such an arrangement is not a contract of guarantee within the Statute of Frauds, and therefore need not be in writing. Besides his remuneration, the factor is entitled to be reimbursed by his principal for any expenses, and to be indemnified against any liabilities which he may have properly incurred in the execution of his principal's instructions. For the purpose of enforcing his rights a factor has, without legal proceedings, two remedies. Firstly, by virtue of his general *lien* (*q.v.*) he may hold any of his principal's goods which come to his hands as security for the payment to him of any commission, out-of-pocket expenses, or even general balance of account in his favour. Although he cannot sell the goods, he may refuse to give them up until he is paid. Secondly, where he has consigned goods to his principal but not been paid, he may "*stop in transit*" subject to the same rules of law as an ordinary vendor; that is to say, he must exercise his right before the transit ends; and his right may be defeated by his principal transferring the document of title to the goods to some third person, who takes it in good faith and for valuable consideration (Factors Act 1889, section 10). If the factor does not carry out his principal's instructions, or carries them out so negligently or unskilfully that his principal gets no benefit thereby, the factor loses his commission and his right to reimbursement and indemnity. If by such failure or negligence the principal suffers any loss, the latter may recover it as damages. So too if the factor fails to render proper accounts his principal may by proper legal proceedings obtain an account and payment of what is found due; and threatened breaches of duty may be summarily stopped by an injunction. Criminal acts by the factor in relation to his principal's goods are dealt with by section 78 of the Larceny Act 1860.

II. Principal and Third Party

(*a*) *At Common Law.*—The actual authority of a factor is defined by the same limits as his duty, the nature of which has been just described; *i.e.* firstly, by his principal's express instructions; secondly, by the rules of law and usages of trade, in view of which those instructions were expressed. But his power to bind his principal as regards third parties is often wider than his actual authority; for it would not be reasonable that third parties should be prejudiced by secret instructions, given in derogation of the authority ordinarily conferred by the custom of trade; and, as regards them, the factor is said to have "*apparent*" or "*ostensible*" authority, or to be *held out* as having authority to do what is customary, even 122
though he may in fact have been expressly forbidden so to do by his principal. But this rule is subject to the proviso that if the third party have notice of the factor's actual instructions, the "apparent" authority will not be greater than the actual. "The general principle of law," said Lord Blackburn in the case of *Cole* v. *North-Western Bank*, 1875, L.R. 10, C.P. 363, "is that when the true owner has clothed any one with apparent authority to act as his agent, he is bound to those who deal with the agent on the assumption that he really is an agent with that authority, to the same extent as if the apparent authority were real." Under such circumstances the principal is for reasons of common fairness precluded, or, in legal phraseology, *estopped*, from denying his agent's authority. On the same principle of estoppel, but not by reason of any trade usages, a course of dealing which has been followed between a factor and a third party with the assent of the principal will give the factor apparent authority to continue dealing on the same terms even after the principal's assent has been withdrawn; provided that the third party has no notice of the withdrawal.

Such apparent authority binds the principal both as to acts done in excess of the actual authority and also when the actual authority has entirely ceased. For instance, A. B. receives goods from C.D. with instructions not to sell below 1s. per lb; A. B. sells at 10½d., the market price; the buyer is entitled to the goods at 10½d., because A. B. had apparent authority, although he exceeded his actual authority. On the same principle the buyer would get a good title by buying from A. B. goods entrusted to him by C. D., even though at the time of the sale C. D. had revoked A. B.'s authority and instructed him not to sell at all. In either case the factor is held out as having authority to sell, and the principal cannot afterwards turn round and say that his factor had no such authority. As in the course of his business the factor must necessarily make representations preliminary to the contracts into which he enters, so the principal will be bound by any such representations as may be within the factor's actual or apparent authority to the same degree as by the factor's contracts.

(*b*) *Under the Factors Act 1889.*—The main object of the Factors Acts, in so far as they relate to transactions carried out by factors, has been to add to the number of cases in which third parties honestly buying or lending money on the security of goods may get a good title from persons in whose possession the goods are with the consent, actual or apparent, of the real owners, thus calling in aid the principle of French law that "*possession vaut titre*" as against the doctrine of the English common law that "*nemo dat quod non*

habet." The chief change in the law relating specially to factors has been to put pledges by factors on the same footing as sales, so as to bind a principal to third parties by his factor's pledge as by his factor's sale. The Factors Act 1889 in part re-enacts and in part extends the provisions of the earlier acts of 1823, 1825, 1842 and 1877; and is, so far as it relates to sales by factors, in large measure merely declaratory of the law as it previously existed. Its most important provisions concerning factors are as follows:—

> Section I., s.s. 1. The expression mercantile agent shall mean a mercantile agent having in the customary course of his business as such agent authority either to sell goods, or to consign goods for the purpose of sale, or to buy goods, or to raise money on the security of goods;
>
> 2. A person shall be deemed to be in possession of goods or of the documents or title to goods when the goods or documents are in his actual custody or are held by any other person subject to his control or for him on his behalf.
>
> 4. The expression "document of title" shall include any bill of lading, dock warrant, warehouse keeper's certificate, and warrant or order for the delivery of goods, and any other document used in the ordinary course of business as proof of the possession or control of goods, or authorizing or purporting to authorize, either by indorsement or by delivery, the possessor of the document to transfer or receive goods thereby represented.
>
> Section II., s.s. 1. Where a mercantile agent is, with the consent of the owner, in possession of goods or of the documents or title to goods, any sale, pledge or other disposition of the goods made by him when acting in the ordinary course of business of a mercantile agent shall, subject to the provisions of this act, be as valid as if he were expressly authorized by the owner of the goods to make the same; provided that the person taking under the disposition acts in good faith, and has not at the time of the disposition notice that the person making the disposition has not authority to make the same.
>
> 2. Where a mercantile agent has, with the consent of the owner, been in possession of goods or of the documents of title to goods, any sale, pledge or other disposition which would have been valid if the consent had continued shall be valid notwithstanding the determination of the consent; provided that the person taking under the disposition has not at the time thereof notice that the consent has been determined.
>
> 3. Where a mercantile agent has obtained possession of any documents of title to goods by reason of his being or having been, with the consent of the owner, in possession of the goods represented thereby, or of any other documents of title to the goods, his possession of the first-mentioned documents shall, for the purposes of the act, be deemed to be with the consent of the owner.

III. Enforcement of Contracts

1. Where a factor makes a contract in the name of his principal and himself signs as agent only, he drops out as soon as the contract is made, and the principal and third party alone can sue or be sued upon it. As factors usually contract in their own name this is not a common case. It is characteristic of brokers rather than of factors.

2. Where a factor makes a contract for the principal without disclosing his principal's name, the third party may, on discovering the principal, elect whether he will treat the factor or his principal as the party to the contract; provided that if the factor contract expressly as factor, so as to exclude the idea that he is personally responsible, he will not be liable. The principal may sue upon the contract, so also may the factor, unless the principal first intervene.

3. Where a factor makes a contract in his own name without disclosing the existence of his principal, the third party may, on discovering the existence of the principal, elect whether he will sue the factor or the principal. Either principal or factor may sue the third party upon the contract. But if the factor has been permitted by the principal to hold himself out as the principal, and the person dealing with the factor has believed that the factor was the principal and has acted on that belief before ascertaining his mistake, then in an action by the principal the third party may set up any defences he would have had against the factor if the factor had brought the action on his own account as principal.

4. Where a factor has a lien upon the goods and their proceeds for advances made to the principal it will be no defence to an action by him for the third party to plead that he has paid the principal, unless the factor by his conduct led the third party to believe that he agreed to a settlement being made with his principal.

5. The factor who acts for a foreign principal will always be personally liable unless it is clear that the third party has agreed to look only to the principal.

6. If a factor contract by deed under seal he alone can sue or be sued upon the contract; but mercantile practice makes contracts by deed uncommon.

AUTHORITIES.—Story, *Commentaries on the Law of Agency* (Boston, 1882); Boyd and Pearson, *The Factors Acts 1823 to 1877* (London, 1884); Blackwell, *The Law relating to Factors* (London, 1897).

(L. F. S.)

FACTORY ACTS, the name given generally to a long series of acts constituting one of the most important chapters in the history of English labour legislation (see LABOUR LEGISLATION); the term "factory" itself being short for manufactory, a building or collection of buildings in which men or women are employed in industry.

FACULA (diminutive of *fax*, Lat. for "torch"), in astronomy, a minute shining spot on the sun's disk, markedly brighter than the photosphere in general, usually appearing in groups. Faculae are most frequent in the neighbourhood of spots. (See SUN.)

FACULTY (through the French, from the Lat. *facultas*, ability to do anything, from *facilis*, easy, *facere*, to do; another form of the word in Lat. *facilitas*, facility, ease, keeps the original meaning), power or capacity of mind or body for particular kinds of activity, feeling, &c. In the early history of psychology the term was applied to various mental processes considered as causes or conditions of the mind—a treatment of "class concepts of mental phenomena as if they were real forces producing these phenomena" (G.F. Stout, *Analytic Psychology*, vol. i. p. 17). In medieval Latin *facultas* was used to translate δύναμις in the Aristotelian application of the word to a branch of learning or knowledge, and thus it is particularly applied to the various departments of knowledge as taught in a university and to the body of teachers of the particular art or science taught. The principal "faculties" in the medieval universities were theology, canon and civil law, medicine and arts (see UNIVERSITIES). A further extension of this use is to the body of members of any particular profession.

In law, "faculty" is a dispensation or licence to do that which is not permitted by the common law. The word in this sense is used only in ecclesiastical law. A faculty may be granted to be ordained deacon under twenty-three years of age; to hold two livings at once (usually called a licence or dispensation, but granted under the seal of the office of faculties; see BENEFICE); to be married at any place or time (usually called a special licence; see MARRIAGE; LICENCE); to act as a notary public (*q.v.*). Any alteration in a church, such as an addition or diminution in the fabric or the utensils or ornaments of the church, cannot strictly be made without the legal sanction of the ordinary, which can only be expressed by the issue of a faculty. So a faculty would be required for a vault, for the removal of a body, for the purpose of erecting monuments, for alterations in a parsonage house, for brick graves, for the apportionment of a seat, &c. Cathedrals, however, are exempt from the necessity for a faculty before making alterations in the fabric, utensils or ornaments.

The court of faculties is the court of the archbishop for granting faculties. It is a court in which there is no litigation or holding of pleas. Its chief officer is called the master of faculties, and he is one and the same with the judge of the court of arches. Attached to the court of faculties are a registrar and deputy registrars, a chief clerk and record-keeper, and

a seal keeper. In Scotland the society of advocates of the court of session, and local bodies of legal practitioners, are described as faculties.

FAED, THOMAS (1826-1900), British painter, born in Kirkcudbrightshire, was the brother of John Faed, R.S.A., and received his art education in the school of design, Edinburgh. He was elected an associate of the Royal Scottish Academy in 1849, came to London three years later, was elected an associate of the Royal Academy in 1861, and academician in 1864, and retired in 1893. He had much success as a painter of domestic genre, and had considerable executive capacity. Three of his pictures, “The Silken Gown,” “Faults on Both Sides,” and “The Highland Mother,” are in the National Gallery of British Art.

See William D. McKay, *The Scottish School of Painting* (1906).

FAENZA (anc. *Faventia*), a city and episcopal see of Emilia, Italy, in the province of Ravenna, from which it is 31 m. S.W. by rail, 110 ft. above sea-level. It is 31 m. S.E. of Bologna by rail, on the line from Bologna to Rimini, and it is the junction of a line to Florence through the Apennines. Pop. (1901) 21,809 (town), 39,757 (commune). The town is surrounded by walls which date from 1456. The cathedral of S. Costanzo stands in the spacious Piazza Vittorio Emanuele in the centre of the town. It was begun in 1474 by Giuliano da Maiano; the façade is, however, incomplete. In the interior is the beautiful early Renaissance tomb of S. Savinus with reliefs showing scenes from his life, of fine and fresh execution, by Benedetto da Maiano; and later tombs by P. Bariloto, a local sculptor. Opposite the cathedral is a fountain with bronze ornamentation of 1583-1621. The clock tower alongside the cathedral belongs to the 17th century. Beyond it is the Palazzo Comunale, formerly the residence of the Manfredi, but entirely reconstructed. The other churches of the town have been mostly restored, but S. Michele (and the Palazzo Manfredi opposite it) are fine early Renaissance buildings in brickwork. The municipal art gallery contains an altar-piece by Girolamo da Treviso (who also painted a fresco in the Chiesa della Commenda), a wooden St Jerome by Donatello, and a bust of the young St John by Antonio Rossellino (?), and some fine specimens of majolica, a variety of which, faience, takes its name from the town. It was largely manufactured in the 15th and 16th centuries, and the industry has been revived in modern times with success.

The ancient Faventia, on the Via Aemilia, was obviously from its name founded by the Romans and had the citizenship before the Social War. It was the scene of the defeat of C. Papirius Carbo and C. Norbanus by Q. Caecilius Metellus Pius in 82 B.C. In the census of Vespasian a woman of Faventia is said to have given her age as 135. Pliny speaks of the whiteness of its linen, and the productiveness of its vines is mentioned. It is noticeable that some of the fields in the territory of the ancient Faventia still preserve the exact size of the ancient Roman *centuria* of 200 *iugeri* (E. Bormann in *Corp. Inscr. Lat.* xi., Berlin, 1888, p. 121). When the exarchate was established, the town became part of it, and in 748 it was taken by Liutprand. Desiderius gave it to the church with the duchy of Ferrara. In the 11th century it began to increase in importance. In the wars of the 12th and 13th centuries it at first took the imperial side, but in 1240 it stood a long siege from Frederick II. and was only taken after eight months. After further struggles between Guelphs and Ghibellines, the Manfredi made themselves masters of the place early in the 14th century, and remained in power until 1501, when the town was taken by Caesar Borgia and the last legitimate members of the house of the Manfredi were drowned in the Tiber; and, after falling for a few years into the hands of the Venetians, it became a part of the states of the church in 1509.

(T. As.)

FAEROE (also written Faroe or The Faeroes, Danish *Faeröerne* or *Färöerne*, "the sheep islands"), a group of islands in the North Sea belonging to Denmark. They are situated between Iceland and the Shetland Islands, about 200 m. N.W. of the latter, about the intersection of 7° E. with 62° N. The total land area of the group is 511 sq. m., and there are twenty-one islands (excluding small rocks and reefs), of which seventeen are inhabited. The population in 1880 amounted to 11,220, and in 1900 to 15,230. The principal islands are Strömö, on which is the chief town, Thorshavn, with a population of 1656; Osterö, Süderö, Vaagö, Sandö and Bordö. They consist throughout of rocks and hills, separated from each other by narrow valleys or ravines; but, though the hills rise abruptly, there are often on their summits, or at different stages of their ascent, plains of considerable magnitude. Almost everywhere they present to the sea perpendicular cliffs, broken into fantastic forms, affording at every turn, to those who sail along the coast, the most picturesque and varied scenery. The highest hills are Slättaretindur in Osterö, and Kopende and Skellingfjeld in Strömö, which rise respectively to 2894, 2592 and 2520 ft. The sea pierces the islands in deep fjords, or separates them by narrow inlets through which tidal currents set with great violence, at speeds up to seven or eight knots an hour; and, as communications are maintained almost wholly by boat, the natives have need of expert watermanship. There are several lakes in which trout are abundant, and char also occur; the largest is Sörvaag Lake in Vaagö, which is close to the sea, and discharges into it by a sheer fall of about 160 ft. Trees are scarce, and there is evidence that they formerly flourished where they cannot do so now.

> The fundamental formation is a series of great sheets of columnar basalt, 70 to 100 ft. thick, in which are intercalated thin beds of tuff. Upon the basalt rests the so-called Coal formation, 35 to 50 ft. thick; the lower part of this is mainly fireclay and sandstone, the upper part is weathered clay with thin layers of brown coal and shale. The coal is found in Süderö and in some of the other islands in sufficient quantity to make it a matter of exploitation. Above these beds there are layers of dolerite, 15 to 20 ft. thick, with nodular segregations and abundant cavities which are often lined with zeolites. As the rocks lie in a horizontal position, on most of the islands of the group only the basalts or dolerite are visible. The crater from which the volcanic rocks were outpoured probably lies off the Faeroe Bank some distance to the south-west of Süderö. The basalts are submarine flows which formed the basis of the land upon which grew the vegetation which gave rise to the coals; the effusion of dolerite which covered up the Coal formation was subaerial. The existing land features, with the fjords, are due to ice erosion in the glacial period.[1]

The climate is oceanic; fogs are common, violent storms are frequent at all seasons. July and August are the only true summer months, but the winters are not very severe. It seldom freezes for more than one month, and the harbours are rarely ice-bound. The methods of agriculture are extremely primitive and less than 3% of the total area is under cultivation. As the plough is ill-suited to the rugged surface of the land, the ground is usually turned up with the spade, care being taken not to destroy the roots of the grass, as hay is the principal crop. Horses and cows are few, and the cows give little milk, in consequence of the coarse hay upon which they are fed. The number of sheep, however, justifies the name of the islands, some individuals having flocks of from three to five hundred, and the total number in the islands considerably exceeds ten thousand. The northern hare (*Lepus alpinus*) is pretty abundant in Strömö and Osterö, having been introduced into the islands about 1840-1850. The catching of the numerous sea-birds which build their nests upon the face of the cliffs forms an important source of subsistence to the inhabitants. Sometimes the fowler is let down from the top of the cliff; at other times he climbs the rocks, or, where possible, is pushed upwards by poles made for the purpose. The birds and the contents of the nests are taken in nets mounted on poles; shooting is not practised, lest it should permanently scare the birds away. Fowling has somewhat decreased in modern times, as the fisheries have risen in importance. The puffin is most commonly taken for its feathers. The cod fishery is especially important, dried fish being exported in large quantity, and the swim-bladders made into gelatine, and also used and exported for food. The whaling industry came into importance towards the close of the 19th century, and stations for the extraction of the oil and whalebone have been established at several points, under careful regulations designed to mitigate the pollution of water, the danger to live-stock from eating the blubber, &c. The finner whale is the species most commonly taken.

The trade of the Faeroe Islands was for some time a monopoly in the hands of a mercantile house at Copenhagen, and this monopoly was afterwards assumed by the Danish government, but by the law of the 21st of March 1855 all restrictions were removed. The produce of the whaling and fishing industries, woollen goods, lamb skins and feathers, are the chief exports, while in Thorshavn the preserving of fish and the manufacture of carpets

are carried on to some extent. Thorshavn is situated on the S.E. side of Strömö, upon a narrow tongue of land, having creeks on each side, where ships may be safely moored. It is the seat of the chief government and ecclesiastical officials, and has a government house and a hospital. The houses are generally built of wood and roofed with birch bark covered with turf. The character of the people is marked by simplicity of manners, kindness and hospitality. They are healthy, and the population increases steadily. The Faeroes form an *amt* (county) of Denmark. They have also a local parliament (*lagthing*), consisting of the *amtmann* and nineteen other members. Among other duties, this body elects a representative to the upper house of parliament (*landsthing*) in Denmark; the people choose by vote a representative in the lower house (*folkething*). The islands are included in the Danish bishopric of Zealand.

History.—The early history of the Faeroes is not clear. It appears that about the beginning of the 9th century Grim Kamban, a Norwegian emigrant who had left his country to escape the tyranny of Harold Haarfager, settled in the islands. It is said that a small colony of Irish and Scottish monks were found in Süderö and dispersed by him. The Faeroes then already bore their name of Sheep Islands, as these animals had been found to flourish here exceedingly. Early in the 11th century Sigmund or Sigismund Bresterson, whose family had flourished in the southern islands but had been almost exterminated by invaders from the northern, was sent from Norway, whither he had escaped, to take possession of the islands for Olaf Trygvason, king of Norway. He introduced Christianity, and, though he was subsequently murdered, Norwegian supremacy was upheld, and continued till 1386, when the islands were transferred to Denmark. English adventurers gave great trouble to the inhabitants in the 16th century, and the name of Magnus Heineson, a native of Strömö, who was sent by Frederick II. to clear the seas, is still celebrated in many songs and stories. There was formerly a bishopric at Kirkebö, S. of Thorshavn, where remains of the cathedral may be seen; but it was abolished at the introduction of Protestantism by Christian III. Denmark retained possession of the Faeroes at the peace of Kiel in 1815. The native literature of the islands consists of the *Faereyinga Saga*, dealing with the period of Sigmund Bresterson, and a number of popular songs and legends of early origin.

BIBLIOGRAPHY.—Lucas Jacobson Debes, *Feroa Reserata* (Copenhagen, 1673; Eng. transl. London, 1675); Torfaeus, *De rebus gestis Faereyensium* (Copenhagen, 1695); I. Landt, *Beskrivelse over Färöerne* (1800), and *Descriptions of the Feroe Islands* (London, 1810); A.J. Symington, *Pen and Pencil Sketches of Faroe and Iceland* (1862); J. Russel-Jeaffreson, *The Faröe Islands* (1901); J. Falk Rönne, *Beskrivelse over Färöerne* (Copenhagen, 1902); C.H. Ostenfeld, E. Warming and others, *Botany of the Faeroes* (Copenhagen, 1901-1903); Annandale, *The Faroes and Iceland* (Oxford, 1905). The *Faereyinga Saga* was translated by F. York Powell (London, 1896); for folk-songs and legends see S. Kraeth, *Die färöischen Lieder von Sigurd* (Paderborn, 1877); V.U. Hammershaimb, *Faeröisk Anthologi* (Copenhagen, 1886-1891).

$1 See Hans von Post, "Om Färöarnes uppkomst," *Geologiska Föreningens i Stockholm Förhandlingar*, vol. xxiv. (1902).

FAESULAE (mod. *Fiesole*, *q.v.*), an ancient city of Etruria, on the height 3 m. to the N.E. of Florentia, 970 ft. above sea-level. Remains of its walls are preserved on all sides, especially on the N.E., in one place to a height of 12 to 14 courses. The blocks are often not quite rectangular, and the courses sometimes change; but the general tendency is horizontal and the walls are not of remote antiquity, the irregularities in them being rather due to the hardness of the material employed, the rock of the hill itself. The courses vary in height from 1 to 3 ft., and some blocks are as long as 12½ ft. In this portion of the wall are two drains, below one of which is a *phallus*. The site of an ancient gate, and the road below it, can be traced; a little farther E. was an archway, conjectured by Dennis to be a gate of the Roman period, destroyed in 1848. The whole circuit of the walls extended for about 1-2/3 m. The Franciscan monastery (1130 ft.) occupies the site of the acropolis, once encircled by a triple wall, of which no traces are now visible. Here was also the *Capitolium* of Roman times, as an inscription found here in 1879 records (*Corpus Inscr. Lat.* xi., Berlin, 1888, No. 1545). The Roman theatre, below the cathedral to the N.E., has 19 tiers of stone seats and is 37 yds. in diameter. Above it is an embanking wall of irregular masonry, and below it some remains of Roman baths, including five parallel vaults of concrete. Just outside the town on the E. a

reservoir, roofed by the convergence of its sides, which were of large regular blocks, was discovered in 1832, but filled in again. Over 1000 silver denarii, all coined before 63 B.C., were found at Faesulae in 1829. A small museum contains the objects found in the excavations of the theatre.

Though Faesulae was an Etruscan city, we have no record of it in history until 215 B.C., when the Gauls passed near it in their march on Rome. Twelve years later Hannibal seems to have taken this route in his march south after the victory of the Trebia. It appears to have suffered at the hands of Rome in the Social War, and Sulla expelled some of the inhabitants from their lands to make room for his veterans, but some of the latter were soon driven out in their turn by the former occupiers. Both the veterans, who soon wasted what they had acquired, and the dispossessed cultivators joined the partisans of Catiline, and Manlius, one of his supporters, made his headquarters at Faesulae. Under the empire we hear practically nothing of it; in A.D. 405 Radagaisus was crushed in the neighbouring hills, and Belisarius besieged and took it in A.D. 539.

See L.A. Milani, *Rendiconti dei Lincei*, ser. vi. vol. ix. (1900), 289 seq., on the discovery of an archaic altar of the *Locus sacer* of Florence, belonging to Ancharia (Angerona), the goddess of Fiesole.

(T. As.)

FAFNIR, in Scandinavian mythology, the son of the giant Hreidmar. He was the guardian of the hoard of the Nibelungs and was killed by Sigurd.

FAGGING (from “fag,” meaning “weary”; of uncertain etymology), in English public schools, a system under which, generally with the full approval of the authorities, a junior boy performs certain duties for a senior. In detail this custom varies slightly in the different schools, but its purpose—the maintenance of discipline among the boys themselves—is the same. Dr Arnold of Rugby defined fagging as “the power given by the supreme authorities of the school to the Sixth Form, to be exercised by them over the lower boys, for the sake of securing a regular government among the boys themselves, and avoiding the evils of anarchy; in other words, of the lawless tyranny of brute force.” Fagging was a fully established system at Eton and Winchester in the 16th century, and is probably a good deal older. That the advantages of thus granting the boys a kind of autonomy have stood the test of time is obvious from the fact that in almost all the great public schools founded during the 19th century, fagging has been deliberately adopted by the authorities. The right to fag carries with it certain well-defined duties. The fag-master is the protector of his fags, and responsible for their happiness and good conduct. In cases of bullying or injustice their appeal is to him, not to the form or house master, and, except in the gravest cases, all such cases are dealt with by the fag-master on his own responsibility and without report to the master. Until recent years a fag’s duties included such humble tasks as blacking boots, brushing clothes, and cooking breakfasts, and there was no limit as to hours; almost all the fag’s spare time being so monopolized. This is now changed. Fagging is now restricted to such light tasks as running errands, bringing tea to the “master’s” study, and fagging at cricket or football. At Eton there is no cricket fagging, and at most schools it is made lighter by all the fags taking their turn in regular order for one hour, so that each boy has to “fag” but once in so many weeks. At Rugby there is “study-fagging”—two fags being assigned to each Sixth Form boy and made responsible for the sweeping out and tidying up of his study alternately each week,—and “night-fagging”—running errands for the Sixth between 8.30 and 9.30 every evening,—and each boy can choose whether he will be a study-fag or night-fag. The right to fag is usually restricted to the Sixth Form, but at Eton the privilege is also granted the Fifth, and at Marlborough and elsewhere the Eleven have a right to fag at cricket, whether in the Sixth or not.

FAGGOT, a bundle of sticks used for firewood. The word is adapted from the Fr. *fagot*, and appears in Italian as *fagotto*, the name given to the bassoon (*q.v.*). "Faggot" is frequently used with reference to the burning of heretics, and recanted heretics wore an embroidered faggot on the arm as a symbol of the punishment they had escaped. In the 18th century the word is used of a "dummy" soldier, appearing on the rolls of a regiment. It is this use, coupled with the idea of a bundle of sticks as being capable of subdivision, that appears in the expression "faggot-vote," a vote artificially created by the minute splitting up of property so as to give a bare qualification for the franchise.

FAGNIEZ, GUSTAVE CHARLES (1842-), French historian and economist, was born in Paris on the 6th of October 1842. Trained at the École des Chartes and the École des Hautes Études, he made his first appearance in the world of scholarship as the author of an excellent book called *Études sur l'industrie et la classe industrielle à Paris au XIII^e^ et au XIV^e^ siècle* (1877). This work, composed almost entirely from documents, many unpublished, opened a new field for historical study. Twenty years later he supplemented this book by an interesting collection of *Documents relatifs à l'histoire de l'industrie et du commerce en France* (2 vols., 1898-1900), and in 1897 he published *L'Économie sociale de la France sous Henri IV*, a volume containing the results of very minute research. He did not, however, confine himself to economic history. His *Le Père Joseph et Richelieu* (1894), though somewhat frigid and severe, is based on a mass of unpublished information, and shows remarkable psychologic grasp. In 1878 his *Journal parisien de Jean de Maupoint, prieur de Ste Catherine-de-la-Couture* was published in vol. iv. of the *Mémoires de la sociêtê de l'histoire de Paris et de l'Île de France*. He wrote numerous articles in the *Revue historique* (of which he was co-director with Gabriel Monod for some years) and in other learned reviews, such as the *Revue des questions historiques* and the *Journal des savants*. In 1901 he was elected member of the Académie des Sciences Morales et Politiques.

FAGUET, ÉMILE (1847-), French critic and man of letters, was born at La Roche sur Yon on the 17th of December 1847. He was educated at the normal school in Paris, and after teaching for some time in La Rochelle and Bordeaux he came to Paris. After acting as assistant professor of poetry in the university he became professor in 1897. He was elected to the academy in 1900, and received the ribbon of the Legion of Honour in the next year. He acted as dramatic critic to the *Soleil*; from 1892 he was literary critic to the *Revue bleue*; and in 1896 took the place of M. Jules Lemaître on the *Journal des débats*. Among his works are monographs on *Flaubert* (1899), *André Chénier* (1902), *Zola* (1903); an admirably concise *Histoire de la littérature française depuis le XVII^e^ siècle jusqu'à nos jours*; series of literary studies on the 17th, 18th and 19th centuries; *Questions politiques* (1899); *Propos littéraires* (3 series, 1902-1905); *Le Libéralisme* (1902); and *L'Anticléricalisme* (1906).

See A. Séché, *Émile Faguet* (1904).

FA-HIEN (fl. A.D. 399-414), Chinese Buddhist monk, pilgrim-traveller, and writer, author of one of the earliest and most valuable Chinese accounts of India. He started from Changgan or Si-gan-fu, then the capital of the Tsin empire, and passing the Great Wall, crossed the "River of Sand" or Gobi Desert beyond, that home of "evil demons and hot winds," which he vividly describes,—where the only way-marks were the bones of the dead, where no bird appeared in the air above, no animal on the ground below. Arriving at Khotan, the traveller witnessed a great Buddhist festival; here, as in Yarkand, Afghanistan and other parts thoroughly Islamized before the close of the middle ages, Fa-Hien shows us Buddhism

still prevailing. India was reached by a perilous descent of “ten thousand cubits” from the “wall-like hills” of the Hindu Kush into the Indus valley (about A.D. 402); and the pilgrim passed the next ten years in the “central” Buddhist realm,—making journeys to Peshawur and Afghanistan (especially the Kabul region) on one side, and to the Ganges valley on another. His especial concern was the exploration of the scenes of Buddha’s life, the copying of Buddhist texts, and converse with the Buddhist monks and sages whom the Brahmin reaction had not yet driven out. Thus we find him at Buddha’s birthplace on the Kohana, north-west of Benares; in Patna and on the Vulture Peak near Patna; at the Jetvana monastery in Oudh; as well as at Muttra on the Jumna, at Kanauj, and at Tamluk near the mouth of the Hugli. But now the narrative, which in its earlier portions was primarily historical and geographical, becomes mystical and theological; miracle-stories and meditations upon Buddhist moralities and sacred memories almost entirely replace matters of fact. From the Ganges delta Fa-Hien sailed with a merchant ship, in fourteen days, to Ceylon, where he transcribed all the sacred books, as yet unknown in China, which he could find; witnessed the festival of the exhibition of Buddha’s tooth; and remarked the trade of Arab merchants to the island, two centuries before Mahomet. He returned by sea to the mouth of the Yangtse-Kiang, changing vessels at Java, and narrowly escaping shipwreck or the fate of Jonah.

Fa-Hien’s work is valuable evidence to the strength, and in many places to the dominance, of Buddhism in central Asia and in India at the time of the collapse of the Roman empire in western Europe. His tone throughout is that of the devout, learned, sensible, rarely hysterical pilgrim-traveller. His record is careful and accurate, and most of his positions can be identified; his devotion is so strong that it leads him to depreciate China as a “border-land,” India the home of Buddha being the true “middle kingdom” of his creed.

See James Legge, *Record of Buddhistic Kingdoms, being an account by the Chinese Monk Fâ-hien of his travels in India and Ceylon*; translated and edited, with map, &c. (Oxford, 1886); S. Beal, *Travels of Fah-Hian and Sung-Yun, Buddhist pilgrims from China to India, 400 and 518 A.D.*, translated, with map, &c. (1869); C.R. Beazley, *Dawn of Modern Geography*, vol. i. (1897), pp. 478-485.

FAHLCRANTZ, CHRISTIAN ERIK (1790-1866), Swedish author, was born at Stora Tuna in Sweden on the 30th of August 1790. His brothers, Carl Johan (1774-1861), the landscape-painter, and Axel Magnus (1780-1854), the sculptor, became hardly less distinguished than himself. In 1804 he entered the university of Upsala; in 1821 he became tutor in Arabic, and in 1825 professor of Oriental languages. In 1828 he entered the church, but earlier than this, in 1825, he published his *Noachs Ark*, a successful satire on the literary and social life of his time, followed in 1826 by a second part. In 1835 Fahlcrantz brought out the first part of his epic of *Ansgarius*, which was completed in 1846, in 14 cantos. In 1842 he was made a member of the Swedish Academy, and in 1849 he was made bishop of Vesterås, his next literary work being an archaeological study on the beautiful ancient cathedral of his diocese. In the course of the years 1858-1861 appeared the five volumes of his *Rom förr och nu* (*Rome as it was and is*), a theological polemic, mainly directed against the Jesuits. He died on the 6th of August 1866. His complete works (7 vols., Örebro, 1863-1866) were issued mainly under his own superintendence.

FAHRENHEIT, GABRIEL DANIEL (1686-1736), German physicist, was born at Danzig on the 14th of May 1686. For the most part he lived in England and Holland, devoting himself to the study of physics and making a living, apparently, by the manufacture of meteorological instruments. He was the author of important improvements in the construction of thermometers, and he introduced the thermometric scale known by his name and still extensively used in Great Britain and the United States (see THERMOMETRY). He also invented an improved form of hygrometer, a description of which, together with accounts of various observations and experiments made by him, was published in the *Phil. Trans.* for

1724. He died in Holland on the 16th of September 1736.

FAIDHERBE, LOUIS LÉON CÉSAR (1818-1889), French general and colonial administrator, was born on the 3rd of June 1818, at Lille, received his military education at the École Polytechnique and at Metz, and entered the engineers in 1840. From 1844 to 1847 he served in Algeria, then two years in the West Indies, and again in Algeria, taking part in many expeditions against the Arabs. In 1852 he was transferred to Senegal as sub-director of engineers, and in 1854 was promoted *chef de bataillon* and appointed governor of the colony. He held this post with one brief interval until July 1865. The work he accomplished in West Africa constitutes his most enduring monument. At that time France possessed in Senegal little else than the town of St Louis and a strip of coast. Explorers had, however, made known the riches and possibilities of the Niger regions, and Faidherbe formed the design of adding those countries to the French dominions. He even dreamed of creating a French African empire stretching from Senegal to the Red Sea. To accomplish even the first part of his design he had very inadequate resources, especially in view of the aggressive action of Omar Al-Hadji, the Moslem ruler of the countries of the middle Niger. By boldly advancing the French outposts on the upper Senegal Faidherbe stemmed the Moslem advance, and by an advantageous treaty with Omar in 1860 brought the French possessions into touch with the Niger. He also brought into subjection the country lying between the Senegal and Gambia. When he resigned his post French rule had been firmly established over a very considerable and fertile area and the foundation laid upon which his successors built up the predominant position occupied now by France in West Africa. In 1863 he became general of brigade. From 1867 to the early part of 1870 he commanded the subdivision of Bona in Algeria, and was commanding the Constantine division at the commencement of the Franco-German War. Promoted general of division in November 1870, he was on the 3rd of December appointed by the Government of National Defence to be commander-in-chief of the army of the North. In this post he showed himself to be possessed of the highest military talents, and the struggle between the I. German army and that commanded by Faidherbe, in which were included the hard-fought battles of Pont Noyelles, Bapaume and St Quentin, was perhaps the most honourable to the French army in the whole of the People’s War. Even with the inadequate force of which he disposed he was able to maintain a steady resistance up to the end of the war. Elected to the National Assembly for the department of the Nord, he resigned his seat in consequence of its reactionary proceedings. For his services he was decorated with the grand cross, and made chancellor of the order of the Legion of Honour. In 1872 he went on a scientific mission to Upper Egypt, where he studied the monuments and inscriptions. An enthusiastic geographer, philologist and archaeologist, he wrote numerous works, among which may be mentioned *Collection des inscriptions numidiques* (1870), *Épigraphie phénicienne* (1873), *Essai sur la langue poul* (1875), and *Le Zénaga des tribes sénégalaises* (1877), the last a study of the Berber language. He also wrote on the geography and history of Senegal and the Sahara, and *La Campagne de l’armée du Nord* (1872). He was elected a senator in 1879, and, in spite of failing health, continued to the last a close student of his favourite subjects. He died on the 29th of September 1889, and received a public funeral. Statues and monuments to his memory were erected at Lille, Bapaume, St Quentin and St Louis, Senegal.

FAIENCE, properly the French term for the *porzellana di Faenza*, a fine kind of glazed and painted earthenware made at Faenza in Italy, hence a term applied generally to all kinds of pottery other than unglazed pottery or porcelain. It is often particularly applied to the translucent earthenware made in Persia (see Ceramics).

FAILLY, PIERRE LOUIS CHARLES DE (1810-1892), French general, was born at Rozoy-sur-Serre (Aisne) on the 21st of January 1810, and entered the army from St Cyr in 1828. In 1851 he had risen to the rank of colonel, and Napoleon III., with whom he was a favourite, made him general of brigade in 1854 and general of division in 1855, after which for a time De Failly was his aide-de-camp. In the war of 1859 De Failly commanded a division, and in 1867 he defeated Garibaldi at Mentana, this action being the first in which the chassepot was used. In 1870 De Failly commanded the V. corps. His inactivity at Bitsch on the 6th of August while the I. corps on his right and the II. corps on his left were crushed at Wörth and Spicheren respectively, gave rise to the greatest indignation in France, and his military career ended, after the V. corps had been severely handled at Beaumont on the 30th of August, with the catastrophe of Sedan. The rest of his life was spent in retirement. De Failly wrote *Campaigne de 1870, Opérations et marche du 5^{me} corps jusqu'au 30 août* (Brussels, 1871).

FAIN, AGATHON JEAN FRANÇOIS (1778-1837), French historian, was born in Paris on the 11th of January 1778. Having gained admittance to the offices of the Directory, he became head of a department. Under the Consulate he entered the office of the secretary of state, in the department of the archives. In 1806 he was appointed secretary and archivist to the *cabinet particulier* of the emperor, whom he attended on his campaigns and journeys. He was created a baron of the empire in 1809, and, on the fall of Napoleon, was first secretary of the cabinet and confidential secretary. Compelled by the second Restoration to retire into private life, he devoted his leisure to writing the history of his times, an occupation for which his previous employments well fitted him. He published successively *Manuscrit de 1814, contenant l'histoire des six derniers mois du règne de Napoléon* (1823; new edition with illustrations, 1906); *Manuscrit de 1813, contenant le précis des événements de cette année pour servir à l'histoire de l'empereur Napoléon* (1824); *Manuscrit de 1812* (1827); and *Manuscrit de l'an iii. (1794-1795), contenant les premières transactions de l'Europe avec la république française et le tableau des derniers événements du régime conventionnel* (1828), all of which are remarkable for accuracy and wide range of knowledge, and are a very valuable source for the history of Napoleon I. Of still greater importance for the history of Napoleon are Fain's *Mémoires*, which were published posthumously in 1908; they relate more particularly to the last five years of the empire, and give a detailed picture of the emperor at work on his correspondence among his confidential secretaries. Immediately after the overthrow of Charles X., King Louis Philippe appointed Fain first secretary of his cabinet (August 1830). Fain was a member of the council of state and deputy from Montargis from 1834 until his death, which occurred in Paris on the 16th of September 1837.

FAIR, a commercial institution, defined as a "greater species of market recurring at more distant intervals": both "fair" and "market" (*q.v.*) have been distinguished by Lord Coke from "mart," which he considers as a greater species of fair; and all three may be defined as periodic gatherings of buyers and sellers in an appointed place, subject to special regulation by law or custom. Thus in England from a strictly legal point of view there can be no fair or market without a franchise; and a franchise of fair or market can only be exercised by right of a grant from the crown, or by the authority of parliament or by prescription presupposing a grant. In the earliest times periodical trading in special localities was necessitated by the difficulties of communication and the dangers of travel. Public gatherings, whether religious, military or judicial, which brought together widely scattered populations, were utilized as opportunities for commerce. At the festivals of Delos and at the Olympic games trade, it is said, found important outlets, while in Etruria the annual general assembly at the temple of Voltumna served at the same time as a fair and was regularly attended by Roman traders. Instances of a similar nature might be multiplied; but it was above all with religious festivals which recurred with regularity and convoked large numbers of persons that fairs, as distinguished from markets, are most intimately associated.

The most commonly accepted derivation of the word “fair” is from the Latin *feria*, a name which the church borrowed from Roman custom and applied to her own festivals. A fair was generally held during the period of a saint’s feast and in the precincts of his church or abbey, but in England this desecration of church or churchyard was first forbidden by the Statute of Winton (*c.* Edward I.). Most of the famous fairs of medieval England and Europe, with their tolls or other revenues, and, within certain limits of time and place, their monopoly of trade, were grants from the sovereign to abbots, bishops and other ecclesiastical dignitaries. Their “holy day” associations are preserved in the German word for fairs, *Messen*; as also in the *kirmiss*, “church mass,” of the people of Brittany. So very intimate was the connexion between the fair and the feast of the saint that the former has very commonly been regarded as an off-shoot or development of the latter. But there is every reason to suppose that fairs were already existing national institutions, long before the church turned or was privileged to turn them to her own profit.

The first charter of the great fair of Stourbridge, near Cambridge, was granted by King John for the maintenance of a leper hospital; but the origin of the fair itself is ascribed to Carausius, the rebel emperor of Britain, A.D. 207. At all events, it may be seen from the *data* given in Herbert Spencer’s *Descriptive Sociology* that the country had then arrived at the stage of development where fairs might have been recognized as a necessity. The Romans also appear to have elaborated a market-law similar to that in force throughout medieval Europe—though it must be observed that the Roman *nundinae*, which some have regarded as fairs, were weekly markets. It has also been supposed that the ancient fairs of Lyons were a special privilege granted by the Roman conquerors; and Sidonius Apollinaris, A.D. 427, alludes to the fairs of the district afterwards known as the county of Champagne, as if they were then familiarly known institutions. Fairs, in a word, would not only have arisen naturally, wherever the means of communication between individual centres of production and consumption were felt to be inadequate to the demand for an interchange of commodities; but, from their very nature, they might be expected to show some essential resemblances, even in points of legislation, and where no international transmission of custom could have been possible. Thus, the fair courts of pre-Spanish Mexico corresponded very closely to those of the Beaucaire fair. They resembled the English courts of piepowder. The Spaniards, when first they saw the Mexican fairs, were reminded of the like institutions in Salamanca and Granada. The great fair or market at the city of Mexico is said to have been attended by about 40,000 or 50,000 persons, and is thus described by Prescott:—

> “Officers patrolled the square, whose business it was to keep the peace, to collect the dues imposed on the various kinds of merchandise, to see that no false measures or fraud of any kind were used, and to bring offenders at once to justice. A court of twelve judges sat in one part of the *tianguez* clothed with those ample and summary powers which, in despotic countries, are often delegated even to petty tribunals. The extreme severity with which they exercised those powers, in more than one instance, proves that they were not a dead letter.”

But notwithstanding the great antiquity of fairs, their charters are comparatively modern —the oldest known being that of St Denys, Paris, which Dagobert, king of the Franks, granted (A.D. 642) to the monks of the place “for the glory of God, and the honour of St Denys at his festival.”

In England it was only after the Norman conquest that fairs became of capital importance. Records exist of 2800 grants of franchise markets and fairs between the years 1199 and 1483. More than half of these were made during the reigns of John and Henry III., when the power of the church was in ascendancy. The first recorded grant, however, appears to be that of William the Conqueror to the bishop of Winchester, for leave to hold an annual “free fair” at St Giles’s hill. The monk who had been the king’s jester received his charter of Bartholomew fair, Smithfield, in the year 1133. And in 1248 Henry III. granted a like privilege to the abbot of Westminster, in honour of the “translation” of Edward the Confessor. Sometimes fairs were granted to towns as a means for enabling them to recover from the effects of war and other disasters. Thus, Edward III. granted a “free fair” to the town of Burnley in Rutland, just as, in subsequent times, Charles VII. favoured Bordeaux after the English wars, and Louis XIV. gave fair charters to the towns of Dieppe and Toulon. The importance attached to these old fairs may be understood from the inducements which, in the 14th century, Charles IV. held out to traders visiting the great fair of Frankfort-on-Main. The charter declared that both during the continuance of the fair, and for eighteen days before and after it, merchants would be exempt from imperial taxation, from arrest for debt, or civil process of any sort, except such as might arise from the transactions of the market itself and within its precincts. Philip of Valois’s regulations for the fairs of Troyes in Champagne might not only be accepted as typical of all subsequent fair-legislation of the

kingdom, but even of the English and German laws on the subject. The fair had its staff of notaries for the attestation of bargains, its court of justice, its police officers, its sergeants for the execution of the market judges' decrees, and its visitors—of whom we may mention the *prud'hommes*,—whose duty it was to examine the quality of goods exposed for sale, and to confiscate those found unfit for consumption. The confiscation required the consent of five or six representatives of the merchant community at the fair. The effect of these great "free fairs" of England and the continent on the development of society was indeed great. They helped to familiarize the western and northern countries with the banking and financial systems of the Lombards and Florentines, who resorted to them under the protection of the sovereign's "firm peace," and the ghostly terrors of the pope. They usually became the seat of foreign agencies. In the names of her streets Provins preserved the memory of her 12th-century intercourse with the agents and merchants of Germany and the Low Countries, and long before that time the Syrian traders at St Denys had established their powerful association in Paris. Like the church on the religious side, the free fairs on the commercial side evoked and cherished the international spirit. And during long ages, when commercial "protection" was regarded as indispensable to a nation's wealth, and the merchant was compelled to "fight his way through a wilderness of taxes," they were the sole and, so far as they went, the complete substitute for the free trade of later days.

Their privileges, however, were, from their very nature, destined to grow more oppressive and intolerable the more the towns were multiplied and the means of communication increased. The people of London were compelled to close their shops during the days when the abbot of Westminster's fair was open. But a more curious and complete instance of such an ecclesiastical monopoly was that of the St Giles's fair, at first granted for the customary three days, which were increased by Henry III. to sixteen. The bishop of Winchester was, as we have seen, the lord of this fair. On the eve of St Giles's feast the magistrates of Winchester surrendered the keys of the city gates to the bishop, who then appointed his own mayor, bailiff and coroner, to hold office until the close of the fair. During the same period, Winchester and Southampton also—though it was then a thriving trading town—were forbidden to transact their ordinary commercial business, except within the bishop's fair, or with his special permission. The bishop's officers were posted along the highways, with power to forfeit to his lordship all goods bought and sold within 7 m. of the fair—in whose centre stood "the pavilion," or bishop's court. It is clear, from the curious record of the *Establishment and Expenses of the Household* of Percy, 5th earl of Northumberland, that fairs were the chief centres of country traffic even as late as the 16th century. They began to decline rapidly after 1759, when good roads had been constructed and canal communication established between Liverpool and the towns of Yorkshire, Cheshire and Lancashire. In the great towns their extinction was hastened in consequence of their evil effects on public morals. All the London fairs were abolished as public nuisances before 1855—the last year of the ever famous fair of St Bartholomew; and the fairs of Paris were swept away in the storm of the Revolution.

English Fairs and Markets.—For the general reasons apparent from the preceding sketch, fairs in England, as in France and Germany, have very largely given way to markets for specialities. Even the live-stock market of the metropolis is being superseded by the dead-meat market, a change which has been encouraged by modern legislation on cattle disease, the movements of home stock and the importation of foreign animals. Agricultural markets are also disappearing before the "agencies" and the corn exchanges in the principal towns. Still there are some considerable fairs yet remaining. Of the English fairs for live stock, those of Weyhill in Hampshire (October 10), St Faith's, near Norwich (October 17), as also several held at Devizes, Wiltshire, are among the largest in the kingdom. The first named stands next to none for its display of sheep. Horncastle, Lincolnshire, is the largest horse fair in the kingdom, and is regularly visited by American and continental dealers. The other leading horse fairs in England are Howden in Yorkshire (well known for its hunters), Woodbridge (on Lady Day) for Suffolk horses, Barnet in Hertfordshire, and Lincoln. Exeter December fair has a large display of cattle, horses and most kinds of commodities. Large numbers of Scotch cattle are also brought to the fairs of Carlisle and Ormskirk. Nottingham has a fair for geese. Ipswich has a fair for lambs on the 1st of August, and for butter and cheese on the 1st of September. Gloucester fair is also famous for the last-named commodity. Falkirk fair, or tryst, for cattle and sheep, is one of the largest in Scotland; and Ballinasloe, Galway, holds a like position among Irish fairs. The Ballinasloe cattle are usually fed for a year in Leinster before they are considered fit for the Dublin or Liverpool markets.

French Fairs.—In France fairs and markets are held under the authority of the prefects, new fairs and markets being established by order of the prefects at the instance of the commune interested. Before the Revolution fairs and markets could only be established by

seigneurs justiciers, but only two small markets have survived the law of 1790 abolishing private ownership of market rights, namely, the *Marché Ste Catherine* and the *Marché des enfants rouges*, both in Paris. Under the present system markets and fairs are held in most of the towns and villages in France; and at all such gatherings entertainments form an important feature. The great fair of Beaucaire instituted in 1168 has steadily declined since the opening of railway communication, and now ranks with the fairs of ordinary provincial towns. Situated at the junction of the Rhone and the Canal du Midi, and less than 40 m. from the sea, it at one time attracted merchants from Spain, from Switzerland and Germany, and from the Levant and Mediterranean ports, and formed one of the greatest temporary centres of commerce on the continent. One trade firm alone, it is said, rarely did less than 1,000,000 francs worth of business during the fortnight that the fair lasted.

German Fairs.—In Germany the police authorities are considered the market authorities, and to them in most cases is assigned the duty of establishing new fairs and markets, subject to magisterial decision. The three great fairs of Germany are those of Frankfort-on-Main, Frankfort-on-Oder and Leipzig, but, like all the large fairs of Europe, they have declined rapidly in importance. Those of Frankfort-on-Main begin on Easter Tuesday and on the nearest Monday to September 8 respectively, and their legal duration is three weeks, though the limit is regularly extended. The fairs of the second-named city are *Reminiscere*, February or March; *St Margaret*, July; *St Martin*, November. Ordinarily they last fifteen days, which is double the legal term. The greatest of the German fairs are those of Leipzig, whose display of books is famous all over the world. Its three fairs are dated January 1, Easter, Michaelmas. The Easter one is the book fair, which is attended by all the principal booksellers of Germany, and by many more from the adjoining countries. Most German publishers have agents at Leipzig. As many as 5000 new publications have been entered in a single Leipzig catalogue. As in the other instances given, the Leipzig fairs last for three weeks, or nearly thrice their allotted duration. Here no days of grace are allowed, and the holder of a bill must demand payment when due, and protest, if necessary, on the same day, otherwise he cannot proceed against either drawer or endorser.

Russian Fairs.—In Russia fairs are held by local authorities. Landed proprietors may also hold fairs on their estates subject to the sanction of the local authorities; but no private tolls may be levied on commodities brought to such fairs. In Siberia and the east of Russia, where more primitive conditions foster such centres of trade, fairs are still of considerable importance. Throughout Russia generally they are very numerous. The most important, that of Nijni Novgorod, held annually in July and August at the confluence of the rivers Volga and Kama, was instituted in the 17th century by the tsar Michael Fedorovitch. In 1881 it was calculated that trade to the value of 246,000,000 roubles was carried on within the limits of the fair. It still continues to be of great commercial importance, and is usually attended by upwards of 100,000 persons from all parts of Asia and eastern Europe. Other fairs of consequence are those of Irbit in Perm, Kharkoff (January and August), Poltava (August and February), Koreunais in Koursk, Ourloupinsknia in the Don Cossack country, Krolevetz in Tchernigoff, and a third fair held at Poltava on the feast of the Ascension.

Indian Fairs.—The largest of these, and perhaps the largest in Asia, is that of Hurdwar, on the upper course of the Ganges. The visitors to this holy fair number from 200,000 to 300,000; but every twelfth year there occurs a special pilgrimage to the sacred river, when the numbers may amount to a million or upwards. Those who go solely for the purposes of trade are Nepalese, Mongolians, Tibetans, central Asiatics and Mahommedan pedlars from the Punjab, Sind and the border states. Persian shawls and carpets, Indian silks, Kashmir shawls, cottons (Indian and English), preserved fruits, spices, drugs, &c. , together with immense numbers of cattle, horses, sheep and camels, are brought to this famous fair.

American Fairs.—The word “fair,” as now used in the United States, appears to have completely lost its Old World meaning. It seems to be exclusively applied to industrial exhibitions and to what in England are called fancy bazaars. Thus, during the Civil War, large sums were collected at the “sanitary fairs,” for the benefit of the sick and wounded. To the first-named class belong the state and county fairs, as they are called. Among the first and best-known of these was the “New York World’s Fair,” opened in 1853 by a company formed in 1851. (See Exhibition.)

Law of Fairs.—As no market or fair can be held in England without a royal charter, or right of prescription, so any person establishing a fair without such sanction is liable to be sued under a writ of *Quo warranto*, by any one to whose property the said market may be injurious. Nor can a fair or market be legally held beyond the time specified in the grant; and by 5 Edward III. c. 5 (1331) a merchant selling goods after the legal expiry of the fair forfeited double their value. To be valid, a sale must take place in “market-overt” (open

market); “it will not be binding if it carries with it a presumption of fraudulence.” These regulations satisfied, the sale “transfers a complete property in the thing sold to the vendee; so that however injurious or illegal the title of the vendor may be, yet the vendee’s is good against all men except the king.” (In Scottish law, the claims of the real owner would still remain valid.) However, by 21 Henry VIII. c. 2 (1529) it was enacted that, “if any felon rob or take away money, goods, or chattels, and be indicted and found guilty, or otherwise attainted upon evidence given by the owner or party robbed, or by any other by their procurement, the owner or party robbed shall be restored to his money, goods or chattels,” but only those goods were restored which were specified in the indictment, now could the owner recover from a *bona fide* purchaser in market-overt who had sold the goods before conviction. For obvious reasons the rules of market-overt were made particularly stringent in the case of horses. Thus, by 2 Philip & Mary c. 7 (1555) and 31 Eliz. c. 12 (1589) no sale of a horse was legal which had not satisfied the following conditions;—Public exposure of the animal for at least an hour between sunrise and sunset; identification of the vendor by the market officer, or guarantee for his honesty by “one sufficient and credible person”; entry of these particulars, together with a description of the animal, and a statement of the price paid for it, in the market officer’s book. Even if his rights should have been violated in spite of all these precautions, the lawful owner could recover, if he claimed within six months, produced witnesses, and tendered the price paid to the vendor. Tolls were not a “necessary incident” of a fair—*i.e.* they were illegal unless specially granted in the patent, or recognized by custom. As a rule, they were paid only by the vendee, and to the market clerk, whose record of the payment was an attestation to the genuineness of the purchase. By 2 & 3 Philip & Mary c. 7 every lord of a fair entitled to exact tolls was bound to appoint a clerk to collect and enter them. It was also this functionary’s business to test measures and weights. Tolls, again, are sometimes held to include “stallage” and “picage,” which mean respectively the price for permission to erect stalls and to dig holes for posts in the market grounds. But toll proper belongs to the lord of the market, whereas the other two are usually regarded as the property of the lord of the soil. The law also provided that stallage might be levied on any house situated in the vicinity of a market, and kept open for business during the legal term of the said market. Among modern statutes, one of the chief is the Markets and Fairs Clauses Act 1847, the chief purpose of which was to consolidate previous measures. By the act no proprietors of a new market were permitted to let stallages, take tolls, or in any way open their ground for business, until two justices of the peace certified to the completion of the fair or market. After the opening of the place for public use, no person other than a licensed hawker may sell anywhere within the borough, his own house or shop excepted, any articles in respect of which tolls are legally exigible in the market. A breach of this provision entails a penalty of forty shillings. Vendors of unwholesome meat are liable to a penalty of £5 for each offence; and the “inspectors of provisions” have full liberty to seize the goods and institute proceedings against the owners. They may also enter “at all times of the day, with or without assistance,” the slaughter-house which the undertaker of the market may, by the special act, have been empowered to construct. For general sanitary reasons, persons are prohibited from killing animals anywhere except in these slaughter-houses. Again, by the Fairs Act 1873, times of holding fairs are determined by the secretary of state; while the Fairs Act 1871 empowers him to abolish any fair on the representation of the magistrate and with the consent of the owner. The preamble of the act states that many fairs held in England and Wales are both unnecessary and productive of “grievous immorality.”

The Fair Courts.—The piepowder courts, the lowest but most expeditious courts of justice in the kingdom, as Chitty calls them, were very ancient. The Conqueror’s law *De Emporiis* shows their pre-existence in Normandy. Their name was derived from *pied poudreux*, *i.e.* “dusty-foot.”[1] The lord of the fair or his representative was the presiding judge, and usually he was assisted by a jury of traders chosen on the spot. Their jurisdiction was limited by the legal time and precincts of the fair, and to disputes about contracts, “slander of wares,” attestations, the preservation of order, &c.

Authorities.—See Herbert Spencer’s *Descriptive Sociology* (1873), especially the columns and paragraphs on “Distribution”; Prescott’s *History of Mexico*, for descriptions of fairs under the Aztecs; Giles Jacob’s *Law Dictionary* (London, 1809); Joseph Chitty’s *Treatise on the Law of Commerce and Manufactures*, vol. ii. chap. 9 (London, 1824); Holinshed’s and Grafton’s *Chronicles*, for lists, &c. , of English fairs; Meyer’s *Das grosse Conversations-Lexicon* (1852), under “Messen”; article “Foire” in Larousse’s *Dictionnaire universelle du XIX*^{e} *siècle* (Paris, 1866-1874), and its references to past authorities; and especially, the second volume, commercial series, of the *Encyclopédie méthodique* (Paris, 1783); M’Culloch’s *Dictionary of Commerce* (1869-1871); Wharton’s *History of English Poetry*, pp. 185, 186 of edition of 1870 (London, Murray & Son), for a description of the Winchester Fair, &c. ; a note by Professor Henry Morley in p. 498, vol. vii. *Notes and Queries*, second series; the same author’s unique *History of the Fair of St Bartholomew* (London, 1859); Wharton’s *Law Lexicon* (Will’s edition, London, 1876); P. Huvelin’s *Essai historique sur le*

droit des marchés et des foires (Paris, 1897); *Report of the Royal Commission on Market Rights and Tolls*, vols. i. (1889), xiv. (1891); *Final Report* (1891); Walford's *Fairs, Past and Present* (1883); *The Law relating to Markets and Fairs*, by Pease and Chitty (London, 1899).

(J. Ma.; Ev. C.*)

1 In Med. Lat. *pede-pulverosus* meant an itinerant merchant or pedlar. In Scots borough law "marchand travelland" and "dusty fute" are identical.

FAIRBAIRN, ANDREW MARTIN (1838-), British Nonconformist divine, was born near Edinburgh on the 4th of November 1838. He was educated at the universities of Edinburgh and Berlin, and at the Evangelical Union Theological Academy in Glasgow. He entered the Congregational ministry and held pastorates at Bathgate, West Lothian and at Aberdeen. From 1877 to 1886 he was principal of Airedale College, Bradford, a post which he gave up to become the first principal of Mansfield College, Oxford. In the transference to Oxford under that name of Spring Hill College, Birmingham, he took a considerable part, and he has exercised influence not only over generations of his own students, but also over a large number of undergraduates in the university generally. He was granted the degree of M.A. by a decree of Convocation, and in 1903 received the honorary degree of doctor of literature. He was also given the degrees of doctor of divinity of Edinburgh and Yale, and doctor of laws of Aberdeen. His activities were not limited to his college work. He delivered the Muir lectures at Edinburgh University (1878-1882), the Gifford lectures at Aberdeen (1892-1894), the Lyman Beecher lectures at Yale (1891-1892), and the Haskell lectures in India (1898-1899). He was a member of the Royal Commission of Secondary Education in 1894-1895, and of the Royal Commission on the Endowments of the Welsh Church in 1906. In 1883 he was chairman of the Congregational Union of England and Wales. He is a prolific writer on theological subjects. He resigned his position at Mansfield College in the spring of 1909.

Among his works are:—*Studies in the Philosophy of Religion and History* (1876); *Studies in the Life of Christ* (1881); *Religion in History and in Modern Life* (1884; rev. 1893); *Christ in Modern Theology* (1893); *Christ in the Centuries* (1893); *Catholicism Roman and Anglican* (1899); *Philosophy of the Christian Religion* (1902); *Studies in Religion and Theology* (1909).

FAIRBAIRN, SIR WILLIAM, Bart. (1789-1874), Scottish engineer, was born on the 19th of February 1789 at Kelso, Roxburghshire, where his father was a farm-bailiff. In 1803 he obtained work at three shillings a week as a mason's labourer on the bridge then being built by John Rennie at Kelso; but within a few days he was incapacitated by an accident. Later in the same year, his father having been appointed steward on a farm connected with Percy Main Colliery near North Shields, he obtained employment as a carter in connexion with the colliery. In March 1804 he was bound an apprentice to a millwright at Percy Main, and then found time to supplement the deficiencies of his early education by systematic private study. It was at Percy Main that he made the acquaintance of George Stephenson, who then had charge of an engine at a neighbouring colliery. For some years subsequent to the expiry of his apprenticeship in 1811, he lived a somewhat roving life, seldom remaining long in one place and often reduced to very hard straits before he got employment. But in 1817 he entered into partnership with a shopmate, James Lillie, with whose aid he hired an old shed in High Street, Manchester, where he set up a lathe and began business. The firm quickly secured a good reputation, and the improvements in mill-work and water-wheels introduced by Fairbairn caused its fame to extend beyond Manchester to Scotland and even the continent of Europe. The partnership was dissolved in 1832.

In 1830 Fairbairn had been employed by the Forth and Clyde Canal Company to make experiments with the view of determining whether it were possible to construct steamers capable of traversing the canal at a speed which would compete successfully with that of the railway; and the results of his investigation were published by him in 1831, under the title *Remarks on Canal Navigation*. His plan of using iron boats proved inadequate to overcome

the difficulties of this problem, but in the development of the use of this material both in the case of merchant vessels and men-of-war he took a leading part. In this way also he was led to pursue extensive experiments in regard to the strength of iron. In 1835 he established, in connexion with his Manchester business, a shipbuilding yard at Millwall, London, where he constructed several hundred vessels, including many for the royal navy; but he ultimately found that other engagements prevented him from paying adequate attention to the management, and at the end of fourteen years he disposed of the concern at a great loss. In 1837 he was consulted by the sultan of Turkey in regard to machinery for the government workshops at Constantinople. In 1845 he was employed, in conjunction with Robert Stephenson, in constructing the tubular railway bridges across the Conway and Menai Straits. The share he had in the undertaking has been the subject of some dispute; his own version is contained in a volume he published in 1849, *An Account of the Construction of the Britannia and Conway Tubular Bridges*. In 1849 he was invited by the king of Prussia to submit designs for the construction of a bridge across the Rhine, but after various negotiations, another design, by a Prussian engineer, which was a modification of Fairbairn's, was adopted. Another matter which engaged much of Fairbairn's attention was steam boilers, in the construction of which he effected many improvements. Amid all the cares of business he found time for varied scientific investigation. In 1851 his fertility and readiness of invention greatly aided an inquiry carried out at his Manchester works by Sir William Thomson (Lord Kelvin) and J.P. Joule, at the instigation of William Hopkins, to determine the melting points of substances under great pressure; and from 1861 to 1865 he was employed to guide the experiments of the government committee appointed to inquire into the "application of iron to defensive purposes." He died at Moor Park, Surrey, on the 18th of August 1874. Fairbairn was a member of many learned societies, both British and foreign, and in 1861 served as president of the British Association. He declined a knighthood, in 1861, but accepted a baronetcy in 1869.

His youngest brother, Sir Peter Fairbairn (1799-1861), founded a large machine manufacturing business in Leeds. Starting on a small scale with flax-spinning machinery, he subsequently extended his operations to the manufacture of textile machinery in general, and finally to that of engineering tools. He was knighted in 1858.

See *The Life of Sir William Fairbairn*, partly written by himself and edited and completed by Dr William Pole (1877).

Full Project Gutenberg™ License available with this file or online at www.gutenberg.org/license.

Section 1. General Terms of Use and Redistributing Project Gutenberg™ electronic works

1.A. By reading or using any part of this Project Gutenberg™ electronic work, you indicate that you have read, understand, agree to and accept all the terms of this license and intellectual property (trademark/copyright) agreement. If you do not agree to abide by all the terms of this agreement, you must cease using and return or destroy all copies of Project Gutenberg™ electronic works in your possession. If you paid a fee for obtaining a copy of or access to a Project Gutenberg™ electronic work and you do not agree to be bound by the terms of this agreement, you may obtain a refund from the person or entity to whom you paid the fee as set forth in paragraph 1.E.8.

1.B. “Project Gutenberg” is a registered trademark. It may only be used on or associated in any way with an electronic work by people who agree to be bound by the terms of this agreement. There are a few things that you can do with most Project Gutenberg™ electronic works even without complying with the full terms of this agreement. See paragraph 1.C below. There are a lot of things you can do with Project Gutenberg™ electronic works if you follow the terms of this agreement and help preserve free future access to Project Gutenberg™ electronic works. See paragraph 1.E below.

1.C. The Project Gutenberg Literary Archive Foundation (“the Foundation” or PGLAF), owns a compilation copyright in the collection of Project Gutenberg™ electronic works. Nearly all the individual works in the collection are in the public domain in the United States. If an individual work is unprotected by copyright law in the United States and you are located in the United States, we do not claim a right to prevent you from copying, distributing, performing, displaying or creating derivative works based on the work as long as all references to Project Gutenberg are removed. Of course, we hope that you will support the Project Gutenberg™ mission of promoting free access to electronic works by freely sharing Project Gutenberg™ works in compliance with the terms of this agreement for keeping the Project Gutenberg™ name associated with the work. You can easily comply with the terms of this agreement by keeping this work in the same format with its attached full Project Gutenberg™ License when you share it without charge with others.

1.D. The copyright laws of the place where you are located also govern what you can do with this work. Copyright laws in most countries are in a constant state of change. If you are outside the United States, check the laws of your country in addition to the terms of this agreement before downloading, copying, displaying, performing, distributing or creating derivative works based on this work or any other Project Gutenberg™ work. The Foundation makes no representations concerning the copyright status of any work in any country other than the United States.

1.E. Unless you have removed all references to Project Gutenberg:

1.E.1. The following sentence, with active links to, or other immediate access to, the full Project Gutenberg™ License must appear prominently whenever any copy of a Project Gutenberg™ work (any work on which the phrase “Project Gutenberg” appears, or with which the phrase “Project Gutenberg” is associated) is accessed, displayed, performed, viewed, copied or distributed:

> This eBook is for the use of anyone anywhere in the United States and most other parts of the world at no cost and with almost no restrictions whatsoever. You may copy it, give it away or re-use it under the terms of the Project Gutenberg License included with this eBook or online at www.gutenberg.org. If you are not located in the United States, you will have to check the laws of the country where you are located before using this eBook.

1.E.2. If an individual Project Gutenberg™ electronic work is derived from texts not protected by U.S. copyright law (does not contain a notice indicating that it is posted with permission of the copyright holder), the work can be copied and distributed to anyone in the United States without paying any fees or charges. If you are redistributing or providing access to a work with the phrase “Project Gutenberg” associated with or appearing on the work, you must comply either with the requirements of paragraphs 1.E.1 through 1.E.7 or obtain permission for the use of the work and the Project Gutenberg™ trademark as set forth in paragraphs 1.E.8 or 1.E.9.

1.E.3. If an individual Project Gutenberg™ electronic work is posted with the permission of the copyright holder, your use and distribution must comply with both paragraphs 1.E.1 through 1.E.7 and any additional terms imposed by the copyright holder. Additional terms will be linked to the Project Gutenberg™ License for all works posted with the permission of the copyright holder found at the beginning of this work.

1.E.4. Do not unlink or detach or remove the full Project Gutenberg™ License terms

from this work, or any files containing a part of this work or any other work associated with Project Gutenberg™.

1.E.5. Do not copy, display, perform, distribute or redistribute this electronic work, or any part of this electronic work, without prominently displaying the sentence set forth in paragraph 1.E.1 with active links or immediate access to the full terms of the Project Gutenberg™ License.

1.E.6. You may convert to and distribute this work in any binary, compressed, marked up, nonproprietary or proprietary form, including any word processing or hypertext form. However, if you provide access to or distribute copies of a Project Gutenberg™ work in a format other than “Plain Vanilla ASCII” or other format used in the official version posted on the official Project Gutenberg™ website (www.gutenberg.org), you must, at no additional cost, fee or expense to the user, provide a copy, a means of exporting a copy, or a means of obtaining a copy upon request, of the work in its original “Plain Vanilla ASCII” or other form. Any alternate format must include the full Project Gutenberg™ License as specified in paragraph 1.E.1.

1.E.7. Do not charge a fee for access to, viewing, displaying, performing, copying or distributing any Project Gutenberg™ works unless you comply with paragraph 1.E.8 or 1.E.9.

1.E.8. You may charge a reasonable fee for copies of or providing access to or distributing Project Gutenberg™ electronic works provided that:

- You pay a royalty fee of 20% of the gross profits you derive from the use of Project Gutenberg™ works calculated using the method you already use to calculate your applicable taxes. The fee is owed to the owner of the Project Gutenberg™ trademark, but he has agreed to donate royalties under this paragraph to the Project Gutenberg Literary Archive Foundation. Royalty payments must be paid within 60 days following each date on which you prepare (or are legally required to prepare) your periodic tax returns. Royalty payments should be clearly marked as such and sent to the Project Gutenberg Literary Archive Foundation at the address specified in Section 4, “Information about donations to the Project Gutenberg Literary Archive Foundation.”

- You provide a full refund of any money paid by a user who notifies you in writing (or by e-mail) within 30 days of receipt that s/he does not agree to the terms of the full Project Gutenberg™ License. You must require such a user to return or destroy all copies of the works possessed in a physical medium and discontinue all use of and all access to other copies of Project Gutenberg™ works.

- You provide, in accordance with paragraph 1.F.3, a full refund of any money paid for a work or a replacement copy, if a defect in the electronic work is discovered and reported to you within 90 days of receipt of the work.

- You comply with all other terms of this agreement for free distribution of Project Gutenberg™ works.

1.E.9. If you wish to charge a fee or distribute a Project Gutenberg™ electronic work or group of works on different terms than are set forth in this agreement, you must obtain permission in writing from the Project Gutenberg Literary Archive Foundation, the manager of the Project Gutenberg™ trademark. Contact the Foundation as set forth in Section 3 below.

1.F.

1.F.1. Project Gutenberg volunteers and employees expend considerable effort to identify, do copyright research on, transcribe and proofread works not protected by U.S. copyright law in creating the Project Gutenberg™ collection. Despite these efforts, Project Gutenberg™ electronic works, and the medium on which they may be stored, may contain “Defects,” such as, but not limited to, incomplete, inaccurate or corrupt data, transcription errors, a copyright or other intellectual property infringement, a defective or damaged disk or other medium, a computer virus, or computer codes that damage or cannot be read by your equipment.

1.F.2. LIMITED WARRANTY, DISCLAIMER OF DAMAGES - Except for the “Right of Replacement or Refund” described in paragraph 1.F.3, the Project Gutenberg Literary Archive Foundation, the owner of the Project Gutenberg™ trademark, and any other party distributing a Project Gutenberg™ electronic work under this agreement, disclaim all liability to you for damages, costs and expenses, including legal fees. YOU AGREE THAT YOU HAVE NO REMEDIES FOR NEGLIGENCE, STRICT LIABILITY, BREACH OF WARRANTY OR BREACH OF CONTRACT EXCEPT THOSE PROVIDED IN PARAGRAPH 1.F.3. YOU AGREE THAT THE FOUNDATION, THE TRADEMARK OWNER, AND ANY DISTRIBUTOR UNDER THIS AGREEMENT WILL NOT BE LIABLE TO YOU FOR ACTUAL, DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE OR INCIDENTAL DAMAGES EVEN IF YOU GIVE NOTICE OF THE POSSIBILITY OF SUCH DAMAGE.

1.F.3. LIMITED RIGHT OF REPLACEMENT OR REFUND - If you discover a defect in this electronic work within 90 days of receiving it, you can receive a refund of the money (if any) you paid for it by sending a written explanation to the person you received the work from. If you received the work on a physical medium, you must return the medium with your written explanation. The person or entity that provided you with the defective work may elect to provide a replacement copy in lieu of a refund. If you received the work electronically, the person or entity providing it to you may choose to give you a second opportunity to receive the work electronically in lieu of a refund. If the second copy is also defective, you may demand a refund in writing without further opportunities to fix the problem.

1.F.4. Except for the limited right of replacement or refund set forth in paragraph 1.F.3, this work is provided to you 'AS-IS', WITH NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

1.F.5. Some states do not allow disclaimers of certain implied warranties or the exclusion or limitation of certain types of damages. If any disclaimer or limitation set forth in this agreement violates the law of the state applicable to this agreement, the agreement shall be interpreted to make the maximum disclaimer or limitation permitted by the applicable state law. The invalidity or unenforceability of any provision of this agreement shall not void the remaining provisions.

1.F.6. INDEMNITY - You agree to indemnify and hold the Foundation, the trademark owner, any agent or employee of the Foundation, anyone providing copies of Project Gutenberg™ electronic works in accordance with this agreement, and any volunteers associated with the production, promotion and distribution of Project Gutenberg™ electronic works, harmless from all liability, costs and expenses, including legal fees, that arise directly or indirectly from any of the following which you do or cause to occur: (a) distribution of this or any Project Gutenberg™ work, (b) alteration, modification, or additions or deletions to any Project Gutenberg™ work, and (c) any Defect you cause.

Section 2. Information about the Mission of Project Gutenberg™

Project Gutenberg™ is synonymous with the free distribution of electronic works in formats readable by the widest variety of computers including obsolete, old, middle-aged and new computers. It exists because of the efforts of hundreds of volunteers and donations from people in all walks of life.

Volunteers and financial support to provide volunteers with the assistance they need are critical to reaching Project Gutenberg™'s goals and ensuring that the Project Gutenberg™ collection will remain freely available for generations to come. In 2001, the Project Gutenberg Literary Archive Foundation was created to provide a secure and permanent future for Project Gutenberg™ and future generations. To learn more about the Project Gutenberg Literary Archive Foundation and how your efforts and donations can help, see Sections 3 and 4 and the Foundation information page at www.gutenberg.org.

Section 3. Information about the Project Gutenberg Literary Archive Foundation

The Project Gutenberg Literary Archive Foundation is a non-profit 501(c)(3) educational corporation organized under the laws of the state of Mississippi and granted tax exempt status by the Internal Revenue Service. The Foundation's EIN or federal tax identification number is 64-6221541. Contributions to the Project Gutenberg Literary Archive Foundation are tax deductible to the full extent permitted by U.S. federal laws and your state's laws.

The Foundation's business office is located at 809 North 1500 West, Salt Lake City, UT 84116, (801) 596-1887. Email contact links and up to date contact information can be found at the Foundation's website and official page at www.gutenberg.org/contact

Section 4. Information about Donations to the Project Gutenberg Literary Archive Foundation

Project Gutenberg™ depends upon and cannot survive without widespread public support and donations to carry out its mission of increasing the number of public domain and licensed works that can be freely distributed in machine-readable form accessible by the widest array of equipment including outdated equipment. Many small donations ($1 to $5,000) are particularly important to maintaining tax exempt status with the IRS.

The Foundation is committed to complying with the laws regulating charities and charitable donations in all 50 states of the United States. Compliance requirements are not uniform and it takes a considerable effort, much paperwork and many fees to meet and keep up with these requirements. We do not solicit donations in locations where we

have not received written confirmation of compliance. To SEND DONATIONS or determine the status of compliance for any particular state visit www.gutenberg.org/donate.

While we cannot and do not solicit contributions from states where we have not met the solicitation requirements, we know of no prohibition against accepting unsolicited donations from donors in such states who approach us with offers to donate.

International donations are gratefully accepted, but we cannot make any statements concerning tax treatment of donations received from outside the United States. U.S. laws alone swamp our small staff.

Please check the Project Gutenberg web pages for current donation methods and addresses. Donations are accepted in a number of other ways including checks, online payments and credit card donations. To donate, please visit: www.gutenberg.org/donate

Section 5. General Information About Project Gutenberg™ electronic works

Professor Michael S. Hart was the originator of the Project Gutenberg™ concept of a library of electronic works that could be freely shared with anyone. For forty years, he produced and distributed Project Gutenberg™ eBooks with only a loose network of volunteer support.

Project Gutenberg™ eBooks are often created from several printed editions, all of which are confirmed as not protected by copyright in the U.S. unless a copyright notice is included. Thus, we do not necessarily keep eBooks in compliance with any particular paper edition.

Most people start at our website which has the main PG search facility: www.gutenberg.org.

This website includes information about Project Gutenberg™, including how to make donations to the Project Gutenberg Literary Archive Foundation, how to help produce our new eBooks, and how to subscribe to our email newsletter to hear about new eBooks.