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THE ENCYCLOPÆDIA BRITANNICA

A DICTIONARY OF ARTS, SCIENCES, LITERATURE AND GENERAL INFORMATION

ELEVENTH EDITION

VOLUME X SLICE III

Fenton, Edward to Finistere

Articles in This Slice

FENTON, EDWARD (d. 1603), English navigator, son of Henry Fenton and brother of Sir Geoffrey Fenton (*q.v.*), was a native of Nottinghamshire. In 1577 he sailed, in command of the “Gabriel,” with Sir Martin Frobisher’s second expedition for the discovery of the north-west passage, and in the following year he took part as second in command in Frobisher’s third expedition, his ship being the “Judith.” He was then employed in Ireland for a time, but in 1582 he was put in charge of an expedition which was to sail round the Cape of Good Hope to the Moluccas and China, his instructions being to obtain any knowledge of the north-west passage that was possible without hindrance to his trade. On this unsuccessful voyage he got no farther than Brazil, and throughout he was engaged in quarrelling with his officers, and especially with his lieutenant, William Hawkins, the nephew of Sir John Hawkins, whom he had in irons when he arrived back in the Thames. In 1588 he had command of the “Mary Rose,” one of the ships of the fleet that was formed to oppose the Armada. He died fifteen years afterwards.

FENTON, ELIJAH (1683-1730), English poet, was born at Shelton near Newcastle-under-Lyme, of an old Staffordshire family, on the 25th of May 1683. He graduated from Jesus College, Cambridge, in 1704, but was prevented by religious scruples from taking orders. He accompanied the earl of Orrery to Flanders as private secretary, and on returning to England became assistant in a school at Headley, Surrey, being soon afterwards appointed master of the free grammar school at Sevenoaks in Kent. In 1710 he resigned his appointment in the expectation of a place from Lord Bolingbroke, but was disappointed. He then became tutor to Lord Broghill, son of his patron Orrery. Fenton is remembered as the coadjutor of Alexander Pope in his translation of the *Odyssey*. He was responsible for the first, fourth, nineteenth and twentieth books, for which he received £300. He died at East Hampstead, Berkshire, on the 16th of July 1730. He was buried in the parish church, and his epitaph was written by Pope.

Fenton also published *Oxford and Cambridge Miscellany Poems* (1707); *Miscellaneous Poems* (1717); *Mariamne*, a tragedy (1723); an edition (1725) of Milton's poems, and one of Waller (1729) with elaborate notes. See W.W. Lloyd, *Elijah Fenton, his Poetry and Friends* (1894).

FENTON, SIR GEOFFREY (*c.* 1539-1608), English writer and politician, was the son of Henry Fenton, of Nottinghamshire. He was brother of Edward Fenton the navigator. He is said to have visited Spain and Italy in his youth; possibly he went to Paris in Sir Thomas Hoby's train in 1566, for he was living there in 1567, when he wrote *Certaine tragicall discourses written oute of Frenche and Latin*. This book is a free translation of François de Belleforest's French rendering of Matteo Bandello's *Novelle*. Till 1579 Fenton continued his literary labours, publishing *Monophylo* in 1572, *Golden epistles gathered out of Guevarae's workes as other authors* ... 1575, and various religious tracts of strong protestant tendencies. In 1579 appeared the *Historie of Guicciardini, translated out of French by G. F.* and dedicated to Elizabeth. Through Lord Burghley he obtained, in 1580, the post of secretary to the new lord deputy of Ireland, Lord Grey de Wilton, and thus became a fellow worker with the poet, Edmund Spenser. From this time Fenton abandoned literature and became a faithful if somewhat unscrupulous servant of the crown. He was a bigoted protestant, longing to use the rack against "the diabolicall secte of Rome," and even advocating the assassination of the queen's most dangerous subjects. He won Elizabeth's confidence, and the hatred of all his fellow-workers, by keeping her informed of every one's doings in Ireland. In 1587 Sir John Perrot arrested Fenton, but the queen instantly ordered his release. Fenton was knighted in 1589, and in 1590-1591 he was in London as commissioner on the impeachment of Perrot. Full of dislike of the Scots and of James VI. (which he did not scruple to utter), on the latter's accession Fenton's post of secretary was in danger, but Burghley exerted himself in his favour, and in 1604 it was confirmed to him for life, though he had to share it with Sir Richard Coke. Fenton died in Dublin on the 19th of October 1608, and was buried in St Patrick's cathedral. He married in June 1585, Alice, daughter of Dr Robert Weston, formerly lord chancellor of Ireland, and widow of Dr Hugh Brady, bishop of Meath, by whom he had two children, a son, Sir William Fenton, and a daughter, Catherine, who in 1603 married Richard Boyle, 1st earl of Cork.

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FENTON, LAVINIA (1708-1760), English actress, was probably the daughter of a naval lieutenant named Beswick, but she bore the name of her mother's husband. Her first appearance was as Monimia in Otway's *Orphans*, in 1726 at the Haymarket. She then joined the company of players at the theatre in Lincoln's Inn Fields, where her success and beauty made her the toast of the beaux. It was in Gay's *Beggar's Opera*, as Polly Peachum, that Miss Fenton made her greatest success. Her pictures were in great demand, verses were written to her and books published about her, and she was the most talked-of person in London. Hogarth's picture shows her in one of the scenes, with the duke of Bolton in a box. After appearing in several comedies, and then in numerous repetitions of the *Beggar's Opera*, she ran away with her lover Charles Paulet, 3rd duke of Bolton, a man much older than herself, who, after the death of his wife in 1751, married her. Their three children all died young. The duchess survived her husband and died on the 24th of January 1760.

FENTON, a town of Staffordshire, England, on the North Staffordshire railway, adjoining the east side of Stoke-on-Trent, in which parliamentary and municipal borough it is included. Pop. (1891) 16,998; (1901) 22,742. The manufacture of earthenware common to the district (the Potteries) employs the bulk of the large industrial population.

FENUGREEK, in botany, *Trigonella Foenum-graecum* (so called from the name given to it by the ancients, who used it as fodder for cattle), a member of a genus of leguminous herbs very similar in habit and in most of their characters to the species of the genus *Medicago*. The leaves are formed of three obovate leaflets, the middle one of which is stalked; the flowers are solitary, or in clusters of two or three, and have a campanulate, 5-cleft calyx; and the pods are many-seeded, cylindrical or flattened, and straight or only slightly curved. The genus is widely diffused over the south of Europe, West and Central Asia, and the north of Africa, and is represented by several species in Australia. Fenugreek is indigenous to south-eastern Europe and western Asia, and is cultivated in the Mediterranean region, parts of central Europe, and in Morocco, and largely in Egypt and in India. It bears a sickle-shaped pod, containing from 10 to 20 seeds, from which 6% of a fetid, fatty and bitter oil can be extracted by ether. In India the fresh plant is employed as an esculent. The seed is an ingredient in curry powders, and is used for flavouring cattle foods. It was formerly much esteemed as a medicine, and is still in repute in veterinary practice.

FENWICK, SIR JOHN (*c.* 1645-1697), English conspirator, was the eldest son of Sir William Fenwick, or Fenwicke, a member of an old Northumberland family. He entered the army, becoming major-general in 1688, but before this date he had been returned in succession to his father as one of the members of parliament for Northumberland, which county he represented from 1677 to 1687. He was a strong partisan of King James II., and in 1685 was one of the principal supporters of the act of attainder against the duke of Monmouth; but he remained in England when William III. ascended the throne three years later. He began at once to plot against the new king, for which he underwent a short imprisonment in 1689. Renewing his plots on his release, he publicly insulted Queen Mary in 1691, and it is practically certain that he was implicated in the schemes for assassinating William which came to light in 1695 and 1696. After the seizure of his fellow-conspirators, Robert Charnock and others, he remained in hiding until the imprudent conduct of his friends in attempting to induce one of the witnesses against him to leave the country led to his arrest in June in 1696. To save himself he offered to reveal all he knew about the Jacobite conspiracies; but his confession was a farce, being confined to charges against some of the leading Whig noblemen, which were damaging, but not conclusive. By this time his friends had succeeded in removing one of the two witnesses, and in these circumstances it was thought that the charge of treason must fail. The government, however, overcame this difficulty by introducing a bill of attainder, which after a long and acrimonious discussion passed through both Houses of Parliament. His wife persevered in her attempts to save his life, but her efforts were fruitless, and Fenwick was beheaded in London on the 28th of January 1697, with the same formalities as were usually observed at the execution of a peer. By his wife, Mary (d. 1708), daughter of Charles Howard, 1st earl of Carlisle, he had three sons and one daughter. Macaulay says that “of all the Jacobites, the most desperate characters not excepted, he (Fenwick) was the only one for whom William felt an intense personal aversion”; and it is interesting to note that Fenwick’s hatred of the king is said to date from the time when he was serving in Holland, and was reprimanded by William, then prince of Orange.

FEOFFMENT, in English law, during the feudal period, the usual method of granting or conveying a freehold or fee. For the derivation of the word see Fief and Fee. The essential elements were *livery of seisin* (delivery of possession), which consisted in formally giving to the feoffee on the land a clod or turf, or a growing twig, as a symbol of the transfer of the land, and words by the feoffor declaratory of his intent to deliver possession to the feoffee with a “limitation” of the estate intended to be transferred. This was called livery *in deed*. Livery *in law* was made not on but in sight of this land, the feoffor saying to the feoffee, “I give you that land; enter and take possession.” Livery in law, in order to pass the estate, had to be perfected by entry by the feoffee during the joint lives of himself and the feoffor. It was usual to evidence the feoffment by writing in a charter or deed of feoffment; but writing was not essential until the Statute of Frauds; now, by the Real Property Act 1845, a conveyance of real property is void unless evidenced by deed, and thus feoffments have been rendered unnecessary and

superfluous. All corporeal hereditaments were by that act declared to be *in grant* as well as *livery*, *i.e.* they could be granted by deed without livery. A feoffment might be a tortious conveyance, *i.e.* if a person attempted to give to the feoffee a greater estate than he himself had in the land, he forfeited the estate of which he was seised. (See Conveyancing; Real Property.)

FERDINAND (Span. *Fernando* or *Hernando*; Ital. *Ferdinando* or *Ferrante*; in O.H. Ger. *Herinand*, *i.e.* "brave in the host," from O.H.G. Heri, "army," A.S. *here*, Mod. Ger. *Heer*, and the Goth, *nanþjan*, "to dare"), a name borne at various times by many European sovereigns and princes, the more important of whom are noticed below in the following order: emperors, kings of Naples, Portugal, Spain (Castile, Leon and Aragon) and the two Sicilies; then the grand duke of Tuscany, the prince of Bulgaria, the duke of Brunswick and the elector of Cologne.

FERDINAND I. (1503-1564), Roman emperor, was born at Alcalá de Henares on the 10th of March 1503, his father being Philip the Handsome, son of the emperor Maximilian I., and his mother Joanna, daughter of Ferdinand and Isabella, king and queen of Castile and Aragon. Philip died in 1506 and Ferdinand, educated in Spain, was regarded with especial favour by his maternal grandfather who wished to form a Spanish-Italian kingdom for his namesake. This plan came to nothing, and the same fate attended a suggestion made after the death of Maximilian in 1519 that Ferdinand, and not his elder brother Charles, afterwards the emperor Charles V., should succeed to the imperial throne. Charles, however, secured the Empire and the whole of the lands of Maximilian and Ferdinand, while the younger brother was perforce content with a subordinate position. Yet some provision must be made for Ferdinand. In April 1521 the emperor granted to him the archduchies and duchies of upper and lower Austria, Carinthia, Styria and Carniola, adding soon afterwards the county of Tirol and the hereditary possessions of the Habsburgs in south-western Germany. About the same time the archduke was appointed to govern the duchy of Württemberg, which had come into the possession of Charles V.; and in May 1521 he was married at Linz to Anna (d. 1547), a daughter of Ladislaus, king of Hungary and Bohemia, a union which had been arranged some years before by the emperor Maximilian. In 1521 also he was made president of the council of regency (*Reichsregiment*), appointed to govern Germany during the emperor's absence, and the next five years were occupied with imperial business, in which he acted as his brother's representative, and in the government of the Austrian lands.

In Austria and the neighbouring duchies Ferdinand sought at first to suppress the reformers and their teaching, and this was possibly one reason why he had some difficulty in quelling risings in the districts under his rule after the Peasants' War broke out in 1524. But a new field was soon opened for his ambition. In August 1526 his childless brother-in-law, Louis II., king of Hungary and Bohemia, was killed at the battle of Mohacs, and the archduke at once claimed both kingdoms, both by treaty and by right of his wife. Taking advantage of the divisions among his opponents, he was chosen king of Bohemia in October 1526, and crowned at Prague in the following February, but in Hungary he was less successful. John Zapolya, supported by the national party and soon afterwards by the Turks, offered a sturdy resistance, and although Ferdinand was chosen king at Pressburg in December 1526, and after defeating Zapolya at Tokay was crowned at Stuhlweissenburg in November 1527, he was unable to take possession of the kingdom. The Bavarian Wittelsbachs, incensed at not securing the Bohemian throne, were secretly intriguing with his foes; the French, after assisting spasmodically, made a formal alliance with Turkey in 1535; and Zapolya was a very useful centre round which the enemies of the Habsburgs were not slow to gather. A truce made in 1533 was soon broken, and the war dragged on until 1538, when by the treaty of Grosswardein, Hungary was divided between the claimants. The kingly title was given to Zapolya, but Ferdinand was to follow him on the throne. Before this, in January 1531, he had been chosen king of the Romans, or German king, at Cologne, and his coronation took place a few days later at Aix-la-Chapelle. He had thoroughly earned this honour by his loyalty to his brother, whom he had represented at several diets. In religious matters the king was now inclined, probably owing to the Turkish danger, to steer a middle course between the contending parties, and in 1532 he agreed to the religious peace of Nuremberg, receiving in return from the Protestants some assistance for the war against the Turks. In 1534, however, his prestige suffered a severe rebuff. Philip, landgrave of Hesse, and his associates had succeeded in conquering Württemberg on behalf of its exiled duke, Ulrich (*q.v.*), and, otherwise engaged, neither Charles nor Ferdinand could send much help to their lieutenants. They were consequently obliged to consent to the treaty of Cadan, made in June 1534, by which the German king recognized Ulrich as duke of Württemberg, on condition that he held his duchy under Austrian suzerainty.

In Hungary the peace of 1538 was not permanent. When Zapolya died in July 1540 a powerful faction refused to admit the right of Ferdinand to succeed him, and put forward his young son John

Sigismund as a candidate for the throne. The cause of John Sigismund was espoused by the Turks and by Ferdinand's other enemies, and, unable to get any serious assistance from the imperial diet, the king repeatedly sought to make peace with the sultan, but his envoys were haughtily repulsed. In 1544, however, a short truce was made. This was followed by others, and in 1547 one was concluded for five years, but only on condition that Ferdinand paid tribute for the small part of Hungary which remained in his hands. The struggle was renewed in 1551 and was continued in the same desultory fashion until 1562, when a truce was made which lasted during the remainder of Ferdinand's lifetime. During the war of the league of Schmalkalden in 1546 and 1547 the king had taken the field primarily to protect Bohemia, and after the conclusion of the war he put down a rising in this country with some rigour. He appears during these years to have governed his lands with vigour and success, but in imperial politics he was merely the representative and spokesman of the emperor. About 1546, however, he began to take up a more independent position. Although Charles had crushed the league of Schmalkalden he had refused to restore Württemberg to Ferdinand; and he gave further offence by seeking to secure the succession of his son Philip, afterwards king of Spain, to the imperial throne. Ferdinand naturally objected, but in 1551 his reluctant consent was obtained to the plan that, on the proposed abdication of Charles, Philip should be chosen king of the Romans, and should succeed Ferdinand himself as emperor. Subsequent events caused the scheme to be dropped, but it had a somewhat unfortunate sequel for Charles, as during the short war between the emperor and Maurice, elector of Saxony, in 1552 Ferdinand's attitude was rather that of a spectator and mediator than of a partisan. There seems, however, to be no truth in the suggestion that he acted treacherously towards his brother, and was in alliance with his foes. On behalf of Charles he negotiated the treaty of Passau with Maurice in 1552, and in 1555 after the conduct of imperial business had virtually been made over to him, and harmony had been restored between the brothers, he was responsible for the religious peace of Augsburg. Early in 1558 Charles carried out his intention to abdicate the imperial throne, and on the 24th of March Ferdinand was crowned as his successor at Frankfort. Pope Paul IV. would not recognize the new emperor, but his successor Pius IV. did so in 1559 through the mediation of Philip of Spain. The emperor's short reign was mainly spent in seeking to settle the religious differences of Germany, and in efforts to prosecute the Turkish war more vigorously. His hopes at one time centred round the council of Trent which resumed its sittings in 1562, but he was unable to induce the Protestants to be represented. Although he held firmly to the Roman Catholic Church he sought to obtain tangible concessions to her opponents; but he refused to conciliate the Protestants by abrogating the clause concerning ecclesiastical reservation in the peace of Augsburg, and all his efforts to bring about reunion were futile. He did indeed secure the privilege of communion in both kinds from Pius IV. for the laity in Bohemia and in various parts of Germany, but the hearty support which he gave the Jesuits shows that he had no sympathy with Protestantism, and was only anxious to restore union in the Church. In November 1562 he obtained the election of his son Maximilian as king of the Romans, and having arranged a partition of his lands among his three surviving sons, died in Vienna on the 25th of July 1564. His family had consisted of six sons and nine daughters.

In spite of constant and harassing engagements Ferdinand was fairly successful both as king and emperor. He sought to consolidate his Austrian lands, reformed the monetary system in Germany, and reorganized the Aulic council (*Reichshofrat*). Less masterful but more popular than his brother, whose character overshadows his own, he was just and tolerant, a good Catholic and a conscientious ruler.

See the article on Charles V. and the bibliography appended thereto. Also, A. Ulloa, *Vita del potentissimo e christianissimo imperatore Ferdinando primo* (Venice, 1565); S. Schard, *Epitome rerum in variis orbis partibus a confirmatione Ferdinandi I.* (Basel, 1574); F.B. von Bucholtz, *Geschichte der Regierung Ferdinands des Ersten* (Vienna, 1831-1838); K. Oberleitner, *Österreichs Finanzen und Kriegswesen unter Ferdinand I.* (Vienna, 1859); A. Rezek, *Geschichte der Regierung Ferdinands I. in Böhmen* (Prague, 1878); E. Rosenthal, *Die Behördenorganisation Kaiser Ferdinands I.* (Vienna, 1887); and W. Bauer, *Die Anfänge Ferdinands I.* (Vienna, 1907).

FERDINAND II. (1578-1637), Roman emperor, was the eldest son of Charles, archduke of Styria (d. 1590), and his wife Maria, daughter of Albert IV., duke of Bavaria and a grandson of the emperor Ferdinand I. Born at Gratz on the 9th of July 1578, he was trained by the Jesuits, finishing his education at the university of Ingolstadt, and became the pattern prince of the counter-reformation. In 1596 he undertook the government of Styria, Carinthia and Carniola, and after a visit to Italy began an organized attack on Protestantism which under his father's rule had made great progress in these archduchies; and although hampered by the inroads of the Turks, he showed his indifference to the material welfare of his dominions by compelling many of his Protestant subjects to choose between exile and conversion, and by entirely suppressing Protestant worship. He was not, however, unmindful of the larger interest of his family, or of the Empire which the Habsburgs regarded as belonging to them by hereditary right. In 1606 he joined his kinsmen in recognizing his cousin Matthias as the head of the family in place of the lethargic Rudolph II.; but he shrank from any proceedings which might lead to the deposition of the emperor, whom he represented at the diet of Regensburg in 1608; and his conduct was somewhat ambiguous during the subsequent quarrel between Rudolph and Matthias.

In the first decade of the 17th century the house of Habsburg seemed overtaken by senile decay,

and the great inheritance of Charles V. and Ferdinand I. to be threatened with disintegration and collapse. The reigning emperor, Rudolph II., was inert and childless; his surviving brothers, the archduke Matthias (afterwards emperor), Maximilian (1558-1618) and Albert (1559-1621), all men of mature age, were also without direct heirs; the racial differences among its subjects were increased by their religious animosities; and it appeared probable that the numerous enemies of the Habsburgs had only to wait a few years and then to divide the spoil. In spite of the recent murder of Henry IV. of France, this issue seemed still more likely when Matthias succeeded Rudolph as emperor in 1612. The Habsburgs, however, were not indifferent to the danger, and about 1615 it was agreed that Ferdinand, who already had two sons by his marriage with his cousin Maria Anna (d. 1616), daughter of William V., duke of Bavaria, should be the next emperor, and should succeed Matthias in the elective kingdoms of Hungary and Bohemia. The obstacles which impeded the progress of the scheme were gradually overcome by the energy of the archduke Maximilian. The elder archdukes renounced their rights in the succession; the claims of Philip III. and the Spanish Habsburgs were bought off by a promise of Alsace; and the emperor consented to his supercession in Hungary and Bohemia. In 1617 Ferdinand, who was just concluding a war with Venice, was chosen king of Bohemia, and in 1618 king of Hungary; but his election as German king, or king of the Romans, delayed owing to the anxiety of Melchior Klesl (*q.v.*) to conciliate the protestant princes, had not been accomplished when Matthias died in March 1619. Before this event, however, an important movement had begun in Bohemia. Having been surprised into choosing a devoted Roman Catholic as their king, the Bohemian Protestants suddenly realized that their religious, and possibly their civil liberties, were seriously menaced, and deeds of aggression on the part of Ferdinand’s representatives showed that this was no idle fear. Gaining the upper hand they declared Ferdinand deposed, and elected the elector palatine of the Rhine, Frederick V., in his stead; and the struggle between the rivals was the beginning of the Thirty Years’ War. At the same time other difficulties confronted Ferdinand, who had not yet secured the imperial throne. Bethlen Gabor, prince of Transylvania, invaded Hungary, while the Austrians rose and joined the Bohemians; but having seen his foes retreat from Vienna, Ferdinand hurried to Frankfort, where he was chosen emperor on the 28th of August 1619.

To deal with the elector palatine and his allies the new emperor allied himself with Maximilian I., duke of Bavaria, and the Catholic League, who drove Frederick from Bohemia in 1620, while Ferdinand’s Spanish allies devastated the Palatinate. Peace having been made with Bethlen Gabor in December 1621, the first period of the war ended in a satisfactory fashion for the emperor, and he could turn his attention to completing the work of crushing the Protestants, which had already begun in his archduchies and in Bohemia. In 1623 the Protestant clergy were expelled from Bohemia; in 1624 all worship save that of the Roman Catholic church was forbidden; and in 1627 an order of banishment against all Protestants was issued. A new constitution made the kingdom hereditary in the house of Habsburg, gave larger powers to the sovereign, and aimed at destroying the nationality of the Bohemians. Similar measures in Austria led to a fresh rising which was put down by the aid of the Bavarians in 1627, and Ferdinand could fairly claim that in his hereditary lands at least he had rendered Protestantism innocuous.

The renewal of the Thirty Years’ War in 1625 was caused mainly by the emperor’s vigorous championship of the cause of the counter-reformation in northern and north-eastern Germany. Again the imperial forces were victorious, chiefly owing to the genius of Wallenstein, who raised and led an army in this service, although the great scheme of securing the southern coast of the Baltic for the Habsburgs was foiled partly by the resistance of Stralsund. In March 1629 Ferdinand and his advisers felt themselves strong enough to take the important step towards which their policy in the Empire had been steadily tending. Issuing the famous edict of restitution, the emperor ordered that all lands which had been secularized since 1552, the date of the peace of Passau, should be restored to the church, and prompt measures were taken to enforce this decree. Many and powerful interests were vitally affected by this proceeding, and the result was the outbreak of the third period of the war, which was less favourable to the imperial arms than the preceding ones. This comparative failure was due, in the initial stages of the campaign, to Ferdinand’s weakness in assenting in 1630 to the demand of Maximilian of Bavaria that Wallenstein should be deprived of his command, and also to the genius of Gustavus Adolphus; and in its later stages to his insistence on the second removal of Wallenstein, and to his complicity in the assassination of the general. This deed was followed by the peace of Prague, concluded in 1635, primarily with John George I., elector of Saxony, but soon assented to by other princes; and this treaty, which made extensive concessions to the Protestants, marks the definite failure of Ferdinand to crush Protestantism in the Empire, as he had already done in Austria and Bohemia. It is noteworthy, however, that the emperor refused to allow the inhabitants of his hereditary dominions to share in the benefits of the peace. During these years Ferdinand had also been menaced by the secret or open hostility of France. A dispute over the duchies of Mantua and Monferrato was ended by the treaty of Cherasco in 1631, but the influence of France was employed at the imperial diets and elsewhere in thwarting the plans of Ferdinand and in weakening the power of the Habsburgs. The last important act of the emperor was to secure the election of his son Ferdinand as king of the Romans. An attempt in 1630 to attain this end had failed, but in December 1636 the princes, meeting at Regensburg, bestowed the coveted dignity upon the younger Ferdinand. A few weeks afterwards, on the 15th of February 1637, the emperor died at Vienna, leaving, in addition to the king of the Romans, a son Leopold William (1614-1662), bishop of Passau and Strassburg. Ferdinand’s reign was so occupied with the Thirty Years’ War and the struggle with the Protestants that he had little time or inclination for other business. It is interesting to note, however, that this orthodox and Catholic emperor was constantly at variance with Pope Urban VIII. The quarrel was due

principally, but not entirely, to events in Italy, where the pope sided with France in the dispute over the succession to Mantua and Monferrato. The succession question was settled, but the enmity remained; Urban showing his hostility by preventing the election of the younger Ferdinand as king of the Romans in 1630, and by turning a deaf ear to the emperor's repeated requests for assistance to prosecute the war against the heretics. Ferdinand's character has neither individuality nor interest, but he ruled the Empire during a critical and important period. Kind and generous to his dependents, his private life was simple and blameless, but he was to a great extent under the influence of his confessors.

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FERDINAND III. (1608-1657), Roman emperor, was the elder son of the emperor Ferdinand II., and was born at Gratz on the 13th of July 1608. Educated by the Jesuits, he was crowned king of Hungary in December 1625, and king of Bohemia two years later, and soon began to take part in imperial business. Wallenstein, however, refused to allow him to hold a command in the imperial army; and henceforward reckoned among his enemies, the young king was appointed the successor of the famous general when he was deposed in 1634; and as commander-in-chief of the imperial troops he was nominally responsible for the capture of Regensburg and Donauwörth, and the defeat of the Swedes at Nördlingen. Having been elected king of the Romans, or German king, at Regensburg in December 1636, Ferdinand became emperor on his father's death in the following February, and showed himself anxious to put an end to the Thirty Years' War. He persuaded one or two princes to assent to the terms of the treaty of Prague; but a general peace was delayed by his reluctance to grant religious liberty to the Protestants, and by his anxiety to act in unison with Spain. In 1640 he had refused to entertain the idea of a general amnesty suggested by the diet at Regensburg; but negotiations for peace were soon begun, and in 1648 the emperor assented to the treaty of Westphalia. This event belongs rather to the general history of Europe, but it is interesting to note that owing to Ferdinand's insistence the Protestants in his hereditary dominions did not obtain religious liberty at this settlement. After 1648 the emperor was engaged in carrying out the terms of the treaty and ridding Germany of the foreign soldiery. In 1656 he sent an army into Italy to assist Spain in her struggle with France, and he had just concluded an alliance with Poland to check the aggressions of Charles X, of Sweden when he died on the 2nd of April 1657. Ferdinand was a scholarly and cultured man, an excellent linguist and a composer of music. Industrious and popular in public life, his private life was blameless; and although a strong Roman Catholic he was less fanatical than his father. His first wife was Maria Anna (d. 1646), daughter of Philip III. of Spain, by whom he had three sons: Ferdinand, who was chosen king of the Romans in 1653, and who died in the following year; Leopold, who succeeded his father on the imperial throne; and Charles Joseph (d. 1664), bishop of Passau and Breslau, and grand-master of the Teutonic order. The emperor's second wife was his cousin Maria (d. 1649), daughter of the archduke Leopold; and his third wife was Eleanora of Mantua (d. 1686). His musical works, together with those of the emperors Leopold I. and Joseph I., have been published by G. Adler (Vienna, 1892-1893).

See M. Koch, *Geschichte des deutschen Reiches unter der Regierung Ferdinands III.* (Vienna, 1865-1866).

FERDINAND I. (1793-1875), emperor of Austria, eldest son of Francis I. and of Maria Theresa of Naples, was born at Vienna on the 19th of April 1793. In his boyhood he suffered from epileptic fits, and could therefore not receive a regular education. As his health improved with his growth and with travel, he was not set aside from the succession. In 1830 his father caused him to be crowned king of Hungary, a pure formality, which gave him no power, and was designed to avoid possible trouble in the future. In 1831 he was married to Anna, daughter of Victor Emmanuel I. of Sardinia. The marriage was barren. When Francis I. died on the 2nd of March 1835, Ferdinand was recognized as his successor. But his incapacity was so notorious that the conduct of affairs was entrusted to a council of state, consisting of Prince Metternich (*q.v.*) with other ministers, and two archdukes, Louis and Francis Charles. They composed the *Staatsconferenz*, the ill-constructed and informal regency which led the Austrian dominions to the revolutionary outbreaks of 1846-1849. (See AUSTRIA-HUNGARY.) The emperor, who was subject to fits of actual insanity, and in his lucid intervals was weak and confused in mind, was a political nullity. His personal amiability earned him the affectionate pity of his subjects,

and he became the hero of popular stories which did not tend to maintain the dignity of the crown. It was commonly said that having taken refuge on a rainy day in a farmhouse he was so tempted by the smell of the dumplings which the farmer and his family were eating for dinner, that he insisted on having one. His doctor, who knew them to be indigestible, objected, and thereupon Ferdinand, in an imperial rage, made the answer:—"Kaiser bin i', und Knüdel müss i' haben" (I am emperor, and will have the dumpling)—which has become a Viennese proverb. His popular name of *Der Gütige* (the good sort of man) expressed as much derision as affection. Ferdinand had good taste for art and music. Some modification of the tight-handed rule of his father was made by the *Staatsconferenz* during his reign. In the presence of the revolutionary troubles, which began with agrarian riots in Galicia in 1846, and then spread over the whole empire, he was personally helpless. He was compelled to escape from the disorders of Vienna to Innsbruck on the 17th of May 1848. He came back on the invitation of the diet on the 12th of August, but soon had to escape once more from the mob of students and workmen who were in possession of the city. On the 2nd of December he abdicated at Olmütz in favour of his nephew, Francis Joseph. He lived under supervision by doctors and guardians at Prague till his death on the 29th of June 1855.

See Krones von Marchland, *Grundriss der österreichischen Geschichte* (Vienna, 1882), which gives an ample bibliography; Count F. Hartig, *Genesis der Revolution in Österreich* (Leipzig, 1850),—an enlarged English translation will be found in the 4th volume of W. Coxe's *House of Austria* (London, 1862).

FERDINAND I. (1423-1494), also called Don Ferrante, king of Naples, the natural son of Alphonso V. of Aragon and I. of Sicily and Naples, was horn in 1423. In accordance with his father's will, he succeeded him on the throne of Naples in 1458, but Pope Calixtus III. declared the line of Aragon extinct and the kingdom a fief of the church. But although he died before he could make good his claim (August 1458), and the new Pope Pius II. recognized Ferdinand, John of Anjou, profiting by the discontent of the Neapolitan barons, decided to try to regain the throne conquered by his ancestors, and invaded Naples. Ferdinand was severely defeated by the Angevins and the rebels at Sarno in July 1460, but with the help of Alessandro Sforza and of the Albanian chief, Skanderbeg, who chivalrously came to the aid of the prince whose father had aided him, he triumphed over his enemies, and by 1464 had re-established his authority in the kingdom. In 1478 he allied himself with Pope Sixtus IV. against Lorenzo de' Medici, but the latter journeyed alone to Naples when he succeeded in negotiating an honourable peace with Ferdinand. In 1480 the Turks captured Otranto, and massacred the majority of the inhabitants, but in the following year it was retaken by his son Alphonso, duke of Calabria. His oppressive government led in 1485 to an attempt at revolt on the part of the nobles, led by Francesca Coppola and Antonello Sanseverino and supported by Pope Innocent VIII.; the rising having been crushed, many of the nobles, notwithstanding Ferdinand's promise of a general amnesty, were afterwards treacherously murdered at his express command. In 1493 Charles VIII. of France was preparing to invade Italy for the conquest of Naples, and Ferdinand realized that this was a greater danger than any he had yet faced. With almost prophetic instinct he warned the Italian princes of the calamities in store for them, but his negotiations with Pope Alexander VI. and Ludovico il Moro, lord of Milan, having failed, he died in January 1494, worn out with anxiety. Ferdinand was gifted with great courage and real political ability, but his method of government was vicious and disastrous. His financial administration was based on oppressive and dishonest monopolies, and he was mercilessly severe and utterly treacherous towards his enemies.

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(L. V.*)

FERDINAND II. (1469-1496), king of Naples, was the grandson of the preceding, and son of Alphonso II. Alphonso finding his tenure of the throne uncertain on account of the approaching invasion of Charles VIII. of France and the general dissatisfaction of his subjects, abdicated in his son's favour in 1495, but notwithstanding this the treason of a party in Naples rendered it impossible to defend the city against the approach of Charles VIII. Ferdinand fled to Ischia; but when the French king left Naples with most of his army, in consequence of the formation of an Italian league against him, he returned, defeated the French garrisons, and the Neapolitans, irritated by the conduct of their conquerors during the occupation of the city, received him back with enthusiasm; with the aid of the great Spanish general Gonzalo de Cordova he was able completely to rid his state of its invaders

shortly before his death, which occurred on the 7th of September 1496.

For authorities see under FERDINAND I. of Naples; for the exploits of Gonzalo de Cordova see H.P. del Pulgar, *Crónica del gran capitano don Gonzalo de Cordoba* (new ed., Madrid, 1834).

FERDINAND IV. (1751-1825), king of Naples (III. of Sicily, and I. of the Two Sicilies), third son of Don Carlos of Bourbon, king of Naples and Sicily (afterwards Charles III. of Spain), was born in Naples on the 12th of January 1751. When his father ascended the Spanish throne in 1759 Ferdinand, in accordance with the treaties forbidding the union of the two crowns, succeeded him as king of Naples, under a regency presided over by the Tuscan Bernardo Tanucci. The latter, an able, ambitious man, wishing to keep the government as much as possible in his own hands, purposely neglected the young king's education, and encouraged him in his love of pleasure, his idleness and his excessive devotion to outdoor sports. Ferdinand grew up athletic, but ignorant, ill-bred, addicted to the lowest amusements; he delighted in the company of the *lazzaroni* (the most degraded class of the Neapolitan people), whose dialect and habits he affected, and he even sold fish in the market, haggling over the price.

His minority ended in 1767, and his first act was the expulsion of the Jesuits. The following year he married Maria Carolina, daughter of the empress Maria Theresa. By the marriage contract the queen was to have a voice in the council of state after the birth of her first son, and she was not slow to avail herself of this means of political influence. Beautiful, clever and proud, like her mother, but cruel and treacherous, her ambition was to raise the kingdom of Naples to the position of a great power; she soon came to exercise complete sway over her stupid and idle husband, and was the real ruler of the kingdom. Tanucci, who attempted to thwart her, was dismissed in 1777, and the Englishman Sir John Acton (1736), who in 1779 was appointed director of marine, succeeded in so completely winning the favour of Maria Carolina, by supporting her in her scheme to free Naples from Spanish influence and securing a *rapprochement* with Austria and England, that he became practically and afterwards actually prime minister. Although not a mere grasping adventurer, he was largely responsible for reducing the internal administration of the country to an abominable system of espionage, corruption and cruelty. On the outbreak of the French Revolution the Neapolitan court was not hostile to the movement, and the queen even sympathized with the revolutionary ideas of the day. But when the French monarchy was abolished and the royal pair beheaded, Ferdinand and Carolina were seized with a feeling of fear and horror and joined the first coalition against France in 1793. Although peace was made with France in 1796, the demands of the French Directory, whose troops occupied Rome, alarmed the king once more, and at his wife's instigation he took advantage of Napoleon's absence in Egypt and of Nelson's victories to go to war. He marched with his army against the French and entered Rome (29th of November), but on the defeat of some of his columns he hurried back to Naples, and on the approach of the French, fled on board Nelson's ship the "Vanguard" to Sicily, leaving his capital in a state of anarchy. The French entered the city in spite of the fierce resistance of the *lazzaroni*, who were devoted to the king, and with the aid of the nobles and bourgeois established the Parthenopaean Republic (January 1799). When a few weeks later the French troops were recalled to the north of Italy, Ferdinand sent an expedition composed of Calabrians, brigands and gaol-birds, under Cardinal Ruffo, a man of real ability, great devotion to the king, and by no means so bad as he has been painted, to reconquer the mainland kingdom. Ruffo was completely successful, and reached Naples in May. His army and the *lazzaroni* committed nameless atrocities, which he honestly tried to prevent, and the Parthenopaean Republic collapsed.

The savage punishment of the Neapolitan Republicans is dealt with in more detail under NAPLES, NELSON and CARACCIOLO, but it is necessary to say here that the king, and above all the queen, were particularly anxious that no mercy should be shown to the rebels, and Maria Carolina made use of Lady Hamilton, Nelson's mistress, to induce him to execute her own spiteful vengeance. Her only excuse is that as a sister of Marie Antoinette the very name of Republican or Jacobin filled her with loathing. The king returned to Naples soon afterwards, and ordered wholesale arrests and executions of supposed Liberals, which continued until the French successes forced him to agree to a treaty in which amnesty for members of the French party was included. When war broke out between France and Austria in 1805, Ferdinand signed a treaty of neutrality with the former, but a few days later he allied himself with Austria and allowed an Anglo-Russian force to land at Naples. The French victory at Austerlitz enabled Napoleon to despatch an army to southern Italy. Ferdinand with his usual precipitation fled to Palermo (23rd of January 1806), followed soon after by his wife and son, and on the 14th of February the French again entered Naples. Napoleon declared that the Bourbon dynasty had forfeited the crown, and proclaimed his brother Joseph king of Naples and Sicily. But Ferdinand continued to reign over the latter kingdom under British protection. Parliamentary institutions of a feudal type had long existed in the island, and Lord William Bentinck (*q.v.*), the British minister, insisted on a reform of the constitution on English and French lines. The king indeed practically abdicated his power, appointing his son Francis regent, and the queen, at Bentinck's instance, was exiled to Austria, where she died in 1814.

After the fall of Napoleon, Joachim Murat, who had succeeded Joseph Bonaparte as king of Naples in

1808, was dethroned, and Ferdinand returned to Naples. By a secret treaty he had bound himself not to advance further in a constitutional direction than Austria should at any time approve; but, though on the whole he acted in accordance with Metternich's policy of preserving the *status quo*, and maintained with but slight change Murat's laws and administrative system, he took advantage of the situation to abolish the Sicilian constitution, in violation of his oath, and to proclaim the union of the two states into the kingdom of the Two Sicilies (December 12th, 1816). He was now completely subservient to Austria, an Austrian, Count Nugent, being even made commander-in-chief of the army; and for four years he reigned as a despot, every tentative effort at the expression of liberal opinion being ruthlessly suppressed. The result was an alarming spread of the influence and activity of the secret society of the Carbonari (*q.v.*), which in time affected a large part of the army. In July 1820 a military revolt broke out under General Pepe, and Ferdinand was terrorized into subscribing a constitution on the model of the impracticable Spanish constitution of 1812. On the other hand, a revolt in Sicily, in favour of the recovery of its independence, was suppressed by Neapolitan troops.

The success of the military revolution at Naples seriously alarmed the powers of the Holy Alliance, who feared that it might spread to other Italian states and so lead to that general European conflagration which it was their main preoccupation to avoid (see EUROPE: *History*). After long diplomatic negotiations, it was decided to hold a congress *ad hoc* at Troppau (October 1820). The main results of this congress were the issue of the famous Troppau Protocol, signed by Austria, Prussia and Russia only, and an invitation to King Ferdinand to attend the adjourned congress at Laibach (1821), an invitation of which Great Britain approved "as implying negotiation" (see TROPPAU, LAIBACH, *Congresses of*). At Laibach Ferdinand played so sorry a part as to provoke the contempt of those whose policy it was to re-establish him in absolute power. He had twice sworn, with gratuitous solemnity, to maintain the new constitution; but he was hardly out of Naples before he repudiated his oaths and, in letters addressed to all the sovereigns of Europe, declared his acts to have been null and void. An attitude so indecent threatened to defeat the very objects of the reactionary powers, and Gentz congratulated the congress that these sorry protests would be buried in the archives, offering at the same time to write for the king a dignified letter in which he should express his reluctance at having to violate his oaths in the face of irresistible force! But, under these circumstances, Metternich had no difficulty in persuading the king to allow an Austrian army to march into Naples "to restore order."

The campaign that followed did little credit either to the Austrians or the Neapolitans. The latter, commanded by General Pepe (*q.v.*), who made no attempt to defend the difficult defiles of the Abruzzi, were defeated, after a half-hearted struggle at Rieti (March 7th, 1821), and the Austrians entered Naples. The parliament was now dismissed, and Ferdinand inaugurated an era of savage persecution, supported by spies and informers, against the Liberals and Carbonari, the Austrian commandant in vain protesting against the savagery which his presence alone rendered possible.

Ferdinand died on the 4th of January 1825. Few sovereigns have left behind so odious a memory. His whole career is one long record of perjury, vengeance and meanness, unredeemed by a single generous act, and his wife was a worthy helpmeet and actively co-operated in his tyranny.

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(L. V.*)

FERDINAND I., king of Portugal (1345-1383), sometimes referred to as *el Gentil* (the Gentleman), son of Pedro I. of Portugal (who is not to be confounded with his Spanish contemporary Pedro the Cruel), succeeded his father in 1367. On the death of Pedro of Castile in 1369, Ferdinand, as great-grandson of Sancho IV. by the female line, laid claim to the vacant throne, for which the kings of Aragon and Navarre, and afterwards the duke of Lancaster (married in 1370 to Constance, the eldest daughter of Pedro), also became competitors. Meanwhile Henry of Trastamara, the brother (illegitimate) and conqueror of Pedro, had assumed the crown and taken the field. After one or two indecisive campaigns, all parties were ready to accept the mediation of Pope Gregory XI. The conditions of the treaty, ratified in 1371, included a marriage between Ferdinand and Leonora of Castile. But before the union could take place the former had become passionately attached to Leonora Tellez, the wife of one of his own courtiers, and having procured a dissolution of her previous marriage, he lost no time in making her his queen. This strange conduct, although it raised a serious insurrection in Portugal, did not at once result in a war with Henry; but the outward concord was soon disturbed by the intrigues of the duke of Lancaster, who prevailed on Ferdinand to enter into a secret

treaty for the expulsion of Henry from his throne. The war which followed was unsuccessful; and peace was again made in 1373. On the death of Henry in 1379, the duke of Lancaster once more put forward his claims, and again found an ally in Portugal; but, according to the Continental annalists, the English proved as offensive to their companions in arms as to their enemies in the field; and Ferdinand made a peace for himself at Badajoz in 1382, it being stipulated that Beatrix, the heiress of Ferdinand, should marry King John of Castile, and thus secure the ultimate union of the crowns. Ferdinand left no male issue when he died on the 22nd of October 1383, and the direct Burgundian line, which had been in possession of the throne since the days of Count Henry (about 1112), became extinct. The stipulations of the treaty of Badajoz were set aside, and John, grand-master of the order of Aviz, Ferdinand's illegitimate brother, was proclaimed. This led to a war which lasted for several years.

FERDINAND I., *El Magno* or "the Great," king of Castile (*d.* 1065), son of Sancho of Navarre, was put in possession of Castile in 1028, on the murder of the last count, as the heir of his mother Elvira, daughter of a previous count of Castile. He reigned with the title of king. He married Sancha, sister and heiress of Bermudo, king of Leon. In 1038 Bermudo was killed in battle with Ferdinand at Tamaron, and Ferdinand then took possession of Leon by right of his wife, and was recognized in Spain as emperor. The use of the title was resented by the emperor Henry IV. and by Pope Victor II. in 1055, as implying a claim to the headship of Christendom, and as a usurpation on the Holy Roman Empire. It did not, however, mean more than that Spain was independent of the Empire, and that the sovereign of Leon was the chief of the princes of the peninsula. Although Ferdinand had grown in power by a fratricidal strife with Bermudo of Leon, and though at a later date he defeated and killed his brother Garcia of Navarre, he ranks high among the kings of Spain who have been counted religious. To a large extent he may have owed his reputation to the victories over the Mahommedans, with which he began the period of the great reconquest. But there can be no doubt that Ferdinand was profoundly pious. Towards the close of his reign he sent a special embassy to Seville to bring back the body of Santa Justa. The then king of Seville, Motadhid, one of the small princes who had divided the caliphate of Cordova, was himself a sceptic and poisoner, but he stood in wholesome awe of the power of the Christian king. He favoured the embassy in every way, and when the body of Santa Justa could not be found, helped the envoys who were also aided by a vision seen by one of them in a dream, to discover the body of Saint Isidore, which was reverently carried away to Leon. Ferdinand died on the feast of Saint John the Evangelist, the 24th of June 1065, in Leon, with many manifestations of ardent piety—having laid aside his crown and royal mantle, dressed in the frock of a monk and lying on a bier, covered with ashes, which was placed before the altar of the church of Saint Isidore.

FERDINAND II., king of Leon only (*d.* 1188), was the son of Alphonso VII. and of Berenguela, of the house of the counts of Barcelona. On the division of the kingdoms which had obeyed his father, he received Leon. His reign of thirty years was one of strife marked by no signal success or reverse. He had to contend with his unruly nobles, several of whom he put to death. During the minority of his nephew Alphonso VIII. of Castile he endeavoured to impose himself on the kingdom as regent. On the west he was in more or less constant strife with Portugal, which was in process of becoming an independent kingdom. His relations to the Portuguese house must have suffered by his repudiation of his wife Urraca, daughter of Alphonso I. of Portugal. Though he took the king of Portugal prisoner in 1180, he made no political use of his success. He extended his dominions southward in Estremadura at the expense of the Moors. Ferdinand, who died in 1188, left the reputation of a good knight and hard fighter, but did not display political or organizing faculty.

FERDINAND III., *El Santo* or "the Saint," king of Castile (1199-1252), son of Alphonso IX. of Leon, and of Berengaria, daughter of Alphonso VIII. of Castile, ranks among the greatest of the Spanish kings. The marriage of his parents, who were second cousins, was dissolved as unlawful by the pope, but the legitimacy of the children was recognized. Till 1217 he lived with his father in Leon. In that year the young king of Castile, Henry, was killed by accident. Berengaria sent for her son with such speed that her messenger reached Leon before the news of the death of the king of Castile, and when he came to her she renounced the crown in his favour. Alphonso of Leon considered himself tricked, and the young king had to begin his reign by a war against his father and a faction of the Castilian nobles. His own ability and the remarkable capacity of his mother proved too much for the king of

Leon and his Castilian allies. Ferdinand, who showed himself docile to the influence of Berengaria, so long as she lived, married the wife she found for him, Beatrice, daughter of the emperor Philip (of Hohenstaufen), and followed her advice both in prosecuting the war against the Moors and in the steps which she took to secure his peaceful succession to Leon on the death of his father in 1231. After the union of Castile and Leon in that year he began the series of campaigns which ended by reducing the Mahommedan dominions in Spain to Granada. Cordova fell in 1236, and Seville in 1248. The king of Granada did homage to Ferdinand, and undertook to attend the cortes when summoned. The king was a severe persecutor of the Albigenses, and his formal canonization was due as much to his orthodoxy as to his crusading by Pope Clement X. in 1671. He revived the university first founded by his grandfather Alphonso VIII., and placed it at Salamanca. By his second marriage with Joan (d. 1279), daughter of Simon, of Dammartin, count of Ponthieu, by right of his wife Marie, Ferdinand was the father of Eleanor, the wife of Edward I. of England.

FERDINAND IV., *El Emplazado* or "the Summoned," king of Castile (*d.* 1312), son of Sancho El Bravo, and his wife Maria de Molina, is a figure of small note in Spanish history. His strange title is given him in the chronicles on the strength of a story that he put two brothers of the name of Carvajal to death tyrannically, and was given a time, a *plazo*, by them in which to answer for his crime in the next world. But the tale is not contemporary, and is an obvious copy of the story told of Jacques de Molay, grand-master of the Temple, and Philippe Le Bel. Ferdinand IV. succeeded to the throne when a boy of six. His minority was a time of anarchy. He owed his escape from the violence of competitors and nobles, partly to the tact and undaunted bravery of his mother Maria de Molina, and partly to the loyalty of the citizens of Avila, who gave him refuge within their walls. As a king he proved ungrateful to his mother, and weak as a ruler. He died suddenly in his tent at Jaen when preparing for a raid into the Moorish territory of Granada, on the 7th of September 1312.

FERDINAND I., king of Aragon (1373-1416), called "of Antequera," was the son of John I. of Castile by his wife Eleanor, daughter of the third marriage of Peter IV. of Aragon. His surname "of Antequera" was given him because he was besieging that town, then in the hands of the Moors, when he was told that the cortes of Aragon had elected him king in succession to his uncle Martin, the last male of the old line of Wilfred the Hairy. As infante of Castile Ferdinand had played an honourable part. When his brother Henry III. died at Toledo, in 1406, the cortes was sitting, and the nobles offered to make him king in preference to his nephew John. Ferdinand refused to despoil his brother's infant son, and even if he did not act on the moral ground he alleged, his sagacity must have shown him that he would be at the mercy of the men who had chosen him in such circumstances. As co-regent of the kingdom with Catherine, widow of Henry III. and daughter of John of Gaunt by his marriage with Constance, daughter of Peter the Cruel and Maria de Padilla, Ferdinand proved a good ruler. He restrained the follies of his sister-in-law, and kept the realm quiet, by firm government, and by prosecuting the war with the Moors. As king of Aragon his short reign of two years left him little time to make his mark. Having been bred in Castile, where the royal authority was, at least in theory, absolute, he showed himself impatient under the checks imposed on him by the *fueros*, the chartered rights of Aragon and Catalonia. He particularly resented the obstinacy of the Barcelonese, who compelled the members of his household to pay municipal taxes. His most signal act as king was to aid in closing the Great Schism in the Church by agreeing to the deposition of the antipope Benedict XIV., an Aragonese. He died at Ygualada in Catalonia on the 2nd of April 1416.

FERDINAND V. of Castile and Leon, and II. of Aragon (1452-1516), was the son of John I. of Aragon by his second marriage with Joanna Henriquez, of the family of the hereditary grand admirals of Castile, and was born at Sos in Aragon on the 16th of March 1452. Under the name of "the Catholic" and as the husband of Isabella, queen of Castile, he played a great part in Europe. His share in establishing the royal authority in all parts of Spain, in expelling the Moors from Granada, in the conquest of Navarre, in forwarding the voyages of Columbus, and in contending with France for the supremacy in Italy, is dealt with elsewhere (see Spain: *History*). In personal character he had none of the attractive qualities of his wife. It may fairly be said of him that he was purely a politician. His marriage in 1469 to his cousin Isabella of Castile was dictated by the desire to unite his own claims to the crown, as the head of the younger branch of the same family, with hers, in case Henry IV. should die childless. When the king died in 1474 he made an ungenerous attempt to procure his own

proclamation as king without recognition of the rights of his wife. Isabella asserted her claims firmly, and at all times insisted on a voice in the government of Castile. But though Ferdinand had sought a selfish political advantage at his wife's expense, he was well aware of her ability and high character. Their married life was dignified and harmonious; for Ferdinand had no common vices, and their views in government were identical. The king cared for nothing but dominion and political power. His character explains the most ungracious acts of his life, such as his breach of his promises to Columbus, his distrust of Ximenez and of the Great Captain. He had given wide privileges to Columbus on the supposition that the discoverer would reach powerful kingdoms. When islands inhabited by feeble savages were discovered, Ferdinand appreciated the risk that they might become the seat of a power too strong to be controlled, and took measures to avert the danger. He feared that Jiménez and the Great Captain would become too independent, and watched them in the interest of the royal authority. Whether he ever boasted, as he is said to have boasted, that he had deceived Louis XII. of France twelve times, is very doubtful; but it is certain that when Ferdinand made a treaty, or came to an understanding with any one, the contract was generally found to contain implied meanings favourable to himself which the other contracting party had not expected. The worst of his character was prominently shown after the death of Isabella in 1504. He endeavoured to lay hands on the regency of Castile in the name of his insane daughter Joanna, and without regard to the claims of her husband Philip of Habsburg. The hostility of the Castilian nobles, by whom he was disliked, baffled him for a time, but on Philip's early death he reasserted his authority. His second marriage with Germaine of Foix in 1505 was apparently contracted in the hope that by securing an heir male he might punish his Habsburg son-in-law. Aragon did not recognize the right of women to reign, and would have been detached together with Catalonia, Valencia and the Italian states if he had had a son. This was the only occasion on which Ferdinand allowed passion to obscure his political sense, and lead him into acts which tended to undo his work of national unification. As king of Aragon he abstained from inroads on the liberties of his subjects which might have provoked rebellion. A few acts of illegal violence are recorded of him—as when he invited a notorious demagogue of Saragossa to visit him in the palace, and caused the man to be executed without form of trial. Once when presiding over the Aragonese cortes he found himself sitting in a thorough draught and ordered the window to be shut, adding in a lower voice, "If it is not against the *fueros*." But his ill-will did not go beyond such sneers. He was too intent on building up a great state to complicate his difficulties by internal troubles. His arrangement of the convention of Guadalupe, which ended the fierce Agrarian conflicts of Catalonia, was wise and profitable to the country, though it was probably dictated mainly by a wish to weaken the landowners by taking away their feudal rights. Ferdinand died at Madrigalejo in Estremadura on the 23rd of February 1516.

The lives of the kings of this name before Ferdinand V. are contained in the chronicles, and in the *Anales de Aragon* of Zurita, and the History of Spain by Mariana. Both deal at length with the life of Ferdinand V. Prescott's *History of the Reign of Ferdinand and Isabella*, in any of its numerous editions, gives a full life of him with copious references to authorities.

FERDINAND VI., king of Spain (1713-1759), second son of Philip V., founder of the Bourbon dynasty, by his first marriage with Maria Louisa of Savoy, was born at Madrid on the 23rd of September 1713. His youth was depressed. His father's second wife, Elizabeth Farnese, was a managing woman, who had no affection except for her own children, and who looked upon her stepson as an obstacle to their fortunes. The hypochondria of his father left Elizabeth mistress of the palace. Ferdinand was married in 1729 to Maria Magdalena Barbara, daughter of John V. of Portugal. The very homely looks of his wife were thought by observers to cause the prince a visible shock when he was first presented to her. Yet he became deeply attached to his wife, and proved in fact nearly as uxorious as his father. Ferdinand was by temperament melancholy, shy and distrustful of his own abilities. When complimented on his shooting, he replied, "It would be hard if there were not something I could do." As king he followed a steady policy of neutrality between France and England, and refused to be tempted by the offers of either into declaring war on the other. In his life he was orderly and retiring, averse from taking decisions, though not incapable of acting firmly, as when he cut short the dangerous intrigues of his able minister Ensenada by dismissing and imprisoning him. Shooting and music were his only pleasures, and he was the generous patron of the famous singer Farinelli (*q.v.*), whose voice soothed his melancholy. The death of his wife Barbara, who had been devoted to him, and who carefully abstained from political intrigue, broke his heart. Between the date of her death in 1758 and his own on the 10th of August 1759 he fell into a state of prostration in which he would not even dress, but wandered unshaven, unwashed and in a night-gown about his park. The memoirs of the count of Fernan Nuñez give a shocking picture of his death-bed.

A good account of the reign and character of Ferdinand VI. will be found in vol. iv. of Coxe's *Memoirs of the Kings of Spain of the House of Bourbon* (London, 1815). See also *Vida de Carlos III.*, by the count of Fernan Nuñez, ed. M. Morel Fatio and Don A. Paz y Melia (1898).

FERDINAND VII., king of Spain (1784-1833), the eldest son of Charles IV., king of Spain, and of his wife Maria Louisa of Parma, was born at the palace of San Ildefonso near Balsain in the Somosierra hills, on the 14th of October 1784. The events with which he was connected were many, tragic and of the widest European interest. In his youth he occupied the painful position of an heir apparent who was carefully excluded from all share in government by the jealousy of his parents, and the prevalence of a royal favourite. National discontent with a feeble government produced a revolution in 1808 by which he passed to the throne by the forced abdication of his father. Then he spent years as the prisoner of Napoleon, and returned in 1814 to find that while Spain was fighting for independence in his name a new world had been born of foreign invasion and domestic revolution. He came back to assert the ancient doctrine that the sovereign authority resided in his person only. Acting on this principle he ruled frivolously, and with a wanton indulgence of whims. In 1820 his misrule provoked a revolt, and he remained in the hands of insurgents till he was released by foreign intervention in 1823. When free, he revenged himself with a ferocity which disgusted his allies. In his last years he prepared a change in the order of succession established by his dynasty in Spain, which angered a large part of the nation, and made a civil war inevitable. We have to distinguish the part of Ferdinand VII. in all these transactions, in which other and better men were concerned. It can confidently be said to have been uniformly base. He had perhaps no right to complain that he was kept aloof from all share in government while only heir apparent, for this was the traditional practice of his family. But as heir to the throne he had a right to resent the degradation of the crown he was to inherit, and the power of a favourite who was his mother's lover. If he had put himself at the head of a popular rising he would have been followed, and would have had a good excuse. His course was to enter on dim intrigues at the instigation of his first wife, Maria Antonietta of Naples. After her death in 1806 he was drawn into other intrigues by flatterers, and, in October 1807, was arrested for the conspiracy of the Escorial. The conspiracy aimed at securing the help of the emperor Napoleon. When detected, Ferdinand betrayed his associates, and grovelled to his parents. When his father's abdication was extorted by a popular riot at Aranjuez in March 1808, he ascended the throne—not to lead his people manfully, but to throw himself into the hands of Napoleon, in the fatuous hope that the emperor would support him. He was in his turn forced to make an abdication and imprisoned in France, while Spain, with the help of England, fought for its life. At Valançay, where he was sent as a prisoner of state, he sank contentedly into vulgar vice, and did not scruple to applaud the French victories over the people who were suffering unutterable misery in his cause. When restored in March 1814, on the fall of Napoleon, he had just cause to repudiate the impracticable constitution made by the cortes without his consent. He did so, and then governed like an evil-disposed boy—indulging the merest animal passions, listening to a small *camarilla* of low-born favourites, changing his ministers every three months, and acting on the impulse of whims which were sometimes mere buffoonery, but were at times lubricous, or ferocious. The autocratic powers of the Grand Alliance, though forced to support him as the representative of legitimacy in Spain, watched his proceedings with disgust and alarm. "The king," wrote Gentz to the hospodar Caradja on the 1st of December 1814, "himself enters the houses of his first ministers, arrests them, and hands them over to their cruel enemies"; and again, on the 14th of January 1815, "The king has so debased himself that he has become no more than the leading police agent and gaoler of his country." When at last the inevitable revolt came in 1820 he grovelled to the 268
insurgents as he had done to his parents, descending to the meanest submissions while fear was on him, then intriguing and, when detected, grovelling again. When at the beginning of 1823, as a result of the congress of Verona, the French invaded Spain,[1] "invoking the God of St Louis, for the sake of preserving the throne of Spain to a descendant of Henry IV., and of reconciling that fine kingdom with Europe," and in May the revolutionary party carried Ferdinand to Cadiz, he continued to make promises of amendment till he was free. Then, in violation of his oath to grant an amnesty, he revenged himself for three years of coercion by killing on a scale which revolted his "rescuers," and against which the duke of Angoulême, powerless to interfere, protested by refusing the Spanish decorations offered him for his services. During his last years Ferdinand's energy was abated. He no longer changed ministers every few months as a sport, and he allowed some of them to conduct the current business of government. His habits of life were telling on him. He became torpid, bloated and horrible to look at. After his fourth marriage in 1829 with Maria Christina of Naples, he was persuaded by his wife to set aside the law of succession of Philip V., which gave a preference to all the males of the family in Spain over the females. His marriage had brought him only two daughters. When well, he consented to the change under the influence of his wife. When ill, he was terrified by priestly advisers, who were partisans of his brother Don Carlos. What his final decision was is perhaps doubtful. His wife was mistress by his death-bed, and she could put the words she chose into the mouth of a dead man—and could move the dead hand at her will. Ferdinand died on the 29th of September 1833. It had been a frequent saying with the more zealous royalists of Spain that a king must be wiser than his ministers, for he was placed on the throne and directed by God. Since the reign of Ferdinand VII. no one has maintained this unqualified version of the great doctrine of divine right.

King Ferdinand VII. kept a diary during the troubled years 1820-1823, which has been published by the count de Casa Valencia.

1 Louis XVIII.'s speech from the throne, Jan. 28, 1823.

FERDINAND II. (1810-1859), king of the Two Sicilies, son of Francis I, was born at Palermo on the 12th of January 1810. In his early years he was credited with Liberal ideas and he was fairly popular, his free and easy manners having endeared him to the *lazzaroni*. On succeeding his father in 1830, he published an edict in which he promised to "give his most anxious attention to the impartial administration of justice," to reform the finances, and to "use every effort to heal the wounds which had afflicted the kingdom for so many years"; but these promises seem to have been meant only to lull discontent to sleep, for although he did something for the economic development of the kingdom, the existing burden of taxation was only slightly lightened, corruption continued to flourish in all departments of the administration, and an absolutism was finally established harsher than that of all his predecessors, and supported by even more extensive and arbitrary arrests. Ferdinand was naturally shrewd, but badly educated, grossly superstitious and possessed of inordinate self-esteem. Though he kept the machinery of his kingdom fairly efficient, and was a patriot to the extent of brooking no foreign interference, he made little account of the wishes or welfare of his subjects. In 1832 he married Cristina, daughter of Victor Emmanuel I., king of Sardinia, and shortly after her death in 1836 he took for a second wife Maria Theresa, daughter of archduke Charles of Austria. After his Austrian alliance the bonds of despotism were more closely tightened, and the increasing discontent of his subjects was manifested by various abortive attempts at insurrection; in 1837 there was a rising in Sicily in consequence of the outbreak of cholera, and in 1843 the Young Italy Society tried to organize a general rising, which, however, only manifested itself in a series of isolated outbreaks. The expedition of the Bandiera brothers (*q.v.*) in 1844, although it had no practical result, aroused great ill-feeling owing to the cruel sentences passed on the rebels. In January 1848 a rising in Sicily was the signal for revolutions all over Italy and Europe; it was followed by a movement in Naples, and the king granted a constitution which he swore to observe. A dispute, however, arose as to the nature of the oath which should be taken by the members of the chamber of deputies, and as neither the king nor the deputies would yield, serious disturbances broke out in the streets of Naples on the 15th of May; so the king, making these an excuse for withdrawing his promise, dissolved the national parliament on the 13th of March 1849. He retired to Gaeta to confer with various deposed despots, and when the news of the Austrian victory at Novara (March 1849) reached him, he determined to return to a reactionary policy. Sicily, whence the Royalists had been expelled, was subjugated by General Filangieri (*q.v.*), and the chief cities were bombarded, an expedient which won for Ferdinand the epithet of "King Bomba." During the last years of his reign espionage and arbitrary arrests prevented all serious manifestations of discontent among his subjects. In 1851 the political prisoners of Naples were calculated by Mr Gladstone in his letters to Lord Aberdeen (1851) to number 15,000 (probably the real figure was nearer 40,000), and so great was the scandal created by the prevailing reign of terror, and the abominable treatment to which the prisoners were subjected, that in 1856 France and England made diplomatic representations to induce the king to mitigate his rigour and proclaim a general amnesty, but without success. An attempt was made by a soldier to assassinate Ferdinand in 1856. He died on the 22nd of May 1856, just after the declaration of war by France and Piedmont against Austria, which was to result in the collapse of his kingdom and his dynasty. He was bigoted, cruel, mean, treacherous, though not without a certain bonhomie; the only excuse that can be made for him is that with his heredity and education a different result could scarcely be expected.

See *Correspondence respecting the Affairs of Naples and Sicily, 1848-1849, presented to both Houses of Parliament by Command of Her Majesty*, 4th May 1849; *Two Letters to the Earl of Aberdeen*, by the Right Hon. W.E. Gladstone, 1st ed., 1851 (an edition published in 1852 and the subsequent editions contain an *Examination of the Official Reply of the Neapolitan Government*); N. Nisco, *Ferdinando II. il suo regno* (Naples, 1884); H. Remsen Whitehouse, *The Collapse of the Kingdom of Naples* (New York, 1899); R. de Cesare, *La Caduta d' un Regno*, vol. i. (Città di Castello, 1900), which contains a great deal of fresh information, but is badly arranged and not always reliable.

(L. V.*)

FERDINAND III. (1769-1824), grand duke of Tuscany, and archduke of Austria, second son of the emperor Leopold II., was born on the 6th of May 1769. On his father becoming emperor in 1790, he succeeded him as grand duke of Tuscany. Ferdinand was one of the first sovereigns to enter into diplomatic relations with the French republic (1793); and although, a few months later, he was compelled by England and Russia to join the coalition against France, he concluded peace with that power in 1795, and by observing a strict neutrality saved his dominions from invasion by the French, except for a temporary occupation of Livorno, till 1799, when he was compelled to vacate his throne, and a provisional Republican government was established at Florence. Shortly afterwards the French arms suffered severe reverses in Italy, and Ferdinand was restored to his territories; but in 1801, by the peace of Lunéville, Tuscany was converted into the kingdom of Etruria, and he was again compelled to return to Vienna. In lieu of the sovereignty of Tuscany, he obtained in 1802 the electorship of Salzburg, which he exchanged by the peace of Pressburg in 1805 for that of Würzburg. In 1806 he was admitted as grand duke of Würzburg to the confederation of the Rhine. He was restored to the throne of Tuscany after the abdication of Napoleon in 1814 and was received with enthusiasm by the people, but had again to vacate his capital for a short time in 1815, when Murat proclaimed war against Austria. The final overthrow of the French supremacy at the battle of Waterloo

secured him, however, in the undisturbed possession of his grand duchy during the remainder of his life. The restoration in Tuscany was not accompanied by the reactionary excesses which characterized it elsewhere, and a large part of the French legislation was retained. His prime minister was Count V. Fossombroni (*q.v.*). The mild rule of Ferdinand, his solicitude for the welfare of his subjects, his enlightened patronage of art and science, his encouragement of commerce, and his toleration render him an honourable exception to the generality of Italian princes. At the same time his paternal despotism tended to emasculate the Tuscan character. He died in June 1824, and was succeeded by his son Leopold II. (*q.v.*).

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FERDINAND, MAXIMILIAN KARL LEOPOLD MARIA, king of Bulgaria (1861-), fifth and youngest son of Prince Augustus of Saxe-Coburg and Gotha, was born on the 26th of February 1861. Great care was exercised in his education, and every encouragement given to the taste for natural history which he exhibited at an early age. In 1879 he travelled with his brother Augustus to Brazil, and the results of their botanical observations were published at Vienna, 1883-1888, under the title of *Itinera Principum S. Coburgi*. Having been appointed to a lieutenancy in the 2nd regiment of Austrian hussars, he was holding this rank when, by unanimous vote of the National Assembly, he was elected prince of Bulgaria, on the 7th of July 1887, in succession to Prince Alexander, who had abdicated on the 7th of September preceding. He assumed the government on the 14th of August 1887, for Russia for a long time refused to acknowledge the election, and he was accordingly exposed to frequent military conspiracies, due to the influence or attitude of that power. The firmness and vigour with which he met all attempts at revolution were at length rewarded, and his election was confirmed in March 1896 by the Porte and the great powers. On the 20th of April 1893 he married Marie Louise de Bourbon (d. 1899), eldest daughter of Duke Robert of Parma, and in May following the Grand Sobranye confirmed the title of Royal Highness to the prince and his heir. The prince adhered to the Roman Catholic faith, but his son and heir, the young Prince Boris, was received into the Orthodox Greek Church on the 14th of February 1896. Prince Boris, to whom the tsar Nicholas III. became godfather, accompanied his father to Russia in 1898, when Prince Ferdinand visited St Petersburg and Moscow, and still further strengthened the bond already existing between Russia and Bulgaria. In 1908 Ferdinand married Eleanor (b. 1860), a princess of the house of Reuss. Later in the year, in connexion with the Austrian annexation of Bosnia-Herzegovina and the crisis with Turkey, he proclaimed the independence of Bulgaria, and took the title of king or tsar. (See BULGARIA, and EUROPE: *History*.)

FERDINAND, duke of Brunswick (1721-1792), Prussian general field marshal, was the fourth son of Ferdinand Albert, duke of Brunswick, and was born at Wolfenbüttel on the 12th of January 1721. He was carefully educated with a view to a military career, and in his twentieth year he was made chief of a newly-raised Brunswick regiment in the Prussian service. He was present in the battles of Mollwitz and Chotusitz. In succession to Margrave Wilhelm of Brandenburg, killed at Prague (1744), Ferdinand received the command of Frederick the Great's *Leibgarde* battalion, and at Sohr (1745) he distinguished himself so greatly at the head of his brigade that Frederick wrote of him, "le Prince Ferdinand s'est surpassé." The height which he captured was defended by his brother Ludwig as an officer of the Austrian service, and another brother of Duke Ferdinand was killed by his side in the charge. During the ten years' peace he was in the closest touch with the military work of Frederick the Great, who supervised the instruction of the guard battalion, and sought to make it a model of the whole Prussian army. Ferdinand was, moreover, one of the most intimate friends of the king, and thus he was peculiarly fitted for the tasks which afterwards fell to his lot. In this time he became successively major-general and lieutenant-general. In the first campaign of the Seven Years' War Ferdinand commanded one of the Prussian columns which converged upon Dresden, and in the operations which led up to the surrender of the Saxon army at Pirna (1756), and at the battle of Lobositz, he led the right wing of the Prussian infantry. In 1757 he was present, and distinguished himself, at Prague, and he served also in the campaign of Rossbach. Shortly after this he was appointed to command the allied forces which were being organized for the war in western Germany. He found this army dejected by a reverse and a capitulation, yet within a week of his taking up the command he assumed the offensive, and thus began the career of victory which made his European reputation as a soldier. His conduct of the five campaigns which followed (see SEVEN YEARS' WAR) was naturally influenced by the teachings of Frederick, whose pupil the duke had been for so many years.

Ferdinand, indeed, approximated more closely to Frederick in his method of making war than any other general of the time. Yet his task was in many respects far more difficult than that of the king. Frederick was the absolute master of his own homogeneous army, Ferdinand merely the commander of a group of contingents, and answerable to several princes for the troops placed under his control. The French were by no means despicable opponents in the field, and their leaders, if not of the first grade, were cool and experienced veterans. In 1758 he fought and won the battle of Crefeld, several marches beyond the Rhine, but so advanced a position he could not well maintain, and he fell back to the Lippe. He resumed a bold offensive in 1759, only to be repulsed at Bergen (near Frankfort-on-Main). On the 1st of August of this year Ferdinand won the brilliant victory of Minden (*q.v.*). Vellinghausen, Wilhelmsthal, Warburg and other victories attested the increasing power of Ferdinand in the following campaigns, and Frederick, hard pressed in the eastern theatre of war, owed much of his success in an almost hopeless task to the continued pressure exerted by Ferdinand in the west. In promoting him to be a field marshal (November 1758) Frederick acknowledged his debt in the words, "Je n'ai fait que ce que je dois, mon cher Ferdinand." After Minden, King George II. gave the duke the order of the Garter, and the thanks of the British parliament were voted on the same occasion to the "Victor of Minden." After the war he was honoured by other sovereigns, and he received the rank of field marshal and a regiment from the Austrians. During the War of American Independence there was a suggestion, which came to nothing, of offering him the command of the British forces. He exerted himself to compensate those who had suffered by the Seven Years' War, devoting to this purpose most of the small income he received from his various offices and the rewards given to him by the allied princes. The estrangement of Frederick and Ferdinand in 1766 led to the duke's retirement from Prussian service, but there was no open breach between the old friends, and Ferdinand visited the king in 1772, 1777, 1779 and 1782. After 1766 he passed the remainder of his life at his castle of Veschelde, where he occupied himself in building and other improvements, and became a patron of learning and art, and a great benefactor of the poor. He died on the 3rd of July 1792. The merits, civil and military, of the prince were recognized by memorials not only in Prussia and Hanover, but also in Denmark, the states of western Germany and England. The Prussian memorials include an equestrian statue at Berlin (1863).

See E. v. L. Knesebeck, *Ferdinand, Herzog von Braunschweig und Lüneburg, während des Siebenjährigen Kriegs* (2 vols., Hanover, 1857-1858); Von Westphalen, *Geschichte der Feldzüge des Herzogs Ferdinands von Braunschweig-Lüneburg* (5 vols., Berlin, 1859-1872); v. d. Osten, *Tagebuch des Herzogl. Gen. Adjutanten v. Reden* (Hamburg, 1805); v. Schafer, *Vie militaire du maréchal Prince Ferdinand* (Magdeburg, 1796; Nuremberg, 1798); also the *Œuvres* of Frederick the Great, *passim*, and authorities for the Seven Years' War.

FERDINAND (1577-1650), elector and archbishop of Cologne, son of William V., duke of Bavaria, was born on the 7th of October 1577. Intended for the church, he was educated by the Jesuits at the university of Ingolstadt, and in 1595 became coadjutor archbishop of Cologne. He became elector and archbishop in 1612 on the death of his uncle Ernest, whom he also succeeded as bishop of Liége, Munster and Hildesheim. He endeavoured resolutely to root out heresy in the lands under his rule, and favoured the teaching of the Jesuits in every possible way. He supported the league founded by his brother Maximilian I., duke of Bavaria, and wished to involve the leaguers in a general attack on the Protestants of north Germany. The cool political sagacity of the duke formed a sharp contrast to the impetuosity of the archbishop, and he refused to accede to his brother's wish; but, in spite of these temporary differences, Ferdinand sent troops and money to the assistance of the league when the Thirty Years' War broke out in 1619. The elector's alliance with the Spaniards secured his territories to a great extent from the depredations of the war until the arrival of the Swedes in Germany in 1630, when the extension of the area of the struggle to the neighbourhood of Cologne induced him to enter into negotiations for peace. Nothing came of these attempts until 1647, when he joined his brother Maximilian in concluding an armistice with France and Sweden at Ulm. The elector's later years were marked by a conflict with the citizens of Liége; and when the peace of Westphalia freed him from his enemies, he was able to crush the citizens and deprive them of many privileges. Ferdinand, who had held the bishopric of Paderborn since 1618, died at Arnsberg on the 13th of September 1650, and was buried in the cathedral at Cologne.

See L. Ennen, *Frankreich und der Niederrhein oder Geschichte von Stadt und Kurstadt Köln seit dem 30 jährigen Kriege*, Band i. (Cologne, 1855-1856).

FERENTINO (anc. *Ferentinum*, to be distinguished from Ferentum or Ferentinum in Etruria), a town and episcopal see of Italy, in the province of Rome, from which it is 48 m. E.S.E. by rail. Pop. (1901) 7957 (town), 12,279 (commune). It is picturesquely situated on a hill 1290 ft. above sea-level,

and still possesses considerable remains of ancient fortifications. The lower portion of the outer walls, which probably did not stand free, is built of roughly hewn blocks of a limestone which naturally splits into horizontal layers; above this in places is walling of rectangular blocks of tufa. Two gates, the Porta Sanguinaria (with an arch with tufa voussoirs), and the Porta S. Maria, a double gate constructed entirely of rectangular blocks of tufa, are preserved. Outside this gate is the tomb of A. Quinctilius Priscus, a citizen of Ferentinum, with a long inscription cut in the rock. See Th. Mommsen in *Corp. Inscrip. Lat.* x. (Berlin, 1883), No. 5853.

The highest part of the town, the acropolis, is fortified also; it has massive retaining walls similar to those of the lower town. At the eastern corner, under the present episcopal palace, the construction is somewhat more careful. A projecting rectangular terrace has been erected, supported by walls of quadrilateral blocks of limestone arranged almost horizontally; while upon the level thus formed a building of rectangular blocks of local travertine was raised. The projecting cornice of this building bears two inscriptions of the period of Sulla, recording its construction by two censors (local officials); and in the interior, which contains several chambers, there is an inscription of the same censors over one of the doors, and another over a smaller external side door. The windows lighting these chambers come immediately above the cornice, and the wall continues above them again. The whole of this construction probably belongs to one period (Mommsen, *op. cit.* No. 5837 seq.). The cathedral occupies a part of the level top of the ancient acropolis; it was reconstructed on the site of an older church in 1099-1118; the interior was modernized in 1693, but was restored to its original form in 1902. It contains a fine canopy in the “Cosmatesque” style (see *Relazione dei lavori eseguiti dall’ ufficio tecnico per la conservazione dei monumenti di Rome a provincia*, Rome, 1903, 175 seq.). The Gothic church of S. Maria Maggiore, in the lower town (13th-14th century), has a very fine exterior; the interior, the plan of which is a perfect rectangle, has been spoilt by restoration. There are several other Gothic churches in the town.

Ferentinum was the chief town of the Hernici; it was captured from them by the Romans in 364 B.C. and took no part in the rising of 306 B.C. The inhabitants became Roman citizens after 195 B.C., and the place later became a *municipium*. It lay just above the Via Latina and, being a strong place, served for the detention of hostages. Horace praises its quietness, and it does not appear much in later history.

(T. As.)

See further Ashby, *Röm. Mittell.* xxiv. (1909).

FERENTUM, or Ferentinum, an ancient town of Etruria, about 6 m. N. of Viterbo (the ancient name of which is unknown) and 3½ m. E. of the Via Cassia. It was the birthplace (32 A.D.) of the emperor Otho, was destroyed in the 11th century, and is now entirely deserted, though it retains its ancient name. It occupied a ridge running from east to west, with deep ravines on three sides. There are some remains of the city walls, and of various Roman structures, but the most important ruin is that of the theatre. The stage front is still standing; it is pierced by seven openings with flat arches, and shows traces of reconstruction. The acropolis was on the hill called Talone on the north-east.

See G. Dennis, *Cities and Cemeteries of Etruria* (London, 1883), i. 156; *Notizie degli scavi*, 1900, 401; 1902, 84; 1905, 31.

FERETORY (from Lat. *feretrum*, a bier, from *ferre*, to bear), in architecture, the enclosure or chapel within which the “fereter” shrine, or tomb (as in Henry VII.’s chapel), was placed.

FERGHANA, or Fergana, a province of Russian Turkestan, formed in 1876 out of the former khanate of Khokand. It is bounded by the provinces of Syr-darya on the N. and N.W., Samarkand on the W., and Semiryechensk on the N.E., by Chinese Turkestan (Kashgaria) on the E., and by Bokhara and Afghanistan on the S. Its southern limits, on the Pamirs, were fixed by an Anglo-Russian commission in 1885, from Zor-kul (Victoria Lake) to the Chinese frontier; and Shignan, Roshan and Wakhan were assigned to Bokhara in exchange for part of Darvaz (on the left bank of the Panj), which was given to Afghanistan. The area amounts to some 53,000 sq. m., of which 17,600 sq. m. are on the Pamirs. The most important part of the province is a rich and fertile valley (1200-1500 ft.), opening towards the S.W. Thence the province stretches northwards across the mountains of the Tian-shan system and southwards across the Alai and Trans-Alai Mts., which reach their highest point in Peak Kaufmann

(23,000 ft.), in the latter range. The valley owes its fertility to two rivers, the Naryn and the Karadarya, which unite within its confines, near Namangan, to form the Syr-darya or Jaxartes. These streams, and their numerous mountain affluents, not only supply water for irrigation, but also bring down vast quantities of sand, which is deposited alongside their courses, more especially alongside the Syr-darya where it cuts its way through the Khojent-Ajar ridge, forming there the Karakchikum. This expanse of moving sands, covering an area of 750 sq. m., under the influence of south-west winds, encroaches upon the agricultural districts. The climate of this valley is dry and warm. In March the temperature reaches 68° F., and then rapidly rises to 95° in June, July and August. During the five months following April no rain falls, but it begins again in October. Snow and frost (down to −4° F.) occur in December and January.

Out of some 3,000,000 acres of cultivated land, about two-thirds are under constant irrigation and the remaining third under partial irrigation. The soil is admirably cultivated, the principal crops being wheat, rice, barley, maize, millet, lucerne, tobacco, vegetables and fruit. Gardening is conducted with a high degree of skill and success. Large numbers of horses, cattle and sheep are kept, and a good many camels are bred. Over 17,000 acres are planted with vines, and some 350,000 acres are under cotton. Nearly 1,000,000 acres are covered with forests. The government maintains a forestry farm at Marghelan, from which 120,000 to 200,000 young trees are distributed free every year amongst the inhabitants of the province.

Silkworm breeding, formerly a prosperous industry, has decayed, despite the encouragement of a state farm at New Marghelan. Coal, iron, sulphur, gypsum, rock-salt, lacustrine salt and naphtha are all known to exist, but only the last two are extracted. Some seventy or eighty factories are engaged in cotton cleaning; while leather, saddlery, paper and cutlery are the principal products of the domestic industries. A considerable trade is carried on with Russia; raw cotton, raw silk, tobacco, hides, sheepskins, fruit and cotton and leather goods are exported, and manufactured wares, textiles, tea and sugar are imported and in part re-exported to Kashgaria and Bokhara. The total trade of Ferghana reaches an annual value of nearly £3,500,000. A new impulse was given to trade by the extension (1899) of the Transcaspian railway into Ferghana and by the opening of the Orenburg-Tashkent railway (1906). The routes to Kashgaria and the Pamirs are mere bridle-paths over the mountains, crossing them by lofty passes. For instance, the passes of Kara-kazyk (14,400 ft.) and Tenghiz-bai (11,200 ft.), both passable all the year round, lead from Marghelan to Kara-teghin and the Pamirs, while Kashgar is reached via Osh and Gulcha, and then over the passes of Terek-davan (12,205 ft.; open all the year round), Taldyk (11,500 ft.), Archat (11,600 ft.), and Shart-davan (14,000 ft.). Other passes leading out of the valley are the Jiptyk (12,460 ft.), S. of Khokand; the Isfairam (12,000 ft.), leading to the glen of the Surkhab, and the Kavuk (13,000 ft.), across the Alai Mts.

The population numbered 1,571,243 in 1897, and of that number 707,132 were women and 286,369 were urban. In 1906 it was estimated at 1,796,500. Two-thirds of the total are Sarts and Uzbegs (of Turkic origin). They live mostly in the valley; while the mountain slopes above it are occupied by Kirghiz, partly nomad and pastoral, partly agricultural and settled. The other races are Tajiks, Kashgarians, Kipchaks, Jews and Gypsies. The governing classes are of course Russians, who constitute also the merchant and artizan classes. But the merchants of West Turkestan are called all over central Asia Andijanis, from the town of Andijan in Ferghana. The great mass of the population are Mussulmans (1,039,115 in 1897). The province is divided into five districts, the chief towns of which are New Marghelan, capital of the province (8977 inhabitants in 1897), Andijan (49,682 in 1900), Khokand (86,704 in 1900), Namangan (61,906 in 1897), and Osh (37,397 in 1900); but Old Marghelan (42,855 in 1900) and Chust (13,686 in 1897) are also towns of importance. For the history, see Khokand.

(P. A. K.; J. T. Be.)

FERGUS FALLS, a city and the county-seat of Otter Tail county, Minnesota, U.S.A., on the Red river, 170 m. N.W. of Minneapolis. Pop. (1890) 3772; (1900) 6072, of whom 2131 were foreign-born; (1905) 6692; (1910) 6887. A large part of the population is of Scandinavian birth or descent. Fergus Falls is served by the Great Northern and the Northern Pacific railways. Situated in the celebrated “park region” of the state, the city possesses great natural beauty, which has been enhanced by a system of boulevards and well-kept private lawns. Lake Alice, in the residential district, adds to the city’s attractions. The city has a public library, a county court house, St Luke’s hospital, the G.B. Wright memorial hospital, and a city hall. It is the seat of a state hospital for the insane (1887) with about 1600 patients, of a business college, of the Park Region Luther College (Norwegian Lutheran, 1892), and of the North-western College (Swedish Lutheran; opened in 1901). It has one of the finest water-powers in the state. Flour is the principal product; among others are woollen goods, foundry and machine-shop products, wooden ware, sash, doors and blinds, caskets, shirts, wagons and packed meats. The city owns and operates its water-works and its electric-lighting plant. Fergus Falls was settled about 1859 and was incorporated in 1863.

FERGUSON, ADAM (1723-1816), Scottish philosopher and historian, was born on the 20th of June 1723, at Logierait, Perthshire. He was educated at Perth grammar school and the university of St Andrews. In 1745, owing to his knowledge of Gaelic, he was appointed deputy chaplain of the 43rd (afterwards the 42nd) regiment (the Black Watch), the licence to preach being granted him by special dispensation, although he had not completed the required six years of theological study. At the battle of Fontenoy (1745) Ferguson fought in the ranks throughout the day, and refused to leave the field, though ordered to do so by his colonel. He continued attached to the regiment till 1754, when, disappointed at not obtaining a living, he abandoned the clerical profession and resolved to devote himself to literary pursuits. In January 1757 he succeeded David Hume as librarian to the faculty of advocates, but soon relinquished this office on becoming tutor in the family of Lord Bute.

In 1759 Ferguson was appointed professor of natural philosophy in the university of Edinburgh, and in 1764 was transferred to the chair of "pneumatics" (mental philosophy) "and moral philosophy." In 1767, against Hume's advice, he published his *Essay on the History of Civil Society*, which was well received and translated into several European languages. In 1776 appeared his (anonymous) pamphlet on the American revolution in opposition to Dr Price's *Observations on the Nature of Civil Liberty*, in which he sympathized with the views of the British legislature. In 1778 Ferguson was appointed secretary to the commission which endeavoured, but without success, to negotiate an arrangement with the revolted colonies. In 1783 appeared his *History of the Progress and Termination of the Roman Republic*; it was very popular, and went through several editions. Ferguson was led to undertake this work from a conviction that the history of the Romans during the period of their greatness was a practical illustration of those ethical and political doctrines which were the object of his special study. The history is written in an agreeable style and a spirit of impartiality, and gives evidence of a conscientious use of authorities. The influence of the author's military experience shows itself in certain portions of the narrative. Finding himself unequal to the labour of teaching, he resigned his professorship in 1785, and devoted himself to the revision of his lectures, which he published (1792) under the title of *Principles of Moral and Political Science*.

When in his seventieth year, Ferguson, intending to prepare a new edition of the history, visited Italy and some of the principal cities of Europe, where he was received with honour by learned societies. From 1795 he resided successively at the old castle of Neidpath near Peebles, at Hallyards on Manor Water and at St Andrews, where he died on the 22nd of February 1816.

In his ethical system Ferguson treats man throughout as a social being, and illustrates his doctrines by political examples. As a believer in the progression of the human race, he placed the principle of moral approbation in the attainment of perfection. His speculations were carefully criticized by Cousin (see his *Cours d'histoire de la philosophie morale au dix-huitième siècle*, pt. ii., 1839-1840):—"We find in his method the wisdom and circumspection of the Scottish school, with something more masculine and decisive in the results. The principle of *perfection* is a new one, at once more rational and comprehensive than benevolence and sympathy, which in our view places Ferguson as a moralist above all his predecessors." By this principle Ferguson endeavours to reconcile all moral systems. With Hobbes and Hume he admits the power of self-interest or utility, and makes it enter into morals as the law of self-preservation. Hutcheson's theory of universal benevolence and Smith's idea of sympathy he combines under the law of society. But, as these laws are the means rather than the end of human destiny, they are subordinate to a supreme end, and this supreme end is perfection. In the political part of his system Ferguson follows Montesquieu, and pleads the cause of well-regulated liberty and free government. His contemporaries, with the exception of Hume, regarded his writings as of great importance; in point of fact they are superficial. The facility of their style and the frequent occurrence of would-be weighty epigrams blinded his critics to the fact that, in spite of his recognition of the importance of observation, he made no real contribution to political theory (see Sir Leslie Stephen, *English Thought in the Eighteenth Century*, x. 89-90).

The chief authority for Ferguson's life is the *Biographical Sketch* by John Small (1864); see also *Public Characters* (1799-1800); *Gentleman's Magazine*, i. (1816 supp.); W.R. Chambers's *Biographical Dictionary of Eminent Scotsmen*; memoir by Principal Lee in early editions of the *Encyclopaedia Britannica*; J. McCosh, *The Scottish Philosophy* (1875); articles in *Dictionary of National Biography* and *Edinburgh Review* (January 1867); Lord Henry Cockburn, *Memorials of his Time* (1856).

FERGUSON, JAMES (1710-1776), Scottish mechanician and astronomer, was born near Rothiemay in Banffshire on the 25th of April 1710, of parents in very humble circumstances. He first learned to read by overhearing his father teach his elder brother, and with the help of an old woman was "able," he says in his autobiography, "to read tolerably well before his father thought of teaching him." After receiving further instruction in reading from his father, who also taught him to write, he was sent at the age of seven for three months to the grammar school at Keith. His taste for mechanics was about this time accidentally awakened on seeing his father making use of a lever to raise a part of the roof of his house—an exhibition of seeming strength which at first "excited his terror as well as wonder." In 1720 he was sent to a neighbouring farm to keep sheep, where in the daytime he amused himself by making models of mills and other machines, and at night in studying the stars. Afterwards, as a

servant with a miller, and then with a doctor, he met with hardships which rendered his constitution feeble through life. Being compelled by his weak health to return home, he there amused himself with making a clock having wooden wheels and a whalebone spring. When slightly recovered he showed this and some other inventions to a neighbouring gentleman, who engaged him to clean his clocks, and also desired him to make his house his home. He there began to draw patterns for needlework, and his success in this art led him to think of becoming a painter. In 1734 he went to Edinburgh, where he began to take portraits in miniature, by which means, while engaged in his scientific studies, he supported himself and his family for many years. Subsequently he settled at Inverness, where he drew up his *Astronomical Rotula* for showing the motions of the planets, places of the sun and moon, &c., and in 1743 went to London, which was his home for the rest of his life. He wrote various papers for the Royal Society, of which he became a fellow in 1763, devised astronomical and mechanical models, and in 1748 began to give public lectures on experimental philosophy. These he repeated in most of the principal towns in England. His deep interest in his subject, his clear explanations, his ingeniously constructed diagrams, and his mechanical apparatus rendered him one of the most successful of popular lecturers on scientific subjects. It is, however, as the inventor and improver of astronomical and other scientific apparatus, and as a striking instance of self-education, that he claims a place among the most remarkable men of science of his country. During the latter years of his life he was in receipt of a pension of £50 from the privy purse. He died in London on the 17th of November 1776.

Ferguson's principal publications are *Astronomical Tables* (1763); *Lectures on Select Subjects* (1st ed., 1761, edited by Sir David Brewster in 1805); *Astronomy explained upon Sir Isaac Newton's Principles* (1756, edited by Sir David Brewster in 1811); and *Select Mechanical Exercises, with a Short Account of the Life of the Author, written by himself* (1773). This autobiography is included in a *Life* by E. Henderson, LL.D. (1st ed., 1867; 2nd, 1870), which also contains a full description of Ferguson's principal inventions, accompanied with illustrations. See also *The Story of the Peasant-Boy Philosopher*, by Henry Mayhew (1857).

FERGUSON, ROBERT (*c.* 1637-1714), British conspirator and pamphleteer, called the "Plotter," was a son of William Ferguson (d. 1699) of Badifurrow, Aberdeenshire, and after receiving a good education, probably at the university of Aberdeen, became a Presbyterian minister. According to Bishop Burnet he was cast out by the Presbyterians; but whether this be so or not, he soon made his way to England and became vicar of Godmersham, Kent, from which living he was expelled by the Act of Uniformity in 1662. Some years later, having gained meanwhile a reputation as a theological controversialist and become a person of importance among the Nonconformists, he attracted the notice of the earl of Shaftesbury and the party which favoured the exclusion of the duke of York (afterwards King James II.) from the throne, and he began to write political pamphlets just at the time when the feeling against the Roman Catholics was at its height. In 1680 he wrote "A Letter to a Person of Honour concerning the 'Black Box,'" in which he supported the claim of the duke of Monmouth to the crown against that of the duke of York; returning to the subject after Charles II. had solemnly denied the existence of a marriage between himself and Lucy Waters. He took an active part in the controversy over the Exclusion Bill, and claimed to be the author of the whole of the pamphlet "No Protestant Plot" (1681), parts of which are usually ascribed to Shaftesbury. Ferguson was deeply implicated in the Rye House Plot, although he asserted that he had frustrated both this and a subsequent attempt to assassinate the king, and he fled to Holland with Shaftesbury in 1682, returning to England early in 1683. For his share in another plot against Charles II. he was declared an outlaw, after which he entered into communication with Argyll, Monmouth and other malcontents. Ferguson then took a leading part in organizing the rising of 1685. Having overcome Monmouth's reluctance to take part in this movement, he accompanied the duke to the west of England and drew up the manifesto against James II., escaping to Holland after the battle of Sedgemoor. He landed in England with William of Orange in 1688, and aided William's cause with his pen; but William and his advisers did not regard him as a person of importance, although his services were rewarded with a sinecure appointment in the Excise. Chagrined at this treatment, Ferguson was soon in correspondence with the exiled Jacobites. He shared in all the plots against the life of William, and after his removal from the Excise in 1692 wrote violent pamphlets against the government. Although he was several times arrested on suspicion, he was never brought to trial. He died in great poverty in 1714, leaving behind him a great and deserved reputation for treachery. It has been thought by Macaulay and others that Ferguson led the English government to believe that he was a spy in their interests, and that his frequent escapes from justice were due to official connivance. In a proclamation issued for his arrest in 1683 he is described as "a tall lean man, dark brown hair, a great Roman nose, thin-jawed, heat in his face, speaks in the Scotch tone, a sharp piercing eye, stoops a little in the shoulders." Besides numerous pamphlets Ferguson wrote: *History of the Revolution* (1706); *Qualifications requisite in a Minister of State* (1710); and part of the *History of all the Mobs, Tumults and Insurrections in Great Britain* (London, 1715).

See James Ferguson, *Robert Ferguson, the Plotter* (Edinburgh, 1887), which gives a favourable account of Ferguson.

FERGUSON, SIR SAMUEL (1810-1886), Irish poet and antiquary, was born at Belfast, on the 10th of March 1810. He was educated at Trinity College, Dublin, was called to the Irish bar in 1838, and was made Q.C. in 1859, but in 1867 retired from practice upon his appointment as deputy-keeper of the Irish records, then in a much neglected condition. He was an excellent civil servant, and was knighted in 1878 for his services to the department. His spare time was given to general literature, and in particular to poetry. He had long been a leading contributor to the *Dublin University Magazine* and to *Blackwood*, where he had published his two literary masterpieces, “The Forging of the Anchor,” one of the finest of modern ballads, and the humorous prose extravaganza of “Father Tom and the Pope.” He published *Lays of the Western Gael* in 1865, *Poems* in 1880, and in 1872 *Congal*, a metrical narrative of the heroic age of Ireland, and, though far from ideal perfection, perhaps the most successful attempt yet made by a modern Irish poet to revivify the spirit of the past in a poem of epic proportions. Lyrics have succeeded better in other hands; many of Ferguson’s pieces on modern themes, notably his “Lament for Thomas Davis” (1845), are, nevertheless, excellent. He was an extensive contributor on antiquarian subjects to the *Transactions of the Royal Irish Academy*, and was elected its president in 1882. His manners were delightful, and his hospitality was boundless. He died at Howth on the 9th of August 1886. His most important antiquarian work, *Ogham Inscriptions in Ireland, Wales, Scotland*, was published in the year after his death.

See *Sir Samuel Ferguson in the Ireland of his Day* (1896), by his wife, Mary C. Ferguson; also an article by A.P. Graves in *A Treasury of Irish Poetry in the English Tongue* (1900), edited by Stopford Brooke and T.W. Rolleston.

FERGUSSON, JAMES (1808-1886), Scottish writer on architecture, was born at Ayr on the 22nd of January 1808. His father was an army surgeon. After being educated first at the Edinburgh high school, and afterwards at a private school at Hounslow, James went to Calcutta as partner in a mercantile house. Here he was attracted by the remains of the ancient architecture of India, little known or understood at that time. The successful conduct of an indigo factory, as he states in his own account, enabled him in about ten years to retire from business and settle in London. The observations made on Indian architecture were first embodied in his book on *The Rock-cut Temples of India*, published in 1845. The task of analysing the historic and aesthetic relations of this type of ancient buildings led him further to undertake a historical and critical comparative survey of the whole subject of architecture in *The Handbook of Architecture*, a work which first appeared in 1855. This did not satisfy him, and the work was reissued ten years later in a much more extended form under the title of *The History of Architecture*. The chapters on Indian architecture, which had been considered at rather disproportionate length in the *Handbook*, were removed from the general *History*, and the whole of this subject treated more fully in a separate volume, *The History of Indian and Eastern Architecture*, which appeared in 1876, and, although complete in itself, formed a kind of appendix to *The History of Architecture*. Previously to this, in 1862, he issued his *History of Modern Architecture*, in which the subject was continued from the Renaissance to the present day, the period of “modern architecture” being distinguished as that of revivals and imitations of ancient styles, which began with the Renaissance. The essential difference between this and the spontaneously evolved architecture of preceding ages Fergusson was the first clearly to point out and characterize. His treatise on *The True Principles of Beauty in Art*, an early publication, is a most thoughtful metaphysical study. Some of his essays on special points in archaeology, such as the treatise on *The Mode in which Light was introduced into Greek Temples*, included theories which have not received general acceptance. His real monument is his *History of Architecture* (later edition revised by R. Phenè Spiers), which, for grasp of the whole subject, comprehensiveness of plan, and thoughtful critical analysis, stands quite alone in architectural literature. He received the gold medal of the Royal Institute of British Architects in 1871. Among his works, besides those already mentioned, are: *A Proposed New System of Fortification* (1849), *Palaces of Nineveh and Persepolis restored* (1851), *Mausoleum at Halicarnassus restored* (1862), *Tree and Serpent Worship* (1868), *Rude Stone Monuments in all Countries* (1872), and *The Temples of the Jews and the other Buildings in the Haram Area at Jerusalem* (1878). The sessional papers of the Institute of British Architects include papers by him on *The History of the Pointed Arch*, *Architecture of Southern India*, *Architectural Splendour of the City of Beejapore*, *On the Erechtheum* and on the *Temple of Diana at Ephesus*.

Although Fergusson never practised architecture he took a keen interest in all the professional work of his time. He was adviser with Austen Layard in the scheme of decoration for the Assyrian court at the Crystal Palace, and indeed assumed in 1856 the duties of general manager to the Palace Company, a post which he held for two years. In 1847 Fergusson had published an “Essay on the Ancient Topography of Jerusalem,” in which he had contended that the “Mosque of Omar” was the identical church built by Constantine the Great over the tomb of our Lord at Jerusalem, and that it, and not the present church of the Holy Sepulchre, was the genuine burial-place of Jesus. The burden of this contention was further explained by the publication in 1860 of his *Notes on the Site of the Holy Sepulchre at Jerusalem*; and *The Temples of the Jews and the other Buildings in the Haram Area at Jerusalem*, published in 1878, was a still completer elaboration of these theories, which are said to have been the origin of the establishment of the Palestine Exploration fund. His manifold activities

continued till his death, which took place in London on the 9th of January 1886.

FERGUSSON, ROBERT (1750-1774), Scottish poet, son of Sir William Fergusson, a clerk in the British Linen Company, was born at Edinburgh on the 5th of September 1750. Robert was educated at the grammar school of Dundee, and at the university of St Andrews, where he matriculated in 1765. His father died while he was still at college; but a bursary enabled him to complete his four years of study. He refused to study for the church, and was too nervous to study medicine as his friends wished. He quarrelled with his uncle, John Forbes of Round Lichnot, Aberdeenshire, and went to Edinburgh, where he obtained employment as copying clerk in a lawyer's office. In this humble occupation he passed the remainder of his life. While at college he had written a clever elegy on Dr David Gregory, and in 1771 he began to contribute verses regularly to Ruddiman's *Weekly Magazine*. He was a member of the Cape Club, celebrated by him in his poem of "Auld Reekie." "The Knights of the Cape" assembled at a tavern in Craig's Close, in the vicinity of the Cross; each member had a name and character assigned to him, which he was required to maintain at all gatherings of the order. David Herd (1732-1810), the collector of the classic edition of *Ancient and Modern Scottish Songs* (1776), was sovereign of the Cape (in which he was known as "Sir Scrape") when Fergusson was dubbed a knight of the order, with the title of "Sir Precentor," in allusion to his fine voice. Alexander Runciman, the historical painter, his pupil Jacob More, and Sir Henry Raeburn were all members. The old minute books of the club abound with pencilled sketches by them, one of the most interesting of which, ascribed to Runciman's pencil, is a sketch of Fergusson in his character of "Sir Precentor."

Fergusson's gaiety and wit made him an entertaining companion, and he indulged too freely in the convivial habits of the time. After a meeting with John Brown of Haddington he became, however, very serious, and would read nothing but his Bible. A fall by which his head was severely injured aggravated symptoms of mental aberration which had begun to show themselves; and after about two months' confinement in the old Darien House—then the only public asylum in Edinburgh—the poet died on the 16th of October 1774.

Fergusson's poems were collected in the year before his death. The influence of his writings on Robert Burns is undoubted. His "Leith Races" unquestionably supplied the model for the "Holy Fair." Not only is the stanza the same, but the Mirth who plays the part of conductor to Fergusson, and the Fun who renders a like service to Burns, are manifestly conceived on the same model. "The Mutual Complaint of Plainstanes and Causey" probably suggested "The Brigs of Ayr"; "On seeing a Butterfly in the Street" has reflections in it which strikingly correspond with "To a Mouse"; nor will a comparison of "The Farmer's Ingle" of the elder poet with "The Cottar's Saturday Night" admit of a doubt as to the influence of the city-bred poet's muse on that exquisite picturing of homely peasant life. Burns was himself the first to render a generous tribute to the merits of Fergusson; on his visit to Edinburgh in 1787 he sought out the poet's grave, and petitioned the authorities of the Canongate burying-ground for permission to erect the memorial stone which is preserved in the existing monument. The date there assigned for his birth differs from the one given above, which rests on the authority of his younger sister Margaret.

> The first edition of Fergusson's poems was published by Ruddiman at Edinburgh in 1773, and a supplement containing additional poems, in 1779. A second edition appeared in 1785. There are later editions, by Robert Chambers (1850) and Dr A.B. Grosart (1851). A life of Fergusson is included in Dr David Irving's *Lives of the Scottish Poets*, and in Robert Chambers's Lives of *Illustrious and Distinguished Scotsmen*.

FERGUSSON, SIR WILLIAM, Bart. (1808-1877), British surgeon, the son of James Fergusson of Lochmaben, Dumfriesshire, was born at Prestonpans, East Lothian, on the 20th of March 1808. After receiving his early education at Lochmaben and the high school of Edinburgh, he entered the university of Edinburgh with the view of studying law, but soon afterwards abandoned his intention and became a pupil of the anatomist Robert Knox (1791-1862) whose demonstrator he was appointed at the age of twenty. In 1836 he succeeded Robert Liston as surgeon to the Edinburgh Royal Infirmary, and coming to London in 1840 as professor of surgery in King's College, and surgeon to King's College Hospital, he acquired a commanding position among the surgeons of the metropolis. He revived the operation for cleft-palate, which for many years had fallen into disrepute, and invented a special mouth-gag for the same. He also devised many other surgical instruments, chief among which, and still in use to-day, are his bone forceps, lion forceps and vaginal speculum. In 1866 he was created a baronet. He died in London on the 10th of February 1877. As a surgeon Fergusson's greatest merit is that of having introduced the practice of "conservative surgery," by which he meant the excision of a joint rather than the amputation of a limb. He made his diagnosis with almost intuitive certainty; as an operator he was characterized by self-possession in the most critical circumstances, by minute

attention to details and by great refinement of touch, and he relied more on his mechanical dexterity than on complicated instruments. He was the author of *The Progress of Anatomy and Surgery in the Nineteenth Century* (1867), and of a *System of Practical Surgery* (1842), which went through several editions.

FERINGHI, or Feringhee, a Frank (Persian, *Farangi*). This term for a European is very old in Asia, and was originally used in a purely geographical sense, but now generally carries a hostile or contemptuous significance. The combatants on either side during the Indian Mutiny called each other Feringhies and Pandies.

FERISHTA, MAHOMMED KASIM (*c*. 1570-*c*. 1611), Persian historian, was born at Astrabad, on the shores of the Caspian Sea. While he was still a child his father was summoned away from his native country into Hindostan, where he held high office in the Deccan; and by his influence the young Ferishta received court promotion. In 1589 Ferishta removed to Bijapur, where he spent the remainder of his life under the immediate protection of the shah Ibrahim Adil II., who engaged him to write a history of India. At the court of this monarch he died about 1611. In the introduction to his work a *résumé* is given of the history of Hindostan prior to the times of the Mahommedan conquest, and also of the victorious progress of the Arabs through the East. The first ten books are each occupied with a history of the kings of one of the provinces; the eleventh book gives an account of the Mussulmans of Malabar; the twelfth a history of the Mussulman saints of India; and the conclusion treats of the geography and climate of India. Ferishta is reputed one of the most trustworthy of the Oriental historians, and his work still maintains a high place as an authority. Several portions of it have been translated into English; but the best as well as the most complete translation is that published by General J. Briggs under the title of *The History of the Rise of the Mahometan Power in India* (London, 1829, 4 vols. 8vo). Several additions were made by Briggs to the original work of Ferishta, but he omitted the whole of the twelfth book, and various other passages which had been omitted in the copy from which he translated.

FERMANAGH, a county of Ireland, in the province of Ulster, bounded N.W. by Donegal, N.E. by Tyrone, E. by Monaghan and S.W. by Cavan and Leitrim. The area is 457,369 acres or about 715 sq. m. The county is situated mostly in the basin of the Erne, which divides the county into two nearly equal sections. Its surface is hilly, and its appearance (in many parts) somewhat sterile, though in the main, and especially in the neighbourhood of Lough Erne, it is picturesque and attractive. The climate, though moist, is healthy, and the people are generally tall and robust. The chief mountains are Cuilcagh (2188 ft.), partly in Leitrim and Cavan, Belmore (1312), Glenkeel (1223), North Shean (1135), Tappahan (1110), Carnmore (1034). Tossett or Toppid and Turaw mountains command extensive prospects, and form striking features in the scenery of the county. But the most distinguishing features of Fermanagh are the Upper and Lower Loughs Erne, which occupy a great extent of its surface, stretching for about 45 m. from S.E. to N.W. These lakes are expansions of the river Erne, which enters the county from Cavan at Wattle Bridge. It passes Belturbet, the Loughs Erne, Enniskillen and Belleek, on its way to the Atlantic, into which it descends at Ballyshannon. At Belleek it forms a considerable waterfall and is here well known to sportsmen for its good salmon fishing. Trout are taken in most of the loughs, and pike of great size in the Loughs Erne. There are several mineral springs in the county, some of them chalybeate, others sulphurous. At Belcoo, near Enniskillen, there is a famous well called Daragh Phadric, held in repute by the peasantry for its cure of paralytic and other diseases; and 4 m. N.W. of the same town, at a place called “the Daughton,” are natural caves of considerable size.

This county includes in the north an area of the gneiss that is discussed under county Donegal, and, west of Omagh, a metamorphic region that stretches in from the central axis of Tyrone. A fault divides the latter from the mass of red-brown Old Red Sandstone that spreads south nearly to Enniskillen. Lower Carboniferous sandstone and limestone occur on the north of Lower Lough Erne. The limestone forms fine scarps on the southern side of the lake, capped by beds regarded as the Yoredale series. The scenery about the two Loughs Macnean is carved out in similarly scarped hills, rising to 2188 ft. in Cuilcagh on the south. The “Marble Arch” cave near Florence-court, with its emerging river, is a characteristic example of the subterranean waterways in the limestone. Upper Lough Erne is a typical

meandering lake of the limestone lowland, with outliers of higher Carboniferous strata forming highlands north-east and south-west of it.

With the exception of the pottery works at Belleek, where iridescent ware of good quality is produced, Fermanagh has no distinguishing manufactures. It is chiefly an agricultural county. The proportion of tillage to pasture is roughly as 1 to 2½. Cattle and poultry are the principal classes of live stock. Oats and potatoes are the crops most extensively cultivated. The north-western division of the Great Northern railway passes through the most populous portion of the county, one branch connecting Enniskillen with Clones, another connecting Enniskillen with Londonderry via Omagh, and a third connecting Bundoran Junction with Bundoran, in county Donegal. The Sligo, Leitrim & Northern Counties railway connects with the Great Northern at Enniskillen, and the Clogher Valley light railway connects southern county Tyrone with the Great Northern at Maguiresbridge.

The population (74,170 in 1891; 65,430 in 1901; almost wholly rural) shows a decrease among the most serious of the county populations of Ireland. It includes 55% of Roman Catholics and about 35% of Protestant Episcopalians. Enniskillen (the county town, pop. 5412) is the only town of importance, the rest being little more than villages. The principal are Lisnaskea, Irvinestown (formerly Lowtherstown), Maguiresbridge, Tempo, Newtownbutler, Belleek, Derrygonnelly and Kesh, at which fairs are held. Garrison, a fishing station on the wild Lough Melvin, and Pettigo, near to the lower Lough Erne, are market villages. Fermanagh returns two members to parliament, one each for the north and south divisions. It comprises eight baronies and nineteen civil parishes. The assizes are held at Enniskillen, quarter sessions at Enniskillen and Newtownbutler. The headquarters of the constabulary are at Enniskillen. Ecclesiastically it belongs to the Protestant and Roman Catholic dioceses of Clogher and Kilmore.

By the ancient Irish the district was called *Feor-magh-Eanagh*, or the “country of the lakes” (lit. “the mountain-valley marsh district”); and also Magh-uire, or “the country of the waters.” A large portion was occupied by the *Guarii*, the ancestors of the MacGuires or Maguires, a name still common in the district. This family was so influential that for centuries the county was called after it Maguire’s Country, and one of the towns still existing bears its name, Maguiresbridge. Fermanagh was formed into a county on the shiring of Ulster in 1585 by Sir John Perrot, and was included in the well-known scheme of colonization of James I., the Plantation of Ulster. In 1689 battles were fought between William III.’s army and the Irish under Macarthy (for James II.), Lisnaskea (26th July) and Newtownbutler (30th July). The chief place of interest to the antiquary is Devenish Island in Lough Erne, about 2½ m. N.W. from Enniskillen (*q.v.*), with its ruined abbey, round tower and cross. In various places throughout the county may be seen the ruins of several ancient castles, Danish raths or encampments, and tumuli, in the last of which urns and stone coffins have sometimes been found. The round tower on Devenish Island is one of the finest examples in the country.

FERMAT, PIERRE DE (1601-1665), French mathematician, was born on the 17th of August 1601, at Beaumont-de-Lomagne near Montauban. While still young, he, along with Blaise Pascal, made some discoveries in regard to the properties of numbers, on which he afterwards built his method of calculating probabilities. He discovered a simpler method of quadrating parabolas than that of Archimedes, and a method of finding the greatest and the smallest ordinates of curved lines analogous to that of the then unknown differential calculus. His great work *De maximis et minimis* brought him into conflict with René Descartes, but the dispute was chiefly due to a want of explicitness in the statement of Fermat (see Infinitesimal Calculus). His brilliant researches in the theory of numbers entitle him to rank as the founder of the modern theory. They originally took the form of marginal notes in a copy of Bachet’s *Diophantus*, and were published in 1670 by his son Samuel, who incorporated them in a new edition of this Greek writer. Other theorems were published in his *Opera Varia*, and in John Wallis’s *Commercium epistolicum* (1658). He died in the belief that he had found a relation which every prime number must satisfy, namely $2^{2n} + 1$ = a prime. This was afterwards disproved by Leonhard Euler for the case when n = 5. *Fermat’s Theorem*, if p is prime and a is prime to p then $a^{p-1} - 1$ is divisible by p, was first given in a letter of 1640. *Fermat’s Problem* is that $x^n + y^n = z^n$ is impossible for integral values of x, y and z when n is greater than 2.

Fermat was for some time councillor for the parliament of Toulouse, and in the discharge of the duties of that office he was distinguished both for legal knowledge and for strict integrity of conduct. Though the sciences were the principal objects of his private studies, he was also an accomplished general scholar and an excellent linguist. He died at Toulouse on the 12th of January 1665. He left a son, Samuel de Fermat (1630-1690) who published translations of several Greek authors and wrote certain books on law in addition to editing his father’s works.

> The *Opera mathematica* of Fermat were published at Toulouse, in 2 vols. folio, 1670 and 1679. The first contains the “Arithmetic of Diophantus,” with notes and additions. The second includes a “Method for the Quadrature of Parabolas,” and a treatise “on Maxima and Minima, on Tangents, and on Centres of Gravity,” containing the same solutions of a variety of problems as were afterwards incorporated into the more extensive method of fluxions by Newton and Leibnitz. In the same volume are treatises on “Geometric Loci, or Spherical Tangencies,” and on the “Rectification of Curves,” besides a

restoration of “Apollonius’s Plane Loci,” together with the author’s correspondence addressed to Descartes, Pascal, Roberval, Huygens and others. The *Œuvres* of Fermat have been re-edited by P. Tannery and C. Henry (Paris, 1891-1894).

See Paul Tannery, “Sur la date des principales découvertes de Fermat,” in the *Bulletin Darboux* (1883); and “Les Manuscrits de Fermat,” in the *Annales de la faculté des lettres de Bordeaux*.

FERMENTATION. The process of fermentation in the preparation of wine, vinegar, beer and bread was known and practised in prehistoric times. The alchemists used the terms fermentation, digestion and putrefaction indiscriminately; any reaction in which chemical energy was displayed in some form or other—such, for instance, as the effervescence occasioned by the addition of an acid to an alkaline solution—was described as a fermentation (Lat. *fervere*, to boil); and the idea of the “Philosopher’s Stone” setting up a fermentation in the common metals and developing the essence or germ, which should transmute them into silver or gold, further complicated the conception of fermentation. As an outcome of this alchemical doctrine the process of fermentation was supposed to have a purifying and elevating effect on the bodies which had been submitted to its influence. Basil Valentine wrote that when yeast was added to wort “an internal inflammation is communicated to the liquid, so that it raises in itself, and thus the segregation and separation of the feculent from the clear takes place.” Johann Becher, in 1669, first found that alcohol was formed during the fermentation of solutions of sugar; he distinguished also between fermentation and putrefaction. In 1697 Georg Stahl admitted that fermentation and putrefaction were analogous processes, but that the former was a particular case of the latter.

The beginning of definite knowledge on the phenomenon of fermentation may be dated from the time of Antony Leeuwenhoek, who in 1680 designed a microscope sufficiently powerful to render yeast cells and bacteria visible; and a description of these organisms, accompanied by diagrams, was sent to the Royal Society of London. This investigator just missed a great discovery, for he did not consider the spherical forms to be living organisms but compared them with starch granules. It was not until 1803 that L.J. Thénard stated that yeast was the cause of fermentation, and held it to be of an animal nature, since it contained nitrogen and yielded ammonia on distillation, nor was it conclusively proved that the yeast cell was the originator of fermentation until the researches of C. Cagniard de la Tour, T. Schwann and F. Kützing from 1836 to 1839 settled the point. These investigators regarded yeast as a plant, and Meyer gave to the germs the systematic name of “Saccharomyces” (sugar fungus). In 1839-1840 J. von Liebig attacked the doctrine that fermentation was caused by micro-organisms, and enunciated his theory of mechanical decomposition. He held that every fermentation consisted of molecular motion which is transmitted from a substance in a state of chemical motion—that is, of decomposition—to other substances, the elements of which are loosely held together. It is clear from Liebig’s publications that he first regarded yeast as a lifeless, albuminoid mass; but, although later he considered they were living cells, he would never admit that fermentation was a physiological process, the chemical aspect being paramount in the mind of this distinguished investigator.

In 1857 Pasteur decisively proved that fermentation was a physiological process, for he showed that the yeast which produced fermentation was no dead mass, as assumed by Liebig, but consisted of living organisms capable of growth and multiplication. His own words are: “The chemical action of fermentation is essentially a correlative phenomenon of a vital act, beginning and ending with it. I think that there is never any alcoholic fermentation without there being at the same time organization, development and multiplication of globules, or the continued consecutive life of globules already formed.” Fermentation, according to Pasteur, was caused by the growth and multiplication of unicellular organisms out of contact with free oxygen, under which circumstance they acquire the power of taking oxygen from chemical compounds in the medium in which they are growing. In other words “fermentation is life without air, or life without oxygen.” This theory of fermentation was materially modified in 1892 and 1894 by A.J. Brown, who described experiments which were in disagreement with Pasteur’s dictum. A.J. Brown writes: “If for the theory ’life without air’ is substituted the consideration that yeast cells can use oxygen in the manner of ordinary aërobic fungi, and probably do require it for the full completion of their life-history, but that the exhibition of their fermentative functions is independent of their environment with regard to free oxygen, it will be found that there is nothing contradictory in Pasteur’s experiments to such a hypothesis.”

Liebig and Pasteur were in agreement on the point that fermentation is intimately connected with the presence of yeast in the fermenting liquid, but their explanations concerning the mechanism of fermentation were quite opposed. According to M. Traube (1858), the active cause of fermentation is due to the action of different enzymes contained in yeast and not to the yeast cell itself. As will be seen later this theory was confirmed by subsequent researches of E. Fischer and E. Buchner.

In 1879 C. Nägeli formulated his well-known molecular-physical theory, which supported Liebig’s chemical theory on the one hand and Pasteur’s physiological hypothesis on the other: “Fermentation is the transference of the condition of motion of the molecules, atomic groups and atoms of the various compounds constituting the living plasma, to the fermenting material, in consequence of which equilibrium in the molecules of the latter is destroyed, the result being their disintegration.” He

agreed with Pasteur that the presence of living cells is essential to the transformation of sugar into alcohol, but dissented from the view that the process occurs within the cell. This investigator held that the decomposition of the sugar molecules takes place outside the cell wall. In 1894 and 1895, Fischer, in a remarkable series of papers on the influence of molecular structure upon the action of the enzyme, showed that various species of yeast behave very differently towards solutions of sugars. For example, some species hydrolyse cane sugar and maltose, and then carry on fermentation at the expense of the simple sugars (hexoses) so formed. *Saccharomyces Marxianus* will not hydrolyse maltose, but it does attack cane sugar and ferment the products of hydrolysis. Fischer next suggested that enzymes can only hydrolyse those sugars which possess a molecular structure in harmony with their own, or to use his ingenious analogy, "the one may be said to fit into the other as a key fits into a lock." The preference exhibited by yeast cells for sugar molecules is shared by mould fungi and soluble enzymes in their fermentative actions. Thus, Pasteur showed that *Penicillium glaucum*, when grown in an aqueous solution of ammonium racemate, decomposed the dextro-tartrate, leaving the laevo-tartrate, and the solution which was originally inactive to polarized light became dextro-rotatory. Fischer found that the enzyme "invertase," which is present in yeast, attacks methyl-*d*-glucoside but not methyl-*l*-glucoside.

In 1897 Buchner submitted yeast to great pressure, and isolated a nitrogenous substance, enzymic in character, which he termed "zymase." This body is being continually formed in the yeast cell, and decomposes the sugar which has diffused into the cell. The freshly-expressed yeast juice causes concentrated solutions of cane sugar, glucose, laevulose and maltose to ferment with the production of alcohol and carbon dioxide, but not milk-sugar and mannose. In this respect the plasma behaves in a similar manner towards the sugars as does the living yeast cell. Pasteur found that, when cane sugar was fermented by yeast, 49.4% of carbonic acid and 51.1% of alcohol were produced; with expressed yeast juice cane sugar yields 47% of carbonic acid and 47.7% of alcohol. According to Buchner the fermentative activity of yeast-cell juice is not due to the presence of living yeast cells, or to the action of living yeast protoplasm, but it is caused by a soluble enzyme. A. Macfadyen, G.H. Morris and S. Rowland, in repeating Buchner's experiments, found that zymase possessed properties differing from all other enzymes, thus: dilution with twice its volume of water practically destroys the fermentative power of the yeast juice. These investigators considered that differences of this nature cannot be explained by the theory that it is a soluble enzyme, which brings about the alcoholic fermentation of sugar. The remarkable discoveries of Fischer and Buchner to a great extent confirm Traube's views, and reconcile Liebig's and Pasteur's theories. Although the action of zymase may be regarded as mechanical, the enzyme cannot be produced by any other than living protoplasm.

Pasteur's important researches mark an epoch in the technical aspect of fermentation. His investigations on vinegar-making revolutionized that industry, and he showed how, instead of waiting two or three months for the elaboration of the process, the vinegar could be made in eight or ten days by exposing the vats containing the mixture of wine and vinegar to a temperature of 20° to 25° C., and sowing with a small quantity of the acetic organism. To the study of the life-history of the butyric and acetic organisms we owe the terms "anaërobic" and "aërobic." His researches from 1860 and onwards on the then vexed question of spontaneous generation proved that, in all cases where spontaneous generation appeared to have taken place, some defect or other was in the experiment. Although the direct object of Pasteur was to prove a negative, yet it was on these experiments that sterilization as known to us was developed. It is only necessary to bear in mind the great part played by sterilization in the laboratory, and pasteurization on the fermentation industries and in the preservation of food materials. Pasteur first formulated the idea that bacteria are responsible for the diseases of fermented liquids; the corollary of this was a demand for pure yeast. He recommended that yeast should be purified by cultivating it in a solution of sugar containing tartaric acid, or, in wort containing a small quantity of phenol. It was not recognized that many of the diseases of fermented liquids are occasioned by foreign yeasts; moreover, this process, as was shown later by Hansen, favours the development of foreign yeasts at the expense of the good yeast.

About this time Hansen, who had long been engaged in researches on the biology of the fungi of fermentation, demonstrated that yeast free from bacteria could nevertheless occasion diseases in beer. This discovery was of great importance to the zymo-technical industries, for it showed that bacteria are not the only undesirable organisms which may occur in yeast. Hansen set himself the task of studying the properties of the varieties of yeast, and to do this he had to cultivate each variety in a pure state. Having found that some of the commonest diseases of beer, such as yeast turbidity and the objectionable changes in flavour, were caused not by bacteria but by certain species of yeast, and, further, that different species of good brewery yeast would produce beers of different character, Hansen argued that the pitching yeast should consist only of a single species—namely, that best suited to the brewery in question. These views met with considerable opposition, but in 1890 Professor E. Duclaux stated that the yeast question as regards low fermentation has been solved by Hansen's investigations. He emphasized the opinion that yeast derived from one cell was of no good for top fermentation, and advocated Pasteur's method of purification. But in the course of time, notwithstanding many criticisms and objections, the reform spread from bottom fermentation to top fermentation breweries on the continent and in America. In the United Kingdom the employment of brewery yeasts selected from a single cell has not come into general use; it may probably be accounted for in a great measure by conservatism and the wrong application of Hansen's theories.

Pure Cultivation of Yeasts.—The methods which were first adopted by Hansen for obtaining pure cultures of yeast were similar in principle to one devised by J. Lister for isolating a pure culture of

lactic acid bacterium. Lister determined the number of bacteria present in a drop of the liquid under examination by counting, and then diluted this with a sufficient quantity of sterilized water so that each drop of the mixture should contain, on an average, less than one bacterium. A number of flasks containing a nutrient medium were each inoculated with one drop of this mixture; it was found that some remained sterile, and Lister assumed that the remaining flasks each contained a pure culture. This method did not give very certain results, for it could not be guaranteed that the growth in the inoculated flask was necessarily derived from a single bacterium. Hansen counted the number of yeast cells suspended in a drop of liquid diluted with sterilized water. A volume of the diluted yeast was introduced into flasks containing sterilized wort, the degree of dilution being such that only a small proportion of the flasks became infected. The flasks were then well shaken, and the yeast cell or cells settled to the bottom, and gave rise to a separate yeast speck. Only those cultures which contained a single yeast speck were assumed to be pure cultivations. By this method several races of *Saccharomycetes* and brewery yeasts were isolated and described.

The next important advance was the substitution of solid for liquid media; due originally to Schroter. R. Koch subsequently improved the method. He introduced bacteria into liquid sterile nutrient gelatin. After being well shaken, the liquid was poured into a sterile glass Petrie dish and covered with a moist and sterile bell-jar. It was assumed that each separate speck contained a pure culture. Hansen pointed out that this was by no means the case, for it is more difficult to separate the cells from each other in the gelatin than in the liquid. To obtain an absolutely pure culture with certainty it is necessary, even when the gelatin method is employed, to start from a single cell. To effect this some of the nutrient gelatin containing yeast cells is placed on the under-surface of the cover-glass of the moist chamber. Those cells are accurately marked, the position of which is such that the colonies, to which they give rise, can grow to their full size without coming into contact with other colonies. The growth of the marked cells is kept under observation for three or four days, by which time the colonies will be large enough to be taken out of the chamber and placed in flasks. The contents of the flasks can then be introduced into larger flasks, and finally into an apparatus suitable for making enough yeast for technical purposes. Such, in brief, are the methods devised by that brilliant investigator Hansen; and these methods have not only been the basis on which our modern knowledge of the *Saccharomycetes* is founded, but are the only means of attack which the present-day observer has at his disposal.

From the foregoing it will be seen that the term fermentation has now a much wider significance than when it was applied to such changes as the decomposition of must or wort with the production of carbon dioxide and alcohol. Fermentation now includes all changes in organic compounds brought about by ferments elaborated in the living animal or vegetable cell. There are two distinct types of fermentation: (1) those brought about by living organisms (organized ferments), and (2) those brought about by non-living or unorganized ferments (enzymes). The first class include such changes as the alcoholic fermentation of sugar solutions, the acetic acid fermentation of alcohol, the lactic acid fermentation of milk sugar, and the putrefaction of animal and vegetable nitrogenous matter. The second class include all changes brought about by the agency of enzymes, such as the action of diastase on starch, invertase on cane sugar, glucase on maltose, &c. The actions are essentially hydrolytic.

Biological Aspect of Yeast.—The Saccharomycetes belong to that division of the Thallophyta called the Hyphomycetes or Fungi (*q.v.*). Two great divisions are recognized in the Fungi: (i.) the *Phycomycetes* or Algal Fungi, which retain a definitely sexual method of reproduction as well as asexual (vegetative) methods, and (ii.) the *Mycomycetes*, characterized by extremely reduced or very doubtful sexual reproduction. The Mycomycetes may be divided as follows: (A) forms bearing both sporangia and conidia (see Fungi), (B) forms bearing conidia only, *e.g.* the common mushroom. Division A comprises (*a*) the true *Ascomycetes*, of which the moulds Eurotium and Penicillium are examples, and (*b*) the *Hemiasci*, which includes the yeasts. The gradual disappearance of the sexual method of reproduction, as we pass upwards in the fungi from the points of their departure from the Algae, is an important fact, the last traces of sexuality apparently disappearing in the ascomycetes.

With certain rare exceptions the Saccharomycetes have three methods of asexual reproduction:—

1. The most common.—The formation of *buds* which separate to form new cells. A portion of the nucleus of the parent cell makes its way through the extremely narrow neck into the daughter cell. This method obtains when yeast is vigorously fermenting a saccharine solution.

2. A division by *fission* followed by Endogenous spore formation, characteristic of the Schizosaccharomycetes. Some species show fermentative power.

3. *Endospore* formation, the conditions for which are as follows: (1) suitable temperature, (2) presence of air, (3) presence of moisture, (4) young and vigorous cells, (5) a food supply in the case of one species at least is necessary, and is in no case prejudicial. In some cases a sexual act would appear to precede spore formation. In most cases four spores are formed within the cell by free formation. These may readily be seen after appropriate staining.

In some of the true Ascomycetes, such as *Penicillium glaucum*, the conidia if grown in saccharine solutions, which they have the power of fermenting, develop single cell yeast-like forms, and do not—at any rate for a time—produce again the characteristic branching mycelium. This is known as the *Torula* condition. It is supposed by some that Saccharomyces is a very degraded Ascomycete, in which the Torula condition has become fixed.

The yeast plant and its allies are saprophytes and form no chlorophyll. Their extreme reduction in form and loss of sexuality may be correlated with the saprophytic habit, the proteids and other organic material required for the growth and reproduction being appropriated ready synthesized, the plant having entirely lost the power of forming them for itself, as evidenced by the absence of chlorophyll. The beer yeast *S. cerevisiae*, is never found wild, but the wine yeasts occur abundantly in the soil of vineyards, and so are always present on the fruit, ready to ferment the expressed juice.

Chemical Aspect of Alcoholic Fermentation.—Lavoisier was the first investigator to study fermentation from a quantitative standpoint. He determined the percentages of carbon, hydrogen and oxygen in the sugar and in the products of fermentation, and concluded that sugar in fermenting breaks up into alcohol, carbonic acid and acetic acid. The elementary composition of sugar and alcohol was fixed in 1815 by analyses made by Gay-Lussac, Thénard and de Saussure. The first-mentioned chemist proposed the following formula to represent the change which takes place when sugar is fermented:—

$C_6H_{12}O_6$	=	$2CO_2$	+	$2C_2H_6O$.
Sugar.		Carbon dioxide.		Alcohol.

This formula substantially holds good to the present day, although a number of definite bodies other than carbon dioxide and alcohol occur in small and varying quantities, according to the conditions of the fermentation and the medium fermented. Prominent among these are glycerin and succinic acid. In this connexion Pasteur showed that 100 parts of cane sugar on inversion gave 105.4 parts of invert sugar, which, when fermented, yielded 51.1 parts alcohol, 49.4 carbonic acid, 0.7 succinic acid, 3.2 glycerin and 1.0 unestimated. A. Béchamp and E. Duclaux found that acetic acid is formed in small quantities during fermentation; aldehyde has also been detected. The higher alcohols such as propyl, isobutyl, amyl, capryl, oenanthyl and caproyl, have been identified; and the amount of these vary according to the different conditions of the fermentation. A number of esters are also produced. The characteristic flavour and odour of wines and spirits is dependent on the proportion of higher alcohols, aldehydes and esters which may be produced.

Certain yeasts exercise a reducing action, forming sulphuretted hydrogen, when sulphur is present. The “stinking fermentations” occasionally experienced in breweries probably arise from this, the free sulphur being derived from the hops. Other yeasts are stated to form sulphurous acid in must and wort. Another fact of considerable technical importance is, that the various races of yeast show considerable differences in the amount and proportion of fermentation products other than ethyl alcohol and carbonic acid which they produce. From these remarks it will be clear that to employ the most suitable kind of yeast for a given alcoholic fermentation is of fundamental importance in certain industries. It is beyond the scope of the present article to attempt to describe the different forms of budding fungi (Saccharomyces), mould fungi and bacteria which are capable of fermenting sugar solutions. Thus, six species isolated by Hansen, *Saccharomyces cerevisiae*, *S. Pasteurianus* I.,[1] II., III., and *S. ellipsoideus*, contained invertase and maltase, and can invert and subsequently ferment cane sugar and maltose. *S. exiguus* and *S. Ludwigii* contain only invertase and not maltase, and therefore ferment cane sugar but not maltose. *S. apiculatus* (a common wine yeast) contains neither of these enzymes, and only ferments solutions of glucose or laevulose.

Previously to Hansen’s work the only way of differentiating yeasts was by studying morphological differences with the aid of the microscope. Max Reess distinguished the species according to the appearance of the cells thus, the ellipsoidal cells were designated *Saccharomyces ellipsoideus*, the sausage-shaped *Saccharomyces Pasteurianus*, and so on. It was found by Hansen that the same species of yeast can assume different shapes; and it therefore became necessary to determine how the different varieties of yeast could be distinguished with certainty. The formation of spores in yeast (first discovered by T. Schwann in 1839) was studied by Hansen, who found that each species only developed spores between certain definite temperatures. The time taken for spore formation varies greatly; thus, at 52° F., *S. cerevisiae* takes 10, *S. Pasteurianus* I. and II. about 4, *S. Pasteurianus* III. about 7, and *S. ellipsoideus* about 4½ days. The formation of spores is used as an analytical method for determining whether a yeast is contaminated with another species,—for example: a sample of yeast is placed on a gypsum or porcelain block saturated with water; if in ten days at a temperature of 52° F. no spores make their appearance, the yeast in question may be regarded as *S. cerevisiae*, and not associated with *S. Pasteurianus* or *S. ellipsoideus*.

The formation of films on fermented liquids is a well-known phenomenon and common to all micro-organisms. A free still surface with a direct access of air are the necessary conditions. Hansen showed that the microscopic appearance of film cells of the same species of Saccharomycetes varies according to the temperature of growth; the limiting temperatures of film formation, as well as the time of its appearance for the different species, also vary.

In the zymo-technical industries the various species of yeast exhibit different actions during fermentations. A well-known instance of this is the “top” and “bottom” brewery fermentations (see Brewing). In a top fermentation—typical of English breweries—the yeast rises, in a bottom fermentation, as the phrase implies, it settles in the vessel. Sometimes a bottom yeast may for a time exhibit signs of a top fermentation. It has not, however, been possible to transform a typical top yeast into a permanent typical bottom yeast. There appear to be no true distinctive characteristics for these two types. Their selection for a particular purpose depends upon some special quality which they

possess; thus for brewing certain essentials are demanded as regards stability, clarification, taste and smell; whereas, in distilleries, the production of alcohol and a high multiplying power in the yeast are required. Culture yeasts have also been successfully employed in the manufacture of wine and cider. By the judicious selection of a type of yeast it is possible to improve the bouquet, and from an inferior must obtain a better wine or cider than would otherwise be produced.

Certain acid fermentations are of common occurrence. The *Bacterium acidi lacti* described by Pasteur decomposes milk sugar into lactic acid. *Bacillus amylobacter* usually accompanies the lactic acid organism, and decomposes lactic and other higher acids with formation of butyric acid. Moulds have been isolated which occasion the formation of citric acid from glucose. The production of acetic acid from alcohol has received much attention at the hands of investigators, and it has an important technical aspect in the manufacture of vinegar. The phenomenon of nitrification (see BACTERIOLOGY, AGRICULTURE and MANURE), *i.e.* the formation of nitrites and nitrates from ammonia and its compounds in the soil, was formerly held to be a purely chemical process, until Schloesing and Müntz suggested in 1877 that it was biological. It is now known that the action takes place in two stages; the ammonium salt is first oxidized to the nitrite stage and subsequently to the nitrate.

(J. L. B.)

1 Hansen found there were three species of spore-bearing Saccharomycetes and that these could be subdivided into varieties. Thus, *S. cerevisiae* I., *S. cerevisiae* II., *S. Pasteurianus* I., &c.

FERMO (anc. *Firmum Picenum*), a town and archiepiscopal see of the Marches, Italy, in the province of Ascoli Piceno, on a hill with a fine view, 1046 ft. above sea-level, on a branch from Porto S. Giorgio on the Adriatic coast railway. Pop. (1901) town, 16,577, commune 20,542. The summit of the hill was occupied by the citadel until 1446. It is crowned by the cathedral, reconstructed in 1227 by Giorgio da Como; the fine façade and campanile of this period still remain, and the side portal is good; the beautiful rose-window over the main door dates from 1348. In the porch are several good tombs, including one of 1366 by Tura da Imola, and also the modern monument of Giuseppe Colucci, a famous writer on the antiquities of Picenum. The interior has been modernized. The building is now surrounded by a garden, with a splendid view. Against the side of the hill was built the Roman theatre; scanty traces of an amphitheatre also exist. Remains of the city wall, of rectangular blocks of hard limestone, may be seen just outside the Porta S. Francesco; whether the walling under the Casa Porti belongs to them is doubtful. The medieval battlemented walls superposed on it are picturesque. The church of S. Francesco has a good tower and choir in brickwork of 1240, the rest having been restored in the 17th century. Under the Dominican monastery is a very large Roman reservoir in two storeys, belonging to the imperial period, divided into many chambers, at least 24 on each level, each 30 by 20 ft., for filtration (see G. de Minicis in *Annali dell' Istituto*, 1846, p. 46; 1858, p. 125). The piazza contains the Palazzo Comunale, restored in 1446, with a statue of Pope Sixtus V. in front of it. The Biblioteca Comunale contains a collection of inscriptions and antiquities. Porto S. Giorgio has a fine castle of 1269, blocking the valley which leads to Fermo.

The ancient Firmum Picenum was founded as a Latin colony in 264 B.C., after the conquest of the Picentes, as the local headquarters of the Roman power, to which it remained faithful. It was originally governed by five quaestors. It was made a colony with full rights after the battle of Philippi, the 4th legion being settled there. It lay at the junction of roads to Pausulae, Urbs Salvia and Asculum, being connected with the coast road by a short branch road from Castellum Firmanum (Porto S. Giorgio). In the 10th century it became the capital of the *Marchia Firmana*. In 1199 it became a free city, and remained independent until 1550, when it became subject to the papacy.

(T. As.)

FERMOY, a market town in the east riding of Co. Cork, Ireland, in the north-east parliamentary division, 21 m. by road N.E. of Cork, and 14 m. E. of Mallow by a branch of the Great Southern & Western railway. Pop. of urban district (1901) 6126. It is situated on the river Blackwater, which divides the town into two parts, the larger of which is on the southern bank, and there the trade of the town, which is chiefly in flour and agricultural produce, is mainly carried on. The town has several good streets and some noteworthy buildings. Of the latter, the most prominent are the military barracks on the north bank of the river, the Protestant church, the Roman Catholic cathedral and St Colman's Roman Catholic college. Fermoy rose to importance only at the beginning of the 19th century, owing entirely to the devotion of John Anderson, a citizen, on becoming landlord. The town is a centre for salmon and trout fishing on the Blackwater and its tributary the Funshion. The neighbouring scenery is attractive, especially in the Glen of Araglin, once famed for its ironworks.

FERN (from O. Eng. *fearn*, a word common to Teutonic languages, cf. Dutch *varen*, and Ger. *Farn*; the Indo-European root, seen in the Sanskrit *parna*, a feather, shows the primary meaning; cf. Gr. πτερόν, feather, πτερίς, fern), a name often used to denote the whole botanical class of Pteridophytes, including both the true ferns, Filicales, by far the largest group of this class in the existing flora, and the fern-like plants, Equisetales, Sphenophyllales, Lycopodiales (see PTERIDOPHYTA).

FERNANDEZ, ALVARO, one of the leading Portuguese explorers of the earlier 15th century, the age of Henry the Navigator. He was brought up (as a page or esquire) in the household of Prince Henry, and while still "young and audacious" took an important part in the discovery of "Guinea." He was a nephew of João Gonçalvez Zarco, who had rediscovered the Madeira group in Henry's service (1418-1420), and had become part-governor of Madeira and commander of Funchal; when the great expedition of 1445 sailed for West Africa he was entrusted by his uncle with a specially fine caravel, under particular injunctions to devote himself to discovery, the most cherished object of his princely master, so constantly thwarted. Fernandez, as a pioneer, outstripped all other servants of the prince at this time. After visiting the mouth of the Senegal, rounding Cape Verde, and landing in Goree (?), he pushed on to the "Cape of Masts" (Cabo dos Matos, or Mastos, so called from its tall spindle-palms), probably between Cape Verde and the Gambia, the most southerly point till then attained. Next year (1446) he returned, and coasted on much farther, to a bay one hundred and ten leagues "south" (*i.e.* S.S.E.) of Cape Verde, perhaps in the neighbourhood of Konakry and the Los Islands, and but little short of Sierra Leone. This record was not broken till 1461, when Sierra Leone was sighted and named. A wound, received from a poisoned arrow in an encounter with natives, now compelled Fernandez to return to Portugal, where he was received with distinguished honour and reward by Prince Henry and the regent of the kingdom, Henry's brother Pedro.

See Gomes Eannes de Azurara, *Chronica de ... Guiné*, chs. lxxv., lxxxvii.; João de Barros, *Asia*, Decade I., bk. i. chs. xiii., xiv.

FERNANDEZ, DIEGO, a Spanish adventurer and historian of the 16th century. Born at Palencia, he was educated for the church, but about 1545 he embarked for Peru, where he served in the royal army under Alonzo de Alvarado. Andres Hurtado de Mendoza, marquess of Cañeté, who became viceroy of Peru in 1655, bestowed on Fernandez the office of chronicler of Peru; and in this capacity he wrote a narrative of the insurrection of Francisco Hernandez Giron, of the rebellion of Gonzalo Pizarro, and of the administration of Pedro de la Gasca. The whole work, under the title *Primera y segunda parte de la Historia del Piru*, was published at Seville in 1571 and was dedicated to King Philip II. It is written in a clear and intelligible style, and with more art than is usual in the compositions of the time. It gives copious details, and, as he had access to the correspondence and official documents of the Spanish leaders, it is, although necessarily possessing bias, the fullest and most authentic record existing of the events it relates.

A notice of the work will be found in W.H. Prescott's *History of the Conquest of Peru* (new ed., London, 1902).

FERNANDEZ, JOHN (*João*, *Joam*), Portuguese traveller of the 15th century. He was perhaps the earliest of modern explorers in the upland of West Africa, and a pioneer of the European slave- and gold-trade of Guinea. We first hear of him (before 1445) as a captive of the Barbary Moors in the western Mediterranean; while among these he acquired a knowledge of Arabic, and probably conceived the design of exploration in the interior of the continent whose coasts the Portuguese were now unveiling. In 1445 he volunteered to stay in Guinea and gather what information he could for Prince Henry the Navigator; with this object he accompanied Antam Gonçalvez to the "River of Gold" (Rio d'Ouro, Rio de Oro) in 23° 40′ N., where he landed and went inland with some native shepherds. He stayed seven months in the country, which lay just within Moslem Africa, slightly north of Pagan Negroland (W. Sudan); he was taken off again by Antam Gonçalvez at a point farther down the coast, near the "Cape of Ransom" (Cape Mirik), in 19° 22′ 14″; and his account of his experiences proved of great interest and value, not only as to the natural features, climate, fauna and flora of the south-western Sahara, but also as to the racial affinities, language, script, religion, nomad habits, and trade of its inhabitants. These people—though Mahommedans, maintaining a certain trade in slaves, gold, &c., with the Barbary coast (especially with Tunis), and classed as "Arabs," "Berbers," and "Tawny

Moors”—did not then write or speak Arabic. In 1446 and 1447 John Fernandez accompanied other expeditions to the Rio d’Ouro and other parts of West Africa in the service of Prince Henry. He was personally known to Gomes Eannes de Azurara, the historian of this early period of Portuguese expansion; and from Azurara’s language it is clear that Fernandez’ revelation of unknown lands and races was fully appreciated at home.

See Azurara, *Chronica de ... Guiné*, chs. xxix., xxxii., xxxiv., xxxv., lxxvii., lxxviii., xc., xci., xciii.

FERNANDEZ, JUAN (fl. *c.* 1570), Spanish navigator and discoverer. While navigating the coasts of South America it occurred to him that the south winds constantly prevailing near the shore, and retarding voyages between Peru and Chile, might not exist farther out at sea. His idea proved correct, and by the help of the trade winds and some currents at a distance from the coast he sailed with such rapidity (thirty days) from Callao to Chile that he was apprehended on a charge of sorcery. His inquisitors, however, accepted his natural explanation of the marvel. During one of his voyages in 1563 (from Lima to Valdivia) Fernandez discovered the islands which now bear his name. He was so enchanted with their beauty and fertility that he solicited the concession of them from the Spanish government. It was granted in 1572, but a colony which he endeavoured to establish at the largest of them (Isla Mas-a-Tierra) soon broke up, leaving behind the goats, whose progeny were hunted by Alexander Selkirk. In 1574 Fernandez discovered St Felix and St Ambrose islands (in 27° S., 82° 7′ W.); and in 1576, while voyaging in the southern ocean, he is said to have sighted not only Easter Island, but also a continent, which was probably Australia or New Zealand if the story (rejected by most critics, but with reservations as to Easter Island) is to be accepted.

See J.L. Arias, *Memoir recommending to the king the conversion of the new discovered islands* (in Spanish, 1609; Eng. trans., 1773); Ulloa, *Relacion del Viaje*, bk. ii. ch. iv.; Alexander Dalrymple, *An Historical Collection of the several Voyages and Discoveries in the South Pacific Ocean* (London, 1769-1771); Fréville, *Voyages de la Mer du Sud par les Espagnols*.

FERNANDEZ, LUCAS, Spanish dramatist, was born at Salamanca about the middle of the 15th century. Nothing is known of his life, and he is represented by a single volume of plays, *Farsas y églogas al modo y estilo pastoril* (1514). In his secular pieces—a *comedia* and two *farsas*—he introduces few personages, employs the simplest possible action, and burlesques the language of the uneducated class; the secular and devout elements are skilfully intermingled in his two *Farsas del nascimiento de Nuestro Señor Jesucristo*. But the best of his dramatic essays is the *Auto de la Pasión*, a devout play intended to be given on Maundy Thursday. It is written in the manner of Encina, with less spontaneity, but with a sombre force to which Encina scarcely attained.

Fernandez’ plays were reprinted by the Spanish Academy in 1867.

FERNANDINA, a city, a port of entry, and the county-seat of Nassau county, Florida, U.S.A., a winter and summer resort, in the N.E. part of the state, 36 m. N.E. of Jacksonville, on Amelia Island (about 22 m. long and from ½ m. to 1½ m. wide), which is separated from the mainland by an arm of the sea, known as Amelia river and bay. Pop. (1900) 3245; (1905, state census), 4959 (2957 negroes); (1910) 3482. Fernandina is served by the Seaboard Air Line railway, and by steamship lines connecting with domestic and foreign ports; its harbour, which has the deepest water on the E. coast of Florida, opens on the N. to Cumberland Sound, which was improved by the Federal government, beginning in 1879, reducing freight rates at Fernandina by 25 to 40%. Under an act of 1907 the channel of Fernandina harbour, 1300 ft. wide at the entrance and about 2 m. long, was dredged to a depth of 20 to 24 ft. at mean low water with a width of 400 to 600 ft. The “inside” water-route between Savannah, Georgia and Fernandina is improved by the Federal government (1892 sqq.) and has a 7-ft. channel. The principal places of interest are “Amelia Beach,” more than 20 m. long and 200 ft. wide, connected with the city by a compact shell road nearly 2 m. long and by electric line; the Amelia Island lighthouse, in the N. end of the island, established in 1836 and rebuilt in 1880; Fort Clinch, at the entrance to the harbour; Cumberland Island, in Georgia, N. of Amelia Island, where land was granted to General Nathanael Greene after the War of American Independence by the state of Georgia; and Dungeness, the estate of the Carnegie family. Ocean City, on Amelia Beach, is a popular pleasure resort. The principal industries are the manufacture of lumber, cotton, palmetto fibres, and cigars, the canning of oysters, and the building and repair of railway cars. The foreign exports, chiefly

lumber, railway ties, cotton, phosphate rock, and naval stores, were valued at $9,346,704 in 1907; and the imports in 1907 at $116,514.

The harbour of Fernandina was known to the early explorers of Florida, and it was here that Dominic de Gourgues landed when he made his expedition against the Spanish at San Mateo in 1568. An Indian mission was established by Spanish priests later in the same century, but it was not successful. When Georgia was founded, General James Oglethorpe placed a military guard on Amelia Island to prevent sudden attack upon his colony by the Spanish, and the first blood shed in the petty warfare between Georgia and Florida was the murder of two unarmed members of the guard by a troop of Spanish soldiers and Indians in 1739. The first permanent settlement was made by the Spanish in 1808, at what is now the village of Old Fernandina, about 1 m. from the city. The island was a centre for smuggling during the period of the embargo and non-importation acts preceding the war of 1812. This was the pretext for General George Matthews (1738-1812) to gather a band of adventurers at St Mary's, Georgia, invade the island, and capture Fernandina in 1812. In the following year the American forces were withdrawn. In 1817 Gregor MacGregor, a filibuster who had aided the Spanish provinces of South America in their revolt against Spain, fitted out an expedition in Baltimore and seized Fernandina, but departed soon after. Later in the same year Louis Aury, another adventurer, appeared with a small force from Texas, and took possession of the place in the name of the Republic of Mexico. In the following year Aury was expelled by United States troops, who held Fernandina in trust for Spain until Florida was finally ceded to the United States in 1821. Fernandina was first incorporated in 1859. In 1861 Fort Clinch was seized by the Confederates, and Fernandina harbour was a centre of blockade running in the first two years of the Civil War. In 1862 the place was captured by a Federal naval force from Port Royal, South Carolina, commanded by Commodore S.F. Du Pont.

FERNANDO DE NORONHA [*Fernão de N.*], an island in the South Atlantic, 125 m. from the coast of Brazil, to which country it belongs, in 3° 50′ S., 32° 25′ W. It is about 7 m. long and 1½ wide, and some other islets lie adjacent to it. Its surface is rugged, and it contains a number of rocky hills from 500 to 700 ft. high, and one peak towering to the height of 1089 ft. It is formed of basalt, trachyte and phonolite, and the soil is very fertile. The climate is healthy. It is defended by forts, and serves as a place of banishment for criminals from Brazil. The next largest island of the group is about a mile in circumference, and the others are small barren rocks. The population is about 2000, all males, including some 1400 criminals, and a garrison of 150. Communication is maintained by steamer with Pernambuco. The island takes name from its Portuguese discoverer (1503), the count of Noronha.

FERNANDO PO, or Fernando Póo, a Spanish island on the west coast of Africa, in the Bight of Biafra, about 20 m. from the mainland, in 3° 12′ N. and 8° 48′ E. It is of volcanic origin, related to the Cameroon system of the adjacent mainland, is the largest island in the Gulf of Guinea, is 44 m. long from N.N.E. to S.S.W., about 20 m. broad, and has an area of about 780 sq. m. Fernando Po is noted for its beautiful aspect, seeming from a short distance to be a single mountain rising from the sea, its sides covered with luxuriant vegetation. The shores are steep and rocky and the coast plain narrow. This plain is succeeded by the slopes of the mountains which occupy the rest of the island and culminate in the magnificent cone of Clarence Peak or Pico de Santa Isabel (native name Owassa). Clarence Peak, about 10,000 ft. high,[1] is in the north-central part of the island. In the south Musolo Mt. attains a height of 7400 ft. There are numerous other peaks between 4000 and 6000 ft. high. The mountains contain craters and crater lakes, and are covered, most of them to their summits, with forests. Down the narrow intervening valleys rush torrential streams which have cut deep beds through the coast plains. The trees most characteristic of the forest are oil palms and tree ferns, but there are many varieties, including ebony, mahogany and the African oak. The undergrowth is very dense; it includes the sugar-cane and cotton and indigo plants. The fauna includes antelopes, monkeys, lemurs, the civet cat, porcupine, pythons and green tree-snakes, crocodiles and turtles. The climate is very unhealthy in the lower districts, where malarial fever is common. The mean temperature on the coast is 78° Fahr. and varies little, but in the higher altitudes there is considerable daily variation. The rainfall is very heavy except during November-January, which is considered the dry season.

The inhabitants number about 25,000. In addition to about 500 Europeans, mostly Spaniards and Cubans, they are of two classes, the Bubis or Bube (formerly also called Ediya), who occupy the interior, and the coast dwellers, a mixed Negro race, largely descended from slave ancestors with an admixture of Portuguese and Spanish blood, and known to the Bubis as "Portos"—a corruption of Portuguese. The Bubis are of Bantu stock and early immigrants from the mainland. Physically they are a finely developed race, extremely jealous of their independence and unwilling to take service of any

kind with Europeans. They go unclothed, smearing their bodies with a kind of pomatum. They stick pieces of wood in the lobes of their ears, wear numerous armlets made of ivory, beads or grass, and always wear hats, generally made of palm leaves. Their weapons are mainly of wood; stone axes and knives were in use as late as 1858. They have no knowledge of working iron. Their villages are built in the densest parts of the forest, and care is taken to conceal the approach to them. The Bubis are sportsmen and fishermen rather than agriculturists. The staple foods of the islanders generally are millet, rice, yams and bananas. Alcohol is distilled from the sugar-cane. The natives possess numbers of sheep, goats and fowls.

The principal settlement is Port Clarence (pop. 1500), called by the Spaniards Santa Isabel, a safe and commodious harbour on the north coast. In its graveyard are buried Richard Lander and several other explorers of West Africa. Port Clarence is unhealthy, and the seat of government has been removed to Basile, a small town 5 m. from Port Clarence and over 1000 ft. above the sea. On the west coast are the bay and port of San Carlos, on the east coast Concepcion Bay and town. The chief industry until the close of the 19th century was the collection of palm-oil, but the Spaniards have since developed plantations of cocoa, coffee, sugar, tobacco, vanilla and other tropical plants. The kola nut is also cultivated. The cocoa plantations are of most importance. The amount of cocoa exported in 1905 was 1800 tons, being 370 tons above the average export for the preceding five years. The total value of the trade of the island (1900-1905) was about £250,000 a year.

History.—The island was discovered towards the close of the 15th century by a Portuguese navigator called Fernão do Po, who, struck by its beauty, named it Formosa, but it soon came to be called by the name of its discoverer.[2] A Portuguese colony was established in the island, which together with Annobon was ceded to Spain in 1778. The first attempts of Spain to develop the island ended disastrously, and in 1827, with the consent of Spain, the administration of the island was taken over by Great Britain, the British "superintendent" having a Spanish commission as governor. By the British Fernando Po was used as a naval station for the ships engaged in the suppression of the slave trade. The British headquarters were named Port Clarence and the adjacent promontory Cape William, in honour of the duke of Clarence (William IV.). In 1844 the Spaniards reclaimed the island, refusing to sell their rights to Great Britain. They did no more at that time, however, than hoist the Spanish flag, appointing a British resident, John Beecroft, governor. Beecroft, who was made British consul in 1849, died in 1854. During the British occupation a considerable number of Sierra Leonians, West Indians and freed slaves settled in the island, and English became and remains the common speech of the coast peoples. In 1858 a Spanish governor was sent out, and the Baptist missionaries who had laboured in the island since 1843 were compelled to withdraw. They settled in Ambas Bay on the neighbouring mainland (see Cameroon). The Jesuits who succeeded the Baptists were also expelled, but mission and educational work is now carried on by other Roman Catholic agencies, and (since 1870) by the Primitive Methodists. In 1879 the Spanish government recalled its officials, but a few years later, when the partition of Africa was being effected, they were replaced and a number of Cuban political prisoners were deported thither. Very little was done to develop the resources of the island until after the loss of the Spanish colonies in the West Indies and the Pacific, when Spain turned her attention to her African possessions. Stimulated by the success of the Portuguese cocoa plantations in the neighbouring island of St Thomas, the Spaniards started similar plantations, with some measure of success. The strategical importance and commercial possibilities of the island caused Germany and other powers to approach Spain with a view to its acquisition, and in 1900 the Spaniards gave France, in return for territorial concessions on the mainland, the right of pre-emption over the island and her other West African possessions.

The administration of the island is in the hands of a governor-general, assisted by a council, and responsible to the ministry of foreign affairs at Madrid. The governor-general has under his authority the sub-governors of the other Spanish possessions in the Gulf of Guinea, namely, the Muni River Settlement, Corisco and Annobon (see those articles). None of these possessions is self-supporting.

See E. d'Almonte, "Someras Notas ... de la isla de Fernando Póo y de la Guinea continental española," in *Bol. Real. Soc. Geog.* of Madrid (1902); and a further article in the *Riv. Geog. Col.* of Madrid (1908); E.L. Vilches, "Fernando Póo y la Guinea española," in the *Bol. Real. Soc. Geog.* (1901); San Javier, *Tres Años en Fernando Póo* (Madrid, 1875); O. Baumann, *Eine africanische Tropeninsel: Fernando Póo und die Bube* (Vienna, 1888); Sir H.H. Johnston, *George Grenfell and the Congo ... and Notes on Fernando Pô* (London, 1908); Mary H. Kingsley, *Travels in West Africa*, ch. iii. (London, 1897); T.J. Hutchinson, sometime British Consul at Fernando Po, *Impressions of Western Africa*, chs. xii. and xiii. (London, 1858), and *Ten Years' Wanderings among the Ethiopians*, chs. xvii. and xviii. (London, 1861). For the Bubi language see J. Clarke, *The Adeeyah Vocabulary* (1841), and *Introduction to the Fernandian Tongue* (1848). Consult also *Wanderings in West Africa* (1863) and other books written by Sir Richard Burton as the result of his consulship at Fernando Po, 1861-1865, and the works cited under Muni River Settlements.

1 The heights given by explorers vary from 9200 to 10,800 ft.

2 Some authorities maintain that another Portuguese seaman, Lopes Gonsalves, was the discoverer of the island. The years 1469, 1471 and 1486 are variously given as those of the date of the discovery.

FERNEL, JEAN FRANÇOIS (1497-1558), French physician, was born at Clermont in 1497, and after receiving his early education at his native town, entered the college of Sainte-Barbe, Paris. At first he devoted himself to mathematical and astronomical studies; his *Cosmotheoria* (1528) records a determination of a degree of the meridian, which he made by counting the revolutions of his carriage wheels on a journey between Paris and Amiens. But from 1534 he gave himself up entirely to medicine, in which he graduated in 1530. His extraordinary general erudition, and the skill and success with which he sought to revive the study of the old Greek physicians, gained him a great reputation, and ultimately the office of physician to the court. He practised with great success, and at his death in 1558 left behind him an immense fortune. He also wrote *Monalosphaerium, sive astrolabii genus, generalis horarii structura et usus* (1526); *De proportionibus* (1528); *De evacuandi ratione* (1545); *De abditis rerum causis* (1548); and *Medicina ad Henricum II.* (1554).

FERNIE, an important city in the east Kootenay district of British Columbia. Pop. about 4000. It is situated on the Crow's Nest branch of the Canadian Pacific railway, at the junction of Coal Creek with the Elk river, and owes its importance to the extensive coal mines in its vicinity. There are about 500 coke ovens in operation at Fernie, which supply most of the smelting plants in southern British Columbia with fuel.

FERNOW, KARL LUDWIG (1763-1808), German art-critic and archaeologist, was born in Pomerania on the 19th of November 1763. His father was a servant in the household of the lord of Blumenhagen. At the age of twelve he became clerk to a notary, and was afterwards apprenticed to a druggist. While serving his time he had the misfortune accidentally to shoot a young man who came to visit him; and although through the intercession of his master he escaped prosecution, the untoward event weighed heavily on his mind, and led him at the close of his apprenticeship to quit his native place. He obtained a situation at Lübeck, where he had leisure to cultivate his natural taste for drawing and poetry. Having formed an acquaintance with the painter Carstens, whose influence was an important stimulus and help to him, he renounced his trade of druggist, and set up as a portrait-painter and drawing-master. At Ludwigslust he fell in love with a young girl, and followed her to Weimar; but failing in his suit, he went next to Jena. There he was introduced to Professor Reinhold, and in his house met the Danish poet Baggesen. The latter invited him to accompany him to Switzerland and Italy, a proposal which he eagerly accepted (1794) for the sake of the opportunity of furthering his studies in the fine arts. On Baggesen's return to Denmark, Fernow, assisted by some of his friends, visited Rome and made some stay there. He now renewed his intercourse with Carstens, who had settled at Rome, and applied himself to the study of the history and theory of the fine arts and of the Italian language and literature. Making rapid progress, he was soon qualified to give a course of lectures on archaeology, which was attended by the principal artists then at Rome. Having married a Roman lady, he returned in 1802 to Germany, and was appointed in the following year professor extraordinary of Italian literature at Jena. In 1804 he accepted the post of librarian to Amelia, duchess-dowager of Weimar, which gave him the leisure he desired for the purpose of turning to account the literary and archaeological researches in which he had engaged at Rome. His most valuable work, the *Römische Studien*, appeared in 3 vols. (1806-1808). Among his other works are—*Das Leben des Künstlers Carstens* (1806), *Ariosto's Lebenslauf* (1809), and *Francesco Petrarca* (1818). Fernow died at Weimar, December 4, 1808.

A memoir of his life by Johanna Schopenhauer, mother of the philosopher, Arthur Schopenhauer, appeared in 1810, and a complete edition of his works in 1829.

FEROZEPUR, or FIROZPUR, a town and district of British India, in the Jullundur division of the Punjab. The town is a railway junction connecting the North-Western and Rajputana railways, and is situated about 4 m. from the present south bank of the Sutlej. Pop. (1901) 49,341. The arsenal is the largest in India, and Ferozepur is the headquarters of a brigade in the 3rd division of the northern army corps. British rule was first established at Ferozepur in 1835, when, on the failure of heirs to the Sikh family who possessed it, a small territory 86 m. in extent became an escheat to the British government, and the present district has been gradually formed around this nucleus. The strategic importance of Ferozepur was at this time very great; and when, in 1839, Captain (afterwards Sir Henry) Lawrence took charge of the station as political officer, it was the outpost of British India in the direction of the Sikh power. Ferozepur accordingly became the scene of operations during the first

Sikh War. The Sikhs crossed the Sutlej in December 1845, and were defeated successively at Mudki, Ferozepur, Aliwal and Sobraon; after which they withdrew into their own territory, and peace was concluded at Lahore. At the time of the mutiny Ferozepur cantonments contained two regiments of native infantry and a regiment of native cavalry, together with the 61st Foot and two companies of European artillery. One of the native regiments, the 57th, was disarmed; but the other, the 45th, broke into mutiny, and, after an unsuccessful attempt to seize the magazine, which was held by the Europeans, proceeded to join the rebel forces in Delhi. Throughout the mutiny Ferozepur remained in the hands of the English.

Ferozepur has rapidly advanced in material prosperity of late years, and is now a very important seat of commerce, trade being mainly in grain. The main streets of the city are wide and well paved, and the whole is enclosed by a low brick wall. Great improvements have been made in the surroundings of the city. The cantonment lies 2 m. to the south of the city, and is connected with it by a good metalled road.

The District of Ferozepur comprises an area of 4302 sq. m. The surface is level, with the exception of a few sand-hills in the south and south-east. The country consists of two distinct tracts, that liable to annual fertilizing inundations from the Sutlej, known as the *bhet*, and the *rohi* or upland tract. The only river is the Sutlej, which runs along the north-western boundary. The principal crops are wheat, barley, millet, gram, pulses, oil-seeds, cotton, tobacco, &c. The manufactures are of the humblest kind, consisting chiefly of cotton and wool-weaving, and are confined entirely to the supply of local wants. The Lahore and Ludhiāna road runs for 51 m. through the district, and forms an important trade route. The North-Western, the Southern Punjab, and a branch of the Rajputana-Malwa railways serve the district. The other important towns and seats of commerce are Fazilka (pop. 8505), Dharmkot (6731), Moga (6725), and Muktsar (6389). Owing principally to the dryness of its climate, Ferozepur has the reputation of being an exceptionally healthy district. In September and October, however, after the annual rains, the people suffer a good deal from remittent fever. In 1901 the population was 958,072. Distributaries of the Sirhind canal water the whole district.

FEROZESHAH, a village in the Punjab, India, notable as the scene of one of the chief battles in the first Sikh War. The battle immediately succeeded that of Mudki, and was fought on the 21st and 22nd of December 1845. During its course Sir Hugh Gough, the British commander, was overruled by the governor-general, Lord Hardinge, who was acting as his second in command (see Sikh Wars). At the end of the first day's fighting the British had occupied the Sikh position, but had not gained an undisputed victory. On the following morning the battle was resumed, and the Sikhs were reinforced by a second army under Tej Singh; but through cowardice or treachery Tej Singh withdrew at the critical moment, leaving the field to the British. In the course of the fight the British lost 694 killed and 1721 wounded, the vast majority being British troops, while the Sikhs lost 100 guns and about 5000 killed and wounded.

FERRAND, ANTOINE FRANÇOIS CLAUDE, Comte (1751-1825), French statesman and political writer, was born in Paris on the 4th of July 1751, and became a member of the parlement of Paris at eighteen. He left France with the first party of emigrants, and attached himself to the prince of Condé; later he was a member of the council of regency formed by the comte de Provence after the death of Louis XVI. He lived at Regensburg until 1801, when he returned to France, though he still sought to serve the royalist cause. In 1814 Ferrand was made minister of state and postmaster-general. He countersigned the act of sequestration of Napoleon's property, and introduced a bill for the restoration of the property of the emigrants, establishing a distinction, since become famous, between royalists of *la ligne droite* and those of *la ligne courbe*. At the second restoration Ferrand was again for a short time postmaster-general. He was also made a peer of France, member of the privy council, grand-officer and secretary of the orders of Saint Michel and the Saint Esprit, and in 1816 member of the Academy, He continued his active support of ultra-royalist views until his death, which took place in Paris on the 17th of January 1825.

Besides a large number of political pamphlets, Ferrand is the author of *L'Esprit de l'histoire, ou Lettres d'un père à son fils sur la manière d'étudier l'histoire* (4 vols., 1802), which reached seven editions, the last number in 1826 having prefixed to it a biographical sketch of the author by his nephew Héricart de Thury; *Éloge historique de Madame Élisabeth de France* (1814); *Œuvres dramatiques* (1817); *Théorie des révolutions rapprochée des événements qui en ont été l'origine, le développement, ou la suite* (4 vols., 1817); and *Histoire des trois démembrements de la Pologne, pour faire suite à l'Histoire de l'anarchie de Pologne par Rulhière* (3 vols., 1820).

FERRAR, NICHOLAS (1592-1637), English theologian, was born in London in 1592 and educated at Clare Hall, Cambridge, graduating in 1610. He was obliged for some years to travel for his health, but on returning to England in 1618 became actively connected with the Virginia Company. When this company was deprived of its patent in 1623 Ferrar turned his attention to politics, and was elected to parliament. But he soon decided to devote himself to a religious life; he purchased the manor of Little Gidding in Huntingdonshire, where he organized a small religious community. Here, in 1626, he was ordained a deacon by Laud, and declining preferment, he lived an austere, almost monastic life of study and good works. He died on the 4th of December 1637, and the house was despoiled and the community broken up ten years later. There are extant a number of “harmonies” of the Gospel, printed and bound by the community, two of them by Ferrar himself. One of the latter was made for Charles I. on his request, after a visit in 1633 to see the “Arminian Nunnery at Little Gidding,” which had been the subject of some scandalous—and undeserved—criticism.

FERRAR, ROBERT (d. 1555), bishop of St David’s and martyr, born about the end of the 15th century of a Yorkshire family, is said to have been educated at Cambridge, whence he proceeded to Oxford and became a canon regular of St Augustine. He came under the influence of Thomas Gerrard and Lutheran theology, and was compelled to bear a faggot with Anthony Dalaber and others in 1528. He graduated B.D. in 1533, accompanied Bishop Barlow on his embassy to Scotland in 1535, and was made prior of St Oswald’s at Nostell near Pontefract. At the dissolution he surrendered his priory without compunction to the crown, and received a liberal pension. For the rest of Henry’s reign his career is obscure; perhaps he fled abroad on the enactment of the Six Articles. He certainly married, and is said to have been made Cranmer’s chaplain, and bishop of Sodor and Man; but he was never consecrated to that see.

After the accession of Edward VI., Ferrar was, probably through the influence of Bishop Barlow, appointed chaplain to Protector Somerset, a royal visitor, and bishop of St David’s on Barlow’s translation to Bath and Wells in 1548. He was the first bishop appointed by letters patent under the act passed in 1547 without the form of capitular election; and the service performed at his consecration was also novel, being in English; he also preached at St Paul’s on the 11th of November clad only as a priest and not as a bishop, and inveighed against vestments and altars. At St David’s he had trouble at once with his singularly turbulent chapter, who, finding that he was out of favour at court since Somerset’s fall in 1549, brought a long list of fantastic charges against him. He had taught his child to whistle, dined with his servants, talked of “worldly things such as baking, brewing, enclosing, ploughing and mining,” preferred walking to riding, and denounced the debasement of the coinage. He seems to have been a kindly, homely, somewhat feckless person like many an excellent parish priest, who did not conceal his indignation at some of Northumberland’s deeds. He had voted against the act of November 1549 for a reform of the canon law, and on a later occasion his nonconformity brought him into conflict with the Council; he was also the only bishop who satisfied Hooper’s test of sacramental orthodoxy. The Council accordingly listened to the accusations of Ferrar’s chapter, and in 1552 he was summoned to London and imprisoned on a charge of *praemunire* incurred by omitting the king’s authority in a commission which he issued for the visitation of his diocese.

Imprisonment on such a charge under Northumberland might have been expected to lead to liberation under Mary. But Ferrar had been a monk and was married. Even so, it is difficult to see on what legal ground he was kept in the queen’s bench prison after July 1553; for Mary herself was repudiating the royal authority in religion. Ferrar’s marriage accounts for the loss of his bishopric in March 1554, and his opinions for his further punishment. As soon as the heresy laws and ecclesiastical jurisdiction had been re-established, Ferrar was examined by Gardiner, and then with signal indecency sent down to be tried by Morgan, his successor in the bishopric of St David’s. He appealed from Morgan’s sentence to Pole as papal legate, but in vain, and was burnt at Caermarthen on the 30th of March 1555. It was perhaps the most wanton of all Mary’s acts of persecution; Ferrar had been no such protagonist of the Reformation as Cranmer, Ridley, Hooper and Latimer; he had had nothing to do with Northumberland’s or Wyatt’s conspiracy. He had taken no part in politics, and, so far as is known, had not said a word or raised a hand against Mary. He was burnt simply because he could not change his religion with the law and would not pretend that he could; and his execution is a complete refutation of the idea that Mary only persecuted heretics because and when they were traitors.

See *Dictionary of National Biography*, xviii. 380-382, and authorities there cited. Also Acts of the Privy Council (1550-1554); H.A.L. Fisher, *Political History of England*, vol. vi.

(A. F. P.)

FERRARA, a city and archiepiscopal see of Emilia, Italy, capital of the province of Ferrara, 30 m. N.N.E. of Bologna, situated 30 ft. above sea-level on the Po di Vomano, a branch channel of the main stream of the Po, which is 3½ m. N. Pop. (1901) 32,968 (town), 86,392 (commune). The town has broad streets and numerous palaces, which date from the 16th century, when it was the seat of the court of the house of Este, and had, it is said, 100,000 inhabitants.

The most prominent building is the square castle of the house of Este, in the centre of the town, a brick building surrounded by a moat, with four towers. It was built after 1385 and partly restored in 1554; the pavilions on the top of the towers date from the latter year. Near it is the hospital of S. Anna, where Tasso was confined during his attack of insanity (1579-1586). The Palazzo del Municipio, rebuilt in the 18th century, was the earlier residence of the Este family. Close by is the cathedral of S. Giorgio, consecrated in 1135, when the Romanesque lower part of the main façade and the side façades were completed. It was built by Guglielmo degli Adelardi (d. 1146), who is buried in it. The upper part of the main façade, with arcades of pointed arches, dates from the 13th century, and the portal has recumbent lions and elaborate sculptures above. The interior was restored in the baroque style in 1712. The campanile, in the Renaissance style, dates from 1451-1493, but the last storey was added at the end of the 16th century. Opposite the cathedral is the Gothic Palazzo della Ragione, in brick (1315-1326), now the law-courts. A little way off is the university, which has faculties of law, medicine and natural science (hardly 100 students in all); the library has valuable MSS., including part of that of the *Orlando Furioso* and letters by Tasso. The other churches are of less interest than the cathedral, though S. Francesco, S. Benedetto, S. Maria in Vado and S. Cristoforo are all good early Renaissance buildings. The numerous early Renaissance palaces, often with good terra-cotta decorations, form quite a feature of Ferrara; few towns of Italy have so many of them proportionately, though they are mostly comparatively small in size. Among them may be noted those in the N. quarter (especially the four at the intersection of its two main streets), which was added by Ercole (Hercules) I. in 1492-1505, from the plans of Biagio Rossetti, and hence called the “Addizione Erculea.” The finest of these is the Palazzo de’ Diamanti, so called from the diamond points into which the blocks of stone with which it is faced are cut. It contains the municipal picture gallery, with a large number of pictures of artists of the school of Ferrara. This did not require prominence until the latter half of the 15th century, when its best masters were Cosimo Tura (1432-1495), Francesco Cossa (d. 1480) and Ercole dei Roberti (d. 1496). To this period are due famous frescoes in the Palazzo Schifanoia, which was built by the Este family; those of the lower row depict the life of Borso of Este, in the central row are the signs of the zodiac, and in the upper are allegorical representations of the months. The vestibule was decorated with stucco mouldings by Domenico di Paris of Padua. The building also contains fine choir-books with miniatures, and a collection of coins and Renaissance medals. The simple house of Ariosto, erected by himself after 1526, in which he died in 1532, lies farther west. The best Ferrarese masters of the 16th century of the Ferrara school were Lorenzo Costa (1460-1535), and Dosso Dossi (1479-1542), the most eminent of all, while Benvenuto Tisi (Garofalo, 1481-1559) is somewhat monotonous and insipid.

The origin of Ferrara is uncertain, and probabilities are against the supposition that it occupies the site of the ancient Forum Alieni. It was probably a settlement formed by the inhabitants of the lagoons at the mouth of the Po. It appears first in a document of Aistulf of 753 or 754 as a city forming part of the exarchate of Ravenna. After 984 we find it a fief of Tedaldo, count of Modena and Canossa, nephew of the emperor Otho I. It afterwards made itself independent, and in 1101 was taken by siege by the countess Matilda. At this time it was mainly dominated by several great families, among them the Adelardi.

In 1146 Guglielmo, the last of the Adelardi, died, and his property passed, as the dowry of his niece Marchesella, to Azzolino d’ Este. There was considerable hostility between the newly entered family and the Salinguerra, but after considerable struggles Azzo Novello was nominated perpetual podestà in 1242; in 1259 he took Ezzelino of Verona prisoner in battle. His grandson, Obizzo II. (1264-1293), succeeded him, and the pope nominated him captain-general and defender of the states of the Church; and the house of Este was from henceforth settled in Ferrara. Niccolò III. (1393-1441) received several popes with great magnificence, especially Eugene IV., who held a council here in 1438. His son Borso received the fiefs of Modena and Reggio from the emperor Frederick III. as first duke in 1452 (in which year Girolamo Savonarola was born here), and in 1470 was made duke of Ferrara by Pope Paul II. Ercole I. (1471-1505) carried on a war with Venice and increased the magnificence of the city. His son Alphonso I. married Lucrezia Borgia, and continued the war with Venice with success. In 1509 he was excommunicated by Julius II., and attacked the pontifical army in 1512 outside Ravenna, which he took. Gaston de Foix fell in the battle, in which he was supporting Alphonso. With the succeeding popes he was able to make peace. He was the patron of Ariosto from 1518 onwards. His son Ercole II. married Renata, daughter of Louis XII. of France; he too embellished Ferrara during his reign (1534-1559). His son Alphonso II. married Barbara, sister of the emperor Maximilian II. He raised the glory of Ferrara to its highest point, and was the patron of Tasso and Guarini, favouring, as the princes of his house had always done, the arts and sciences. He had no legitimate male heir, and in 1597 Ferrara was claimed as a vacant fief by Pope Clement VIII., as was also Comacchio. A fortress was constructed by him on the site of the castle of Tedaldo, at the W. angle of the town. The town remained a part of the states of the Church, the fortress being occupied by an Austrian garrison from 1832 until 1859, when it became part of the kingdom of Italy.

A considerable area within the walls of Ferrara is unoccupied by buildings, especially on the north, where, the handsome Renaissance church of S. Cristoforo, with the cemetery, stands; but modern

times have brought a renewal of industrial activity. Ferrara is on the main line from Bologna to Padua and Venice, and has branches to Ravenna and Poggio Rusco (for Suzzara).

See G. Agnelli, *Ferrara e Pomposa* (Bergamo, 1902); E.G. Gardner, *Dukes and Poets of Ferrara* (London, 1904).

FERRARA-FLORENCE, COUNCIL OF (1438 ff.). The council of Ferrara and Florence was the culmination of a series of futile medieval attempts to reunite the Greek and Roman churches. The emperor, John VI. Palaeologus, had been advised by his experienced father to avoid all serious negotiations, as they had invariably resulted in increased bitterness; but John, in view of the rapid dismemberment of his empire by the Turks, felt constrained to seek a union. The situation was, however, complicated by the strife which broke out between the pope (Eugenius IV.) and the oecumenical council of Basel. Both sides sent embassies to the emperor at Constantinople, as both saw the importance of gaining the recognition and support of the East, for on this practically depended the victory in the struggle between papacy and council for the supreme jurisdiction over the church (see Councils). The Greeks, fearing the domination of the papacy, were at first more favourably inclined toward the conciliar party; but the astute diplomacy of the Roman representatives, who have been charged by certain Greek writers with the skilful use of money and of lies, won over the emperor. With a retinue of about 700 persons, entertained in Italy at the pope's expense, he reached Ferrara 284
early in March 1438. Here a council had been formally opened in January by the papal party, a bull of the previous year having promptly taken advantage of the death of the Emperor Sigismund by ordering the removal of the council of Basel to Ferrara; and one of the first acts of the assemblage at Ferrara had been to excommunicate the remnant at Basel. A month after the coming of the Greeks, the Union Synod was solemnly inaugurated on the 9th of April 1438. After six months of negotiation, the first formal session was held on the 8th of October, and on the 14th the real issues were reached. The time-honoured question of the *filioque* was still in the foreground when it seemed for several reasons advisable to transfer the council to Florence: Ferrara was threatened by condottieri, the pest was raging; Florence promised a welcome subvention, and a situation further inland would make it more difficult for uneasy Greek bishops to flee the synod.

The first session at Florence and the seventeenth of the union council took place on the 26th of February 1439; there ensued long debates and negotiations on the *filioque*, in which Markos Eugenikos, archbishop of Ephesus, spoke for the irreconcilables; but the Greeks under the leadership of Bessarion, archbishop of Nicaea, and Isidor, metropolitan of Kiev, at length made a declaration on the *filioque* (4th of June), to which all save Markos Eugenikos subscribed. On the next topic of importance, the primacy of the pope, the project of union nearly suffered shipwreck; but here a vague formula was finally constructed which, while acknowledging the pope's right to govern the church, attempted to safeguard as well the rights of the patriarchs. On the basis of the above-mentioned agreements, as well as of minor discussions as to purgatory and the Eucharist, the decree of union was drawn up in Latin and in Greek, and signed on the 5th of July by the pope and the Greek emperor, and all the members of the synod save Eugenikos and one Greek bishop who had fled; and on the following day it was solemnly published in the cathedral of Florence. The decree explains the *filioque* in a manner acceptable to the Greeks, but does not require them to insert the term in their symbol; it demands that celebrants follow the custom of their own church as to the employment of leavened or unleavened bread in the Eucharist. It states essentially the Roman doctrine of purgatory, and asserts the world-wide primacy of the pope as the "true vicar of Christ and the head of the whole Church, the Father and teacher of all Christians"; but, to satisfy the Greeks, inconsistently adds that all the rights and privileges of the Oriental patriarchs are to be maintained unimpaired. After the consummation of the union the Greeks remained in Florence for several weeks, discussing matters such as the liturgy, the administration of the sacraments, and divorce; and they sailed from Venice to Constantinople in October.

The council, however, desirous of negotiating unions with the minor churches of the East, remained in session for several years, and seems never to have reached a formal adjournment. The decree for the Armenians was published on the 22nd of November 1439; they accepted the *filioque* and the Athanasian creed, rejected Monophysitism and Monothelitism, agreed to the developed scholastic doctrine concerning the seven sacraments, and conformed their calendar to the Western in certain points. On the 26th of April 1441 the pope announced that the synod would be transferred to the Lateran; but before leaving Florence a union was negotiated with the Oriental Christians known as Jacobites, through a monk named Andreas, who, at least as regards Abyssinia, acted in excess of his powers. The *Decretum pro Jacobitis*, published on the 4th of February 1442, is, like that for the Armenians, of high dogmatic interest, as it summarizes the doctrine of the great medieval scholastics on the points in controversy. The decree for the Syrians, published at the Lateran on the 30th of September 1444, and those for the Chaldeans (Nestorians) and the Maronites (Monothelites), published at the last known session of the council on the 7th of August 1445, added nothing of doctrinal importance. Though the direct results of these unions were the restoration of prestige to the absolutist papacy and the bringing of Byzantine men of letters, like Bessarion, to the West, the outcome was on the whole disappointing. Of the complicated history of the "United" churches of the

East it suffices to say that Rome succeeded in securing but fragments, though important fragments, of the greater organizations. As for the Greeks, the union met with much opposition, particularly from the monks, and was rejected by three Oriental patriarchs at a synod of Jerusalem in 1443; and after various ineffective attempts to enforce it, the fall of Constantinople in 1453 put an end to the endeavour. As Turkish interests demanded the isolation of the Oriental Christians from their western brethren, and as the orthodox Greek nationalists feared Latinization more than Mahommedan rule, a patriarch hostile to the union was chosen, and a synod of Constantinople in 1472 formally rejected the decisions of Florence.

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(W. W. R.*)

FERRARI, GAUDENZIO (1484-1549), Italian painter and sculptor, of the Milanese, or more strictly the Piedmontese, school, was born at Valduggia, Piedmont, and is said (very dubiously) to have learned the elements of painting at Vercelli from Girolamo Giovenone. He next studied in Milan, in the school of Scotto, and some say of Luini; towards 1504 he proceeded to Florence, and afterwards (it used to be alleged) to Rome. His pictorial style may be considered as derived mainly from the old Milanese school, with a considerable tinge of the influence of Da Vinci, and later on of Raphael; in his personal manner there was something of the demonstrative and fantastic. The gentler qualities diminished, and the stronger intensified, as he progressed. By 1524 he was at Varallo in Piedmont, and here, in the chapel of the Sacro Monte, the sanctuary of the Piedmontese pilgrims, he executed his most memorable work. This is a fresco of the Crucifixion, with a multitude of figures, no less than twenty-six of them being modelled in actual relief, and coloured; on the vaulted ceiling are eighteen lamenting angels, powerful in expression. Other leading examples are the following. In the Royal Gallery, Turin, a "Pietà," an able early work. In the Brera Gallery, Milan, "St Katharine miraculously preserved from the Torture of the Wheel," a very characteristic example, hard and forcible in colour, thronged in composition, turbulent in emotion; also several frescoes, chiefly from the church of Santa Maria della Pace, three of them being from the history of Joachim and Anna. In the cathedral of Vercelli, the choir, the "Virgin with Angels and Saints under an Orange Tree." In the refectory of San Paolo, the "Last Supper." In the church of San Cristoforo, the transept (in 1532-1535), a series of paintings in which Ferrari's scholar Lanini assisted him; by Ferrari himself are the "Birth of the Virgin," the "Annunciation," the "Visitation," the "Adoration of the Shepherds and Kings," the "Crucifixion," the "Assumption of the Virgin," all full of life and decided character, though somewhat mannered. In the Louvre, "St Paul Meditating." In Varallo, convent of the Minorites (1507), a "Presentation in the Temple," and "Christ among the Doctors," and (after 1510) the "History of Christ," in twenty-one subjects; also an ancona in six compartments, named the "Ancona di San Gaudenzio." In Santa Maria di Loreto, near Varallo (after 1527), an "Adoration." In the church of Saronno, near Milan, the cupola (1535), a "Glory of Angels," in which the beauty of the school of Da Vinci alternates with bravura of foreshortenings in the mode of Correggio. In Milan, Santa Maria delle Grazie (1542), the "Scourging of Christ," an "Ecce Homo" and a "Crucifixion." The "Scourging," or else a "Last Supper," in the Passione of Milan (unfinished), is regarded as Ferrari's latest work. He was a very prolific painter, distinguished by strong expression, animation and fulness of composition, and abundant invention; he was skilful in painting horses, and his decisive rather hard colour is marked by a partiality for shot tints in drapery. In general character, his work appertains more to the 15th than the 16th century. His subjects were always of the sacred order. Ferrari's death took place in Milan. Besides Lanini, already mentioned, Andrea Solario, Giambattista della Cerva and Fermo Stella were three of his principal scholars. He is represented to us as a good man, attached to his country and his art, jovial and sometimes facetious, but an enemy of scandal. The reputation which he enjoyed soon after his death was very great, but it has not fully stood the test of time. Lomazzo went so far as to place him seventh among the seven prime painters of Italy.

See G. Bordiga, two works concerning *Gaudenzio Ferrari* (1821 and 1835); G. Colombo, *Vita ed*

opere di Gaudenzio Ferrari (1881); Ethel Halsey, *Gaudenzio Ferrari* (in the series *Great Masters*, 1904).

There was another painter nearly contemporary with Gaudenzio, Difendente Ferrari, also of the Lombard school. His celebrity is by no means equal to that of Gaudenzio; but *Kugler* (1887, as edited by Layard) pronounced him to be "a good and original colourist, and the best artist that Piedmont has produced."

(W. M. R.)

FERRARI, GIUSEPPE (1812-1876), Italian philosopher, historian and politician, was born at Milan on the 7th of March 1812, and died in Rome on the 2nd of July 1876. He studied law at Pavia, and took the degree of doctor in 1831. A follower of Romagnosi (d. 1835) and Giovan Battista Vico (*q.v.*), his first works were an article in the *Biblioteca Italiana* entitled "Mente di Gian Domenico Romagnosi" (1835), and a complete edition of the works of Vico, prefaced by an appreciation (1835). Finding Italy uncongenial to his ideas, he went to France and, in 1839, produced in Paris his *Vico et l'Italie*, followed by *La Nouvelle Religion de Campanella* and *La Théorie de l'erreur*. On account of these works he was made Docteur-ès-lettres of the Sorbonne and professor of philosophy at Rochefort (1840). His views, however, provoked antagonism, and in 1842 he was appointed to the chair of philosophy at Strassburg. After fresh trouble with the clergy, he returned to Paris and published a defence of his theories in a work entitled *Idées sur la politique de Platon et d'Aristote*. After a short connexion with the college at Bourges, he devoted himself from 1849 to 1858 exclusively to writing. The works of this period are *Les Philosophes Salariés, Machiavel juge des révolutions de notre temps* (1849), *La Federazione repubblicana* (1851), *La Filosofia della rivoluzione* (1851), *L' Italia dopo il colpo di Stato* (1852), *Histoire des révolutions, ou Guelfes et Gibelins* (1858; Italian trans., 1871-1873). In 1859 he returned to Italy, where he opposed Cavour, and upheld federalism against the policy of a single Italian monarchy. In spite of this opposition, he held chairs of philosophy at Turin, Milan and Rome in succession, and during several administrations represented the college of Gavirate in the chamber. He was a member of the council of education and was made senator on the 15th of May 1876. Amongst other works may be mentioned *Histoire de la raison d'état, La China et l' Europa, Corso d' istoria degli scrittori politici italiani*. A sceptic in philosophy and a revolutionist in politics, rejoicing in controversy of all kinds, he was admired as a man, as an orator, and as a writer.

See Marro Macchi, *Annuario istorico italiano* (Milan, 1877); Mazzoleni, *Giuseppe Ferrari*; Werner, *Die ital. Philosophie des 19. Jahrh.* vol. 3 (Vienna, 1885); Überweg, *History of Philosophy* (Eng. trans. ii. 461 foll.).

FERRARI, PAOLO (1822-1889), Italian dramatist, was born at Modena. After producing some minor pieces, in 1852 he made his reputation as a playwright with *Goldoni e le sue sedici commedie*. Among numerous later plays his comedy *Parini e la satira* (1857) had considerable success. Ferrari may be regarded as a follower of Goldoni, modelling himself on the French theatrical methods. His collected plays were published in 1877-1880.

FERREIRA, ANTONIO (1528-1569), Portuguese poet, was a native of Lisbon; his father held the post of *escrivão de fazenda* in the house of the duke of Coimbra at Setubal, so that he must there have met the great adventurer Mendes Pinto. In 1547-1548 he went to the university of Coimbra, and on the 16th of July 1551 took his bachelor's degree. The Sonnets forming the First Book in his collected works date from 1552 and contain the history of his early love for an unknown lady. They seem to have been written in Coimbra or during vacations in Lisbon; and if some are dry and stilted, others, like the admirable No. 45, are full of feeling and tears. The Sonnets in the Second Book were inspired by D. Maria Pimentel, whom he afterwards married, and they are marked by that chastity of sentiment, seriousness and ardent patriotism which characterized the man and the writer. Ferreira's ideal, as a poet, was to win "the applause of the good," and, in the preface to his poems, he says, "I am content with this glory, that I have loved my land and my people." He was intimate with princes, nobles and the most distinguished literary men of the time, such as the scholarly Diogo de Teive and the poets Bernardes, Caminha and Corte-Real, as well as with the aged Sá de Miranda, the founder of the classical school of which Ferreira became the foremost representative.

The death in 1554 of Prince John, the heir to the throne, drew from him, as from Camoens,

Bernardes and Caminha, a poetical lament, which consisted of an elegy and two eclogues, imitative of Virgil and Horace, and devoid of interest. On the 14th of July 1555 he took his doctor's degree, an event which was celebrated, according to custom, by a sort of Roman triumph, and he stayed on as a professor, finding Coimbra with its picturesque environs congenial to his poetical tastes and love of a country life. The year 1557 produced his sixth elegy, addressed to the son of the great Albuquerque, a poem of noble patriotism expressed in eloquent and sonorous verse, and in the next year he married. After a short and happy married life, his wife died, and the ninth sonnet of Book 2 describes her end in moving words. This loss lent Ferreira's verse an added austerity, and the independence of his muse is remarkable when he addresses King Sebastian and reminds him of his duties as well as his rights. On the 14th of October 1567 he became *Disembargador da Casa do Civel*, and had to leave the quiet of Coimbra for Lisbon. His verses tell how he disliked the change, and how the bustle of the capital, then a great commercial emporium, made him sad and almost tongue-tied for poetry. The intrigues and moral twists of the courtiers and traders, among whom he was forced to live, hurt his fine sense of honour, and he felt his mental isolation the more, because his friends were few and scattered in that great city which the discoveries and conquests of the Portuguese had made the centre of a world empire. In 1569 a terrible epidemic of carbunculous fever broke out and carried off 50,000 inhabitants of Lisbon, and, on the 29th of November, Ferreira, who had stayed there doing his duty when others fled, fell a victim.

Horace was his favourite poet, erudition his muse, and his admiration of the classics made him disdain the popular poetry of the Old School (*Escola Velha*) represented by Gil Vicente. His national feeling would not allow him to write in Latin or Spanish, like most of his contemporaries, but his Portuguese is as Latinized as he could make it, and he even calls his poetical works *Poemas Lusitanos*. Sá de Miranda had philosophized in the familiar *redondilha*, introduced the epistle and founded the comedy of learning. It was the beginning of a revolution, which Ferreira completed by abandoning the hendecasyllable for the Italian decasyllable, and by composing the noble and austere Roman poetry of his letters, odes and elegies. It was all done of set purpose, for he was a reformer conscious of his mission and resolved to carry it out. The gross realism of the popular poetry, its lack of culture and its carelessness of form, offended his educated taste, and its picturesqueness and ingenuity made no appeal to him. It is not surprising, however, that though he earned the applause of men of letters he failed to touch the hearts of his countrymen. Ferreira wrote the Terentian prose comedy *Bristo*, at the age of twenty-five (1553), and dedicated it to Prince John in the name of the university. It is neither a comedy of character nor manners, but its *vis comica* lies in its plot and situations. The *Cioso*, a later product, may almost be called a comedy of character. *Castro* is Ferreira's most considerable work, and, in date, is the first tragedy in Portuguese, and the second in modern European literature. Though fashioned on the great models of the ancients, it has little plot or action, and the characters, except that of the prince, are ill-designed. It is really a splendid poem, with a chorus which sings the sad fate of Ignez in musical odes, rich in feeling and grandeur of expression. Her love is the chaste, timid affection of a wife and a vassal rather than the strong passion of a mistress, but Pedro is really the man history describes, the love-fettered prince whom the tragedy of Ignez's death converted into the cruel tyrant. King Alfonso is little more than a shadow, and only meets Ignez once, his son never; while, stranger still, Pedro and Ignez never come on the stage together, and their love is merely narrated. Nevertheless, Ferreira merits all praise for choosing one of the most dramatic episodes in Portuguese history for his subject, and though it has since been handled by poets of renown in many different languages, none has been able to surpass the old master.

The *Castro* was first printed in Lisbon in 1587, and it is included in Ferreira's *Poemas*, published in 1598 by his son. It has been translated by Musgrave (London, 1825), and the chorus of Act I. appeared again in English in the *Savoy* for July 1896. It has also been done into French and German. The *Bristo* and *Cioso* first appeared with the comedies of Sá de Miranda in Lisbon in 1622. There is a good modern edition of the Complete Works of Ferreira (2 vols., Paris, 1865). See Castilho's *Antonio Ferreira* (3 vols., Rio, 1865), which contains a full biographical and critical study with extracts.

(E. Pr.)

FERREL'S LAW, in physical geography. "If a body moves in any direction on the earth's surface, there is a deflecting force arising from the earth's rotation, which deflects it to the right in the northern hemisphere and to the left in the southern hemisphere." This law applies to every body that is set in motion upon the surface of the rotating earth, but usually the duration of the motion of any body due to a single impulse is so brief, and there are so many frictional disturbances, that it is not easy to observe the results of this deflecting force. The movements of the atmosphere, however, are upon a scale large enough to make this observation easy, and the simplest evidence is obtained from a study of the direction of the air movements in the great wind systems of the globe. (See Meteorology.)

FERRERS, the name of a great Norman-English feudal house, derived from Ferrières-St-Hilaire, to the south of Bernay, in Normandy. Its ancestor Walkelin was slain in a feud during the Conqueror's minority, leaving a son Henry, who took part in the Conquest. At the time of the Domesday survey his fief extended into fourteen counties, but the great bulk of it was in Derbyshire and Leicestershire, especially the former. He himself occurs in Worcestershire as one of the royal commissioners for the survey. He established his chief seat at Tutbury Castle, Staffordshire, on the Derbyshire border, and founded there a Cluniac priory. As was the usual practice with the great Norman houses, his eldest son succeeded to Ferrières, and, according to Stapleton, he was ancestor of the Oakham house of Ferrers, whose memory is preserved by the horseshoes hanging in the hall of their castle. Robert, a younger son of Henry, inherited his vast English fief, and, for his services at the battle of the Standard (1138), was created earl of Derby by Stephen. He appears to have died a year after.

Both the title and the arms of the earls have been the subject of much discussion, and they seem to have been styled indifferently earls of Derby or Nottingham (both counties then forming one shrievalty) or of Tutbury, or simply (de) Ferrers. Robert, the 2nd earl, who founded Merevale Abbey, was father of William, the 3rd earl, who began the opposition of his house to the crown by joining in the great revolt of 1173, when he fortified his castles of Tutbury and Duffield and plundered Nottingham, which was held for the king. On his subsequent submission his castles were razed. Dying at the siege of Acre, 1190, he was succeeded by his son William, who attacked Nottingham on Richard's behalf in 1194, but whom King John favoured and confirmed in the earldom of Derby, 1199. A claim that he was heir to the honour of Peveral of Nottingham, which has puzzled genealogists, was compromised with the king, whom the earl thenceforth stoutly supported, being with him at his death and witnessing his will, with his brother-in-law the earl of Chester, and with William Marshal, earl of Pembroke, whose daughter married his son. With them also he acted in securing the succession of the young Henry, joining in the siege of Mountsorrel and the battle of Lincoln. But he was one of those great nobles who looked with jealousy on the rising power of the king's favourites. In 1227 he was one of the earls who rose against him on behalf of his brother Richard and made him restore the forest charters, and in 1237 he was one of the three counsellors forced on the king by the barons. His influence had by this time been further increased by the death, in 1232, of the earl of Chester, whose sister, his wife, inherited a vast estate between the Ribble and the Mersey. On his death in 1247, his son William succeeded as 5th earl, and inherited through his wife her share of the great possessions of the Marshals, earls of Pembroke. By his second wife, a daughter of the earl of Winchester, he was father of Robert, 6th and last earl. Succeeding as a minor in 1254, Robert had been secured by the king, as early as 1249, as a husband for his wife's niece, Marie, daughter of Hugh, count of Angoulême, but, in spite of this, he joined the opposition in 1263 and distinguished himself by his violence. He was one of the five earls summoned to Simon de Montfort's parliament, though, on taking the earl of Gloucester's part, he was arrested by Simon. In spite of this he was compelled on the king's triumph to forfeit his castles and seven years' revenues. In 1266 he broke out again in revolt on his own estates in Derbyshire, but was utterly defeated at Chesterfield by Henry "of Almain," deprived of his earldom and lands and imprisoned. Eventually, in 1269, he agreed to pay £50,000 for restoration, and to pledge all his lands save Chartley and Holbrook for its payment. As he was not able to find the money, the lands passed to the king's son, Edmund, to whom they had been granted on his forfeiture.

The earl's son John succeeded to Chartley, a Staffordshire estate long famous for the wild cattle in its chase, and was summoned as a baron in 1299, though he had joined the baronial opposition in 1297. On the death, in 1450, of the last Ferrers lord of Chartley, the barony passed with his daughter to the Devereux family and then to the Shirleys, one of whom was created Earl Ferrers in 1711. The barony has been in abeyance since 1855.

The line of Ferrers of Groby was founded by William, younger brother of the last earl, who inherited from his mother Margaret de Quinci her estate of Groby in Leicestershire, and some Ferrers manors from his father. His son was summoned as a baron in 1300, but on the death of his descendant, William, Lord Ferrers of Groby, in 1445, the barony passed with his granddaughter to the Grey family and was forfeited with the dukedom of Suffolk in 1554. A younger son of William, the last lord, married the heiress of Tamworth Castle, and his line was seated at Tamworth till 1680, when an heiress carried it to a son of the first Earl Ferrers. From Sir Henry, a younger son of the first Ferrers of Tamworth, descended Ferrers of Baddesley Clinton, seated there in the male line till towards the end of the 19th century. The line of Ferrers of Wemme was founded by a younger son of Lord Ferrers of Chartley, who married the heiress of Wemme, Co. Salop, and was summoned as a baron in her right; but it ended with their son. There are doubtless male descendants of this great Norman house still in existence.

Higham Ferrers, Northants, and Woodham Ferrers, Essex, take their names from this family. It has been alleged that they bore horseshoes for their arms in allusion to Ferrières (*i.e.* ironworks); but when and why they were added to their coat is a moot point.

See Dugdale's *Baronage*; J.R. Planché's *The Conqueror and his Companions*; G.E. C(okayne)'s *Complete Peerage*; *Chronicles and Memorials* (Rolls Series); T. Stapleton's *Rotuli Scaccarii Normannie*.

(J. H. R.)

FERRERS, LAURENCE SHIRLEY, 4TH EARL (1720-1760), the last nobleman in England to suffer a felon's death, was born on the 18th of August 1720. There was insanity in his family, and from an early age his behaviour seems to have been eccentric, and his temper violent, though he was quite capable of managing his business affairs. In 1758 his wife obtained a separation from him for cruelty. The Ferrers estates were then vested in trustees, the Earl Ferrers secured the appointment of an old family steward, Johnson, as receiver of rents. This man faithfully performed his duty as a servant to the trustees, and did not prove amenable to Ferrer's personal wishes. On the 18th of January 1760, Johnson called at the earl's mansion at Staunton Harold, Leicestershire, by appointment, and was directed to his lordship's study. Here, after some business conversation, Lord Ferrers shot him. In the following April Ferrers was tried for murder by his peers in Westminster Hall. His defence, which he conducted in person with great ability, was a plea of insanity, and it was supported by considerable evidence, but he was found guilty. He subsequently said that he had only pleaded insanity to oblige his family, and that he had himself always been ashamed of such a defence. On the 5th of May 1760, dressed in a light-coloured suit, embroidered with silver, he was taken in his own carriage from the Tower of London to Tyburn and there hanged. It has been said that as a concession to his order the rope used was of silk.

See Peter Burke, *Celebrated Trials connected with the Aristocracy in the Relations of Private Life* (London, 1849); Edward Walford, *Tales of our Great Families* (London, 1877); *Howell's State Trials* (1816), xix. 885-980.

FERRET, a domesticated, and frequently albino breed of quadruped, derived from the wild polecat (*Putorius foetidus*, or *P. putorius*), which it closely resembles in size, form, and habits, and with which it interbreeds. It differs in the colour of its fur, which is usually yellowish-white, and of its eyes, which are pinky-red. The "polecat-ferret" is a brown breed, apparently the product of the above-mentioned cross. The ferret attains a length of about 14 in., exclusive of the tail, which measures 5 in. Although exhibiting considerable tameness, it seems incapable of attachment, and when not properly fed, or when irritated, is apt to give painful evidence of its ferocity. It is chiefly employed in destroying rats and other vermin, and in driving rabbits from their burrows. The ferret is remarkably prolific, the female bringing forth two broods annually, each numbering from six to nine young. It is said to occasionally devour its young immediately after birth, and in this case produces another brood soon after. The ferret was well known to the Romans, Strabo stating that it was brought from Africa into Spain, and Pliny that it was employed in his time in rabbit-hunting, under the name *Viverra*; the English name is not derived from this, but from Fr. *furet*, Late Lat. *furo*, robber. The date of its introduction into Great Britain is uncertain, but it has been known in England for at least 600 years.

The ferret should be kept in dry, clean, well-ventilated hutches, and fed twice daily on bread, milk, and meat, such as rabbits' and fowls' livers. When used to hunt rabbits it is provided with a muzzle, or, better and more usual, a cope, made by looping and knotting twine about the head and snout, in order to prevent it killing its quarry, in which case it would gorge itself and go to sleep in the hole. As the ferret enters the hole the rabbits flee before it, and are shot or caught by dogs as they break ground. A ferret's hold on its quarry is as obstinate as that of a bulldog, but can easily be broken by a strong pressure of the thumb just above the eyes. Only full-grown ferrets are "worked to" rats. Several are generally used at a time and without copes, as rats are fierce fighters.

See *Ferrets*, by Nicholas Everitt (London, 1897).

FERRI, CIRO (1634-1689), Roman painter, the chief disciple and successor of Pietro da Cortona. He was born in the Roman territory, studied under Pietro, to whom he became warmly attached, and, at an age a little past thirty, completed the painting of the ceilings and other internal decorations begun by his instructor in the Pitti palace, Florence. He also co-operated in or finished several other works by Pietro, both in Florence and in Rome, approaching near to his style and his particular merits, but with less grace of design and native vigour, and in especial falling short of him in colour. Of his own independent productions, the chief is an extensive series of scriptural frescoes in the church of S. Maria Maggiore in Bergamo; also a painting (rated as Ferri's best work) of St Ambrose healing a sick person, the principal altarpiece in the church of S. Ambrogio della Massima in Rome. The paintings of the cupola of S. Agnese in the same capital might rank even higher than these; but this labour remained uncompleted at the death of Ferri, and was marred by the performances of his successor Corbellini. He executed also a large amount of miscellaneous designs, such as etchings and frontispieces for books; and he was an architect besides. Ferri was appointed to direct the Florentine students in Rome, and Gabbiani was one of his leading pupils. As regards style, Ferri ranks as chief of the so-called Machinists, as opposed to the school founded by Sacchi, and continued by Carlo Maratta. He died in Rome—his end being hastened, as it is said, by mortification at his recognized inferiority to

Bacciccia in colour.

FERRI, LUIGI (1826-1895), Italian philosopher, was born at Bologna on the 15th of June 1826. His education was obtained mainly at the École Normale in Paris, where his father, a painter and architect, was engaged in the construction of the Théâtre Italien. From his twenty-fifth year he began to lecture in the colleges of Evreux, Dieppe, Blois and Toulouse. Later, he was lecturer at Annecy and Casal-Montferrat, and became head of the education department under Mamiani in 1860. Three years later he was appointed to the chair of philosophy at the Istituto di Perfezionamento at Florence, and, in 1871, was made professor of philosophy in the university of Rome. On the death of Mamiani in 1885 he became editor of the *Filosofia delle scuole italiane*, the title of which he changed to *Rivista italiana di filosofia*. He wrote both on psychology and on metaphysics, but is known especially as a historian of philosophy. His original work is eclectic, combining the psychology of his teachers, Jules Simon, Saisset and Mamiani, with the idealism of Rosmini and Gioberti. Among his works may be mentioned *Studii sulla coscienza*; *Il Fenomeno nelle sue relazioni con la sensazione*; *Della idea del vero*; *Della filosofia del diritto presso Aristotile* (1885); *Il Genio di Aristotile*; *La Psicologia di Pietro Pomponazzi* (1877), and, most important, *Essai sur l'histoire de la philosophie en Italie au XIX^e^ siècle* (Paris, 1869), and *La Psychologie de l'association depuis Hobbes jusqu'à nos jours*.

FERRIER, ARNAUD DU (*c.* 1508-1585), French jurisconsult and diplomatist, was born at Toulouse about 1508, and practised as a lawyer first at Bourges, afterwards at Toulouse. Councillor to the *parlement* of the latter town, and then to that of Rennes, he later became president of the *parlement* of Paris. He represented Charles IX., king of France, at the council of Trent in 1562, but had to retire in consequence of the attitude he had adopted, and was sent as ambassador to Venice, where he remained till 1567, returning again in 1570. On his return to France he came into touch with the Calvinists whose tenets he probably embraced, and consequently lost his place in the privy council and part of his fortune. As compensation, Henry, king of Navarre, appointed him his chancellor. He died in the end of October 1585.

See also E. Frémy, *Un Ambassadeur libéral sous Charles IX et Henri III, Arnaud du Ferrier* (Paris, 1880).

FERRIER, JAMES FREDERICK (1808-1864), Scottish metaphysical writer, was born in Edinburgh on the 16th of June 1808, the son of John Ferrier, writer to the signet. His mother was a sister of John Wilson (Christopher North). He was educated at the university of Edinburgh and Magdalen College, Oxford, and subsequently, his metaphysical tastes having been fostered by his intimate friend, Sir William Hamilton, spent some time at Heidelberg studying German philosophy. In 1842 he was appointed professor of civil history in Edinburgh University, and in 1845 professor of moral philosophy and political economy at St Andrews. He was twice an unsuccessful candidate for chairs in Edinburgh, for that of moral philosophy on Wilson's resignation in 1852, and for that of logic and metaphysics in 1856, after Hamilton's death. He remained at St Andrews till his death on the 11th of June 1864. He married his cousin, Margaret Anne, daughter of John Wilson. He had five children, one of whom became the wife of Sir Alexander Grant.

Ferrier's first contribution to metaphysics was a series of articles in *Blackwood's Magazine* (1838-1839), entitled *An Introduction to the Philosophy of Consciousness*. In these he condemns previous philosophers for ignoring in their psychological investigations the fact of consciousness, which is the distinctive feature of man, and confining their observation to the so-called "states of the mind." Consciousness comes into manifestation only when the man has used the word "I" with full knowledge of what it means. This notion he must originate within himself. Consciousness cannot spring from the states which are its object, for it is in antagonism to them. It originates in the will, which in the act of consciousness puts the "I" in the place of our sensations. Morality, conscience, and responsibility are necessary results of consciousness. These articles were succeeded by a number of others, of which the most important were *The Crisis of Modern Speculation* (1841), *Berkeley and Idealism* (1842), and an important examination of Hamilton's edition of Reid (1847), which contains a vigorous attack on the philosophy of common sense. The perception of matter is pronounced to be the *ne plus ultra* of thought, and Reid, for presuming to analyse it, is declared to be a representationist in fact, although he professed to be an intuitionist. A distinction is made between the "perception of matter" and "our

apprehension of the perception of matter." Psychology vainly tries to analyse the former. Metaphysic shows the latter alone to be analysable, and separates the subjective element, "our apprehension," from the objective element, "the perception of matter,"—not matter *per se*, but the perception of matter is the existence independent of the individual's thought. It cannot, however, be independent of thought. It must belong to some mind, and is therefore the property of the Divine Mind. There, he thinks, is an indestructible foundation for the *a priori* argument for the existence of God.

Ferrier's matured philosophical doctrines find expression in the *Institutes of Metaphysics* (1854), in which he claims to have met the twofold obligation resting on every system of philosophy, that it should be reasoned and true. His method is that of Spinoza, strict demonstration, or at least an attempt at it. All the errors of natural thinking and psychology must fall under one or other of three topics:—Knowing and the Known, Ignorance, and Being. These are all-comprehensive, and are therefore the departments into which philosophy is divided, for the sole end of philosophy is to correct the inadvertencies of ordinary thinking.

The problems of knowing and the known are treated in the "Epistemology or Theory of Knowing." The truth that "along with whatever any intelligence knows it must, as the ground or condition of its knowledge, have some cognizance of itself," is the basis of the whole philosophical system. Object + subject, thing + me, is the only possible knowable. This leads to the conclusion that the only independent universe which any mind can think of is the universe in synthesis with some *other* mind or *ego*.

The leading contradiction which is corrected in the "Agnoiology or Theory of Ignorance" is this: that there can be an ignorance of that of which there can be no knowledge. Ignorance is a defect. But there is no defect in not knowing what cannot be known by any intelligence (*e.g.* that two and two make five), and therefore there can be an ignorance only of that of which there can be a knowledge, *i.e.* of some-object-*plus*-some-subject. The knowable alone is the ignorable. Ferrier lays special claim to originality for this division of the *Institutes*.

The "Ontology or Theory of Being" forms the third and final division. It contains a discussion of the origin of knowledge, in which Ferrier traces all the perplexities and errors of philosophers to the assumption of the absolute existence of matter. The conclusion arrived at is that the only true real and independent existences are minds-together-with-that-which-they-apprehend, and that the one strictly necessary absolute existence is a supreme and infinite and everlasting mind in synthesis with all things.

> Ferrier's works are remarkable for an unusual charm and simplicity of style. These qualities are especially noticeable in the *Lectures on Greek Philosophy*, one of the best introductions on the subject in the English language. A complete edition of his philosophical writings was published in 1875, with a memoir by E.L. Lushington; see also monograph by E.S. Haldane in the Famous Scots Series.

FERRIER, PAUL (1843-), French dramatist, was born at Montpellier on the 29th of March 1843. He had already produced several comedies when in 1873 he secured real success with two short pieces, *Chez l'avocat* and *Les Incendies de Massoulard*. Others of his numerous plays are *Les Compensations* (1876); *L'Art de tromper les femmes* (1890), with M. Najac. One of Ferrier's greatest triumphs was the production with Fabrice Carré of *Joséphine vendue par ses sœurs* (1886), an *opéra bouffe* with music by Victor Roger. His opera libretti include *La Marocaine* (1879), music of J. Offenbach; *Le Chevalier d'Harmental* (1896) after the play of Dumas père, for the music of A. Messager; *La Fille de Tabarin* (1901), with Victorien Sardou, music of Gabriel Pierné.

FERRIER, SUSAN EDMONSTONE (1782-1854), Scottish novelist, born in Edinburgh on the 7th of September 1782, was the daughter of James Ferrier, for some years factor to the duke of Argyll, and at one time one of the clerks of the court of session with Sir Walter Scott. Her mother was a Miss Coutts, the beautiful daughter of a Forfarshire farmer. James Frederick Ferrier, noticed above, was Susan Ferrier's nephew.

Miss Ferrier's first novel, *Marriage*, was begun in concert with a friend, Miss Clavering, a niece of the duke of Argyll; but this lady only wrote a few pages, and *Marriage*, completed by Miss Ferrier as early as 1810, appeared in 1818. It was followed in 1824 by *The Inheritance*, a better constructed and more mature work; and the last and perhaps best of her novels, *Destiny*, dedicated to Sir Walter Scott (who himself undertook to strike the bargain with the publisher Cadell), appeared in 1831. All these novels were published anonymously; but, with their clever portraiture of contemporary Scottish life and manners, and even recognizable caricatures of some social celebrities of the day, they could not fail to become popular north of the Tweed. "Lady MacLaughlan" represents Mrs Seymour Damer in

dress and Lady Frederick Campbell, whose husband, Lord Ferrier, was executed in 1760, in manners. Mary, Lady Clark, well known in Edinburgh, figured as “Mrs Fox” and the three maiden aunts were the Misses Edmonstone. Many were the conjectures as to the authorship of the novels. In the *Noctes Ambrosianae* (November 1826), James Hogg is made to mention *The Inheritance*, and adds, “which I aye thought was written by Sir Walter, as weel’s *Marriage*, till it spunked out that it was written by a leddy.” Scott himself gave Miss Ferrier a very high place indeed among the novelists of the day. In his diary (March 27, 1826), criticizing a new work which he had been reading, he says, “The women do this better. Edgeworth, Ferrier, Austen, have all given portraits of real society far superior to anything man, vain man, has produced of the like nature.” Another friendly recognition of Miss Ferrier is to be found at the conclusion of his *Tales of my Landlord*, where Scott calls her his “sister shadow,” the still anonymous author of “the very lively work entitled *Marriage*.” Lively, indeed, all Miss Ferrier’s works are,—written in clear, brisk English, and with an inexhaustible fund of humour. It is true her books portray the eccentricities, the follies, and foibles of the society in which she lived, caricaturing with terrible exactness its hypocrisy, boastfulness, greed, affectation, and undue subservience to public opinion. Yet Miss Ferrier wrote less to reform than to amuse. In this she is less like Miss Edgeworth than Miss Austen. Miss Edgeworth was more of a moralist; her wit is not so involuntary, her caricatures not always so good-natured. But Miss Austen and Miss Ferrier were genuine humorists, and with Miss Ferrier especially a keen sense of the ludicrous was always dominant. Her humorous characters are always her best. It was no doubt because she felt this that in the last year of her life she regretted not having devoted her talents more exclusively to the service of religion. But if she was not a moralist, neither was she a cynic; and her wit, even where it is most caustic, is never uncharitable.

Miss Ferrier’s mother died in 1797, and from that date she kept house for her father until his death in 1829. She lived quietly at Morningside House and in Edinburgh for more than twenty years after the publication of her last work. The pleasantest picture that we have of her is in Lockhart’s description of her visit to Scott in May 1831. She was asked there to help to amuse the dying master of Abbotsford, who, when he was not writing *Count Robert of Paris*, would talk as brilliantly as ever. Only sometimes, before he had reached the point in a narrative, “it would seem as if some internal spring had given way.” He would pause, and gaze blankly and anxiously round him. “I noticed,” says Lockhart, “the delicacy of Miss Ferrier on such occasions. Her sight was bad, and she took care not to use her glasses when he was speaking; and she affected to be also troubled with deafness, and would say, ‘Well, I am getting as dull as a post; I have not heard a word since you said so-and-so,’—being sure to mention a circumstance behind that at which he had really halted. He then took up the thread with his habitual smile of courtesy—as if forgetting his case entirely in the consideration of the lady’s infirmity.”

Miss Ferrier died on the 5th of November 1854, at her brother’s house in Edinburgh. She left among her papers a short unpublished article, entitled “Recollections of Visits to Ashestiel and Abbotsford.” This is her own very interesting account of her long friendship with Sir Walter Scott, from the date of her first visit to him and Lady Scott at Ashestiel, where she went with her father in the autumn of 1811, to her last sad visit to Abbotsford in 1831. It contains some impromptu verses written by Scott in her album at Ashestiel.

Miss Ferrier’s letters to her sister, which contained much interesting biographical matter, were destroyed at her particular request, but a volume of her correspondence with a memoir by her grand-nephew, John Ferrier, was published in 1898.

FERROL [*El Ferrol*], a seaport of north-western Spain, in the province of Corunna; situated 12 m. N.E. of the city of Corunna, and on the Bay of Ferrol, an inlet of the Atlantic Ocean. Pop. (1900) 25,281. Together with San Fernando, near Cadiz, and Cartagena, Ferrol is governed by an admiral, with the special title of captain-general; and it ranks beside these two ports as one of the principal naval stations of Spain. The town is beautifully situated on a headland overlooking the bay, and is surrounded by rocky hills which render it invisible from the sea. Its harbour, naturally one of the best in Europe, and the largest in Spain except those of Vigo and Corunna, is deep, capacious and secure; but the entrance is a narrow strait about 2 m. long, which admits only one vessel at a time, and is commanded by modern and powerfully armed forts, while the neighbouring heights are also crowned by defensive works. Ferrol is provided with extensive dockyards, quays, warehouses and an arsenal; most of these, with the palace of the captain-general, the bull-ring, theatres, and other principal buildings, were built or modernized between 1875 and 1905. The local industries are mainly connected with the shipping trade, or the refitting of warships. Owing to the lack of railway communication, and the competition of Corunna at so short a distance, Ferrol is not a first-class commercial port; and in the early years of the 20th century its trade, already injured by the loss to Spain of Cuba and Porto Rico in 1898, showed little prospect of improvement. The exports are insignificant, and consist chiefly of wooden staves and beams for use as pit-props; the chief imports are coal, cement, timber, iron and machinery. In 1904, 282 vessels of 155,881 tons entered the harbour. In the same year the construction of a railway to the neighbouring town of Betanzos was undertaken, and in 1909 important shipbuilding operations were begun.

Ferrol was a mere fishing village until 1752, when Ferdinand VI. began to fit it for becoming an arsenal. In 1799 the British made a fruitless attempt to capture it, but on the 4th of November 1805 they defeated the French fleet in front of the town, which they compelled to surrender. On the 27th of January 1809 it was through treachery delivered over to the French, but it was vacated by them on the 22nd of July. On the 15th of July 1823 another blockade was begun by the French, and Ferrol surrendered to them on the 27th of August.

FERRUCCIO, or Ferrucci, **FRANCESCO** (1489-1530), Florentine captain. After spending a few years as a merchant's clerk he took to soldiering at an early age, and served in the *Bande Nere* in various parts of Italy, earning a reputation as a daring fighter and somewhat of a swashbuckler. When Pope Clement VII. and the emperor Charles V. decided to reinstate the Medici in Florence, they made war on the Florentine republic, and Ferruccio was appointed Florentine military commissioner at Empoli, where he showed great daring and resource by his rapid marches and sudden attacks on the Imperialists. Early in 1530 Volterra had thrown off Florentine allegiance and had been occupied by an Imperialist garrison, but Ferruccio surprised and recaptured the city. During his absence, however, the Imperialists captured Empoli by treachery, thus cutting off one of the chief avenues of approach to Florence. Ferruccio proposed to the government of the republic that he should march on Rome and terrorize the pope by the threat of a sack into making peace with Florence on favourable terms, but although the war committee appointed him commissioner-general for the operations outside the city, they rejected his scheme as too audacious. Ferruccio then decided to attempt a diversion by attacking the Imperialists in the rear and started from Volterra for the Apennines. But at Pisa he was laid up for a month with a fever—a misfortune which enabled the enemy to get wind of his plan and to prepare for his attack. At the end of July Ferruccio left Pisa at the head of about 4000 men, and although the besieged in Florence, knowing that a large part of the Imperialists under the prince of Orange had gone to meet Ferruccio, wished to co-operate with the latter by means of a sortie, they were prevented from doing so by their own traitorous commander-in-chief, Malatesta Baglioni. Ferruccio encountered a much larger force of the enemy on the 3rd of August at Gavinana; a desperate battle ensued, and at first the Imperialists were driven back by Ferruccio's fierce onslaught and the prince of Orange himself was killed, but reinforcements under Fabrizio Maramaldo having arrived, the Florentines were almost annihilated and Ferruccio was wounded and captured. Maramaldo out of personal spite despatched the wounded man with his own hand. This defeat sealed the fate of the republic, and nine days later Florence surrendered. Ferruccio was one of the great soldiers of the age, and his enterprise is the finest episode of the last days of the Florentine republic. See also under Florence and Medici.

Bibliography.—F. Sassetti, *Vita di Francesco Ferrucci*, written in the 16th century and published in the *Archivio storico*, vol. iv. pt. ii. (Florence, 1853), with an introduction by C. Monzani; E. Aloisi, *La Battaglia di Gavinana* (Bologna, 1881); cf. P. Villari's criticism of the latter work, "Ferruccio e Maramaldo," in his *Arte, storia, e filosofia* (Florence, 1884); Gino Capponi, *Storia della repubblica di Firenze*, vol. ii. (Florence, 1875).

FERRULE, a small metal cap or ring used for holding parts of a rod, &c., together, and for giving strength to weakened materials, or especially, when attached to the end of a stick, umbrella, &c., for preventing wearing or splitting. The word is properly *verrel* or *verril*, in which form it was used till the 18th century, and is derived through the O. Fr. *virelle*, modern *virole*, from a diminutive Latin *viriola* of *viriae*, bracelets. The form in which the word is now known is due to the influence of Latin *ferrum*, iron. "Ferrule" must be distinguished from "ferule" or "ferula," properly the Latin name of the "giant fennel." From the use of the stalk of this plant as a cane or rod for punishment, comes the application of the word to many instruments used in chastisement, more particularly a short flat piece of wood or leather shaped somewhat like the sole of a boot, and applied to the palms of the hand. It is the common form of disciplinary instrument in Roman Catholic schools; the pain inflicted is exceedingly sharp and immediate, but the effects are momentary and leave no chance for any dangerous results. The word is sometimes applied to the ordinary cane as used by schoolmasters.

FERRY, JULES FRANÇOIS CAMILLE (1832-1893), French statesman, was born at Saint Dié (Vosges) on the 5th of April 1832. He studied law, and was called to the bar at Paris, but soon went into politics, contributing to various newspapers, particularly to the *Temps*. He attacked the Empire with great violence, directing his opposition especially against Baron Haussmann, prefect of the Seine.

Elected republican deputy for Paris in 1869, he protested against the declaration of war with Germany, and on the 6th of September 1870 was appointed prefect of the Seine by the government of national defence. In this position he had the difficult task of administering Paris during the siege, and after the Commune was obliged to resign (5th of June 1871). From 1872-1873 he was sent by Thiers as minister to Athens, but returned to the chamber as deputy for the Vosges, and became one of the leaders of the republican party. When the first republican ministry was formed under W.H. Waddington on the 4th of February 1879, he was one of its members, and continued in the ministry until the 30th of March 1885, except for two short interruptions (from the 10th of November 1881 to the 30th of January 1882, and from the 29th of July 1882 to the 21st of February 1883), first as minister of education and then as minister of foreign affairs. He was twice premier (1880-1881 and 1883-1885). Two important works are associated with his administration, the non-clerical organization of public education, and the beginning of the colonial expansion of France. Following the republican programme he proposed to destroy the influence of the clergy in the university. He reorganized the committee of public education (law of the 27th of February 1880), and proposed a regulation for the conferring of university degrees, which, though rejected, aroused violent polemics because the 7th article took away from the unauthorized religious orders the right to teach. He finally succeeded in passing the great law of the 28th of March 1882, which made primary education in France free, non-clerical and obligatory. In higher education the number of professors doubled under his ministry. After the military defeat of France by Germany in 1870, he formed the idea of acquiring a great colonial empire, not to colonize it, but for the sake of economic exploitation. He directed the negotiations which led to the establishment of a French protectorate in Tunis (1881), prepared the treaty of the 17th of December 1885 for the occupation of Madagascar; directed the exploration of the Congo and of the Niger region; and above all he organized the conquest of Indo-China. The excitement caused at Paris by an unimportant reverse of the French troops at Lang-son caused his downfall (30th of March 1885), but the treaty of peace with China (9th of June 1885) was his work. He still remained an influential member of the moderate republican party, and directed the opposition to General Boulanger. After the resignation of President Grévy (2nd of December 1887), he was a candidate for the presidency of the republic, but the radicals refused to support him, and he withdrew in favour of Sadi Carnot. The violent polemics aroused against him at this time caused a madman to attack him with a revolver, and he died from the wound, on the 17th of March 1893. The chamber of deputies voted him a state funeral.

See Edg. Zevort, *Histoire de la troisième République*; A. Rambaud, *Jules Ferry* (Paris, 1903).

FERRY (from the same root as that of the verb “to fare,” to journey or travel, common to Teutonic languages, cf. Ger. *fahren*; it is connected with the root of Gr. πόρος, way, and Lat. *portare*, to carry), a place where boats ply regularly across a river or arm of the sea for the conveyance of goods and persons. The word is also applied to the boats employed (ferry boats). In a car-ferry or train-ferry railway cars or complete trains are conveyed across a piece of water in vessels which have railway lines laid on their decks, so that the vehicles run on and off them on their own wheels. In law the right of ferrying persons or goods across a particular river or strait, and of exacting a reasonable toll for the service, belongs, like the right of fair and market, to the class of rights known as franchises. Its origin must be by statute, royal grant, or prescription. It is wholly unconnected with the ownership or occupation of land, so that the owner of the ferry need not be proprietor of the soil on either side of the water over which the right is exercised. He is bound to maintain safe and suitable boats ready for the use of the public, and to employ fit persons as ferrymen. As a correlative of this duty he has a right of action, not only against those who evade or refuse payment of toll when it is due, but also against those who disturb his franchise by setting up a new ferry, so as to diminish his custom, unless a change of circumstances, such as an increase of population near the ferry, justify other means of passage, whether of the same kind or not. See also Water Rights.

FERSEN, FREDRIK AXEL, Count von (1719-1794), Swedish politician, was a son of Lieutenant-General Hans Reinhold Fersen and entered the Swedish Life Guards in 1740, and from 1743 to 1748 was in the French service (*Royal-Suédois*), where he rose to the rank of brigadier. In the Seven Years’ War Fersen distinguished himself during the operations round Usedom and Wollin (1759), when he inflicted serious loss on the Prussians. But it is as a politician that he is best known. At the diet of 1755-1756 he was elected *landtmarskalk*, or marshal of the diet, and from henceforth, till the revolution of 1772, led the Hat party (see Sweden: *History*). In 1756 he defeated the projects of the court for increasing the royal power; but, after the disasters of the Seven Years’ War, gravitated towards the court again and contributed, by his energy and eloquence, to uphold the tottering Hats for several years. On the accession of the Caps to power in 1766, Fersen assisted the court in its struggle with them by refusing to employ the Guards to keep order in the capital when King Adolphus

Frederick, driven to desperation by the demands of the Caps, publicly abdicated, and a seven days' interregnum ensued. At the ensuing diet of 1769, when the Hats returned to power, Fersen was again elected marshal of the diet; but he made no attempt to redeem his pledges to the crown prince Gustavus, as to a very necessary reform of the constitution, which he had made before the elections, and thus involuntarily contributed to the subsequent establishment of absolutism. When Gustavus III. ascended the throne in 1772, and attempted to reconcile the two factions by a composition which aimed at dividing all political power between them, Fersen said he despaired of bringing back, in a moment, to the path of virtue and patriotism a people who had been running riot for more than half a century in the wilderness of political licence and corruption. Nevertheless he consented to open negotiations with the Caps, and was the principal Hat representative on the abortive composition committee. During the revolution of August 1772, Fersen remained a passive spectator of the overthrow of the constitution, and was one of the first whom Gustavus summoned to his side after his triumph. Yet his relations with the king were never cordial. The old party-leader could never forget that he had once been a power in the state, and it is evident, from his *Historiska Skrifter*, how jealous he was of Gustavus's personal qualities. There was a slight collision between them as early as the diet of 1778; but at the diet of 1786 Fersen boldly led the opposition against the king's financial measures (see Gustavus III.) which were consequently rejected; while in private interviews, if his own account of them is to be trusted, he addressed his sovereign with outrageous insolence. At the diet of 1789 Fersen marshalled the nobility around him for a combat *à outrance* against the throne and that, too, at a time when Sweden was involved in two dangerous foreign wars, and national unity was absolutely indispensable. This tactical blunder cost him his popularity and materially assisted the secret operations of the king. Obstruction was Fersen's chief weapon, and he continued to postpone the granting of subsidies by the house of nobles for some weeks. But after frequent stormy scenes in the diet, which were only prevented from becoming mêlées by Fersen's moderation, or hesitation, at the critical moment, he and twenty of his friends of the nobility were arrested (17th February 1789) and the opposition collapsed. Fersen was speedily released, but henceforth kept aloof from politics, surviving the king two years. He was a man of great natural talent, with an imposing presence, and he always bore himself like the aristocrat he was. But his haughtiness and love of power are undeniable, and he was perhaps too great a party-leader to be a great statesman. Yet for seventeen years, with very brief intervals, he controlled the destinies of Sweden, and his influence in France was for some time pretty considerable. His *Historiska Skrifter*, which are a record of Swedish history, mainly autobiographical, during the greater part of the 18th century, is excellent as literature, but somewhat unreliable as an historical document, especially in the later parts.

See C.G. Malmström, *Sveriges politiska Historia* (Stockholm, 1855-1865); R.N. Bain, *Gustavus III.* (London, 1895); C.T. Odhner, *Sveriges politiska Historia under Gustaf III.'s Regering* (Stockholm, 1885, &c.); F.A. Fersen, *Historiska Skrifter* (Stockholm, 1867-1872).

(R. N. B.)

FERSEN, HANS AXEL, Count von (1755-1810), Swedish statesman, was carefully educated at home, at the Carolinum at Brunswick and at Turin. In 1779 he entered the French military service (*Royal-Bavière*), accompanied General Rochambeau to America as his adjutant, distinguished himself during the war with England, notably at the siege of Yorktown, 1781, and in 1785 was promoted to be *colonel propriétaire* of the regiment *Royal-Suédois*. The young nobleman was, from the first, a prime favourite at the French court, owing, partly to the recollection of his father's devotion to France, but principally because of his own amiable and brilliant qualities. The queen, Marie Antoinette, was especially attracted by the grace and wit of *le beau Fersen*, who had inherited his full share of the striking handsomeness which was hereditary in the family.

It is possible that Fersen would have spent most of his life at Versailles, but for a hint from his own sovereign, then at Pisa, that he desired him to join his suite. He accompanied Gustavus III. in his Italian tour and returned home with him in 1784. When the war with Russia broke out, in 1788, Fersen accompanied his regiment to Finland, but in the autumn of the same year was sent to France, where the political horizon was already darkening. It was necessary for Gustavus to have an agent thoroughly in the confidence of the French royal family, and, at the same time, sufficiently able and audacious to help them in their desperate straits, especially as he had lost all confidence in his accredited minister, the baron de Stael. With his usual acumen, he fixed upon Fersen, who was at his post early in 1790. Before the end of the year he was forced to admit that the cause of the French monarchy was hopeless so long as the king and queen of France were nothing but captives in their own capital, at the mercy of an irresponsible mob. He took a leading part in the flight to Varennes. He found most of the requisite funds at the last moment. He ordered the construction of the famous carriage for six, in the name of the baroness von Korff, and kept it in his hotel grounds, rue Matignon, that all Paris might get accustomed to the sight of it. He was the coachman of the *fiacre* which drove the royal family from the Carrousel to the Porte Saint-Martin. He accompanied them to Bondy, the first stage of their journey.

In August 1791, Fersen was sent to Vienna to induce the emperor Leopold to accede to a new coalition against revolutionary France, but he soon came to the conclusion that the Austrian court

meant to do nothing at all. At his own request, therefore, he was transferred to Brussels, where he could be of more service to the queen of France. In February 1792, at his own mortal peril, he once more succeeded in reaching Paris with counterfeit credentials as minister plenipotentiary to Portugal. On the 13th he arrived, and the same evening contrived to steal an interview with the queen unobserved. On the following day he was with the royal family from six o'clock in the evening till six o'clock the next morning, and convinced himself that a second flight was physically impossible. On the afternoon of the 21st he succeeded in paying a third visit to the Tuileries, stayed there till midnight and succeeded, with great difficulty, in regaining Brussels on the 27th. This perilous expedition, a monumental instance of courage and loyalty, had no substantial result. In 1797 Fersen was sent to the congress of Rastatt as the Swedish delegate, but in consequence of a protest from the French government, was not permitted to take part in it.

During the regency of the duke of Sudermania (1792-1796) Fersen, like all the other Gustavians, was in disgrace; but, on Gustavus IV. attaining his majority in 1796, he was welcomed back to court with open arms, and reinstated in all his offices and dignities. In 1801 he was appointed *Riksmarskalk* (= earl-marshal). On the outbreak of the war with Napoleon, Fersen accompanied Gustavus IV. to Germany to assist him in gaining fresh allies. He prevented Gustavus from invading Prussia in revenge for the refusal of the king of Prussia to declare war against France, and during the rest of the reign was in semi-disgrace, though generally a member of the government when the king was abroad.

Fersen stood quite aloof from the revolution of 1809. (See SWEDEN: *History*.) His sympathies were entirely with Prince Gustavus, son of the unfortunate Gustavus IV., and he was generally credited with the desire to see him king. When the newly elected successor to the throne, the highly popular prince Christian Augustus of Augustenburg, died suddenly in Skåne in May 1810, the report spread that he had been poisoned, and that Fersen and his sister, the countess Piper, were accessories. The source of this equally absurd and infamous libel has never been discovered. But it was eagerly taken up by the anti-Gustavian press, and popular suspicion was especially aroused by a fable called "The Foxes" directed against the Fersens, which appeared in *Nya Posten*. When, then, on the 20th of June 1810, the prince's body was conveyed to Stockholm, and Fersen, in his official capacity as *Riksmarskalk*, received it at the barrier and led the funeral cortège into the city, his fine carriage and his splendid robes seemed to the people an open derision of the general grief. The crowd began to murmur and presently to fling stones and cry "murderer!" He sought refuge in a house in the Riddarhus Square, but the mob rushed after him, brutally maltreated him and tore his robes to pieces. To quiet the people and save the unhappy victim, two officers volunteered to conduct him to the senate house and there place him in arrest. But he had no sooner mounted the steps leading to the entrance than the crowd, which had followed him all the way beating him with sticks and umbrellas, made a rush at him, knocked him down, and kicked and trampled him to death. This horrible outrage, which lasted more than an hour, happened, too, in the presence of numerous troops, drawn up in the Riddarhus Square, who made not the slightest effort to rescue the Riksmarskalk from his tormentors. In the circumstances, one must needs adopt the opinion of Fersen's contemporary, Baron Gustavus Armfelt, "One is almost tempted to say that the government wanted to give the people a victim to play with, just as when one throws something to an irritated wild beast to distract its attention. The more I consider it all, the more I am certain that the mob had the least to do with it.... But in God's name what were the troops about? How could such a thing happen in broad daylight during a procession, when troops and a military escort were actually present?" The responsibility certainly rests with the government of Charles XIII., which apparently intended to intimidate the Gustavians by the removal of one of their principal leaders. Armfelt escaped in time, so Fersen fell the victim.

See R.M. Klinckowström, *Le Comte de Fersen et la cour de France* (Paris, 1877; Eng. ed., London, 1902); *Historia om Axel von Fersens mord* (Stockholm, 1844); R.N. Bain, *Gustavus III.*, vol. ii. (London, 1895); P. Gaulot, *Un Ami de la reine* (Paris, 1892); F.F. Flach, *Grefve Hans Axel von Fersen* (Stockholm, 1896); E. Tegner, *Gustaf Mauritz Armfelt*, vol. iii. (Stockholm, 1883-1887).

(R. N. B.)

FESCA, FREDERIC ERNEST (1789-1826), German violinist and composer of instrumental music, was born on the 15th of February 1789 at Magdeburg, where he received his early musical education. He completed his studies at Leipzig under Eberhard Müller, and at the early age of fifteen appeared before the public with several concerti for the violin, which were received with general applause, and resulted in his being appointed leading violinist of the Leipzig orchestra. This position he occupied till 1806, when he became concert-master to the duke of Oldenburg. In 1808 he was appointed solo-violinist by King Jerome of Westphalia at Cassel, and there he remained till the end of the French occupation (1814), when he went to Vienna, and soon afterwards to Carlsruhe, having been appointed concert-master to the grand-duke of Baden. His failing health prevented him from enjoying the numerous and well-deserved triumphs he owed to his art, and in 1826 he died of consumption at the early age of thirty-seven. As a virtuoso Fesca ranks amongst the best masters of the German school of violinists, the school subsequently of Spohr and of Joachim. Especially as leader of a quartet he is said to have been unrivalled with regard to classic dignity and simplicity of style. Amongst his compositions, his quartets for stringed instruments and other pieces of chamber music are the most

remarkable. His two operas, *Cantemira* and *Omar and Leila*, were less successful, lacking dramatic power and originality. He also wrote some sacred compositions, and numerous songs and vocal quartets.

FESCENNIA, an ancient city of Etruria, which is probably to be placed immediately to the N. of the modern Corchiano, 6 m. N.W. of Civita Castellana (see FALERII). The Via Amerina traverses it. G. Dennis (*Cities and Cemeteries of Etruria*, London, 1883, i. 115) proposed to place it at the Riserva S. Silvestro, 3 m. E. of Corchiano, nearer the Tiber, where remains of Etruscan walls exist. At Corchiano itself, however, similar walls may be traced, and the site is a strong and characteristic one—a triangle between two deep ravines, with the third (west) side cut off by a ditch. Here, too, remains of two bridges may be seen, and several rich tombs have been excavated.

See A. Buglione, "Conte di Monale," in *Römische Mitteilungen* (1887), p. 21 seq.

FESCENNINE VERSES (*Fescennina carmina*), one of the earliest kinds of Italian poetry, subsequently developed into the Satura and the Roman comic drama. Originally sung at village harvest-home rejoicings, they made their way into the towns, and became the fashion at religious festivals and private gatherings—especially weddings, to which in later times they were practically restricted. They were usually in the Saturnian metre and took the form of a dialogue, consisting of an interchange of extemporaneous raillery. Those who took part in them wore masks made of the bark of trees. At first harmless and good-humoured, if somewhat coarse, these songs gradually outstripped the bounds of decency; malicious attacks were made upon both gods and men, and the matter became so serious that the law intervened and scurrilous personalities were forbidden by the Twelve Tables (Cicero, *De re publica*, iv. 10). Specimens of the Fescennines used at weddings are the Epithalamium of Manlius (Catullus, lxi. 122) and the four poems of Claudian in honour of the marriage of Honorius and Maria; the first, however, is distinguished by a licentiousness which is absent in the latter. Ausonius in his *Cento nuptialis* mentions the Fescennines of Annianus Faliscus, who lived in the time of Hadrian. Various derivations have been proposed for *Fescennine*. According to Festus, they were introduced from Fescennia in Etruria, but there is no reason to assume that any particular town was specially devoted to the use of such songs. As an alternative Festus suggests a connexion with *fascinum*, either because the Fescennina were regarded as a protection against evil influences (see Munro, *Criticisms and Elucidations of Catullus*, p. 76) or because *fascinum* (= *phallus*), as the symbol of fertility, would from early times have been naturally associated with harvest festivals. H. Nettleship, in an article on "The Earliest Italian Literature" (*Journal of Philology*, xi. 1882), in support of Munro's view, translates the expression "verses used by charmers," assuming a noun *fescennus*, connected with *fas fari*.

The *locus classicus* in ancient literature is Horace, *Epistles*, ii. 1. 139; see also Virgil, *Georgics*, ii. 385; Tibullus ii. 1. 55; E. Hoffmann, "Die Fescenninen," in *Rheinisches Museum*, li. p. 320 (1896); art. LATIN LITERATURE.

FESCH, JOSEPH (1763-1839), cardinal, was born at Ajaccio on the 3rd of January 1763. His father, a Swiss officer in the service of the Genoese Republic, had married the mother of Laetitia Bonaparte, after the decease of her first husband. Fesch therefore stood almost in the relation of an uncle to the young Bonapartes, and after the death of Lucien Bonaparte, archdeacon of Ajaccio, he became for a time the protector and patron of the family. In the year 1789, when the French Revolution broke out, he was archdeacon of Ajaccio, and, like the majority of the Corsicans, he felt repugnance for many of the acts of the French government during that period; in particular he protested against the application to Corsica of the act known as the "Civil Constitution of the Clergy" (July 1790). As provost of the "chapter" in that city he directly felt the pressure of events; for on the suppression of religious orders and corporations, he was constrained to retire into private life.

Thereafter he shared the fortunes of the Bonaparte family in the intrigues and strifes which ensued. Drawn gradually by that family into espousing the French cause against Paoli and the Anglophiles, he was forced to leave Corsica and to proceed with Laetitia and her son to Toulon, in the early part of the autumn of 1793. Failing to find clerical duties at that time (the period of the Terror), he entered civil life, and served in various capacities, until on the appointment of Napoleon Bonaparte to the command of the French "Army of Italy" he became a commissary attached to that army. This part of his career is

obscure and without importance. His fortunes rose rapidly on the attainment of the dignity of First Consul by his former charge, Napoleon, after the *coup d'état* of Brumaire (November 1799). Thereafter, when the restoration of the Roman Catholic religion was in the mind of the First Consul, Fesch resumed his clerical vocation and took an active part in the complex negotiations which led to the signing of the Concordat with the Holy See on the 15th of July 1801. His reward came in the prize of the archbishopric of Lyons, on the duties of which he entered in August 1802. Six months later he received a still more signal reward for his past services, being raised to the dignity of cardinal.

In 1804 on the retirement of Cacault from the position of French ambassador at Rome, Fesch received that important appointment. He was assisted by Châteaubriand, but soon sharply differed with him on many questions. Towards the close of the year 1804 Napoleon entrusted to Fesch the difficult task of securing the presence of Pope Pius VII. at the forthcoming coronation of the emperor at Notre Dame, Paris (Dec. 2nd, 1804). His tact in overcoming the reluctance of the pope to be present at the coronation (it was only eight months after the execution of the duc d'Enghien) received further recognition. He received the grand cordon of the Legion of Honour, became grand-almoner of the empire and had a seat in the French senate. He was to receive further honours. In 1806 one of the most influential of the German clerics, Karl von Dalberg, then prince bishop of Regensburg, chose him to be his coadjutor and designated him as his successor.

Events, however, now occurred which overclouded his prospects. In the course of the years 1806-1807 Napoleon came into sharp collision with the pope on various matters both political and religious. Fesch sought in vain to reconcile the two potentates. Napoleon was inexorable in his demands, and Pius VII. refused to give way where the discipline and vital interests of the church seemed to be threatened. The emperor on several occasions sharply rebuked Fesch for what he thought to be weakness and ingratitude. It is clear, however, that the cardinal went as far as possible in counselling the submission of the spiritual to the civil power. For a time he was not on speaking terms with the pope; and Napoleon recalled him from Rome.

Affairs came to a crisis in the year 1809, when Napoleon issued at Vienna the decree of the 17th of May, ordering the annexation of the papal states to the French empire. In that year Napoleon conferred on Fesch the archbishopric of Paris, but he refused the honour. He, however, consented to take part in an ecclesiastical commission formed by the emperor from among the dignitaries of the Gallican Church, but in 1810 the commission was dissolved. The hopes of Fesch with respect to Regensburg were also damped by an arrangement of the year 1810 whereby Regensburg was absorbed in Bavaria.

In the year 1811 the emperor convoked a national council of Gallican clerics for the discussion of church affairs, and Fesch was appointed to preside over their deliberations. Here again, however, he failed to satisfy the inflexible emperor and was dismissed to his diocese. The friction between uncle and nephew became more acute in the following year. In June 1812, Pius VII. was brought from his first place of detention, Savona, to Fontainebleau, where he was kept under surveillance in the hope that he would give way in certain matters relating to the Concordat and in other clerical affairs. Fesch ventured to write to the aged pontiff a letter which came into the hands of the emperor. His anger against Fesch was such that he stopped the sum of 150,000 florins which had been accorded to him. The disasters of the years 1812-1813 brought Napoleon to treat Pius VII. with more lenity and the position of Fesch thus became for a time less difficult. On the first abdication of Napoleon (April 11th, 1814) and the restoration of the Bourbons, he, however, retired to Rome where he received a welcome. The events of the Hundred Days (March-June, 1815) brought him back to France; he resumed his archiepiscopal duties at Lyons and was further named a member of the senate. On the second abdication of the emperor (June 22nd, 1815) Fesch retired to Rome, where he spent the rest of his days in dignified ease, surrounded by numerous masterpieces of art, many of which he bequeathed to the city of Lyons. He died at Rome on the 13th of May 1839.

See J.B. Monseigneur Lyonnet, *Le Cardinal Fesch* (2 vols., Lyons, 1841); Ricard, *Le Cardinal Fesch* (Paris, 1893); H. Welschinger, *Le Pape et l'empereur* (Paris, 1905); F. Masson, *Napoléon et sa famille* (4 vols., Paris, 1897-1900).

FESSA, a town and district of Persia in the province of Fars. The town is situated in a fertile plain in 29° N. and 90 m. from Shiraz, and has a population of about 5000. The district has forty villages and extends about 40 m. north-south from Runiz to Nassīrabad and 16 m. east-west from Vāsilabad to Deh Dasteh (Dastajah); it produces much grain, dates, tobacco, opium and good fruit.

FESSENDEN, WILLIAM PITT (1806-1869), American statesman and financier, was born in Boscawen, New Hampshire, on the 16th of October 1806. After graduating at Bowdoin College in

1823, he studied law, and in 1827 was admitted to the bar, eventually settling in Portland, Maine, where for two years he was associated in practice with his father, Samuel Fessenden (1784-1869), a prominent lawyer and anti-slavery leader. In 1832 and in 1840 Fessenden was a representative in the Maine legislature, and in 1841-1843 was a Whig member of the national House of Representatives. When his term in this capacity was over, he devoted himself unremittingly and with great success to the law. He became well known, also, as an eloquent advocate of slavery restriction. In 1845-1846 and 1853-1854 he again served in the state House of Representatives, and in 1854 was chosen by the combined votes of Whigs and Anti-Slavery Democrats to the United States Senate. Within a fortnight after taking his seat he delivered a speech in opposition to the Kansas-Nebraska Bill, which at once made him a force in the congressional anti-slavery contest. From then on he was one of the most eloquent and frequent debaters among his colleagues, and in 1859, almost without opposition, he was re-elected to the Senate as a member of the Republican party, in the organization of which he had taken an influential part. He was a delegate in 1861 to the Peace Congress, but after the actual outbreak of hostilities he insisted that the war should be prosecuted vigorously. As chairman of the Senate Committee on Finance, his services were second in value only to those of President Lincoln and Secretary Salmon P. Chase in efforts to provide funds for the defence of the Union; and in July 1864 Fessenden succeeded Chase as secretary of the treasury. The finances of the country in the early summer of 1864 were in a critical condition; a few days before leaving office Secretary Chase had been compelled to withdraw from the market $32,000,000 of 6% bonds, on account of the lack of acceptable bids; gold had reached 285 and was fluctuating between 225 and 250, while the value of the paper dollar had sunk as low as 34 cents. It was Secretary Fessenden’s policy to avoid a further increase of the circulating medium, and to redeem or consolidate the temporary obligations outstanding. In spite of powerful pressure the paper currency was not increased a dollar during his tenure of the office. As the sales of bonds and treasury notes were not sufficient for the needs of the Treasury, interest-bearing certificates of indebtedness were issued to cover the deficits; but when these began to depreciate the secretary, following the example of his predecessors, engaged the services of the Philadelphia banker Jay Cooke (*q.v.*) and secured the consent of Congress to raise the balance of the $400,000,000 loan authorized on the 30th of June 1864 by the sale of the so-called “seven-thirty” treasury notes (*i.e.* notes bearing interest at 7.3% payable in currency in three years or convertible at the option of the holder into 6% 5-20 year gold bonds). Through Cooke’s activities the sales became enormous; the notes, issued in denominations as low as $50, appealed to the patriotic impulses of the people who could not subscribe for bonds of a higher denomination. In the spring of 1865 Congress authorized an additional loan of $600,000,000 to be raised in the same manner, and for the first time in four years the Treasury was able to meet all its obligations. After thus securing ample funds for the enormous expenditures of the war, Fessenden resigned the treasury portfolio in March 1865, and again took his seat in the Senate, serving till his death. In the Senate he again became chairman of the finance committee, and also of the joint committee on reconstruction. He was the author of the report of this last committee (1866), in which the Congressional plan of reconstruction was set forth and which has been considered a state paper of remarkable power and cogency. He was not, however, entirely in accord with the more radical members of his own party, and this difference was exemplified in his opposition to the impeachment of President Johnson and subsequently in his voting for Johnson’s acquittal. He bore with calmness the storm of reproach from his party associates which followed, and lived to regain the esteem of those who had attacked him. He died at Portland, Maine, on the 6th of September 1869.

See Francis Fessenden, *Life and Public Services of William Pitt Fessenden* (2 vols., Boston, 1907).

FESSLER, IGNAZ AURELIUS (1756-1839), Hungarian ecclesiastic, historian and freemason, was born on the 18th of May 1756 at the village of Zurány in the county of Moson. In 1773 he joined the order of Capuchins, and in 1779 was ordained priest. He had meanwhile continued his classical and philological studies, and his liberal views brought him into frequent conflict with his superiors. In 1784, while at the monastery of Mödling, near Vienna, he wrote to the emperor Joseph II., making suggestions for the better education of the clergy and drawing his attention to the irregularities of the monasteries. The searching investigation which followed raised up against him many implacable enemies. In 1784 he was appointed professor of Oriental languages and hermeneutics in the university of Lemberg, when he took the degree of doctor of divinity; and shortly afterwards he was released from his monastic vows on the intervention of the emperor. In 1788 he brought out his tragedy of *Sidney*, an *exposé* of the tyranny of James II. and of the fanaticism of the papists in England. This was attacked so violently as profane and revolutionary that he was compelled to resign his office and seek refuge in Silesia. In Breslau he met with a cordial reception from G.W. Korn the publisher, and was, moreover, subsequently employed by the prince of Carolath-Schönaich as tutor to his sons. In 1791 Fessler was converted to Lutheranism and next year contracted an unhappy marriage, which was dissolved in 1802, when he married again. In 1796 he went to Berlin, where he founded a humanitarian society, and was commissioned by the freemasons of that city to assist Fichte in reforming the statutes and ritual of their lodge. He soon after this obtained a government appointment in connexion with the newly-acquired Polish provinces, but in consequence of the battle of Jena (1806) he lost this office, and remained in very needy circumstances until 1809, when he was summoned to St

Petersburg by Alexander I., to fill the post of court councillor, and the professorship of oriental languages and philosophy at the Alexander-Nevski Academy. This office, however, he was soon obliged to resign, owing to his alleged atheistic tendencies, but he was subsequently nominated a member of the legislative commission. In 1815 he went with his family to Sarepta, where he joined the Moravian community and again became strongly orthodox. This cost him the loss of his salary, but it was restored to him in 1817. In November 1820 he was appointed consistorial president of the evangelical communities at Saratov and subsequently became chief superintendent of the Lutheran communities in St Petersburg. Fessler's numerous works are all written in German. In recognition of his important services to Hungary as a historian, he was in 1831 elected a corresponding member of the Hungarian Academy of Sciences. He died at St Petersburg on the 15th of December 1839.

Fessler was a voluminous writer, and during his life exercised great influence; but, with the possible exception of the history of Hungary, none of his books has any value now. He did not pretend to any critical treatment of his materials, and most of his historical works are practically historical novels. He did much, however, to make the study of history popular. His most important works are—*Die Geschichten der Ungarn und ihrer Landsassen* (10 vols. Leipzig, 1815-1825); *Marcus Aurelius* (3 vols., Breslau, 1790-1792; 3rd edition, 4 vols., 1799); *Aristides und Themistokles* (2 vols., Berlin, 1792; 3rd edition, 1818); *Attila, König der Hunnen* (Breslau, 1794); *Mathias Corvinus* (2 vols., Breslau, 1793-1794); and *Die drei grossen Könige der Hungarn aus dem Arpadischen Stamme* (Breslau, 1808).

See Fessler's *Rückblicke auf seine siebzigjährige Pilgerschaft* (Breslau, 1824; 2nd edition, Leipzig, 1851).

FESTA, CONSTANZO (*c.* 1495-1545), Italian singer and musical composer, became a member of the Pontifical choir in Rome in 1517, and soon afterwards *maestro* at the Vatican. His motets and madrigals (the first book of which appeared in 1537) excited Dr Burney's warm praise in his *History of Music*; and, among other church music, his *Te Deum* (published in 1596) is still sung at important services in Rome. His madrigal, called in English "Down in a flow'ry vale," is well known.

FESTINIOG (or Ffestiniog), a town of Merionethshire, North Wales, at the head of the Festiniog valley, 600 ft. above the sea, in the midst of rugged scenery, near the stream Dwyryd, 31 m. from Conway. Pop. of urban district (1901), 11,435. There are many large slate quarries in this parish, especially at Blaenau Festiniog, the junction of three railways, London & North Western, Great Western and Festiniog, a narrow-gauge line between Portmadoc and Duffws. This light railway runs at a considerable elevation (some 700 ft.), commanding a view across the valley and lake of Tan y Bwlch. Lord Lyttelton's letter to Mr Bower is a well-known panegyric on Festiniog. Thousands of workmen are employed in the slate quarries. The Cynfael falls are famous. Near are *Beddau gwyr Ardudwy* (the graves of the men of Ardudwy), memorials of a fight to recover women of the Clwyd valley from the men of Ardudwy. Near, too, is a rock named "Hugh Lloyd's pulpit" (Lloyd lived in the time of Charles I., Cromwell and Charles II.).

FESTOON (from Fr. *feston*, Ital. *festone*, from a Late Lat. *festo*, originally a "festal garland," Lat. *festum*, feast), a wreath or garland, and so in architecture a conventional arrangement of flowers, foliage or fruit bound together and suspended by ribbons, either from a decorated knot, or held in the mouths of lions, or suspended across the back of bulls' heads as in the Temple of Vesta at Tivoli. The "motif" is sometimes known as a "swag." It was largely employed both by the Greeks and Romans and formed the principal decoration of altars, friezes and panels. The ends of the ribbons are sometimes formed into bows or twisted curves; when in addition a group of foliage or flowers is suspended it is called a "drop." Its origin is probably due to the representation in stone of the garlands of natural flowers, &c., which were hung up over an entrance doorway on fête days, or suspended round the altar.

FESTUS (? Rufus or Rufius), one of the Roman writers of *breviaria* (epitomes of Roman history). The reference to the defeat of the Goths at Noviodunum (A.D. 369) by the emperor Valens, and the fact that the author is unaware of the constitution of Valentia as a province (which took place in the same year) are sufficient indication to fix the date of composition. Mommsen identifies the author with Rufius Festus, proconsul of Achaea (366), and both with Rufius Festus Avienus (*q.v.*), the translator of Aratus. But the absence of the name Rufius in the best MSS. is against this. Others take him to be Festus of Tridentum, *magister memoriae* (secretary) to Valens and proconsul of Asia, where he was sent to punish those implicated in the conspiracy of Theodorus, a commission which he executed with such merciless severity that his name became a byword. The work itself (*Breviarium rerum gestarum populi Romani*) is divided into two parts—one geographical, the other historical. The chief authorities used are Livy, Eutropius and Florus. It is extremely meagre, but the fact that the last part is based on the writer's personal recollections makes it of some value for the history of the 4th century.

Editions by W. Förster (Vienna, 1873) and C. Wagener (Prague, 1886); see also R. Jacobi, *De Festi breviarii fontibus* (Bonn, 1874), and H. Peter, *Die geschichtliche Litt. über die römische Kaiserzeit* ii. p. 133 (1897), where the epitomes of Festus, Aurelius Victor and Eutropius are compared.

FESTUS, SEXTUS POMPEIUS, Roman grammarian, probably flourished in the 2nd century A.D. He made an epitome of the celebrated work *De verborum significatu*, a valuable treatise alphabetically arranged, written by M. Verrius Flaccus, a freedman and celebrated grammarian who flourished in the reign of Augustus. Festus gives the etymology as well as the meaning of every word; and his work throws considerable light on the language, mythology and antiquities of ancient Rome. He made a few alterations, and inserted some critical remarks of his own. He also omitted such ancient Latin words as had long been obsolete; these he discussed in a separate work now lost, entitled *Priscorum verborum cum exemplis*. Of Flaccus's work only a few fragments remain, and of Festus's epitome only one original copy is in existence. This MS., the Codex Festi Farnesianus at Naples, only contains the second half of the work (M-V) and that not in a perfect condition. It has been published in facsimile by Thewrewk de Ponor (1890). At the close of the 8th century Paulus Diaconus abridged the abridgment. From his work and the solitary copy of the original attempts have been made with the aid of conjecture to reconstruct the treatise of Festus.

Of the early editions the best are those of J. Scaliger (1565) and Fulvius Ursinus (1581); in modern times, those of C.O. Müller (1839, reprinted 1880) and de Ponor (1889); see J.E. Sandys, *History of Classical Scholarship*, vol. i. (1906).

FÉTIS, FRANÇOIS JOSEPH (1784-1871), Belgian composer and writer on music, was born at Mons in Belgium on the 25th of March 1784, and was trained as a musician by his father, who followed the same calling. His talent for composition manifested itself at the age of seven, and at nine years old he was an organist at Sainte-Waudru. In 1800 he went to Paris and completed his studies at the conservatoire under such masters as Boieldieu, Rey and Pradher. In 1806 he undertook the revision of the Roman liturgical chants in the hope of discovering and establishing their original form. In this year he married the granddaughter of the Chevalier de Kéralio, and also began his *Biographie universelle des musiciens*, the most important of his works, which did not appear until 1834. In 1821 he was appointed professor at the conservatoire. In 1827 he founded the *Revue musicale*, the first serious paper in France devoted exclusively to musical matters. Fétis remained in the French capital till in 1833, at the request of Leopold I., he became director of the conservatoire of Brussels and the king's chapel-master. He also was the founder, and, till his death, the conductor of the celebrated concerts attached to the conservatoire of Brussels, and he inaugurated a free series of lectures on musical history and philosophy. He produced a large quantity of original compositions, from the opera and the oratorio down to the simple *chanson*. But all these are doomed to oblivion. Although not without traces of scholarship and technical ability, they show total absence of genius. More important are his writings on music. They are partly historical, such as the *Curiosités historiques de la musique* (Paris, 1850), and the *Histoire universelle de musique* (Paris, 1869-1876); partly theoretical, such as the *Méthode des méthodes de piano* (Paris, 1837), written in conjunction with Moscheles. Fétis died at Brussels on the 26th of March 1871. His valuable library was purchased by the Belgian government and presented to the Brussels conservatoire. His work as a musical historian was prodigious in quantity, and, in spite of many inaccuracies and some prejudice revealed in it, there can be no question as to its value for the student.

FETISHISM, an ill-defined term, used in many different senses: (*a*) the worship of inanimate objects, often regarded as peculiarly African; (*b*) negro religion in general; (*c*) the worship of inanimate objects conceived as the residence of spirits not inseparably bound up with, nor originally connected with, such objects; (*d*) the doctrine of spirits embodied in, or attached to, or conveying influence through, certain material objects (Tylor); (*e*) the use of charms, which are not worshipped, but derive their magical power from a god or spirit; (*f*) the use as charms of objects regarded as magically potent in themselves. A further extension is given by some writers, who use the term as synonymous with the religions of primitive peoples, including under it not only the worship of inanimate objects, such as the sun, moon or stars, but even such phases of primitive philosophy as totemism. Comte applied the term to denominate the view of nature more commonly termed animism.

Derivation.—The word fetish (or fetich) was first used in connexion with Africa by the Portuguese discoverers of the last half of the 15th century; relics of saints, rosaries and images were then abundant all over Europe and were regarded as possessing magical virtue; they were termed by the Portuguese *feiticos* (*i.e.* charms). Early voyagers to West Africa applied this term to the wooden figures, stones, &c., regarded as the temporary residence of gods or spirits, and to charms. There is no reason to suppose that the word *feitico* was applied either to an animal or to the local spirit of a river, hill or forest. *Feitico* is sometimes interpreted to mean artificial, made by man, but the original sense is more probably "magically active or artful." The word was probably brought into general use by C. de Brosses, author of *Du culte des dieux fétiches* (1760), but it is frequently used by W. Bosman in his *Description of Guinea* (1705), in the sense of "the false god, Bossum" or "Bohsum," properly a tutelary deity of an individual.

Definition.—The term fetish is commonly understood to mean the worship of or respect for material, inanimate objects, conceived as magically active from a virtue inherent in them, temporarily or permanently, which does not arise from the fact that a god or spirit is believed to reside in them or communicate virtue to them. Taken in this sense fetishism is probably a mark of decadence. There is no evidence of any such belief in Africa or elsewhere among primitive peoples. It is only after a certain grade of culture has been attained that the belief in luck appears; the fetish is essentially a mascot or object carried for luck.

Ordinary Usage.—In the sense in which Dr Tylor uses the term the fetish is (1) a "god-house" or (2) a charm derived from a tutelary deity or spirit, and magically active in virtue of its association with such deity or spirit. In the first of these senses the word is applied to objects ranging from the unworked stone to the pot or the wooden figure, and is thus hardly distinguishable from idolatry. (*a*) The *bohsum* or tutelary deity of a particular section of the community is derived from the local gods through the priests by the performance of a certain series of rites. The priest indicates into what object the *bohsum* will enter and proceeds to the abode of the local god to procure the object in question. After making an offering the object is carried to an appropriate spot and a "fetish" tree set up as a shade for it, which is sacred so long as the *bohsum* remains beneath it. The fall of the tree is believed to mark the departure of the spirit. A *bohsum* may also be procured through a dream; but in this case, too, it is necessary to apply to the priest to decide whether the dream was veridical. (*b*) The *suhman* or tutelary deity of an individual is not an object selected at random to be the residence of the spirit. It is only procurable at the residence of a Sasabonsum, a malicious non-human being. Various ceremonies are performed, and a spirit connected with the Sasabonsum is finally asked to enter an object. This is then kept for three days; if no good fortune results it is concluded either that the spirit did not enter the object selected, or that it is disinclined to extend its protection. In either case the ceremonies must be commenced afresh. Otherwise offerings and even human sacrifices in exceptional cases are made to the *suhman*. It is commonly believed that the negro claims the power of coercing his tutelary deity. This is denied by Colonel Ellis. It is certain that coercion of deities is not unknown, but further evidence is required that the negro uses it when his deity is refractory.

The *suhman* can, it is believed, communicate a part of his powers to various objects in which he does not dwell; these are also termed *suhman* by the natives and may have given rise to the belief that the practices commonly termed fetishism are not animistic. These charms are many in number; offerings of food and drink are made, *i.e.* to the portion of the power of the *suhman* which resides in them. These charms can only be made by the possessor of the *suhman*.

On the Guinea Coast the spirit implanted in the object is usually, if not invariably, non-human. Farther south on the Congo the "fetish" is inhabited by human souls also. The priest goes into the forest and cuts an image; when a party enters a wood for this purpose they may not mention the name of any living being unless they wish him to die and his soul to enter the fetish. The right person having been selected, his name is mentioned; and he is believed to die within ten days, his soul passing into the *nkissi*. It is into these figures that the nails are driven, in order to procure the vengeance of the indwelling spirit on some enemy.

In many cases the fetish spirit is believed to leave the "god-house" and pass for the time being into the body of the priest, who manifests the phenomena of possession (*q.v.*). It is a common error to suppose that the whole of African religion is embraced in the practices connected with these tutelary deities; so far from this being the case, belief in higher gods, not necessarily accompanied with worship or propitiation, is common in many parts of Africa, and there is no reason to suppose that it had been derived in every case, perhaps not in any case, from Christian or Mahommedan missionaries.

See A.B. Ellis, *Tshi-speaking Peoples*, chs. vii., viii. and xii.; Waitz, *Anthropologie der Naturvölker*, ii. 174; R.E. Dennett in *Folklore*, vol. xvi.; R.H. Nassau, *Fetichism in West Africa* (1904); also Tylor,

Primitive Culture, ii. 143, and M.H. Kingsley, *West African Studies* (2nd ed., 1901), where the term is used in a more extended sense.

(N. W. T.)

FETTERCAIRN, a burgh of barony of Kincardineshire, Scotland, 4½ m. N.W. of Laurencekirk. Pop. of parish (1901) 1390. The chief structures include a public hall, library and reading-room, and the arch built to commemorate the visit of Queen Victoria in 1861. The most interesting relic, however, is the market cross, which originally belonged to the extinct town of Kincardine. To the S.W. is Balbegno Castle, dating from 1509, and planned on a scale that threatened to ruin its projector. It contains a lofty hall of fine proportions. Two miles N. is Fasque, the estate of the Gladstones, which was acquired in 1831 by Sir John Gladstone (1764-1851), the father of W.E. Gladstone. The castle, which stands in beautiful grounds, was built in 1809. Sir John Gladstone’s tomb is in the Episcopal church of St Andrew, which he erected and endowed. In the immediate vicinity are the ruins of the royal castle of Kincardine, where, according to tradition, Kenneth III. was assassinated in 1005, although he is more generally said to have been slain in battle at Monzievaird, near Crieff in Perthshire.

FETTERS AND HANDCUFFS, instruments for securing the feet and hands of prisoners under arrest, or as a means of punishment. The old names were manacles, shackbolts or shackles, gyves and swivels. Until within recent times handcuffs were of two kinds, the figure-8 ones which confined the hands close together either in front or behind the prisoner, or the rings from the wrists were connected by a short chain much on the model of the handcuffs in use by the police forces of to-day. Much improvement has been made in handcuffs of late. They are much lighter and they are adjustable, fitting any wrist, and thus the one pair will serve a police officer for any prisoner. For the removal of gangs of convicts an arrangement of handcuffs connected by a light chain is used, the chain running through a ring on each fetter and made fast at both ends by what are known as *end-locks*. Several recently invented appliances are used as handcuffs, *e.g.* snaps, nippers, twisters. They differ from handcuffs in being intended for one wrist only, the other portion being held by the captor. In the snap the smaller circlet is snapped to on the prisoner’s wrist. The nippers can be instantly fastened on the wrist. The twister, not now used in England as being liable to injure prisoners seriously, is a chain attached to two handles; the chain is put round the wrist and the two handles twisted till the chain is tight enough.

Leg-irons are anklets of steel connected by light chains long enough to permit of the wearer walking with short steps. An obsolete form was an anklet and chain to the end of which was attached a heavy weight, usually a round shot. The Spanish used to secure prisoners in bilboes, shackles round the ankles secured by a long bar of iron. This form of leg-iron was adopted in England, and was much employed in the services during the 17th and 18th centuries. An ancient example is preserved in the Tower of London. The French marine still use a kind of leg-iron of the bilbo type.

FEU, in Scotland, the commonest mode of land tenure. The word is the Scots variant of “fee” (*q.v.*). The relics of the feudal system still dominate Scots conveyancing. That system has recognized as many as seven forms of tenure—ward, socage, mortification, feu, blench, burgage, booking. Ward, the original military holding, was abolished in 1747 (20 G. II. c. 20), as an effect of the rising of 1745. Socage and mortification have long since disappeared. Booking is a conveyance peculiar to the borough of Paisley, but does not differ essentially from feu. Burgage is the system by which land is held in royal boroughs. Blench holding is by a nominal payment, as of a penny Scots, or a red rose, often only to be rendered upon demand. In feu holding there is a substantial annual payment in money or in kind in return for the enjoyment of the land. The crown is the first overlord or superior, and land is held of it by crown vassals, but they in their turn may “feu” their land, as it is called, to others who become *their* vassals, whilst they themselves are mediate overlords or superiors; and this process of sub-infeudation may be repeated to an indefinite extent. The Conveyancing Act of 1874 renders any clause in a disposition against sub-infeudation null and void. In England on the other hand, since 1290, when the statute *Quia Emptores* was passed, sub-infeudation is impossible, as the new holder simply effaces the grantor, holding by the same title as the grantor himself. Casualties, which are a feature of land held in feu, are certain payments made to the superior, contingent on the happening of certain events. The most important was the payment of an amount equal to one year’s feu-duty by a new holder, whether heir or purchaser of the feu. The Conveyancing Act of 1874 abolished casualties in all

feus after that date, and power was given to redeem this burden on feus already existing. If the vassal does not pay the feu-duty for two years, the superior, among other remedies, may obtain by legal process a decree of irritancy, whereupon *tinsel* or forfeiture of the feu follows. Previously to 1832 only the vassals of the crown had votes in parliamentary elections for the Scots counties, and this made in favour of sub-infeudation as against sale outright. In Orkney and Shetland land is still largely possessed as udal property, a holding derived or handed down from the time when these islands belonged to Norway. Such lands may be converted into feus at the will of the proprietor and held from the crown or Lord Dundas. At one time the system of conveyancing by which the transfer of feus was effected was curious and complicated, requiring the presence of parties on the land itself and the symbolical handing over of the property, together with the registration of various documents. But legislation since the middle of the 19th century has changed all that. The system of feuing in Scotland, as contrasted with that of long leaseholds in England, has tended to secure greater solidity and firmness in the average buildings of the northern country.

See Erskine's *Principles*; Bell's *Principles*; Rankine, *Law of Landownership in Scotland*.

FEUCHÈRES, SOPHIE, Baronne de (1795-1840), Anglo-French adventuress, was born at St Helens, Isle of Wight, in 1795, the daughter of a drunken fisherman named Dawes. She grew up in the workhouse, went up to London as a servant, and became the mistress of the duc de Bourbon, afterwards prince de Condé. She was ambitious, and he had her well educated not only in modern languages but, as her exercise books—still extant—show, in Greek and Latin. He took her to Paris and, to prevent scandal and to qualify her to be received at court, had her married in 1818 to Adrien Victor de Feuchères, a major in the Royal Guards. The prince provided her dowry, made her husband his aide-de-camp and a baron. The baroness, pretty and clever, became a person of consequence at the court of Louis XVIII. De Feuchères, however, finally discovered the relations between his wife and Condé, whom he had been assured was her father, left her—he obtained a legal separation in 1827—and told the king, who thereupon forbade her appearance at court. Thanks to her influence, however, Condé was induced in 1829 to sign a will bequeathing about ten million francs to her, and the rest of his estate—more than sixty-six millions—to the duc d'Aumale, fourth son of Louis Philippe. Again she was in high favour. Charles X. received her at court, Talleyrand visited her, her niece married a marquis and her nephew was made a baron. Condé, wearied by his mistress's importunities, and but half pleased by the advances made him by the government of July, had made up his mind to leave France secretly. When on the 27th of August 1830 he was found hanging dead from his window, the baroness was suspected and an inquiry was held, but the evidence of death being the result of any crime appearing insufficient, she was not prosecuted. Hated as she was alike by legitimatists and republicans, life in Paris was no longer agreeable for her, and she returned to London, where she died in December 1840.

FEUCHTERSLEBEN, ERNST, Freiherr von (1806-1849), Austrian physician, poet and philosopher, was born in Vienna on the 29th of April 1806; of an old Saxon noble family. He attended the "Theresian Academy" in his native city, and in 1825 entered its university as a student of medicine. In 1833 he obtained the degree of doctor of medicine, settled in Vienna as a practising surgeon, and in 1834 married. The young doctor kept up his connexion with the university, where he lectured, and in 1844 was appointed dean of the faculty of medicine. He cultivated the acquaintance of Franz Grillparzer, Heinrich Laube, and other intellectual lights of the Viennese world, interested himself greatly in educational matters, and in 1848, while refusing the presidency of the ministry of education, accepted the appointment of under secretary of state in that department. His health, however, gave way, and he died at Vienna on the 3rd of September 1849. He was not only a clever physician, but a poet of fine aesthetical taste and a philosopher. Among his medical works may be mentioned: *Über das Hippokratische erste Buch von der Diät* (Vienna, 1835), *Ärzte und Publicum* (Vienna, 1848) and *Lehrbuch der ärztlichen Seelenkunde* (1845). His poetical works include *Gedichte* (Stutt. 1836), among which is the well-known beautiful hymn, which Mendelssohn set to music. "*Es ist bestimmt in Gottes Rat.*" As a philosopher he is best known by his *Zur Diätetik der Seele* [Dietetics of the soul] (Vienna, 1838), which attained great popularity, and the tendency of which, in contrast to Hufeland's *Makrobiotik* (On the Art of Prolonging Life), is to show the true way of rendering life harmonious and lovely. This work had by 1906 gone into fifty editions. Noteworthy also is his *Beiträge zur Litteratur-, Kunst- und Lebenstheorie* (Vienna, 1837-1841), and an anthology, *Geist der deutschen* Klassiker (Vienna, 1851; 3rd ed. 1865-1866).

His collected works (with the exception of the purely medical ones) were published in 7 vols. by Fr. Hebbel (Vienna, 1851-1853). See M. Necker, "Ernst von Feuchtersleben, der Freund Grillparzers," in the *Jahrbuch der Grillparzer Gesellschaft*, vol. iii. (Vienna, 1893).

FEUD, animosity, hatred, especially a permanent condition of hostilities between persons, and hence applied to a state of private warfare between tribes, clans or families, a “vendetta.” The word appears in Mid. Eng. as *fede*, which came through the O. Fr. from the O. High Ger. *fehida*, modern *Fehde*. The O. Teutonic *faiho*, an adjective, the source of *fehida*, gives the O. Eng. fáh, foe. “Fiend,” originally an enemy (cf. Ger. *Feind*), hence the enemy of mankind, the devil, and so any evil spirit, is probably connected with the same source. The word *fede* was of Scottish usage, but in the 16th century took the form *foode*, *fewd* in English. The *New English Dictionary* points out that “feud, fee (Lat. *feudum*) could not have influenced the change, for it appears fifty years later than the first instances of *foode*, &c., and was only used by writers on feudalism.” For the etymology of “feud” (*feudum*) see Fee, and for its history see Feudalism.

FEUDALISM (from Late Lat. *feodum* or *feudum*, a fee or fiel; see Fee). In every case of institutional growth in history two things are to be clearly distinguished from the beginning for a correct understanding of the process and its results. One of these is the change of conditions in the political or social environment which made growth necessary. The other is the already existing institutions which began to be transformed to meet the new needs. In studying the origin and growth of political feudalism, the distinction is easy to make. The all-prevailing need of the later Roman and early medieval society was protection—protection against the sudden attacks of invading tribes or revolted peasants, against oppressive neighbours, against the unwarranted demands of government officers, or even against the legal but too heavy exactions of the government itself. In the days of the decaying empire and of the chaotic German settlement, the weak freeman, the small landowner, was exposed to attack in almost every relation of life and on every side. The protection which normally it is the business of government to furnish he could no longer obtain. He must seek protection elsewhere wherever he could get it, and pay the price demanded for it. This is the great social fact—the failure of government to perform one of its most primary duties, the necessity of finding some substitute in private life—extending in greater or less degree through the whole formative period of feudalism, which explains the transformation of institutions that brought it into existence. Similar conditions have produced an organization which may be called feudal, in various countries, and in widely separated periods of history. While these different feudal systems have shown a general similarity of organization, there has been also great variation in their details, because they have started from different institutions and developed in different ways. The feudal system with which history most concerns itself is that of medieval western Europe, and it is that which will be here described.

The institutions which the need of protection seized upon when it first began to turn away from the state were twofold. They had both long existed in the private, not public, relations of the Romans, and they had up to this time shown no tendency to grow. One of them related to the person, to the man himself, without reference to property, the other related to land. There are thus distinguished at the beginning those two great sides of feudalism which remained to the end of its history more or less distinct, the personal relation and the land relation. The personal institution needs little description. It was the Roman patron and client relationship which had remained in existence into the days of the empire, in later times less important perhaps legally than socially, and which had been reinforced in Gaul by very similar practices in use among the Celts before their conquest. The description of this institution which has come down to us from Roman sources of the days when feudalism was beginning is not so detailed as we could wish, but we can see plainly enough that it met a frequent need, that it was called by a new name, the *patrocinium*, and that it was firmly enough entrenched in usage to survive the German conquest, and to be taken up and continued by the conquerors. In its new use, alike in the later Roman and the early German state, the landless freeman who could not support himself went to some powerful man, stated his need, and offered his services, those proper to a freeman, in return for shelter and support. This transaction, which was called commendation, gave rise in the German state to a written contract which related the facts and provided a penalty for its violation. It created a relationship of protection and support on one side, and of free service on the other.

Roman origins.

The other institution, relating to land, was that known to the Roman law as the *precarium*, a name derived from one of its essential features through all its history, the prayer of the suppliant by which the relationship was begun. The *precarium* was a form of renting land not intended primarily for income, but for use when the lease was made from friendship for example, or as a reward, or to secure a debt. Legally its characteristic feature was that the lessee had no right of any kind against the grantor. The owner could call in his land and terminate the relation at any time, for any reason, or for none at all. Even a definite understanding at the outset that the lease might be enjoyed to a specified date was no protection.[1] It followed of course that the heir had no right in the land which his father held in this way, nor was the heir of the donor bound by his father’s act. The legal character of this

transaction is summed up in a well-known passage in the *Digest:—Interdictum de precariis merito introductum est, quia nulla eo nomine juris civilis actio esset, magis enim ad donationes et beneficii causam, quam ad negotii contracti spectat precarii conditio.*[2] This may be paraphrased as follows:—The *precarium* tenant may employ the interdict against a third party, because he cannot use the ordinary civil action, his holding being not a matter of business but rather of favour and kindness. It should be noted that from its very beginning the land relationship of feudalism was not created primarily for the grantor's income, but that it emphasized in the most striking way his continued ownership.

As used for protection in later Roman days the *precarium* gave rise to what was called the commendation of lands, *patrocinium fundorum*. The poor landowner, likely to lose all that he had from one kind of oppression or another, went to the great landowner, his neighbour, whose position gave him immunity from attack or the power to prevent official abuses, and begged to be protected. The rich man answered, I can only protect my own. Of necessity the poor man must surrender to his powerful neighbour the ownership of his lands, which he then received back as a *precarium*—gaining protection during his lifetime at the cost of his children, who were left without legal claim and compelled to make the best terms they could.[3] Applied to this use the *precarium* found extensive employment in the last age of the empire. The government looked on the practice with great disfavour, because it transferred large areas from the easy access of the state to an ownership beyond its reach. The laws repeatedly forbade it under increasing penalties, but clearly it could not be stopped. The motive was too strong on both sides—the need of protection on one side, the natural desire to increase large possessions and means of self-defence on the other.

Frankish development.

These practices the Frankish conquerors of Gaul found in full possession of society when they entered into that province. They seem to have understood them at once, and, like much else Roman, to have made them their own without material change. The *patrocinium* they were made ready to understand by the existence of a somewhat similar institution among themselves, the *comitatus*, described by Tacitus. In this institution the chief of the tribe, or of some plainly marked division of the tribe, gathered about himself a band of chosen warriors, who formed a kind of private military force and body-guard. The special features of the institution were the strong tie of faith and service which bound the man, the support and rewards given by the lord, and the pride of both in the relationship. The *patrocinium* might well seem to the German only a form of the *comitatus*, but it was a form which presented certain advantages in his actual situation. The chief of these was perhaps the fact that it was not confined to king or tribal chief, but that every noble was able in the Roman practice to surround himself with his organized private army. Probably this fact, together with the more general fact of the absorption in most things of the German in the Roman, accounts for the substitution of the *patrocinium* for the *comitatus* which took place under the Merovingians.

This change did not occur, however, without some modification of the Roman customs. The *comitatus* made contributions of its own to future feudalism, to some extent to its institutional side, largely to the ideas and spirit which ruled in it. Probably the ceremony which grew into feudal homage, and the oath of fealty, certainly the honourable position of the vassal and his pride in the relationship, the strong tie which bound lord and man together, and the idea that faith and service were due on both sides in equal measure, we may trace to German sources. But we must not forget that the origin of the vassal relationship, as an institution, is to be found on Roman and not on German soil. The *comitatus* developed and modified, it did not originate. Nor was the feudal system established in any sense by the settlement of the *comitatus* group on the conquered land. The uniting of the personal and the land sides of feudalism came long after the conquest, and in a different way.

To the *precarium* German institutions offered no close parallel. The advantages, however, which it afforded were obvious, and this side of feudalism developed as rapidly after the conquest as the personal. The new German noble was as eager to extend the size of his lands and to increase the numbers of his dependants as the Roman had been. The new German government furnished no better protection from local violence, nor was it able any more effectively to check the practices which were creating feudalism; indeed for a long time it made no attempt to do so. *Precarium* and *patrocinium* easily passed from the Roman empire to the Frankish kingdom, and became as firmly rooted in the new society as they had ever been in the old. Up to this point we have seen only the small landowner and the landless man entering into these relations. Feudalism could not be established, however, until the great of the land had adopted them for themselves, and had begun to enter the clientage of others and to hold lands by the *precarium* tenure. The first step towards this result was easily and quickly taken. The same class continued to furnish the king's men, and to form his household and body-guard whether the relation was that of the *patrocinium* or the *comitatus*, and to be made noble by entering into it. It was later that they became clients of one another, and in part at least as a result of their adoption of the *precarium* tenure. In this latter step the influence of the Church rather than of the king seems to have been effective. The large estates which pious intentions had bestowed on the Church it was not allowed to alienate. It could most easily make them useful to gain the influence and support which it needed, and to provide for the public functions which fell to its share, by employing the *precarium* tenure. On the other side, the great men coveted the wide estates of bishop and abbot, and were ready without persuasion to annex portions of them to their own on the easy terms of this tenure, not always indeed observed by the holder, or able to be enforced by the Church. The employment of the *precarium* by the Church seems to have been one of the surest means by which this form of landholding was carried over from the Romans to the Frankish period and developed into new

forms. It came to be made by degrees the subject of written contract, by which the rights of the holder were more definitely defined and protected than had been the case in Roman law. The length of time for which the holding should last came to be specified, at first for a term of years and then for life, and some payment to the grantor was provided for, not pretending to represent the economic value of the land, but only to serve as a mark of his continued ownership.

These changes characterize the Merovingian age of Frankish history. That period had practically ended, however, before these two institutions showed any tendency to join together as they were joined in later feudalism. Nor had the king up to that time exerted any apparent influence on the processes that were going forward. Grants of land of the Merovingian kings had carried with them ownership and not a limited right, and the king's *patrocinium* had not widened in extent in the direction of the later vassal relation. It was the advent of the Carolingian princes and the difficulties which they had to overcome that carried these institutions a stage further forward. Making their way up from a position among the nobility to be the rulers of the land, and finally to supplant the kings, the Carolingians had especial need of resources from which to purchase and reward faithful support. This need was greatly increased when the Arab attack on southern Gaul forced them to transform a large part of the old Frankish foot army into cavalry.[4] The fundamental principle of the Frankish military system, that the man served at his own expense, was still unchanged. It had indeed begun to break down under the strain of frequent and distant campaigns, but it was long before it was changed as the recognized rule of medieval service. If now, in addition to his own expenses, the soldier must provide a horse and its keeping, the system was likely to break down altogether. It was this problem which led to the next step. To solve it the early Carolingian princes, especially Charles Martel, who found the royal domains exhausted and their own inadequate, grasped at the land of the Church. Here was enough to endow an army, if some means could be devised to permit its use. This means was found in the *precarium* tenure. Keeping alive, as it did, the fact of the grantor's ownership, it did not in form deprive the Church of the land. Recognizing that ownership by a small payment only, not corresponding to the value of the land, it left the larger part of the income to meet the need which had arisen. At the same time undoubtedly the new holder of the land, if not already the vassal of the prince, was obliged to become so and to assume an obligation of service with a mounted force when called upon.[5] This expedient seems to have solved the problem. It gave rise to the numerous *precariae verbo regis*, of the Church records, and to the condemnation of Charles Martel in the visions of the clergy to worse difficulties in the future life than he had overcome in this. The most important consequences of the expedient, however, were not intended or perceived at the time. It brought together the two sides of feudalism, vassalage and benefice, as they were now commonly called, and from this age their union into what is really a single institution was rapid;[6] it emphasized military service as an essential obligation of the vassal; and it spread the vassal relation between individual proprietors and the sovereign widely over the state.

In the period that followed, the reign of Charlemagne and the later Carolingian age, continued necessities, military and civil, forced the kings to recognize these new institutions more fully, even when standing in a position between the government and the subject, intercepting the public duties of the latter. The incipient feudal baron had not been slow to take advantage of the break-down of the old German military system. As in the last days of the Roman empire the poor landowner had found his only refuge from the exactions of the government in the protection of the senator, who could in some way obtain exemptions, so the poor Frank could escape the ruinous demands of military service only by submitting himself and his lands to the count, who did not hesitate on his side to force such submission. Charlemagne legislated with vigour against this tendency, trying to make it easier for the poor freeman to fulfil his military duties directly to the state, and to forbid the misuse of power by the rich, but he was not more successful than the Roman government had been in a like attempt. Finally the king found himself compelled to recognize existing facts, to lay upon the lord the duty of producing his men in the field and to allow him to appear as their commander. This solved the difficulty of military service apparently, but with decisive consequences. It completed the transformation of the army into a vassal army; it completed the recognition of feudalism by the state, as a legitimate relation between different ranks of the people; and it recognized the transformation in a great number of cases of a public duty into a private obligation.

In the meantime another institution had grown up in this Franco-Roman society, which probably began and certainly assisted in another transformation of the same kind. This is the immunity. Suggested probably by Roman practices, possibly developed directly from them, it received a great extension in the Merovingian period, at first and especially in the interest of the Church, but soon of lay land-holders. By the grant of an immunity to a proprietor the royal officers, the count and his representatives, were forbidden to enter his lands to exercise any public function there. The duties which the count should perform passed to the proprietor, who now represented the government for all his tenants free and unfree. Apparently no modification of the royal rights was intended by this arrangement, but the beginning of a great change had really been made. The king might still receive the same revenues and the same services from the district held by the lord as formerly, but for their payment a private person in his capacity as overlord was now responsible. In the course of a long period characterized by a weak central government, it was not difficult to enlarge the rights which the lord thus obtained, to exclude even the king's personal authority from the immunity, and to translate the duties and payments which the tenant had once owed to the state into obligations which he owed to his lord, even finally into incidents of his tenure. The most important public function whose transformation into a private possession was assisted by the growth of the immunity was the judicial. This process had probably already begun in a small way in the growth of institutions which belong to

the economic side of feudalism, the organization of agriculture on the great estates. Even in Roman days the proprietor had exercised a jurisdiction over the disputes of his unfree tenants. Whether this could by its own growth have been extended over his free tenants and carried so far as to absorb a local court, like that of the hundred, into private possession, is not certain. It seems probable that it could. But in any case, the immunity easily carried the development of private jurisdiction through these stages. The lord's court took the place of the public court in civil, and even by degrees in criminal cases. The plaintiff, even if he were under another lord, was obliged to sue in the court of the defendant's lord, and the portion of the fine for a breach of the peace which should have gone to the state went in the end to the lord.

The transfer of the judicial process, and of the financial and administrative sides of the government as well, into private possession, was not, however, accomplished entirely by the road of the immunity. As government weakened after the strong days of Charlemagne, and disorder, invasion, and the difficulty of intercommunication tended to throw the locality more and more upon its own resources, the officer who had once been the means of centralization, the count, found success in the effort for independence which even Charlemagne had scarcely overcome. He was able to throw off responsibility to any central authority, and to exercise the powers which had been committed to him as an agent of the king, as if they were his own private possession. Nor was the king's aid lacking to this method of dividing up the royal authority, any more than to the immunity, for it became a frequent practice to make the administrative office into a fief, and to grant it to be held in that form of property by the count. In this way the feudal county, or duchy, formed itself, corresponding in most cases only roughly to the old administrative divisions of the state, for within the bounds of the county there had often formed private feudal possessions too powerful to be forced into dependence upon the count, sometimes the vice-comes had followed the count's example, and often, on the other hand, the count had attached to his county like private possessions of his own lying outside its boundaries. In time the private lord, who had never been an officer of the state, assumed the old administrative titles and called himself count or viscount, and perhaps with some sort of right, for his position in his territories, through the development of the immunity, did not differ from that now held by the man who had been originally a count.

In these two ways then the feudal system was formed, and took possession of the state territorially, and of its functions in government. Its earliest stage of growth was that of the private possession only. Under a government too weak to preserve order, the great landowner formed his estate into a little territory which could defend itself. His smaller neighbours who needed protection came to him for it. He forced them to become his dependants in return under a great variety of forms, but especially developing thereby the *precarium* land tenure and the *patrocinium* personal service, and organizing a private jurisdiction over his tenants, and a private army for defence. Finally he secured from the king an immunity which excluded the royal officers from his lands and made him a quasi-representative of the state. In the meantime his neighbour the count had been following a similar process, and in addition he had enjoyed considerable advantages of his own. His right to exact military, financial and judicial duties for the state he had used to force men to become his dependants, and then he had stood between them and the state, freeing them from burdens which he threw with increased weight upon those who still stood outside his personal protection. In ignorance of their danger, and later in despair of getting public services adequately performed in any other way, the kings first adopted for themselves some of the forms and practices which had thus grown up, and by degrees recognized them as legally proper for all classes. It proved to be easier to hold the lord responsible for the public duties of all his dependants because he was the king's vassal and by attaching them as conditions to the benefices which he held, than to enforce them directly upon every subject.

When this stage was reached the formative age of feudalism may be considered at an end. When the government of the state had entered into feudalism, and the king was as much senior as king; when the vassal relationship was recognized as a proper and legal foundation of public duties; when the two separate sides of early feudalism were united as the almost universal rule, so that a man received a fief because he owed a vassal's duties, or looked at in the other and finally prevailing way, that he owed a vassal's duties because he had received a fief; and finally, when the old idea of the temporary character of the *precarium* tenure was lost sight of, and the right of the vassal's heir to receive his father's holding was recognized as the general rule—then the feudal system may be called full grown. Not that the age of growth was really over. Feudal history was always a becoming, always a gradual passing from one stage to another, so long as feudalism continued to form the main organization of society. But we may say that the formative age was over when these features of the system had combined to be its characteristic marks. What follows is rather a perfection of details in the direction of logical completeness. To assign any specific date to the end of this formative age is of course impossible, but meaning by the end what has just been stated, we shall not be far wrong if we place it somewhere near the beginning of the 10th century.

Before we leave the history of feudal origins another word is necessary. We have traced a definite line of descent for feudal institutions from Roman days through the Merovingian and Carolingian ages to the 10th century. That line of descent can be made out with convincing clearness and with no particular difficulty from epoch to epoch, from the *precarium* and the *patrocinium*, through the benefice and commendation, to the fief and vassalage. But the definiteness of this line should not cause us to overlook the fact that there was during these centuries much confusion of custom and practice. All round and about this line of descent there was a crowd of varying forms branching off more or less widely from the main stem, different kinds of commendation, different forms of

precarium, some of which varied greatly from that through which the fief descends, and some of which survived in much the old character and under the old name for a long time after later feudalism was definitely established.[7] The variety and seeming confusion which reign in feudal society, under uniform controlling principles, rule also in the ages of beginning. It is easy to lose one's bearings by over-emphasizing the importance of variation and exception. It is indeed true that what was the exception, the temporary offshoot, might have become the main line. It would then have produced a system which would have been feudal, in the wide sense of the term, but it would have been marked by different characteristics, it would have operated in a somewhat different way. The crowd of varying forms should not prevent us from seeing that we can trace through their confusion the line along which the characteristic traits and institutions of European feudalism, as it actually was, were growing constantly more distinct.[8] That is the line of the origin of the feudal system. (See also FRANCE: *Law and Institutions.*)

Results in England.

The growth which we have traced took place within the Frankish empire. When we turn to Anglo-Saxon England we find a different situation and a different result. There *precarium* and *patrocinium* were lacking. Certain forms of personal commendation did develop, certain forms of dependent land tenure came into use. These do not show, however, the characteristic marks of the actual line of feudal descent. They belong rather in the varying forms around that line. Scholars are not yet agreed as to what would have been their result if their natural development had not been cut off by the violent introduction of Frankish feudalism with the Norman conquest, whether the historical feudal system, or a feudal system in the general sense. To the writer it seems clear that the latter is the most that can be asserted. They were forms which may rightly be called feudal, but only in the wider meaning in which we speak of the feudalism of Japan, or of Central Africa, not in the sense of 12th-century European feudalism; Saxon commendation may rightly be called vassalage, but only as looking back to the early Frankish use of the term for many varying forms of practice, not as looking forward to the later and more definite usage of completed feudalism; and such use of the terms feudal and vassalage is sure to be misleading. It is better to say that European feudalism is not to be found in England before the Conquest, not even in its beginnings. If these had really been in existence it would require no argument to show the fact. There is no trace of the distinctive marks of Frankish feudalism in Saxon England, not where military service may be thought to rest upon the land, nor even in the rare cases where the tenant seems to some to be made responsible for it, for between these cases as they are described in the original accounts, legally interpreted, and the feudal conception of the vassal's military service, there is a great gulf.

The completed system.

In turning from the origin of feudalism to a description of the completed system one is inevitably reminded of the words with which de Quincey opens the second part of his essay on style. He says: "It is a natural resource that whatsoever we find it difficult to investigate as a result, we endeavour to follow as a growth. Failing analytically to probe its nature, historically we seek relief to our perplexities by tracing its origin.... Thus for instance when any feudal institution (be it Gothic, Norman, or Anglo-Saxon) eludes our deciphering faculty from the imperfect records of its use and operation, then we endeavour conjecturally to amend our knowledge by watching the circumstances in which that institution arose." The temptation to use the larger part of any space allotted to the history of feudalism for a discussion of origins does not arise alone from greater interest in that phase of the subject. It is almost impossible even with the most discriminating care to give a brief account of completed feudalism and convey no wrong impression. We use the term "feudal system" for convenience sake, but with a degree of impropriety if it conveys the meaning "systematic." Feudalism in its most flourishing age was anything but systematic. It was confusion roughly organized. Great diversity prevailed everywhere, and we should not be surprised to find some different fact or custom in every lordship. Anglo-Norman feudalism attained a logical completeness and a uniformity of practice which, in the feudal age proper, can hardly be found elsewhere through so large a territory; but in Anglo-Norman feudalism the exception holds perhaps as large a place as the regular, and the uniformity itself was due to the most serious of exceptions from the feudal point of view—centralization under a powerful monarchy.

But too great emphasis upon variation conveys also a wrong impression. Underlying all the apparent confusion of fact and practice were certain fundamental principles and relationships, which were alike everywhere, and which really gave shape to everything that was feudal, no matter what its form might be. The chief of these are the following: the relation of vassal and lord; the principle that every holder of land is a tenant and not an owner, until the highest rank is reached, sometimes even the conception rules in that rank; that the tenure by which a thing of value is held is one of honourable service, not intended to be economic, but moral and political in character; the principle of mutual obligations of loyalty, protection and service binding together all the ranks of this society from the highest to the lowest; and the principle of contract between lord and tenant, as determining all rights, controlling their modification, and forming the foundation of all law. There was actually in fact and practice a larger uniformity than this short list implies, because these principles tended to express themselves in similar forms, and because historical derivation from a common source in Frankish feudalism tended to preserve some degree of uniformity in the more important usages.

The foundation of the feudal relationship proper was the fief, which was usually land, but might be any desirable thing, as an office, a revenue in money or kind, the right to collect a toll, or operate a mill. In return for the fief, the man became the vassal of his lord; he knelt before him, and, with his

hands between his lord's hands, promised him fealty and service; he rose to his feet and took the oath of fealty which bound him to the obligations he had assumed in homage; he received from his lord ceremonial investiture with the fief. The faithful performance of all the duties he had assumed in homage constituted the vassal's right and title to his fief. So long as they were fulfilled, he, and his heir after him, held the fief as his property, practically and in relation to all under tenants as if he were the owner. In the ceremony of homage and investiture, which is the creative contract of feudalism, the obligations assumed by the two parties were, as a rule, not specified in exact terms. They were determined by local custom. What they were, however, was as well known, as capable of proof, and as adequate a check on innovation by either party, as if committed to writing. In many points of detail the vassal's services differed widely in different parts of the feudal world. We may say, however, that they fall into two classes, general and specific. The general included all that might come under the idea of loyalty, seeking the lord's interests, keeping his secrets, betraying the plans of his enemies, protecting his family, &c. The specific services are capable of more definite statement, and they usually received exact definition in custom and sometimes in written documents. The most characteristic of these was the military service, which included appearance in the field on summons with a certain force, often armed in a specified way, and remaining a specified length of time. It often included also the duty of guarding the lord's castle, and of holding one's own castle subject to the plans of the lord for the defence of his fief. Hardly less characteristic was court service, which included the duty of helping to form the court on summons, of taking one's own cases to that court instead of to some other, and of submitting to its judgments. The duty of giving the lord advice was often demanded and fulfilled in sessions of the court, and in these feudal courts the obligations of lord and vassal were enforced, with an ultimate appeal to war. Under this head may be enumerated also the financial duties of the vassal, though these were not regarded by the feudal law as of the nature of the tenure, *i.e.* failure to pay them did not lead to confiscation, but they were collected by suit and distraint like any debt. They did not have their origin in economic considerations, but were either intended to mark the vassal's tenant relation, like the relief, or to be a part of his service, like the aid, that is, he was held to come to the aid of his lord in a case of financial as of military necessity. The relief was a sum paid by the heir for the lord's recognition of his succession. The aids were paid on a few occasions, determined by custom, where the lord was put to unusual expense, as for his ransom when captured by the enemy, or for the knighting of his eldest son. There was great variety regarding the occasion and amount of these payments, and in some parts of the feudal world they did not exist at all. The most lucrative of the lord's rights were wardship and marriage, but the feudal theory of these also was non-economic. The fief fell into the hands of the lord, and he enjoyed its revenues during the minority of the heir, because the minor could not perform the duties by which it was held. The heiress must marry as the lord wished, because he had a right to know that the holder of the fief could meet the obligations resting upon it. Both wardship and marriage were, however, valuable rights which the lord could exercise himself or sell to others. These were by no means the only rights and duties which could be described as existing in feudalism, but they are the most characteristic, and on them, or some of them, as a foundation, the whole structure of feudal obligation was built, however detailed.

Ideally regarded, feudalism covered Europe with a network of these fiefs, rising in graded ranks one above the other from the smallest, the knight's fee, at the bottom, to the king at the top, who was the supreme landowner, or who held the kingdom from God. Actually not even in the most regular of feudal countries, like England or Germany, was there any fixed gradation of rank, titles or size. A knight might hold directly of the king, a count of a viscount, a bishop of an abbot, or the king himself of one of his own vassals, or even of a vassal's vassal, and in return his vassal's vassal might hold another fief directly of him. The case of the count of Champagne, one of the peers of France, is a famous example. His great territory was held only in small part of the king of France. He held a portion of a foreign sovereign, the emperor, and other portions of the duke of Burgundy, of two archbishops, of four bishops, and of the abbot of St Denis. Frequently did great lay lords, as in this case, hold lands by feudal tenure of ecclesiastics.

It is now possible perhaps to get some idea of the way in which the government of a feudal country was operated. The early German governments whose chief functions, military, judicial, financial, legislative, were carried on by the freemen of the nation because they were members of the body politic, and were performed as duties owed to the community for its defence and sustenance, no longer existed. New forms of organization had arisen in which indeed these conceptions had not entirely disappeared, but in which the vast majority of cases a wholly different idea of the ground of service and obligation prevailed. Superficially, for example, the feudal court differed but little from its Teutonic predecessor. It was still an assembly court. Its procedure was almost the same as the earlier. It often included the same classes of men. Saxon Witenagemot and Norman *Curia regis* seem very much alike. But the members of the feudal court met, not to fulfil a duty owed to the community, but a private obligation which they had assumed in return for the fiefs they held, and in the history of institutions it is differences of this sort which are the determining principles. The feudal state was one in which, as it has been said, private law had usurped the place of public law. Public duty had become private obligation. To understand the feudal state it is essential to make clear to one's mind that all sorts of services, which men ordinarily owe to the public or to one another, were translated into a form of rent paid for the use of land, and defined and enforced by a private contract. In every feudal country, however, something of the earlier conception survived. A general military levy was occasionally made. Something like taxation occasionally occurred, though the government was usually sustained by the scanty feudal payments, by the proceeds of justice and by the income of domain manors. About the office of king more of this earlier conception gathered than elsewhere in the state,

and gradually grew, aided not merely by traditional ideas, but by the active influence of the Bible, and soon of the Roman law. The kingship formed the nucleus of new governments as the feudal system passed away.

Actual government in the feudal age was primitive and undifferentiated. Its chief and almost only organ, for kingdom and barony alike, was the *curia*—a court formed of the vassals. This acted at once and without any consciousness of difference of function, as judiciary, as legislature, in so far as there was any in the feudal period, and as council, and it exercised final supervision and control over revenue and administration. Almost all the institutions of modern states go back to the *curia regis*, branching off from it at different dates as the growing complexity of business forced differentiation of function and personnel. In action it was an assembly court, deciding all questions by discussion and the weight of opinion, though its decisions obtained their legal validity by the formal pronunciation of the presiding member, *i.e.* of the lord whose court it was. It can readily be seen that in a government of this kind the essential operative element was the baron. So long as the government remained dependent on the baron, it remained feudal in its character. When conditions so changed that government could free itself from its dependence on the baron, feudalism disappeared as the organization of society; when a professional class arose to form the judiciary, when the increased circulation of money made regular taxation possible and enabled the government to buy military and other services, and when better means of intercommunication and the growth of common ideas made a wide centralization possible and likely to be permanent. Feudalism had performed a great service, during an age of disintegration, by maintaining a general framework of government, while allowing the locality to protect and care for itself. When the function of protection and local supervision could be resumed by the general government the feudal age ended. In nearly all the states of Europe this end was reached during, or by the close of, the 13th century.

At the moment, however, when feudalism was disappearing as the organization of society, it gave rise to results which in a sense continued it into after ages and even to our own day. One of these results was the system of law which it created. As feudalism passed from its age of supremacy into its age of decline, its customs tended to crystallize into fixed forms. At the same time a class of men arose interested in these forms for their own sake, professional lawyers or judges, who wrote down for their own and others' use the feudal usages with which they were familiar. The great age of these codes was the 13th century, and especially the second half of it. The codes in their turn tended still further to harden these usages into fixed forms, and we may date from the end of the 13th century an age of feudal law regulating especially the holding and transfer of land, and much more uniform in character than the law of the feudal age proper. This was particularly the case in parts of France and Germany where feudalism continued to regulate the property relations of lords and vassals longer than elsewhere, and where the underlying economic feudalism remained in large part unchanged. In this later pseudo-feudalism, however, the political had given way to the economic, and customs which had once had no economic significance came to have that only.

Decline and survivals.

Feudalism formed the starting-point also of the later social nobilities of Europe. They drew from it their titles and ranks and many of their regulative ideas, though these were formed into more definite and regular systems than ever existed in feudalism proper. It was often the policy of kings to increase the social privileges and legal exemptions of the nobility while taking away all political power, so that it is necessary in the history of institutions to distinguish sharply between these nobilities and the feudal baronage proper. It is only in certain backward parts of Europe that the terms feudal and baronage in any technical sense can be used of the nobility of the 15th century.

(G. B. A.)

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1 *Digest*, xliii. 26. 12.

2 *Ibid.* xliii. 26. 14, and cf. 17.

3 Salvian, *De gub. Dei*, v. 8, ed. Halm, p. 62.

4 H. Brunner, *Zeitschr. der sav. Stift. für Rechtsgeschichte*, Germ. Abth. viii. 1-38 (1887). Also in his Forschungen, 39-74 (1894).

5 See F. Dahn, *Könige der Germanen*, viii. 2, 90 ff.

6 F. Dahn, *Könige der Germanen*, viii. 2, 197.

7 G. Waitz, *Deutsche Verfassungsgeschichte*, vi. 112 ff. (1896). Most fully described in G. Seeliger, *Die soziale u. politische Bedeutung d. Grundherrschaft im früheren Mittelalter* (1903).

8 F. Dahn, *Könige*, viii. 2, 89-90; 95.

FEUERBACH, ANSELM (1829-1880), German painter, born at Spires, the son of a well-known archaeologist, was the leading classicist painter of the German 19th-century school. He was the first to realize the danger arising from contempt of technique, that mastery of craftsmanship was needed to express even the loftiest ideas, and that an ill-drawn coloured cartoon can never be the supreme achievement in art. After having passed through the art schools of Düsseldorf and Munich, he went to Antwerp and subsequently to Paris, where he benefited by the teaching of Couture, and produced his first masterpiece, "Hafiz at the Fountain" in 1852. He subsequently worked at Karlsruhe, Venice (where he fell under the spell of the greatest school of colourists), Rome and Vienna. He was steeped in classic knowledge, and his figure compositions have the statuesque dignity and simplicity of Greek art. Disappointed with the reception given in Vienna to his design of "The Fall of the Titans" for the ceiling of the Museum of Modelling, he went to live in Venice, where he died in 1880. His works are to be found at the leading public galleries of Germany; Stuttgart has his "Iphigenia"; Karlsruhe, the "Dante at Ravenna"; Munich, the "Medea"; and Berlin, "The Concert," his last important picture. Among his chief works are also "The Battle of the Amazons," "Pietà," "The Symposium of Plato," "Orpheus and Eurydice" and "Ariosto in the Park of Ferrara."

FEUERBACH, LUDWIG ANDREAS (1804-1872), German philosopher, fourth son of the eminent jurist (see below), was born at Landshut in Bavaria on the 28th of July 1804. He matriculated at Heidelberg with the intention of pursuing an ecclesiastical career. Through the influence of Prof. Daub he was led to an interest in the then predominant philosophy of Hegel and, in spite of his father's opposition, went to Berlin to study under the master himself. After two years' discipleship the Hegelian influence began to slacken. "Theology," he wrote to a friend, "I can bring myself to study no more. I long to take nature to my heart, that nature before whose depth the faint-hearted theologian shrinks back; and with nature man, man in his entire quality." These words are a key to Feuerbach's development. He completed his education at Erlangen with the study of natural science. His first book, published anonymously, *Gedanken über Tod und Unsterblichkeit* (1830, 3rd ed. 1876), contains an attack upon personal immortality and an advocacy of the Spinozistic immortality of reabsorption in nature. These principles, combined with his embarrassed manner of public speaking, debarred him from academic advancement. After some years of struggling, during which he published his *Geschichte der neueren Philosophie* (2 vols., 1833-1837, 2nd ed. 1844), and *Abälard und Heloise* (1834, 3rd ed. 1877), he married in 1837 and lived a rural existence at Bruckberg near Nuremberg, supported by his wife's share in a small porcelain factory. In two works of this period, *Pierre Bayle* (1838) and *Philosophie und Christentum* (1839), which deal largely with theology, he held that he had proved "that Christianity has in fact long vanished not only from the reason but from the life of mankind, that it is nothing more than a fixed idea" in flagrant contradiction to the distinctive features of contemporary civilization. This attack is followed up in his most important work, *Das Wesen des Christentums* (1841), which was translated into English (*The Essence of Religion*, by George Eliot, 1853, 2nd ed. 1881), French and Russian. Its aim may be described shortly as an effort to humanize theology. He lays it down that man, so far as he is rational, is to himself his own object of thought.

Religion is consciousness of the infinite. Religion therefore is “nothing else than the consciousness of the infinity of the consciousness; or, in the consciousness of the infinite, the conscious subject has for his object the infinity of his own nature.” Thus God is nothing else than man: he is, so to speak, the outward projection of man’s inward nature. In part 1 of his book he develops what he calls the “true or anthropological essence of religion.” Treating of God in his various aspects “as a being of the understanding,” “as a moral being or law,” “as love” and so on, Feuerbach shows that in every aspect God corresponds to some feature or need of human nature. “If man is to find contentment in God, he must find himself in God.” In part 2 he discusses the “false or theological essence of religion,” *i.e.* the view which regards God as having a separate existence over against man. Hence arise various mistaken beliefs, such as the belief in revelation which not only injures the moral sence, but also “poisons, nay destroys, the divinest feeling in man, the sense of truth,” and the belief in sacraments such as the Lord’s Supper, a piece of religious materialism of which “the necessary consequences are superstition and immorality.” In spite of many admirable qualities both of style and matter the *Essence of Christianity* has never made much impression upon British thought. To treat the actual forms of religion as expressions of our various human needs is a fruitful idea which deserves fuller development than it has yet received; but Feuerbach’s treatment of it is fatally vitiated by his subjectivism. Feuerbach denied that he was rightly called an atheist, but the denial is merely verbal: what he calls “theism” is atheism in the ordinary sense. Feuerbach labours under the same difficulty as Fichte; both thinkers strive in vain to reconcile the religious consciousness with subjectivism.

During the troubles of 1848-1849 Feuerbach’s attack upon orthodoxy made him something of a hero with the revolutionary party; but he never threw himself into the political movement, and indeed had not the qualities of a popular leader. During the period of the diet of Frankfort he had given public lectures on religion at Heidelberg. When the diet closed he withdrew to Bruckberg and occupied himself partly with scientific study, partly with the composition of his *Theogonie* (1857). In 1860 he was compelled by the failure of the porcelain factory to leave Bruckberg, and he would have suffered the extremity of want but for the assistance of friends supplemented by a public subscription. His last book, *Gottheit, Freiheit und Unsterblichkeit*, appeared in 1866 (2nd ed., 1890). After a long period of decay he died on the 13th of September 1872.

Feuerbach’s influence has been greatest upon the anti-Christian theologians such as D.F. Strauss, the author of the *Leben Jesu*, and Bruno Bauer, who like Feuerbach himself had passed over from Hegelianism to a form of naturalism. But many of his ideas were taken up by those who, like Arnold Ruge, had entered into the struggle between church and state in Germany, and those who, like F. Engels and Karl Marx, were leaders in the revolt of labour against the power of capital. His work was too deliberately unsystematic (“keine Philosophie ist meine Philosophie”) ever to make him a power in philosophy. He expressed in an eager, disjointed, but condensed and laboured fashion, certain deep-lying convictions—that philosophy must come back from unsubstantial metaphysics to the solid facts of human nature and natural science, that the human body was no less important than the human spirit (“Der Mensch ist was er isst”) and that Christianity was utterly out of harmony with the age. His convictions gained weight from the simplicity, uprightness and diligence of his character; but they need a more effective justification than he was able to give them.

His works appeared in 10 vols. (Leipzig, 1846-1866); his correspondence has been edited with an indifferent biography by Karl Grün (1874). See A. Lévy, *La Philosophie de Feuerbach* (1904); M. Meyer, *L. Feuerbach’s Moralphilosophie* (Berlin, 1899); E. v. Hartmann, *Geschichte d. Metaphysik* (Leipzig, 1899-1900), ii. 437-444: F. Engels, *L. Feuerbach und d. Ausgang d. class, deutsch. Philos.* (2nd ed., 1895).

(H. St.)

FEUERBACH, PAUL JOHANN ANSELM, Ritter von (1775-1833), German jurist and writer on criminal law, was born at Hainichen near Jena on the 14th of November 1775. He received his early education at Frankfort on Main, whither his family had removed soon after his birth. At the age of sixteen, however, he ran away from home, and, going to Jena, was helped by relations there to study at the university. In spite of poor health and the most desperate poverty, he made rapid progress. He attended the lectures of Karl Leonhard Reinhold and Gottlieb Hufeland, and soon published some literary essays of more than ordinary merit. In 1795 he took the degree of doctor in philosophy, and in the same year, though he only possessed 150 thalers (£22 : 10s.), he married. It was this step which led him to success and fame, by forcing him to turn from his favourite studies of philosophy and history to that of law, which was repugnant to him, but which offered a prospect of more rapid advancement. His success in this new and uncongenial sphere was soon assured. In 1796 he published *Kritik des natürlichen Rechts als Propädeutik zu einer Wissenschaft der natürlichen Rechte*, which was followed, in 1798, by *Anti-Hobbes, oder über die Grenzen der bürgerlichen Gewalt*, a dissertation on the limits of the civil power and the right of resistance on the part of subjects against their rulers, and by *Philosophische, juristische Untersuchungen über das Verbrechen des Hochverraths*. In 1799 he obtained the degree of doctor of laws. Feuerbach, as the founder of a new theory of penal law, the so-called “psychological-coercive or intimidation theory,” occupied a prominent place in the history of criminal science. His views, which he first made known in his *Revision der Grundsätze und*

Grundbegriffe des positiven peinlichen Rechts (1799), were further elucidated and expounded in the *Bibliothek für die peinliche Rechtswissenschaft* (1800-1801), an encyclopaedic work produced in conjunction with Karl L.W.G. Grolmann and Ludwig Harscher von Almendingen, and in his famous *Lehrbuch des gemeinen in Deutschland geltenden peinlichen Rechts* (1801). These works were a powerful protest against vindictive punishment, and did much towards the reformation of the German criminal law. The *Carolina* (the penal code of the emperor Charles V.) had long since ceased to be respected. What in 1532 was an inestimable blessing, as a check upon the arbitrariness and violence of the effete German procedure, had in the course of time outlived its usefulness and become a source of evils similar to those it was enacted to combat. It availed nothing that, at the commencement of the 18th century, a freer and more scientific spirit had been breathed into Roman law; it failed to reach the criminal law. The administration of justice was, before Feuerbach's time, especially distinguished by two characteristics: the superiority of the judge to all law, and the blending of the judicial and executive offices, with the result that the individual was practically at the mercy of his prosecutors. This state of things Feuerbach set himself to reform, and using as his chief weapon the *Revision der Grundbegriffe* above referred to, was successful in his task. His achievement in the struggle may be summed up as: *nullum crimen, nulla poena sine lege* (no wrong and no punishment without a remedy). In 1801 Feuerbach was appointed extraordinary professor of law without salary, at the university of Jena, and in the following year accepted a chair at Kiel, where he remained two years. In 1804 he removed to the university of Landshut; but on being commanded by King Maximilian Joseph to draft a penal code for Bavaria (*Strafgesetzbuch für das Königreich Bayern*), he removed in 1805 to Munich, where he was given a high appointment in the ministry of justice and was ennobled in 1808. Meanwhile the practical reform of penal legislation in Bavaria was begun under his influence in 1806 by the abolition of torture. In 1808 appeared the first volume of his *Merkwürdige Criminalfälle*, completed in 1811—a work of deep interest for its application of psychological considerations to cases Of crime, and intended to illustrate the inevitable imperfection of human laws in their application to individuals. In his *Betrachtungen über das Geschworenengericht* (1811) Feuerbach declared against trial by jury, maintaining that the verdict of a jury was not adequate legal proof of a crime. Much controversy was aroused on the subject, and the author's view was subsequently to some extent modified. The result of his labours was promulgated in 1813 as the Bavarian penal code. The influence of this code, the embodiment of Feuerbach's enlightened views, was immense. It was at once made the basis for new codes in Württemberg and Saxe-Weimar; it was adopted in its entirety in the grand-duchy of Oldenburg; and it was translated into Swedish by order of the king. Several of the Swiss cantons reformed their codes in conformity with it. Feuerbach had also undertaken to prepare a civil code for Bavaria, to be founded on the Code Napoléon. This was afterwards set aside, and the Codex Maximilianus adopted as a basis. But the project did not become law. During the war of liberation (1813-1814) Feuerbach showed himself an ardent patriot, and published several political brochures which, from the writer's position, had almost the weight of state manifestoes. One of these is entitled *Über deutsche Freiheit und Vertretung deutsche Volker durch Landstände* (1514). In 1814 Feuerbach was appointed second president of the court of appeal at Bamberg, and three years later he became first president of the court of appeal at Anspach. In 1821 he was deputed by the government to visit France, Belgium, and the Rhine provinces for the purpose of investigating their juridical institutions. As the fruit of this visit, he published his treatises *Betrachtungen über Öffentlichkeit und Mündigkeit der Gerechtigkeitspflege* (1821) and *Über die Gerichtsverfassung und das gerichtliche Verfahren Frankreichs* (1825). In these he pleaded unconditionally for publicity in all legal proceedings. In his later years he took a deep interest in the fate of the strange foundling Kaspar Hauser (*q.v.*), which had excited so much attention in Europe; and he was the first to publish a critical summary of the ascertained facts, under the title of *Kaspar Hauser, ein Beispiel eines Verbrechens am Seelenleben* (1832). Shortly before his death appeared a collection of his *Kleine Schriften* (1833). Feuerbach, still in the full enjoyment of his intellectual powers, died suddenly at Frankfort, while on his way to the baths of Schwalbach, on the 29th of May 1833. In 1853 was published the *Leben und Wirken Ans. von Feuerbachs*, 2 vols., consisting of a selection of his letters and journals, with occasional notes by his fourth son Ludwig, the distinguished philosopher.

See also, for an estimate of Feuerbach's life and work, Marquardtsen, in *Allgemeine deutsche Biographie*, vol. vi.; and an "in memoriam" notice in *Die allgemeine Zeitung* (Augsburg), 15th Nov. 1875, by Professor Dr Karl Binding of Leipzig University.

FEUILLANTS, CLUB OF THE, a political association which played a prominent part during the French Revolution. It was founded on the 16th of July 1791 by several members of the Jacobin Club, who refused to sign a petition presented by this body, demanding the deposition of Louis XVI. Among the dissident members were B. Barère; and E.J. Sieyès, who were later joined by other politicians, among them being Dupont de Nemours. The name of Feuillants was popularly given to this group of men, because they met in the fine buildings which had been occupied by the religious order bearing this name, in the rue Saint-Honoré, near the Place Vendôme, in Paris. The members of the club preserved the title of *Amis de la Constitution*, as being a sufficient indication of the line they intended to pursue. This consisted in opposing everything not contained in the Constitution; in their opinion, the latter was in need of no modification, and they hated alike all those who were opposed to it,

whether *émigrés* or Jacobins; they affected to avoid all political discussion, and called themselves merely a “conservative assembly.”

This attitude they maintained after the Constituent Assembly had been succeeded by the Legislative, but not many of the new deputies became members of the club. With the rapid growth of extreme democratic ideas the Feuillants soon began to be looked upon as reactionaries, and to be classed with “aristocrats.” They did, indeed, represent the aristocracy of wealth, for they had to pay a subscription of four louis, a large sum at that time, besides six livres for attendance. Moreover, the luxury with which they surrounded themselves, and the restaurant which they had annexed to their club, seemed to mock the misery of the half-starved proletariat, and added to the suspicion with which they were viewed, especially after the popular triumphs of the 20th of June and the 10th of August 1792 (see French Revolution). A few days after the insurrection of the 10th of August, the papers of the Feuillants were seized, and a list was published containing the names of 841 members proclaimed as suspects. This was the death-blow of the club. It had made an attempt, though a weak one, to oppose the forward march of the Revolution, but, unlike the Jacobins, had never sent out branches into the provinces. The name of Feuillants, as a party designation, survived the club. It was applied to those who advocated a policy of “cowardly moderation,” and *feuillantisme* was associated with *aristocratie* in the mouths of the sansculottes.

The act of separation of the Feuillants from the Jacobins was published in a pamphlet dated the 16th of July 1791, beginning with the words, *Les Membres de l’assemblée nationale* ... (Paris, 1791). The statutes of the club were also published in Paris. See also A. Aulard, *Histoire politique de la Révolution française* (Paris, 1903), 2nd ed., p. 153.

FEUILLET, OCTAVE (1821-1890), French novelist and dramatist, was born at Saint-Lô, Manche, on the 11th of August 1821. He was the son of a Norman gentleman of learning and distinction, who would have played a great part in politics “sans ses diables de nerfs,” as Guizot said. This nervous excitability was inherited, though not to the same excess, by Octave, whose mother died in his infancy and left him to the care of the hyper-sensitive invalid. The boy was sent to the lycée Louis-le Grand, in Paris, where he achieved high distinction, and was destined for the diplomatic service. In 1840 he appeared before his father at Saint-Lô, and announced that he had determined to adopt the profession of literature. There was a stormy scene, and the elder Feuillet cut off his son, who returned to Paris and lived as best he could by a scanty journalism. In company with Paul Bocage he began to write for the stage, and not without success; at all events, he continued to exist until, three years after the quarrel, his father consented to forgive him. Enjoying a liberal allowance, he now lived in Paris in comfort and independence, and he published his early novels, none of which is quite of sufficient value to retain the modern reader. The health and spirits of the elder M. Feuillet, however, having still further declined, he summoned his son to leave Paris and bury himself as his constant attendant in the melancholy château at Saint-Lô. This was to demand a great sacrifice, but Octave Feuillet cheerfully obeyed the summons. In 1851 he married his cousin, Mlle Valérie Feuillet, who helped him to endure the mournful captivity to which his filial duty bound him. Strangely enough, in this exile—rendered still more irksome by his father’s mania for solitude and by his tyrannical temper—the genius of Octave Feuillet developed. His first definite success was gained in the year 1852, when he published the novel *Bellah* and produced the comedy *La Crise*. Both were reprinted from the *Revue des deux mondes*, where many of his later novels also appeared. He wrote books which have long held their place, *La Petite Comtesse* (1857), *Dalila* (1857), and in particular that universal favourite, *Le Roman d’un jeune homme pauvre* (1858). He himself fell into a nervous state in his “prison,” but he was sustained by the devotion and intelligence of his wife and her mother. In 1857, having been persuaded to make a play of the novel of *Dalila*, he brought out this piece at the Vaudeville, and enjoyed a brilliant success; on this occasion he positively broke through the *consigne* and went up to Paris to see his play rehearsed. His father bore the shock of his temporary absence, and the following year Octave ventured to make the same experiment on occasion of the performance of *Un Jeune Homme pauvre*. To his infinite chagrin, during this brief absence his father died. Octave was now, however, free, and the family immediately moved to Paris, where they took part in the splendid social existence of the Second Empire. The elegant and distinguished young novelist became a favourite at court; his pieces were performed at Compiègne before they were given to the public, and on one occasion the empress Eugénie deigned to play the part of Mme de Pons in *Les Portraits de la Marquise*. Feuillet did not abandon the novel, and in 1862 he achieved a great success with *Sibylle*. His health, however, had by this time begun to decline, affected by the sad death of his eldest son. He determined to quit Paris, where the life was far too exciting for his nerves, and to regain the quietude of Normandy. The old château of the family had been sold, but he bought a house called “Les Paillers” in the suburbs of Saint-Lô, and there he lived, buried in his roses, for fifteen years. He was elected to the French Academy in 1862, and in 1868 he was made librarian of Fontainebleau palace, where he had to reside for a month or two in each year. In 1867 he produced his masterpiece of *Monsieur de Camors*, and in 1872 he wrote *Julia de Trécœur*, which is hardly less admirable. His last years, after the sale of “Les Paillers,” were passed in a ceaseless wandering, the result of the agitation of his nerves. He was broken by sorrow and by ill-health, and when he passed away in Paris on the 29th of December 1890,

his death was a release. His last book was *Honneur d'artiste* (1890). Among the too-numerous writings of Feuillet, the novels have lasted longer than the dramas; of the former three or four seem destined to retain their charm as classics. He holds a place midway between the romanticists and the realists, with a distinguished and lucid portraiture of life which is entirely his own. He drew the women of the world whom he saw around him with dignity, with indulgence, with extraordinary penetration and clairvoyance. There is little description in his novels, which sometimes seem to move on an almost bare and colourless stage, but, on the other hand, the analysis of motives, of emotions, and of "the fine shades" has rarely been carried further. Few have written French with greater purity than Feuillet, and his style, reserved in form and never excessive in ornament, but full of wit and delicate animation, is in admirable uniformity with his subjects and his treatment. It is probably in *Sibylle* and in *Julia de Trécœur* that he can now be studied to most advantage, though *Monsieur de Camors* gives a greater sense of power, and though *Le Roman d'un jeune homme pauvre* still preserves its popularity.

See also Sainte-Beuve, *Nouveaux Lundis*, vol. v.; F. Brunetière, *Nouveaux Essais sur la littérature contemporaine* (1895).

(E. G.)

FEUILLETON (a diminutive of the Fr. *feuillet*, the leaf of a book), originally a kind of supplement attached to the political portion of French newspapers. Its inventor was Bertin the elder, editor of the *Débats*. It was not usually printed on a separate sheet, but merely separated from the political part of the newspaper by a line, and printed in smaller type. In French newspapers it consists chiefly of non-political news and gossip, literature and art criticism, a chronicle of the fashions, and epigrams, charades and other literary trifles; and its general characteristics are lightness, grace and sparkle. The *feuilleton* in its French sense has never been adopted by English newspapers, though in various modern journals (in the United States especially) the sort of matter represented by it is now included. But the term itself has come into English use to indicate the instalment of a serial story printed in one part of a newspaper.

FEUQUIÈRES, ISAAC MANASSÈS DE PAS, Marquis de (1590-1640), French soldier, came of a distinguished family of which many members held high command in the civil wars of the 16th century. He entered the Royal army at the age of thirty, and soon achieved distinction. In 1626 he served in the Valtelline, and in 1628-1629 at the celebrated siege of La Rochelle, where he was taken prisoner. In 1629 he was made *Maréchal de Camp*, and served in the fighting on the southern frontiers of France. After occupying various military positions in Lorraine, he was sent as an ambassador into Germany, where he rendered important services in negotiations with Wallenstein. In 1636 he commanded the French corps operating with the duke of Weimar's forces (afterwards Turenne's "Army of Weimar"). With these troops he served in the campaigns of 1637 (in which he became lieutenant-general), 1638 and 1639. At the siege of Thionville (Diedenhofen) he received a mortal wound. His *lettres inédites* appeared (ed. Gallois) in Paris in 1845.

His son Antoine Manassès de Pas, Marquis de Feuquières (1648-1711), was born at Paris in 1648, and entered the army at the age of eighteen. His conduct at the siege of Lille in 1667, where he was wounded, won him promotion to the rank of captain. In the campaigns of 1672 and 1673 he served on the staff of Marshal Luxemburg, and at the siege of Oudenarde in the following year the king gave him command of the Royal Marine regiment, which he held until he obtained a regiment of his own in 1676. In 1688 he served as a brigadier at the siege of Philipsburg, and afterwards led a ravaging expedition into south Germany, where he acquired much booty. Promoted *Maréchal de Camp*, he served under Catinat against the Waldenses, and in the course of the war won the nickname of the "Wizard." In 1692 he made a brilliant defence of Speierbach against greatly superior forces, and was rewarded with the rank of lieutenant-general. He bore a distinguished part in Luxemburg's great victory of Neerwinden or Landen in 1693. Marshal Villeroi impressed him less favourably than his old commander Luxemburg, and the resumption of war in 1701 found him in disfavour in consequence. The rest of his life, embittered by the refusal of the marshal's baton, he spent in compiling his celebrated memoirs, which, coloured as they were by the personal animosities of the writer, were yet considered by Frederick the Great and the soldiers of the 18th century as the standard work on the art of war as a whole. He died in 1711. The *Mémoires sur la guerre* appeared in the same year and new editions were frequently published (Paris 1711, 1725, 1735, &c., London 1736, Amsterdam subsequently). An English version appeared in London 1737, under the title *Memoirs of the Marquis de Feuquières*, and a German translation (*Feuquières geheime Nachrichten*) at Leipzig 1732, 1738, and Berlin 1786. They deal in detail with every branch of the art of war and of military service.

FÉVAL, PAUL HENRI CORENTIN (1817-1887), French novelist and dramatist, was born on the 27th of September 1817, at Rennes in Brittany, and much of his best work deals with the history of his native province. He was educated for the bar, but after his first brief he went to Paris, where he gained a footing by the publication of his "Club des phoques" (1841) in the *Revue de Paris*. The *Mystères de Londres* (1844), in which an Irishman tries to avenge the wrongs of his countrymen by seeking the annihilation of England, was published under the ingenious pseudonym "Sir Francis Trolopp." Others of his novels are: *Le Fils du diable* (1846); *Les Compagnons du silence* (1857); *Le Bossu* (1858); *Le Poisson d'or* (1863); *Les Habits noirs* (1863); *Jean le diable* (1868), and *Les Compagnons du trésor* (1872). Some of his novels were dramatized, *Le Bossu* (1863), in which he had M. Victorien Sardou for a collaborator, being especially successful in dramatic form. His chronicles of crime exercised an evil influence, eventually recognized by the author himself. In his later years he became an ardent Catholic, and occupied himself in revising his earlier works from his new standpoint and in writing religious pamphlets. Reverses of fortune and consequent overwork undermined his mental and bodily health, and he died of paralysis in the monastery of the Brothers of Saint John in Paris on the 8th of March 1887.

His son, PAUL FÉVAL (1860-), became well known as a novelist and dramatist. Among his works are *Nouvelles* (1890), *Maria Laura* (1891), and *Chantepie* (1896).

FEVER (Lat. *febris*, connected with *fervere*, to burn), a term generally used to include all conditions in which the normal temperature of the animal body is markedly exceeded for any length of time. When the temperature reaches as high a point as 106° F. the term hyperpyrexia (excessive fever) is applied, and is regarded as indicating a condition of danger; while, if it exceeds 107° or 108° for any length of time, death almost always results. The diseases which are called specific fevers, because of its being a predominant factor in them, are discussed separately under their ordinary names. Occasionally in certain specific fevers and febrile diseases the temperature may attain the elevation of 110°-112° prior to the fatal issue. For the treatment of fever in general, see THERAPEUTICS.

Pathology.—Every rise of temperature is due to a disturbance in the heat-regulating mechanism, the chief variable in which is the action of the skin in eliminating heat (see ANIMAL HEAT). Although for all practical purposes this mechanism works satisfactorily, it is not by any means perfect, and many physiological conditions cause a transient rise of temperature; *e.g.* severe muscular exercise, in which the cutaneous eliminating mechanism is unable at once to dispose of the increased amount of heat produced in the muscles. Pathologically, the heat-regulating mechanism may be disturbed in three different ways: 1st, by mechanical interference with the nervous system; 2nd, by interference with heat elimination; 3rd, by the action of various poisons.

1. In the human subject, fever the result of *mechanical interference* with the nervous system rarely occurs, but it can readily be produced in the lower animals by stimulating certain parts of the great brain, *e.g.* the anterior portion of the corpus striatum. This leads to a rise of temperature with increased heat production. The high temperature seems to cause disintegration of cell protoplasm and increased excretion of nitrogen and of carbonic acid. Possibly some of the cases of high temperature recorded after injuries to the nervous system may be caused in this way; but some may also be due to stimulation of vaso-constrictor fibres to the cutaneous vessels diminishing heat elimination. So far the pathology of this condition has not been studied with the same care that has been devoted to the investigation of the third type of fever.

2. Fever may readily be produced by *interference with heat elimination*. This has been done by submitting dogs to a temperature slightly below that of the rectum, and it is seen in man in *Sunstroke*. The typical nervous symptoms of fever are thus produced, and the rate of chemical change in the tissues is accelerated, as is shown by the increased excretion of carbonic acid. The protoplasm is also injured and the proteids are broken down, and thus an increased excretion of nitrogen is produced and the cells undergo degenerative changes.

3. The products of various micro-organisms have a toxic action on the protoplasm of a large number of animals, and among the symptoms of this toxic action one of the most frequent is a rise in temperature. While this is by no means a necessary accompaniment, its occurrence is so general that the term *Fever* has been applied to the general reaction of the organism to the microbial poison. Toxins which cause a marked rise of temperature in men may cause a fall in other animals. It is not the alteration of temperature which is the great index of the severity of the struggle between the host and the parasite, but the death and removal to a greater or lesser extent of the protoplasm of the host. In this respect fever resembles poisoning with phosphorus and arsenic and other similar substances. The true measure of the intensity of a fever is the extent of disintegration of protoplasm, and this may be estimated by the amount of nitrogen excreted in the urine. The increased disintegration of protoplasm is also indicated by the rise in the excretion of sulphur and phosphorus and by the appearance in the urine of acetone, aceto-acetic and β-oxybutyric acids (see NUTRITION). Since the temperature is generally proportionate to the intensity of the toxic action, its height is usually proportionate to the excretion of nitrogen. But sometimes the rise of temperature is not marked, while

the excretion of nitrogen is very decidedly increased. When the temperature is sufficiently elevated, the heat has of itself an injurious action on the protoplasm, and tends to increase disintegration just as when heat elimination is experimentally retarded. But the increase due to rise of temperature is small compared to that produced by the destructive action of the microbial products. In the beginning of a fever the activity of the metabolism is not increased to any marked extent, and any increase is necessarily largely due to the greater activity of the muscles of the heart and respiratory mechanism, and to the muscular contractions which produce the initial rigors. Thus the excretion of carbon dioxide —the great measure of the *activity of metabolism*—is not usually increased, and there is no evidence of an increased combustion. In the later stages the increased temperature may bring about an acceleration in the rate of chemical change; but this is comparatively slight, less in fact than the increase observed on taking muscular exercise after rest. The *rise of temperature* is primarily due to diminished heat elimination. This diminished giving off of heat was demonstrated by means of the calorimeter by I. Rosenthal, while E. Maragliano showed that the cutaneous vessels are contracted. Even in the later stages, until defervescence occurs, heat elimination is inadequate to get rid of the heat produced.

The toxic action is manifested not only by the increased disintegration of protoplasm, but also by disturbances in the functions of the various organs. The activity of the *digestive glands* is diminished and appetite is lost. Food is therefore not taken, although when taken it appears to be absorbed in undiminished quantities. As a result of this the patient suffers from inanition, and lives largely on his own fats and proteids, and for this reason rapidly emaciates. The functions of the *liver* are also diminished in activity. Glycogen is not stored in the cells, and the bile secretion is modified, the essential constituents disappearing almost entirely in some cases. The production of urea is also interfered with, and the proportion of nitrogen in the urine not in the urea increases. This is in part due to the increased disintegration of proteids setting free sulphur and phosphorus, which, oxidized into sulphuric and phosphoric acids, combine with the ammonia which would otherwise have been changed to urea. Thus the proportion of ammonia in the urine is increased. Concurrently with these alterations in the functions of the liver-cells, a condition of granular degeneration and probably a state of fatty degeneration makes its appearance. That the functional activity of the *kidneys* is modified, is shown by the frequent appearance of proteoses or of albumen and globulin in the urine. Frequently the toxin acts very markedly on the protoplasm of the kidney epithelium, and causes a shedding of the cells and sometimes inflammatory reaction. The *muscles* are weakened, but so far no satisfactory study has been made of the influence of microbial poisons on muscular contraction. A granular and fatty degeneration supervenes, and the fibres waste. The *nervous structures*, especially the nerve-cells, are acted upon, and not only is their functional activity modified, but they also undergo structural changes of a chromatolytic nature. The *blood* shows two important changes—first, a fall in the alkalinity due to the products of disintegration of protoplasm; and, secondly, an increase in the number of leucocytes, and chiefly in the polymorpho-nuclear variety. This is best marked in pneumonia, where the normal number is often increased twofold and sometimes more than tenfold, while it is altogether absent in enteric fever.

An interesting general modification in the metabolism is the enormous fall in the excretion of chlorine, a fall far in excess of what could be accounted for by inanition, and out of all proportion to the fall in the sodium and potassium with which the chlorine is usually combined in the urine. The fevered animal in fact stores chlorine in its tissues, though in what manner and for what reason is not at present known.

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(D. N. P.)

FEYDEAU, ERNEST-AIMÉ (1821-1873), French author, was born in Paris, on the 16th of March 1821. He began his literary career in 1844, by the publication of a volume of poetry, *Les Nationales*. Either the partial failure of this literary effort, or his marriage soon afterwards to a daughter of the economist Blanqui, caused him to devote himself to finance and to archaeology. He gained a great success with his novel *Fanny* (1858), a success due chiefly to the cleverness with which it depicted and excused the corrupt manners of a certain portion of French society. This was followed in rapid succession by a series of fictions, similar in character, but wanting the attraction of novelty; none of them enjoyed the same vogue as *Fanny*. Besides his novels Feydeau wrote several plays, and he is also the author of *Histoire générale des usages funèbres et des sépultures des peuples anciens* (3 vols., 1857-1861); *Le Secret du bonheur* (sketches of Algerian life) (2 vols., 1864); and *L’Allemagne en 1871* (1872), a clever caricature of German life and manners. He died in Paris on the 27th of October 1873.

See Sainte-Beuve, *Causeries du lundi*, vol. xiv., and Barbey d’Aurevilly, *Les Œuvres et les hommes*

au XIX^e siècle.

FEZ (*Fās*), the chief city of Morocco, into which empire it was incorporated in 1548. It lies in 34° 6′ 3″ N., 4° 38′ 15″ W., about 230 m. N.E. of Marrākesh, 100 m. E. from the Atlantic and 85 m. S. of the Mediterranean. It is beautifully situated in a deep valley on the Wad Fās, an affluent of the Wad Sebu, which divides the town into two parts—the ancient town, Fās el Bali, on the right bank, and the new, Fās el Jadīd, on the left.

Like many other Oriental cities, Fez from a distance appears a very attractive place. It stretches out between low hills, crowned by the ruins of ancient fortresses, and though there is nothing imposing, there is something particularly impressive in the sight of that white-roofed conglomeration of habitations, broken only by occasional mosque towers or, on the outskirts, by luxuriant foliage. Except on the south side the city is surrounded by hills, interspersed with groves of orange, pomegranate and other fruit trees, and large olive gardens.

From its peculiar situation Fez has a drainage superior to that of most Moorish towns. When the town becomes very dirty, the water is allowed to run down the streets by opening lids for the purpose in the conduits and closing the ordinary exits, so that it overflows and cleanses the pavements. The Fasis as a rule prefer to drink the muddy river water rather than that of the pure springs which abound in certain quarters of the town. But the assertion that the supply and drainage system are one is a libel, since the drainage system lies below the level of the fresh river water, and was organized by a French renegade, under Mohammed XVI., about the close of the 18th century. The general dampness of the town renders it unhealthy, however, as the pallid faces of the inhabitants betoken, but this is considered a mark of distinction and is jealously guarded.

Most of the streets are exceedingly narrow, and as the houses are high and built in many cases over the thoroughfares these are often very dark and gloomy, though, since wooden beams, rough stones and mortar are used in building, there is less of that ruined, half-decayed appearance so common in other Moorish towns where mud concrete is the material employed.

As a commercial town Fez is a great depot for the trade of Barbary and wares brought from the east and south by caravans. The manufactures still carried on are those of yellow slippers of the famous Morocco leather, fine white woollen and silk haiks, of which it is justly proud, women’s embroidered sashes, various coarse woollen cloths and blankets, cotton and silk handkerchiefs, silk cords and braids, swords and guns, saddlery, brass trays, Moorish musical instruments, rude painted pottery and coloured tiles. Until recent times the city had a monopoly of the manufacture of Fez caps, for it was supposed that the dye which imparts the dull crimson hue of these caps could not be procured elsewhere; they are now, however, made both in France and Turkey. The dye is obtained from the juice of a berry which grows in large quantities near the town, and is also used in the dyeing of leather. Some gold ornaments are made, the gold being brought from the interior by caravans which trade regularly with Timbuktu.

As in other capitals each trade has a district or street devoted chiefly to its activities. Old Fez is the business portion of the town, new Fez being occupied principally by government quarters and the Jews’ mellah. The tradesman usually sits cross-legged in a corner of his shop with his goods so arranged that he can reach most of them without moving.

In the early days of Mahommedan rule in Morocco, Fez was the seat of learning and the empire’s pride. Its schools of religion, philosophy and astronomy enjoyed a great reputation in Africa and also in southern Europe, and were even attended by Christians. On the expulsion of the Moors from Spain, refugees of all kinds flocked to Fez, and brought with them some knowledge of arts, sciences and manufactures, and thither flocked students to make use of its extensive libraries. But its glories were brief, and though still “the university town” of Morocco, it retains but a shadow of its greatness. Its library, estimated by Gerhard Rohlfs in 1861 to contain 5000 volumes, is open on Fridays, and any Moor of known respectability may borrow volumes on getting an order and signing a receipt for them. There are about 1500 students who read at the Karueein. They pay no rents, but buy the keys of the rooms from the last occupants, selling them again on leaving.

The Karueein is celebrated as the largest mosque in Africa, but it is by no means the most magnificent. On account of the vast area covered, the roof, supported by three hundred and sixty-six pillars of stone, appears very low. The side chapel for services for the dead contains twenty-four pillars. All these columns support horse-shoe arches, on which the roof is built, long vistas of arches being seen from each of the eighteen doors of the mosque. The large lamp is stated to weigh 1763 lb and to have 509 lights, but it is very seldom lit. The total number of lights in the Karueein is given as seventeen hundred, and they are said to require 3½ cwt. of oil for one filling. The mosque of Mulai Idris, built by the founder of Fez about the year 810, is considered so sacred that the streets which approach its entrance are forbidden to Jews, Christians or four-footed beasts. The sanctity of the shrine in particular is esteemed very great, and this accounts for the crowds which daily flock to it. The Tumiat door leading to it was once very fine, but is now much faded. Opposite to it is a refuge for

friendless sharifas—the female descendants of Mahomet—built by Mohammed XVII.

It is believed that the foundation stone of Fez was laid in 808 by Idris II. Since then its history has been chequered, as it was successfully besieged no fewer than eight times in the first five hundred years of its existence, yet only once knew foreign masters, when in 1554 the Turks took possession of it without a siege and held it for a short time. Fez became the chief residence of the Filali dynasty, who obtained possession of the town in 1649 (see further MOROCCO: *History*).

The population has been very varyingly estimated; probably the inhabitants number under one hundred thousand, even when the court is in residence.

See H. Gaillard, *Une Ville de l'Islam. Fès* (Paris, 1905); C. René-Leclerc, "Le commerce et l'industrie à Fez" in *Renseignements col. comité afrique française* (1905).

FEZZAN (the ancient *Phazania*, or country of the Garamantes), a region of the Sahara, forming a "kaimakamlik" of the Ottoman vilayet of Tripoli (*q.v.*). Its frontiers, ill-defined, run from Bonjem, within 50 m. of the Mediterranean on the north, south-westward to the Akakus range of hills, which separates Fezzan from Ghat, thence eastward for over 400 m., and then turn north and west to Bonjem again, embracing an area of about 156,000 sq. m.

Physical Features.—The general form of the country is determined by the ranges of hills, including the Jebel-es-Suda (highest peak about 4000 ft.), the Haruj-el-Aswad and the Haruj-el-Abiad, which between 14° and 19° E. and 27° and 29° N. form the northern edge of a broad desert plateau, and shut off the northern region draining to the Mediterranean from the depressions in which lie the oases of Fezzan proper in the south. The central depression of Hofra ("ditch"), as it is called, lies in about 26° N. It does not form a continuous fertile tract, but consists of a monotonous sandy expanse somewhat more thickly studded with oases than the surrounding wastes. The Hofra at its lowest part is not more than 600 ft. above the sea-level, and in this hollow is situated the capital Murzuk. It has a general east to west direction. North-west of the Hofra is a long narrow valley, the Wadi-el-Gharbi, which trends north-east and is the most fertile district of Fezzan. It contains several perennial springs and lake-like basins. One of these basins, the saline Bahr-el-Dud ("Sea of Worms"), has an extent of 600 sq. m., and is in places 26 ft. deep. Southwards the Hofra rises to a height of 2000 ft., and in this direction lies the oasis of Gatron, followed by Tejerri on the verge of the desert, which marks the southern limit of the date and the northern of the dum palm. Beyond Tejerri the Saharan plateau rises continuously to the Tibesti highlands. (See further TRIPOLI.)

Climate.—The average temperature of Murzuk was found by Rohlfs to be 70° F. Frost is not uncommon in the winter months. The climate is a very regular one, and is in general healthy, the dryness of the air in summer making the heat more bearable than on the sea coast. An almost perpetual blue sky overhangs the desert, and the people of Fezzan are so unaccustomed to and so ill-prepared for wet weather that, as in Tuat and Tidikelt, they pray to be spared from rain. Water is found almost everywhere at small depths.

Flora and Fauna.—The date-palm is the characteristic tree of Fezzan, and constitutes the chief wealth of the land. Many different kinds of date-palms are found in the oases: in that of Murzuk alone more than 30 varieties are counted, the most esteemed being named the Tillis, Tuati and Auregh. In all Fezzan the date is the staple food, not only for men, but for camels, horses and dogs. Even the stones of the fruit are softened and given to the cattle. The huts of the poorer classes are entirely made of date-palm leaves, and the more substantial habitations consist chiefly of the same material. The produce of the tree is small, 100 full-grown trees yielding only about 40 cwt. of dates. Besides the date there are numerous olive, fig and almond trees. Various grains are cultivated. Wheat and barley are sown in winter, and in spring, summer and autumn several kinds of durra, especially ksob and gafoli. Cotton flourishes, is perennial for six or seven years, and gives large pods of moderate length of staple.

There are no large carnivora in Fezzan. In the uninhabited oases gazelles and antelopes are occasionally found. The most important animal is the camel, of which there are two varieties, the Tebu or Sudan camel and the Arabian, differing very much in size, form and capabilities. Horses and cattle are not numerous. Among birds are ostriches, falcons, vultures, swallows and ravens; in summer wild pigeons and ducks are numerous, but in winter they seek a warmer climate. There are no remarkable insects or snakes. A species of *Artemia* or brine shrimp, about a quarter of an inch in length, of a colour resembling the bright hue of the gold fish, is fished for with cotton nets in the "Sea of Worms," and mixed with dates and kneaded into a paste, which has the taste and smell of salt herring, is considered a luxury by the people of Fezzan.

Inhabitants.—The total population is estimated at between 50,000 and 80,000. The inhabitants are a mixed people, derived from the surrounding Teda and Bornu on the south, Tuareg of the plateaus on the west, Berbers and Arabs from the north. The primitive inhabitants, called by their Arab conquerors Berāuna, are believed to have been of Negro origin. They no longer persist as a distinct people. In colour the present inhabitants vary from black to white, but the prevailing hue of skin is a Malay-like

yellow, the features and woolly hair being Negro. The chief languages are the Kanuri or Bornu language and Arabic. Many understand Targish, the Teda and the Hausa tongues. If among such a mixed people there can be said to be any national language, it is that of Bornu, which is most widely understood and spoken. The people of Sokna, north of the Jebel-es-Suda, have a peculiar Berber dialect which Rohlfs found to be very closely allied to that of Ghadames. The men wear a haik or barakan like those of Tripoli, and a fez; short hose, and a large loose shirt called mansarīa, with red or yellow slippers, complete their toilet. Yet one often sees the large blue or white *tobe* of Bornu, and the *litham* or shawl-muffler of the Tuareg, wound round the mouth to keep out the blown sand of the desert. The women, who so long as they are young have very plump forms, and who are generally small, are more simply dressed, as a rule, in the barakan, wound round their bodies; they seldom wear shoes, but generally have sandals made of palm leaf. Like the Arab women they load arms and legs with heavy metal rings, which are of silver among the more wealthy. The hair, thickly greased with butter, soon catching the dust which forms a crust over it, is done up in numberless little plaits round the head, in the same fashion as in Bornu and the Hausa countries. Children run about naked until they attain the age of puberty, which comes very early, for mothers of ten or twelve years of age are not uncommon. The Fezzani are of a gay disposition, much given to music and dancing.

Towns and Trade.—Murzuk, the present capital, which is in telegraphic communication with the town of Tripoli, lies in the western corner of the Hofra depression, in 25° 55′ N. and 14° 10′ E. It was founded about 1310, about which time the *kasbah* or citadel was built. The Turks repaired it, as well as the town-wall, which has, however, again fallen into a ruinous condition. Murzuk, which had in 1906 some 3000 inhabitants, is cut in two by a wide street, the *dendal*. The citadel and most of the houses are built of salt-saturated dried mud. Sokna, about midway between Tripoli and Murzuk, situated on a great gravel plain north of the Suda range, has a population of about 2500.

Garama (Jerma-el-Kedima), the capital under the Garamantes and the Romans, was in the Wadi-el-Gharbi. It was a flourishing town at the time of the Arab conquest but is now deserted. Among the ruins is a well-preserved stone monument marking the southern limit of the Roman dominions in this part of Africa. The modern Jerma is a small place a little north of the site of Garama. Zuila, the capital under the Arabs, lies in a depression called the Sherguia east of Murzuk on the most direct caravan route to Barca and Egypt. Of Traghen, the capital under the Nesur dynasty, which was on the same caravan route and between Zuila and Murzuk, little besides the ruined kasbah remains.

Placed roughly midway between the countries of the central Sudan and Tripoli, Fezzan serves as a depot for caravans crossing the Sahara; its commerce is unimportant. Its most important export is that of dates. Slave dealing, formerly the most lucrative occupation of the people, is moribund owing to the stoppage of slave raiding by the European governments in their Sudan territories.

History.—The country formed part of the territory of the Garamantes, described by Herodotus as a very powerful people. Attempts have been made to identify the Garamantes with the Berāuna of the Arabs of the 7th century, and to the period of the Garamantes Duveyrier assigns the remains of remarkable hydraulic works, and certain tombs and rock sculptures—indications, it is held, of a Negro civilization of ancient date which existed in the northern Sahara. The Garamantes, whether of Libyan or Negro origin, had certainly a considerable degree of civilization when in the year 19 B.C. they were conquered by the proconsul L. Cornelius Balbus Minor and their country added to the Roman empire. By the Romans it was called Phazania, whence the present name Fezzan. After the Vandal invasion Phazania appears to have regained independence and to have been ruled by a Berāuna dynasty. At this time the people were Christians, but in 666 the Arabs conquered the country and all traces of Christianity seem speedily to have disappeared. Subject at first to the caliphs, an independent Arab dynasty, that of the Beni Khattab, obtained power early in the 10th century. In the 13th century the country came under the rule of the king of Kanem (Bornu), but soon afterwards the Nesur, said to have been a native or Berāuna dynasty, were in power. More probably the Nesur were hereditary governors originally appointed by the rulers of Kanem. In the 14th century the Nesur were conquered and dethroned by an Arab tribe, that of Khorman, who reduced the people of Fezzan to a state of slavery, a position from which they were rescued about the middle of the 16th century by a sherif of Morocco, Montasir-b.-Mahommed, who founded the dynasty of Beni Mahommed. This dynasty, which came into frequent conflict with the Turks, who had about the same time that Montasir secured Fezzan established themselves in Tripoli, gradually extended its borders as far as Sokna in the north. It was the Beni Mahommed who chose Murzuk as their capital. They became intermittently tributary to the pasha of Tripoli, but within Fezzan the power of the sultans was absolute. They maintained a body-guard of mamelukes, mostly Europeans—Greeks, Genoese, or their immediate descendants. The annual tribute was paid to the pasha either in money or in gold, senna or slaves. The last of the Beni Mahommed sultans was killed in the vicinity of Traghen in 1811 by El-Mukkeni, one of the lieutenants of Yusef Pasha, the last sovereign but one of the independent Karamanli dynasty of Tripoli. El-Mukkeni now made himself sultan of Fezzan, and became notorious by his slaving expeditions into the central Sudan, in which he advanced as far as Bagirmi. In 1831, Abd-el-Jelil, a chief of the Walid-Sliman Arabs, usurped the sovereign authority. After a troublous reign of ten years he was slain in battle by a Turkish force under Bakir Bey, and Fezzan was added to the Turkish empire. Towards the end of the 19th century the Turks, alarmed at the increase of French influence in the neighbouring countries, reinforced their garrison in Fezzan. The kaimakamlik is said to yield an annual revenue of £6000 only to the Tripolitan treasury.

AUTHORITIES.—The most notable of the European travellers who have visited Fezzan, and to whose works reference should be made for more detailed information regarding it, are, taking them in the

order of date, as follows: F. Hornemann, 1798; G.F. Lyon, 1819; D. Denham, H. Clapperton and W. Oudney, 1822; J. Richardson, 1845; H. Barth, 1850-1855; E. Vogel, 1854; H. Duveyrier, 1859-1861; M. von Beurmann, 1862; G. Rohlfs, 1865; G. Nachtigal, 1869; P.L. Monteil, 1892; H. Vischer, 1906. Nachtigal's *Sahara and Sudan*, vol. i. (Berlin, 1879), gathers up much of the information in earlier works, and a list of the Beni Mahommed sovereigns is given in A.M.H.J. Stokvis, *Manuel d'histoire*, vol. i. (Leiden, 1888), p. 471. Miss Tinné (*q.v.*), who travelled with Nachtigal as far as Murzuk, was shortly afterwards murdered at the Sharaba wells on the road to Ghat.

FIACRE, SAINT (Celt. *Fiachra*), an anchorite of the 7th century, of noble Irish descent. We have no information concerning his life in his native country. His *Acta*, which have scarcely any historical value, relate that he left Ireland, and came to France with his companions. He approached St Faro, the bishop of Meaux, to whom he made known his desire to live a life of solitude in the forest. St Faro assigned him a spot called Prodilus (Brodolium), the modern Breuil, in the province of Brie. There St Fiacre built a monastery in honour of the Holy Virgin, and to it added a small house for guests, to which he himself withdrew. Here he received St Chillen (? Killian), who was returning from a pilgrimage to Rome, and here he remained until his death, having acquired a great reputation for miracles. His remains rested for a long time in the place which he had sanctified. In 1568, at the time of the religious troubles, they were transferred to the cathedral of Meaux, where his shrine may still be seen in the sacristy. Various relics of St Fiacre were given to princes and great personages. His festival is celebrated on the 30th of August. He is the patron of Brie, and gardeners invoke him as their protector. French hackney-coaches received the name of *fiacre* from the Hôtel St Fiacre, in the rue St Martin, Paris, where one Sauvage, who was the first to provide cabs for hire, kept his vehicles.

See *Acta Sanctorum*, Augusti vi. 598-620; J. O'Hanlon, *Lives of the Irish Saints*, viii. 421-447 (Dublin, 1875-1904); J.C. O'Meagher, "Saint Fiacre de la Brie," in *Proceedings of the Royal Irish Academy*, 3rd series, ii. 173-176.

(H. De.)

FIARS PRICES, in the law of Scotland, the average prices of each of the different sorts of grain grown in each county, as fixed annually by the sheriff, usually after the verdict of a jury; they serve as a rule for ascertaining the value of the grain due to feudal superiors, to the clergy or to lay proprietors of teinds, to landlords as a part or the whole of their rents and in all cases where the price of grain has not been fixed by the parties. It is not known when or how the practice of "striking the fiars," as it is called, originated. It probably was first used to determine the value of the grain rents and duties payable to the crown. In confirmation of this view it seems that at first the duty of the sheriffs was merely to make a return to the court of exchequer of the prices of grain within their counties, the court itself striking the fiars; and from an old case it appears that the fiars were struck above the true prices, being regarded rather as punishments to force the king's tenants to pay their rents than as the proper equivalent of the grain they had to pay. Co-existent, however, with these fiars, which were termed sheriffs' fiars, there was at an early period another class called commissaries' fiars, by which the values of teinds were regulated. They have been traced back to the Reformation, and were under the management of the commissary or consistorial courts, which then took the place of the bishops and their officials. They have now been long out of use, but they were perhaps of greater antiquity than the sheriffs' fiars, and the model upon which these were instituted. In 1723 the court of session passed an Act of Sederunt for the purpose of regulating the procedure in fiars courts. Down to that date the practice of striking the fiars was by no means universal over Scotland; and even in those counties into which it had been introduced, there was, as the preamble of the act puts it, "a general complaint that the said fiars are struck and given out by the sheriffs without due care and inquiry into the current and just prices." The act in consequence provided that all sheriffs should summon annually, between the 4th and the 20th of February, a competent number of persons, living in the shire, of experience in the prices of grain within its bounds, and that from these they should choose a jury of fifteen, of whom at least eight were to be heritors; that witnesses and other evidence as to the price of grain grown in the county, especially since the 1st of November preceding until the day of inquiry, were to be brought before the jury, who might also proceed on "their own proper knowledge"; that the verdict was to be returned and the sentence of the sheriff pronounced by the 1st of March; and further, where custom or expediency recommended it, the sheriff was empowered to fix fiars of different values according to the different qualities of the grain. It cannot be said that this act has remedied all the evils of which it complained. The propriety of some of its provisions has been questioned, and the competency of the court to pass it has been doubted, even by the court itself. Its authority has been entirely disregarded in one county—Haddingtonshire—where the fiars are struck by the sheriff alone, without a jury; and when this practice was called in question the court declined to interfere, observing that the fiars were better struck in Haddingtonshire than anywhere else. The

other sheriffs have in the main followed the act, but with much variety of detail, and in many instances on principles the least calculated to reach the true average prices. Thus in some counties the averages are taken on the number of transactions, without regard to the quantities sold. In one case, in 1838, the evidence was so carelessly collected that the second or inferior barley fiars were 2s. 4d. higher than the first. Formerly the price was struck by the boll, commonly the Linlithgowshire boll; now the imperial quarter is always used.

The origin of the plural word fiars (feors, feers, fiers) is uncertain. Jamieson, in his *Dictionary*, says that it comes from the Icelandic *fe*, wealth; Paterson derives it from an old French word *feur*, an average; others connect it with the Latin *forum* (*i.e.* market). The *New English Dictionary* accepts the two latter connexions. On the general subject of fiars prices see Paterson's *Historical Account of the Fiars in Scotland* (Edin., 1852); Connell, *On Tithes*; Hunter's *Landlord and Tenant*.

FIBRES (or Fibers, in American spelling; from Lat. *fibra*, apparently connected either with *filum*, thread, or *findere*, to split), the general term for certain structural components of animal and vegetable tissue utilized in manufactures, and in respect of such uses, divided for the sake of classification into textile, papermaking, brush and miscellaneous fibres.

I. *Textile Fibres* are mostly products of the organic world, elaborated in their elongated form to subserve protective functions in animal life (as wool and epidermal hairs, &c.) or as structural components of vegetable tissues (flax, hemp and wood cells). It may be noted that the inorganic world provides an exception to this general statement in the fibrous mineral asbestos (*q.v.*), which is spun or twisted into coarse textiles. Other silicates are also transformed by artificial processes into fibrous forms, such as "glass," which is fused and drawn or spun to a continuous fibre, and various "slags" which, in the fused state, are transformed into "slag wool." Lastly, we note that a number of metals are drawn down to the finest dimensions, in continuous lengths, and these are woven into cloth or gauze, such metallic cloths finding valuable applications in the arts. Certain metals in the form of fine wire are woven into textile fabrics used as dress materials. Such exceptional applications are of insignificant importance, and will not be further considered in this article.

The common characteristics of the various forms of matter comprised in the widely diversified groups of textile fibres are those of the colloids. Colloidal matter is intrinsically devoid of structure, and in the mass may be regarded as homogeneous; whereas crystalline matter in its proximate forms assumes definite and specific shapes which express a complex of internal stresses. The properties of matter which condition its adaptation to structural functions, first as a constituent of a living individual, and afterwards as a textile fibre, are homogeneous continuity of substance, with a high degree of interior cohesion, and associated with an irreducible minimum of elasticity or extensibility. The colloids show an infinite diversity of variations in these essential properties: certain of them, and notably cellulose (*q.v.*), maintain these characteristics throughout a cycle of transformations such as permit of their being brought into a soluble plastic form, in which condition they may be drawn into filaments in continuous length. The artificial silks or lustra-celluloses are produced in this way, and have already taken an established position as staple textiles. For a more detailed account of these products see Cellulose.

The animal fibres are composed of nitrogenous colloids of which the typical representatives are the albumens, fibrines and gelatines. They are of highly complex constitution and their characteristics have only been generally investigated. The vegetable fibre substances are celluloses and derivatives of celluloses, also typically colloidal bodies. The broad distinction between the two groups is chiefly evident in their relationship to alkalis. The former group are attacked, resolved and finally dissolved, under conditions of action by no means severe. The celluloses, on the other hand, and therefore the vegetable fibres, are extraordinarily resistant to the action of alkalis.

The animal fibres are relatively few in number but of great industrial importance. They occur as detached units and are of varying dimensions; sheep's wool having lengths up to 36 in., the fleeces being shorn for textile uses at lengths of 2 to 16 in.; horse hair is used in lengths of 4 to 24 in., whereas the silks may be considered as being produced in continuous length, "reeled silks" having lengths measured in hundreds of yards, but "spun silks" are composed of silk fibres purposely broken up into short lengths.

The vegetable fibres are extremely numerous and of very diversified characteristics. They are individualized units only in the case of seed hairs, of which cotton is by far the most important; with this exception they are elaborated as more or less complex aggregates. The bast tissues of dicotyledonous annuals furnish such staple materials as flax, hemp, rhea or ramie and jute. The bast occurs in a peripheral zone, external to the wood and beneath the cortex, and is mechanically separated from the stem, usually after steeping, followed by drying.

The commercial forms of these fibres are elongated filaments composed of the elementary bast cells (ultimate fibres) aggregated into bundles. The number of these as any part of the filament may vary from 3 to 20 (see figs.). In the processes of refinement preparatory to the spinning (hackling, scutching) and in the spinning process itself, the fibre-bundles are more or less subdivided, and the

divisibility of the bundles is an element in the textile value of the raw material. But the value of the material is rather determined by the length of the ultimate fibres (for, although not the spinning unit, the tensile strength of the yarn is ultimately limited by the cohesion of these fibres), qualified by the important factor of uniformity.

Thus, the ultimate fibre of flax has a length of 25 to 35 mm.; jute, on the other hand, 2 to 3 mm.; and this disparity is an essential condition of the difference of values of these fibres. Rhea or ramie, to cite another typical instance, has an ultimate fibre of extraordinary length, but of equally conspicuous variability, viz. from 50 to 200 mm. The variability is a serious impediment in the preparation of the material for spinning and this defect, together with low drawing or spinning quality, limits the applications of this fibre to the lower counts or grades of yarn.

The monocotyledons yield still more complex fibre aggregates, which are the fibro-vascular bundles of leaves and stems. These complex structures as a class do not yield to the mechanical treatment by which the bast fibres are subdivided, nor is there any true spinning quality such as is conditioned by bringing the ultimate fibres into play under the drawing process, which immediately precedes the twisting into yarn. Such materials are therefore only used for the coarsest textiles, such as string or rope. An exception to be noted in passing is to be found in the pine apple (*Ananassa Sativa*) the fibres of which are worked into yarns and cloth of the finest quality. The more important fibres of this class are manila, sisal, phormium. A heterogeneous mass of still more complex fibre aggregates, in many cases the entire stem (cereal straws, esparto), in addition to being used in plaited form, *e.g.* in hats, chairs, mats, constitute the staple raw material for paper manufacturers, requiring a severe chemical treatment for the separation of the ultimate fibres.

In this class we must include the woods which furnish wood pulps of various classes and grades. Chemical processes of two types, (*a*) acid and (*b*) alkaline, are also employed in resolving the wood, and the resolution not only effects a complete isolation of the wood cells, but, by attacking the hydrolysable constituents of the wood substance (lignocellulose), the cells are obtained in the form of cellulose. These cellulose pulps are known in commerce as “sulphite pulps” and “soda pulps” respectively. In addition to these raw materials or “half stuffs” the paper-maker employs the rejecta of the vegetable and textile industries, scutching, spinning and cloth wastes of all kinds, which are treated by chemical (boiling) and mechanical means (beating) to separate the ultimate fibres and reduce them to the suitable dimensions (0.5-2.0 mm.). These papermaking fibres have also to be reckoned with as textile raw materials, in view of a new and growing industry in “pulp yarns” (*Papierstoffgarn*), a coarse textile obtained by treating paper as delivered in narrow strips from the paper machine; the strips are reeled, dried to retain 30-40% moisture, and in this condition subjected to the twisting operation, which confers the cylindrical form and adds considerably to the strength of the fibrous strip. The following are the essential characteristics of the economically important fibres.

Animal.—A. Silk. (*a*) The true silks are produced by the *Bombyx Mori*, the worm feeding on the leaves of the mulberry. The fibre is extruded as a viscous liquid from the glands of the worm, and solidifies to a cylindrical thread. The cohesion of these threads in pairs gives to raw silk the form of a dual cylinder (Plate I. fig. 2). For textile purposes the thread is reeled from the cocoon, and several units, five and upwards, are brought together and suitably twisted. (*b*) The “Wild” silks are produced by a large variety of insects, of which the most important are the various species of Antherea, which yield the Tussore silks. These silks differ in form and composition from the true silks. While they consist of a “dual” thread, each unit of these is complex, being made up of a number of fibrillae. This unit thread is quadrangular in section, and of larger diameter than the true silk, the mean breadth being 0.052 mm., as compared with 0.018, the mean diameter of the true silks. The variations in structure as well as in dimensions are, however, very considerable.

B. Epidermal hairs. Of these (*a*) wool, the epidermal protective covering of sheep, is the most important. The varying species of the animal produce wools of characteristic qualities, varying considerably in fineness, in length of staple, in composition and in spinning quality. Hence the classing of the fleeces or raw wool followed by the elaborate processes of selection, *i.e.* “sorting” and preparation, which precede the actual spinning or twisting of the yarn. These consist in entirely freeing the fibres and sorting them mechanically (combing, &c.), thereafter forming them into continuous lengths of parallelized units. This is followed by the spinning process which consists in a simultaneous drawing and twisting, and a continuous production of the yarn with the structural characteristics of worsted yarns. The shorter staple—from 5 to 25% of average fleeces—is prepared by the “carding” process for the spinning operation, in which drawing and twisting are simultaneous, the length spun being then wound up, and the process being consequently intermittent. This section of the industry is known as “woollen spinning” in contrast to the former or “*worsted* spinning.”

(*b*) An important group of raw material closely allied to the wools are the epidermal hairs of the Angora goat (mohair), the llama, alpaca. Owing to their form and the nature of the substance of which they are composed, they possess more lustre than the wools. They present structural differences from sheep wools which influence the processes by which they are prepared or spun, and the character of the yarns; but the differences are only of subordinate moment.

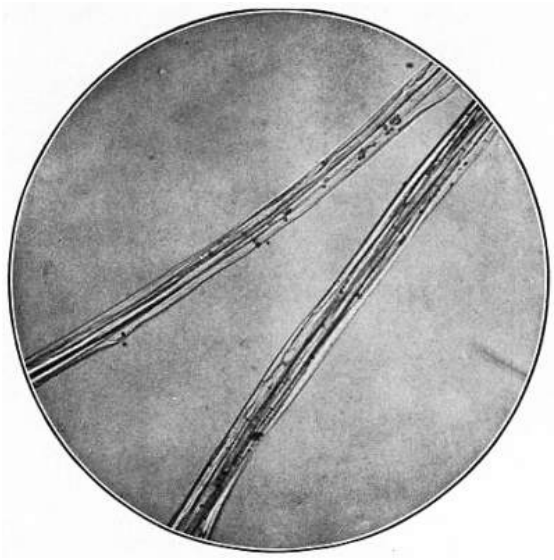


FIG. 1.—RAW SILK. *Bombyx mori*. Filament of bave, viewed in length. × 110.

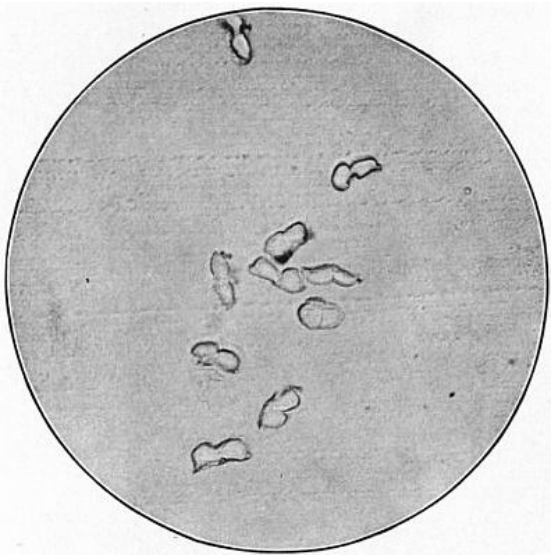


FIG. 2.—RAW SILK. *Bombyx mori*. Single fibres in transverse section showing each fibre or "bave" as dual cylinder. × 235.

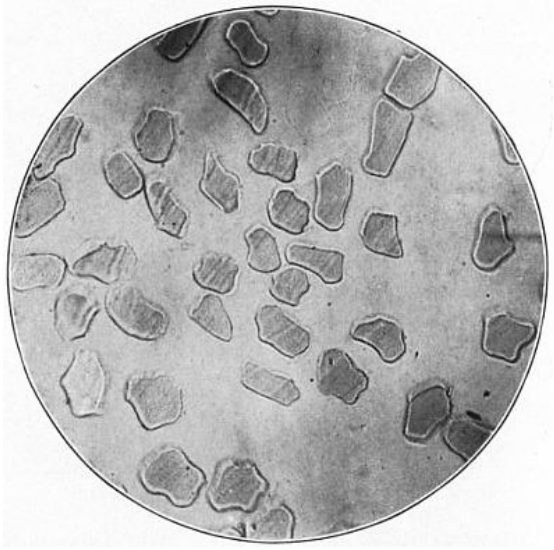


FIG. 3.—ARTIFICIAL "SILK." Lustra-cellulose viscose process, single fibres in transverse section × 235. Normal type—polygon of 5 sides—with concave sides due to contact of the component units of textile filament.

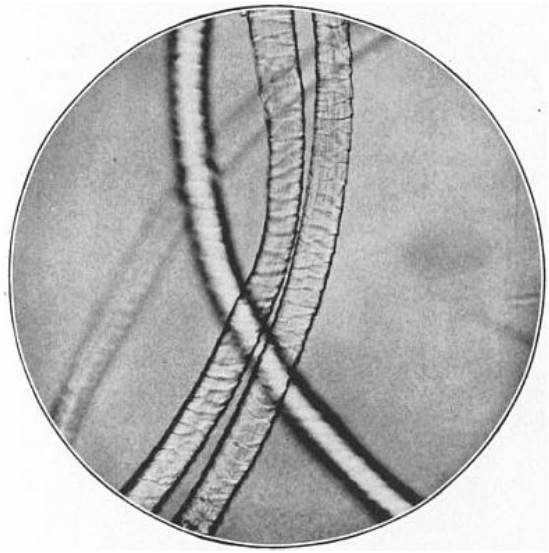
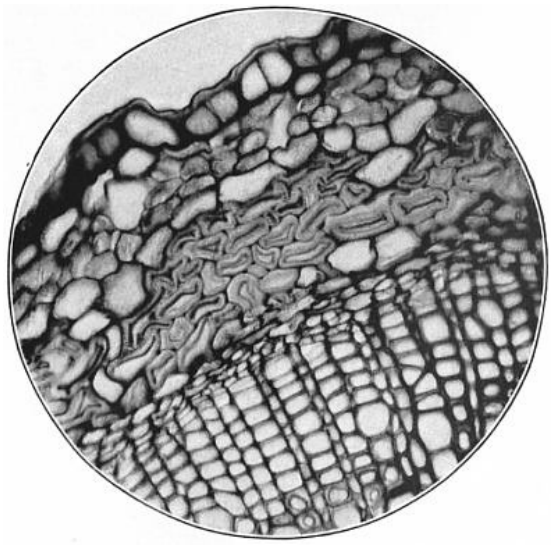


FIG. 4.—WOOL FIBRES. Australian merino viewed in length, × 235. Surface imbrications—the structural cause of true felting properties.



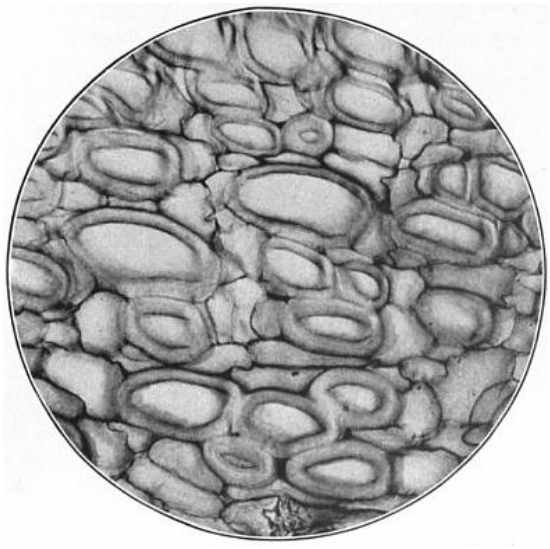


FIG. 5.—FLAX STEM. *Linum usitatissimum*. Transverse section of stem, × 235, showing bast fibres occupying central zone.

FIG. 6.—RAMIE. Section of bast region, × 235. Showing bast fibres bundles but only slightly occurring as individuals.

PLATE II.

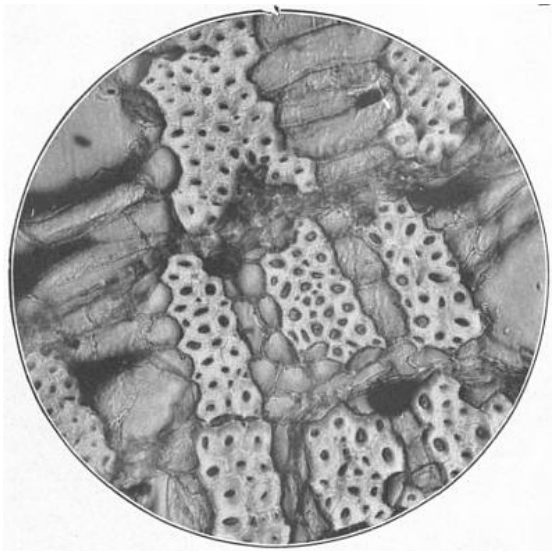


FIG. 7.—JUTE. Bast bundles. Section of bast region, × 235, showing agglomerated bundles of bast fibre, each bundle representing a spinning unit or filament.

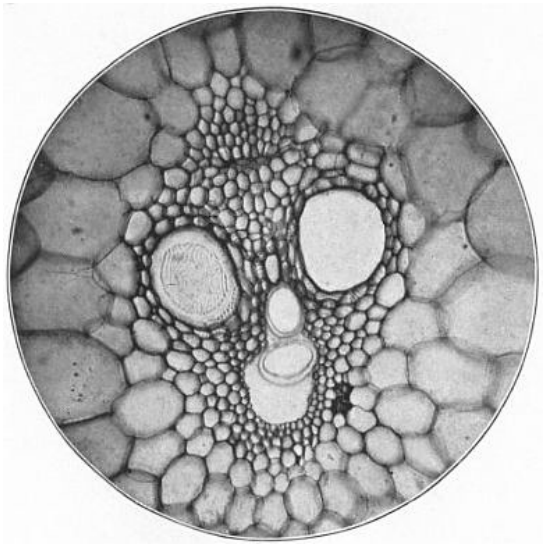


FIG. 8.—MAIZE STEM. *Zea mais*. Fibro-vascular bundle in section. × 110, typical of monocotyledonous structure.

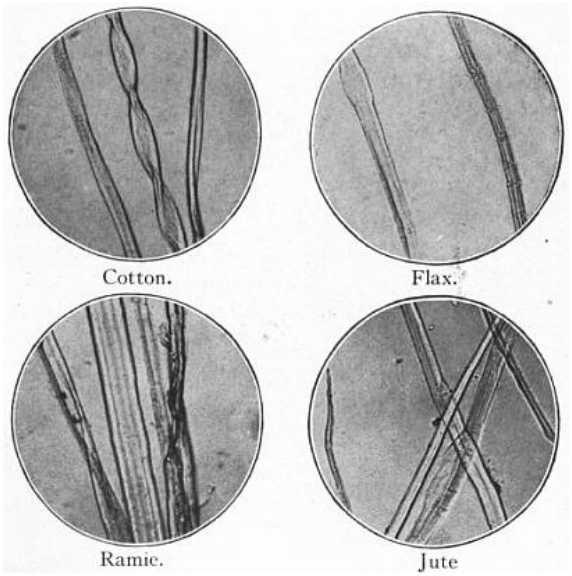


FIG. 9.—COTTON. FLAX. RAMIE. JUTE. Ultimate fibres in the length, × 110. Portions selected to show typical structural characteristics.

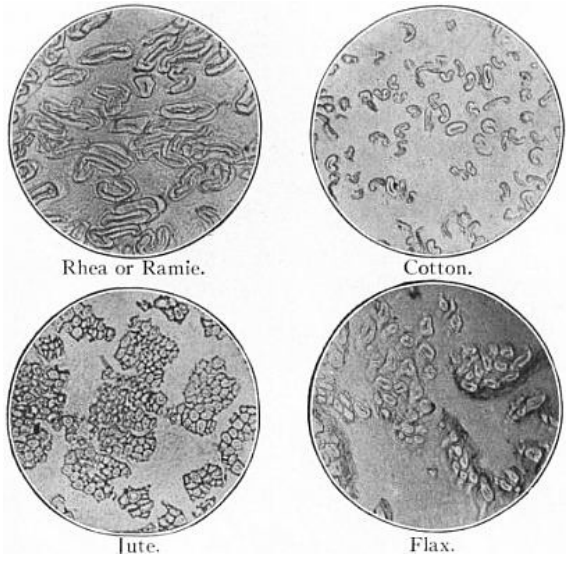


FIG. 10.—COTTON. FLAX. RAMIE. JUTE. Ultimate fibres—transverse section, × 110. Note similarity of ramie to cotton and jute to flax.

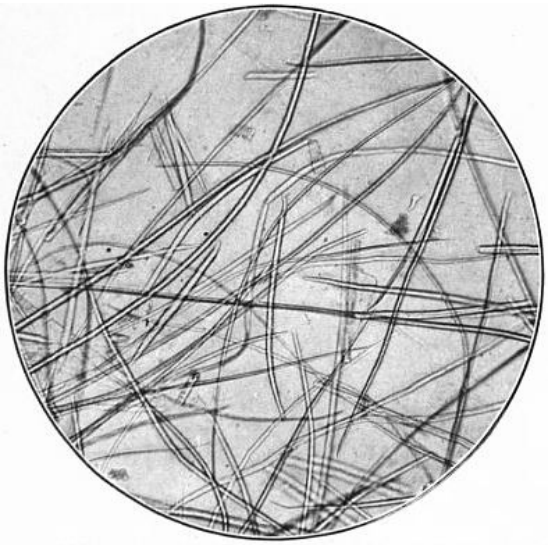


FIG. 11.—ESPARTO. Cellulose. Ultimate fibres of paper making pulp. Typical fusiform bast fibres. × 65.

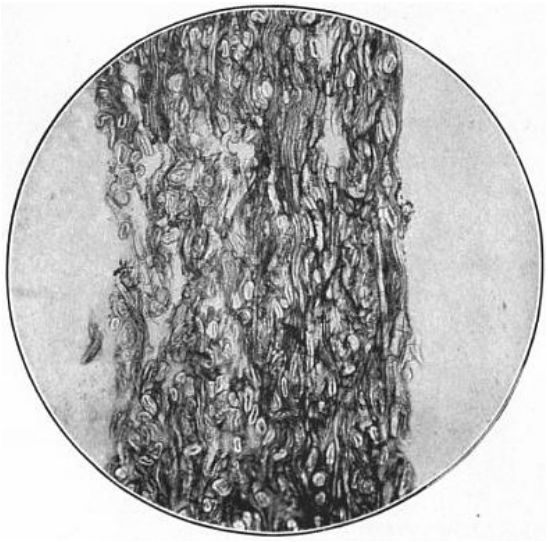


FIG. 12.—SECTION OF HAND-MADE PAPER. × 110. Ultimate component fibres disposed in every plane.

(*c*) Various animal hairs, such as those of the cow, camel and rabbit, are also employed; the latter is largely worked into the class of fabrics known as felts. In these the hairs are compacted together by taking advantage of the peculiarity of structure which causes the imbrications of the surface.

(*d*) Horse hair is employed in its natural form as an individual filament or monofil.[1]

Vegetable Fibres.—The subjoined scheme of classification sets out the morphological structural characteristics of the vegetable fibres:—

Produced from

Dicotyledons.	*Monocotyledons.*
A. Seed hairs.	D. Fibro-vascular bundles.
B. Bast fibres.	E. Entire leaves and stems.
C. Bast aggregates.	

In the list of the more important fibrous raw materials subjoined, the capital letter immediately following the name refers the individual to its position in this classification. In reference to the important question of chemical composition and the actual nature of the fibre substance, it may be premised that the vegetable fibres are composed of cellulose, an important representative of the group of carbohydrates, of which the cotton fibre substance is the chemical prototype, mixed and combined with various derivatives belonging to the subgroups. (*a*) Carbohydrates. (*b*) Unsaturated compounds of benzenoid and furfuroid constitutions. (*c*) "Fat and wax" derivatives, *i.e.* groups belonging to the fatty series, and of higher molecular dimensions—of such compound celluloses the following are the prototypes:—

(*a*) Cellulose combined and mixed with "pectic" bodies (*i.e.* pecto-celluloses), flax, rhea.

(*b*) Cellulose combined with unsaturated groups or ligno-celluloses, jute and the woods.

(*c*) Cellulose combined and mixed with higher fatty acids, alcohols, ethers, cuto-celluloses, protective epidermal covering of leaves.

The letters *a*, *b*, *c* in the table below and following the capitals, which have reference to the structural basis of classification, indicate the main characteristics of the fibre substances. (See also CELLULOSE.)

Miscellaneous.—Various species of the family Palmaceae yield fibrous products of value, of which mention must be made of the following. *Raffia*, epidermal strips of the leaves of *Raphia ruffia* (Madagascar), *R. taedigera* (Japan), largely employed as binder twine in horticulture, replacing the "bast" (linden) formerly employed. *Coir*, the fibrous envelope of the fruit of the *Cocos nucifera*, extensively used for matting and other coarse textiles. *Carludovica palmata* (Central America) yields the raw material for Panama hats, the *Corypha australis* (Australia) yields a similar product. The leaves of the date palm, *Phoenix dactylifera*, are employed locally in making baskets and mats, and the fibro-vascular bundles are isolated for working up into coarse twine and rope; similarly, the leaves of the *Elaeis guineensis*, the fruit of which yields the "palm oil" of commerce, yield a fibre which finds employment locally (Africa) for special purposes. *Chamaerops humilis*, the dwarf palm, yields the well-known "Crin d'Afrique." Locally (Algiers) it is twisted into ropes, but its more general use, in Europe, is in upholstery as a stuffing material. The cereal straws are used in the form of plait in the making of hats and mats. Esparto grass is also used in the making of coarse mats.

	Botanical Identity. Genus and Order.	Country of Origin.	Dimensions of Ultimate.	Textile Uses.
Cotton, A.*a*	Gossypium Malvaceae	Tropical and subtropical countries	12-40 mm. 0.019-0.025. Av. 28 mm.	Universal. Also as a raw material in chemical industries, notably

				explosives, celluloid.
Flax, B.*a*	Linum Linaceae	Temperate (and subtropical) countries, chiefly European	6.60 mm. 0.011-0.025. Av. 28 mm.	General. Special effects in lustre damasks. In India and America plants grown for seed (linseed).
Hemp, B.*a*	Cannabis Cannabineae	Temperate countries, chiefly Europe	5-55 mm. 0.016-0.050. Av. 22. mm. Av. 0.022	Coarser textiles, sail-cloth, rope and twine.
Ramie, B.*a*	Boehmeria Urticaceae	Tropical countries (some temperate)	60-200 mm. 0.03-0.08. Av. 120 mm. Av. 0.050	Coarse textiles. Cost of preparation for fine textiles prohibitive.
Jute, B.*b*	Corchorus Tiliaceae	Tropical countries, chiefly India	1.5-5 mm. 0.020-0.025. Av. 2.5 mm. Av. 0.022	Coarse textiles, chiefly “Hessians” and sacking. “Line” spun yarns used in cretonne and furniture textiles.
B.*b*	Crotalaria Leguminosae	India	4.0-12.0. 0.025-0.050. Av. 7.5. Av. 0.022	Twine and rope. Coarse textiles.
Hibiscus, B.*b*	Hibiscus	Tropical, chiefly India	2-6 mm. 0.014-0.033. Av. 4 mm. Av. 0.021	Coarse textiles. H. Elams has been extensively used in making mats.
Sida, B.*b*	Sida Malvaceae	Tropical and subtropical	1.5-4 mm. 0.013-0.02. Av. 2 mm. Av. 0.015	Coarse textiles. Appears capable of substituting jute.
Lime or Linden, C.*b*	Tilia Tiliaceae	European countries, chiefly Russia	1.5 mm. 0.014-0.020. Av. 2 mm. Av. 0.016	Matting and binder twine.
Mulberry, C	Broussonetia Moraceae	Far East	5-31 mm. 0.02-0.04. Av. 15 mm. Av. 0.03	Paper and paper cloths.
Monocotyledons—				
Manila, D	Musa Musaceae	Tropical countries, chiefly Philippine Islands	3-12 mm. 0.016-0.032. Av. 6 mm. Av. 0.024	Twine and ropes. Produces papers of special quality.
Sisal, D	Agave Amaryllideae	Tropical countries, chiefly Central America	1.5-4 mm. 0.020-0.032. Av. 2.5. Av. 0.024	Twine and ropes.
	Yucca Liliaceae	do.	0.5-6 mm. 0.01-0.02.	do.
	Sansevieria Liliaceae	East Indies, Ceylon, East Africa	1.5-6 mm. 0.015-0.026. Av. 3 mm. Av. 0.020	do.
Phormium, D	Phormium tenax Liliaceae	New Zealand	5.0-15 mm. 0.010-0.020. Av. 9 mm. Av. 0.016	Twine and ropes. Distinguished by high yield of fibre from green leaf.
Pine-apple, D	Ananassa Bromeliaceae	Tropical East and West Indies	3.0-9.0 mm. 0.004-0.008. Av. 5. Av. 0.006	Textiles of remarkable fineness. Exceptional fineness of ultimate fibre.

The processes by which the fibres are transformed into textile fabrics are in the main determined by their structural features. The following are the distinctive types of treatment.

A. The fibre is in virtually continuous lengths. The textile yarn is produced by assembling together the unit threads, which are wound together and suitably twisted (silk; artificial silk).

B. The fibres in the form of units of variable short dimensions are treated by more or less elaborate processes of scutching, hackling, combing, with the aim of producing a mass of free parallelized units of uniform dimensions; these are then laid together and drawn into continuous bands of sliver and roving, which are finally drawn and twisted into yarns. In this group are comprised the larger number of textile products, such as cotton, wool, flax and jute, and it also includes at the other extreme the production of coarse textiles, such as twine and rope.

C. The fibres of still shorter dimensions are treated in various ways for the production of a fabric in continuous length.

The distinction of type of manufacturing processes in which the relatively short fibres are utilized, either as disintegrated units or comminuted long fibres, follows the lines of division into long and short fibres; the long fibres are worked into yarns by various processes, whereas the shorter fibres are agglomerated by both dry and wet processes to felted tissues or felts. It is obvious, however, that these distinctions do not constitute rigid dividing lines. Thus the principles involved in felting are also applied in the manipulation of long fibre fabrics. For instance, woollen goods are closed or shrunk by milling, the web being subjected to a beating or hammering treatment in an apparatus known as “the Stocks,” or is continuously run through squeezing rollers, in weak alkaline liquids. Flax goods are “closed” by the process of beetling, a long-continued process of hammering, under which the ultimate fibres are more or less subdivided, and at the same time welded or incorporated together. As already indicated, paper, which is a web composed of units of short dimensions produced by deposition from suspension in water and agglomerated by the interlacing of the component fibres in all planes within the mass, is a species of textile. Further, whereas the silks are mostly worked up in the extreme lengths of the cocoon, there are various systems of spinning silk wastes of variable short lengths, which are similar to those required for spinning the fibres which occur naturally in the shorter lengths.

The fibres thus enumerated as commercially and industrially important have established themselves as the result of a struggle for survival, and each embodies typical features of utility. There are innumerable vegetable fibres, many of which are utilized in the locality or region of their production, but are not available for the highly specialized applications of modern competitive industry to qualify for which a very complex range of requirements has to be met. These include primarily the factors of production and transport summed up in cost of production, together with the question of regularity of supply; structural characteristics, form and dimensions, including uniformity of ultimate unit and

adaptability to standard methods of preparing and spinning, together with tenacity and elasticity, lustre. Lastly, composition, which determines the degree of resistance to chemical disintegrating influences as well as subsidiary questions of colour and relationship to colouring matters. The quest for new fibres, as well as modified methods of production of those already known, require critical investigation from the point of view of established practice. The present perspective outline of the group will be found to contain the elements of a grammar of the subject. But those who wish to pursue the matter will require to amplify this outlined picture by a study of the special treatises which deal with general principles, as well as the separate articles on the various fibres.

Analysis and Identification.—For the analysis of textile fabrics and the identification of component fibre, a special treatise must be consulted. The following general facts are to be noted as of importance.

All animal fibres are effectively dissolved by 10% solution of caustic potash or soda. The fabric or material is boiled in this solution for 10 minutes and exhaustively washed. Any residue will be vegetable or cellulose fibre. It must not be forgotten that the chemical properties of the fibre substances are modified more or less by association in combination with colouring matters and mordants. These may, in many cases, be removed by treatments which do not seriously modify the fibre substances.

Wool is distinguished from silk by its relative resistance to the action of sulphuric acid. The cold concentrated acid rapidly dissolves silk as well as the vegetable fibres. The attack on wool is slow, and the epidermal scales of wool make their appearance. The true silks are distinguished from the wild silks by the action of concentrated hydrochloric acid in the cold, which reagent dissolves the former, but has only a slight effect on Tussore silk. After preliminary resolution by these group reagents, the fabric is subjected to microscopical analysis for the final identification of its component fibres (see H. Schlichter, *Journal Soc. Chem. Ind.*, 1890, p. 241).

A scheme for the commercial analysis or assay of vegetable fibres, originally proposed by the author,[2] and now generally adopted, includes the following operations:—

1. Determination of moisture.

2. Determination of ash left after complete ignition.

3. Hydrolysis:

(*a*) loss of weight after boiling the raw fibre with a 1% caustic soda solution for five minutes;

(*b*) loss after boiling for one hour.

4. Determination of cellulose: the white residue after

(*a*) boiling for five minutes with 1% caustic soda,

(*b*) exposure to chlorine gas for one hour,

(*c*) boiling with basic sodium sulphite solution.

5. Mercerizing: the loss of weight after digestion with a 20% solution of sodium hydrate for one hour in the cold.

6. Nitration: the weight of the product obtained after digestion with a mixture of equal volumes of sulphuric and nitric acids for one hour in the cold.

7. Acid purification: treatment of the raw fibre with 20% acetic acid for one minute, the product being washed with water and alcohol, and then dried.

8. Determination of the total carbon by combustion.

II. *Papermaking.*—The papermaking industry (see Paper) employs as raw materials a large proportion of the vegetable fibre products already enumerated, and, for the reasons incidentally mentioned, they may be, and are, employed in a large variety of forms: in fact any fibrous material containing over 30% “cellulose” and yielding ultimate fibres of a length exceeding 1 mm. can be used in this industry. Most important staples are cotton and flax; these are known to the paper-maker as “rag” fibres, rags, *i.e.* cuttings of textile fabrics, new and old, being their main source of supply. These are used for writing and drawing papers. In the class of “printings” two of the most important staples are wood pulp, prepared by chemical treatment from both pine and foliage woods, and in England esparto cellulose, the cellulose obtained from esparto grass by alkali treatment; the cereal straws are also used and are resolved into cellulose by alkaline boiling followed by bleaching. In the class of “wrappings” and miscellaneous papers a large number of other materials find use, such as various residues of manufacturing and preparing processes, scutching wastes, ends of rovings and yarns, flax, hemp and manila rope waste, adansonia bast, and jute wastes, raw (cuttings) and manufactured (bagging). Other materials have been experimentally tried, and would no doubt come into use on their papermaking merits, but as a matter of fact the actually suitable raw materials are comprised in the list above enumerated, and are limited in number, through the influence of a number of factors of value or utility.

III. *Brush Fibres, &c.*—In addition to the textile industries there are manufactures which utilize fibres of both animal and vegetable character. The most important of these is brush-making. The

familiar brushes of everyday use are extremely diversified in form and texture. The supplies of animal fibres are mainly drawn from the badger, hog, bear, sable, squirrel and horse. These fibres and bristles cover a large range of effects. Brushes required for cleansing purposes are composed of fibres of a more or less hard and resilient character, such as horse hairs, and other tail hairs and bristles. For painting work brushes of soft quality are employed, graduating for fine work into the extreme softness of the "camel hair" pencil. Of vegetable fibres the following are used in this industry. The *Caryota urens* furnishes the Kittul fibre, obtained from the base of the leaf stalks. Piassava is obtained from the *Attalea funifera*, also from the *Leopoldina piassaba* (Brazil). Palmyra fibre is obtained from the *Borassus flabellifer*. These are all members of the natural order of the Palmaceae. Mexican fibre, or Istle, is obtained from the agave. The fibre known as Whisk, largely used for dusting brushes, is obtained from various species of the Gramineae; the "Mexican Whisk" from *Epicampeas macroura*; and "Italian Whisk" from *Andropogon*. The *coir* fibre mentioned above in connexion with coarse textiles is also extensively used in brush-making. Aloe and Agave fibres in their softer forms are also used for plasterers' brushes. Many of the whitewashes and cleansing solutions used in house decoration are alkaline in character, and for such uses advantage is taken of the specially resistant character of the cellulose group of materials.

Stuffing and Upholstery.—Another important use for fibrous materials is for filling or stuffing in connexion with the seats and cushions in upholstery. In the large range of effects required, a corresponding number and variety of products find employment. One of the most important is the floss or seed-hair of the *Eriodendron anfractuosum*, known as Kapok, the use of which in Europe was created by the Dutch merchants who drew their supplies from Java. The fibre is soft, silky and elastic, and maintains its elasticity in use. Many fibres when used in the mass show, on the other hand, a tendency to become matted and compressed in use, and to restore them to their original state the fibre requires to be removed and subjected to a teasing or carding process. This defect limits the use of other "flosses" or seed hairs in competition with Kapok. Horse hair is extensively used in this industry, as are also wool flocks and other short animal hairs and wastes.

Hats and Matting.—For these manufactures a large range of the fibrous products above described are employed, chiefly in their natural or raw state.

Bibliography.—The list of works appended comprises only a small fraction of the standard literature of the subject, but they are sufficiently representative to enable the specialist, by referring to them, to cover the subject-matter. F.H. Bowman, *The Structure of the Wood Fibre* (1885), *The Structure of Cotton Fibre* (1882); Cross, Bevan and King, *Indian Fibres and Fibrous Substances* (London, 1887); C.F. Cross, *Report on Miscellaneous Fibres*, Colonial Indian Exhibition, 1886 (London, 1887); Cross and Bevan, *Cellulose, Researches on Cellulose*, i. and ii. (London, 1895-1905); C.R. Dodge, *A Descriptive Catalogue of Useful Fibre Plants of the World* (Report No. 9, U.S. Dept. of Agriculture, Washington, 1897); von Höhmel, *Die Mikroskopie der technisch verwendeten Faserstoffe* (Leipzig, 1905); J.J. Hummel, *The Dyeing of Textile Fabrics* (London, 1885); J.M. Matthews, *The Textile Fibres, their Physical, Microscopical and Chemical Properties* (New York, 1904); H. Müller, *Die Pflanzenfaser* (Braunschweig, 1877); H. Schlichter, "The Examination of Textile Fibres and Fabrics" (*Jour. Soc. Chem. Ind.*, 1890, 241); M. Vetillart, *Études sur les fibres végétales textiles* (Paris, 1876); Sir T.H. Wardle, *Silk and Wild Silks*, original memoirs in connexion with Col. Ind. Ex., 1886, Jubilee Ex. Manchester, 1887; Sir G. Watt, *Dictionary of Economic Products of India* (London, 1891); Wiesner, *Die Rohstoffe des Pflanzenreichs* (Leipzig, 1873); O.N. Witt, *Chemische Technologie der Gespinnstfasern* (Braunschweig, 1888); *Kew Bulletin*; *The Journal of the Imperial Institute*; *The Journal of the Society of Arts*; W.I. Hannam, *The Textile Fibres of Commerce* (London, 1902); J. Jackson, *Commercial Botany*; J. Zipser, *Die Textilen Rohmaterialien* (Wien, 1895); F. Zetzsche, *Die wichtigsten Faserstoffe der europäischen Industrie* (Leipzig, 1895).

(C. F. C.)

1 See also Alpaca, Felt, Mohair, Shoddy and Wool.

2 Col. Ind. Exhibition, 1886, *Miscellaneous Reports*.

FIBRIN, or Fibrine, a protein formed by the action of the so-called fibrin-ferment on fibrinogen, a constituent of the blood-plasma of all vertebrates. This change takes place when blood leaves the arteries, and the fibrin thus formed occasions the clotting which ensues (see Blood). To obtain pure coagulated fibrin it is best to heat blood-plasma (preferably that of the horse) to 56° C. The usual method of beating a blood-clot with twigs and removing the filamentous fibrin which attaches itself to them yields a very impure product containing haemoglobin and much globulin; moreover, it is very difficult to purify. Fibrin is a very voluminous, tough, strongly elastic, jelly-like substance; when denaturalized by heat, alcohol or salts, it behaves as any other coagulated albumin.

FICHTE, IMMANUEL HERMANN (originally HARTMANN) **VON** (1797-1879), German philosopher, son of J.G. Fichte, was born at Jena on the 18th of July 1797. Having held educational posts at Saarbrücken and Düsseldorf, in 1836 he became extraordinary professor of philosophy at Bonn, and in 1840 full professor. In 1842 he received a call to Tübingen, retired in 1867, and died at Stuttgart on the 8th of August 1879. The most important of his comprehensive writings are: *System der Ethik* (1850-1853), *Anthropologie* (1856, 3rd ed. 1876), *Psychologie* (1864-1873), *Die theistische Weltansicht* (1873). In 1837 he had founded the *Zeitschrift für Philosophie* as an organ of his views, more especially on the subject of the philosophy of religion, where he was in alliance with C.H. Weisse; but, whereas Weisse thought that the Hegelian structure was sound in the main, and that its imperfections might be mended, Fichte held it to be incurably defective, and spoke of it as a "masterpiece of erroneous consistency or consistent error." Fichte's general views on philosophy seem to have changed considerably as he advanced in years, and his influence has been impaired by certain inconsistencies and an appearance of eclecticism, which is strengthened by his predominantly historical treatment of problems, his desire to include divergent systems within his own, and his conciliatory tone. His philosophy is an attempt to reconcile monism (Hegel) and individualism (Herbart) by means of theism (Leibnitz). He attacks Hegelianism for its pantheism, its lowering of human personality, and imperfect recognition of the demands of the moral consciousness. God, he says, is to be regarded not as an absolute but as an Infinite Person, whose nature it is that he should realize himself in finite persons. These persons are objects of God's love, and he arranges the world for their good. The direct connecting link between God and man is the "genius," a higher spiritual individuality existing in man by the side of his lower, earthly individuality. Fichte, in short, advocates an ethical theism, and his arguments might easily be turned to account by the apologist of Christianity. In his conception of finite personality he recurs to something like the monadism of Leibnitz. His insistence on moral experience is connected with his insistence on personality. One of the tests by which Fichte discriminates the value of previous systems is the adequateness with which they interpret moral experience. The same reason that made him depreciate Hegel made him praise Krause (panentheism) and Schleiermacher, and speak respectfully of English philosophy. It is characteristic of Fichte's almost excessive receptiveness that in his latest published work, *Der neuere Spiritualismus* (1878), he supports his position by arguments of a somewhat occult or theosophical cast, not unlike those adopted by F.W.H. Myers. He also edited the complete works and literary correspondence of his father, including his life.

See R. Eucken, "Zur Erinnerung I. H. F.," in *Zeitschrift für Philosophie*, ex. (1897); C.C. Scherer, *Die Gotteslehre von I. H. F.* (1902); article by Karl Hartmann in *Allegemeine deutsche Biographie* xlviii. (1904). Some of his works were translated by J.D. Morell under the title of *Contributions to Mental Philosophy* (1860).

FICHTE, JOHANN GOTTLIEB (1762-1814), German philosopher, was born at Rammenau in Upper Lusatia on the 19th of May 1762. His father, a ribbon-weaver, was a descendant of a Swedish soldier who (in the service of Gustavus Adolphus) was left wounded at Rammenau and settled there. The family was distinguished for piety, uprightness, and solidity of character. With these qualities Fichte himself combined a certain impetuosity and impatience probably derived from his mother, a woman of a somewhat querulous and jealous disposition.

At a very early age the boy showed remarkable mental vigour and moral independence. A fortunate accident which brought him under the notice of a neighbouring nobleman, Freiherr von Miltitz, was the means of procuring him a more excellent education than his father's circumstances would have allowed. He was placed under the care of Pastor Krebel at Niederau. After a short stay at Meissen he was entered at the celebrated school at Pforta, near Naumburg. In 1780 he entered the university of Jena as a student of theology. He supported himself mainly by private teaching, and during the years 1784-1787 acted as tutor in various families of Saxony. In 1787, after an unsuccessful application to the consistory for pecuniary assistance, he seems to have been driven to miscellaneous literary work. A tutorship at Zürich was, however, obtained in the spring of 1788, and Fichte spent in Switzerland two of the happiest years of his life. He made several valuable acquaintances, among others Lavater and his brother-in-law Hartmann Rahn, to whose daughter, Johanna Maria, he became engaged.

Settling at Leipzig, still without any fixed means of livelihood, he was again reduced to literary drudgery. In the midst of this work occurred the most important event of his life, his introduction to the philosophy of Kant. At Schulpforta he had read with delight Lessing's *Anti-Goeze*, and during his Jena days had studied the relation between philosophy and religion. The outcome of his speculations, *Aphorismen über Religion und Deismus* (unpublished, date 1790; *Werke*, i. 1-8), was a species of Spinozistic determinism, regarded, however, as lying altogether outside the boundary of religion. It is remarkable that even for a time fatalism should have been predominant in his reasoning, for in character he was opposed to such a view, and, as he has said, "according to the man, so is the system of philosophy he adopts."

Fichte's *Letters* of this period attest the influence exercised on him by the study of Kant. It effected a revolution in his mode of thinking; so completely did the Kantian doctrine of the inherent moral

worth of man harmonize with his own character, that his life becomes one effort to perfect a true philosophy, and to make its principles practical maxims. At first he seems to have thought that the best method for accomplishing his object would be to expound Kantianism in a popular, intelligible form. He rightly felt that the reception of Kant's doctrines was impeded by their phraseology. An abridgment of the *Kritik der Urtheilskraft* was begun, but was left unfinished.

Fichte's circumstances had not improved. It had been arranged that he should return to Zürich and be married to Johanna Rahn, but the plan was overthrown by a commercial disaster which affected the fortunes of the Rahn family. Fichte accepted a post as private tutor in Warsaw, and proceeded on foot to that town. The situation proved unsuitable; the lady, as Kuno Fischer says, "required greater submission and better French" than Fichte could yield, and after a fortnight's stay Fichte set out for Königsberg to see Kant. His first interview was disappointing; the coldness and formality of the aged philosopher checked the enthusiasm of the young disciple, though it did not diminish his reverence. He resolved to bring himself before Kant's notice by submitting to him a work in which the principles of the Kantian philosophy should be applied. Such was the origin of the work, written in four weeks, the *Versuch einer Kritik aller Offenbarung* (Essay towards a Critique of all Revelation). The problem which Fichte dealt with in this essay was one not yet handled by Kant himself, the relations of which to the critical philosophy furnished matter for surmise. Indirectly, indeed, Kant had indicated a very definite opinion on theology: from the *Critique of Pure Reason* it was clear that for him speculative theology must be purely negative, while the *Critique of Practical Reason* as clearly indicated the view that the moral law is the absolute content or substance of any religion. A *critical* investigation of the conditions under which religious belief was possible was still wanting. Fichte sent his essay to Kant, who approved it highly, extended to the author a warm reception, and exerted his influence to procure a publisher. After some delay, consequent on the scruples of the theological censor of Halle, who did not like to see miracles rejected, the book appeared (Easter, 1792). By an oversight Fichte's name did not appear on the title-page, nor was the preface given, in which the author spoke of himself as a beginner in philosophy. Outsiders, not unnaturally, ascribed the work to Kant. The *Allgemeine Literatur-Zeitung* went so far as to say that no one who had read a line of Kant's writings could fail to recognize the eminent author of this new work. Kant himself corrected the mistake, at the same time highly commending the work. Fichte's reputation was thus secured at a stroke.

The *Critique of Revelation* marks the culminating point of Fichte's Kantian period. The exposition of the conditions under which revealed religion is possible turns upon the absolute requirements of the moral law in human nature. Religion itself is the belief in this moral law as divine, and such belief is a practical postulate, necessary in order to add force to the law. It follows that no revealed religion, so far as matter or substance is concerned, can contain anything beyond this law; nor can any fact in the world of experience be recognized by us as supernatural. The supernatural element in religion can only be the divine character of the moral law. Now, the revelation of this divine character of morality is possible only to a being in whom the lower impulses have been, or are, successful in overcoming reverence for the law. In such a case it is conceivable that a revelation might be given in order to add strength to the moral law. Religion ultimately then rests upon the practical reason, and expresses some demand or want of the pure ego. In this conclusion we can trace the prominence assigned by Fichte to the practical element, and the tendency to make the requirements of the ego the ground for all judgment on reality. It was not possible that having reached this point he should not press forward and leave the Kantian position.

This success was coincident with an improvement in the fortunes of the Rahn family, and the marriage took place at Zürich in October 1793. The remainder of the year he spent at Zürich, slowly perfecting his thoughts on the fundamental problems left for solution in the Kantian philosophy. During this period he published anonymously two remarkable political works, *Zurückforderung der Denkfreiheit von den Fürsten Europas* and *Beiträge zur Berichtigung der Urtheile des Publicums über die französische Revolution*. Of these the latter is much the more important. The French Revolution seemed to many earnest thinkers the one great outcry of modern times for the liberty of thought and action which is the eternal heritage of every human being. Unfortunately the political condition of Germany was unfavourable to the formation of an unbiassed opinion on the great movement. The principles involved in it were lost sight of under the mass of spurious maxims on social order which had slowly grown up and stiffened into system. To direct attention to the true nature of revolution, to demonstrate how inextricably the right of liberty is interwoven with the very existence of man as an intelligent agent, to point out the inherent progressiveness of state arrangements, and the consequent necessity of reform or amendment, such are the main objects of the *Beiträge*; and although, as is often the case with Fichte, the arguments are too formal and the distinctions too wire-drawn, yet the general idea is nobly conceived and carried out. As in the *Critique of Revelation* so here the rational nature of man and the conditions necessary for its manifestation or realization become the standard for critical judgment.

Towards the close of 1793 Fichte received an invitation to succeed K.L. Reinhold as extraordinary professor of philosophy at Jena. This chair, not in the ordinary faculty, had become, through Reinhold, the most important in the university, and great deliberation was exercised in selecting his successor. It was desired to secure an exponent of Kantianism, and none seemed so highly qualified as the author of the *Critique of Revelation*. Fichte, while accepting the call, desired to spend a year in preparation; but as this was deemed inexpedient he rapidly drew out for his students an introductory outline of his system, and began his lectures in May 1794. His success was instantaneous and complete. The fame of his predecessor was altogether eclipsed. Much of this success was due to Fichte's rare power as a

lecturer. In oral exposition the vigour of thought and moral intensity of the man were most of all apparent, while his practical earnestness completely captivated his hearers. He lectured not only to his own class, but on general moral subjects to all students of the university. These general addresses, published under the title *Bestimmung des Gelehrten* (Vocation of the Scholar), were on a subject dear to Fichte's heart, the supreme importance of the highest intellectual culture and the duties incumbent on those who had received it. Their tone is stimulating and lofty.

The years spent at Jena were unusually productive; indeed, the completed Fichtean philosophy is contained in the writings of this period. A general introduction to the system is given in the tractate *Über den Begriff der Wissenschaftslehre* (On the Notion of the Theory of Science), 1794, and the theoretical portion is worked out in the *Grundlage der gesammten Wissenschaftslehre* (Foundation of the whole Theory of Science, 1794) and *Grundriss des Eigenthümlichen d. Wissenschaftslehre* (Outline of what is peculiar in the Theory of Science, 1794). To these were added in 1797 a *First* and a *Second Introduction to the Theory of Science*, and an *Essay towards a new Exposition of the Theory of Science*. The *Introductions* are masterly expositions. The practical philosophy was given in the *Grundlage des Naturrechts* (1796) and *System der Sittenlehre* (1798). The last is probably the most important of all Fichte's works; apart from it, his theoretical philosophy is unintelligible.

During this period Fichte's academic career had been troubled by various storms, the last so violent as to put a close to his professorate at Jena. The first of them, a complaint against the delivery of his general addresses on Sundays, was easily settled. The second, arising from Fichte's strong desire to suppress the *Landsmannschaften* (students' orders), which were productive of much harm, was more serious. Some misunderstanding caused an outburst of ignorant ill-feeling on the part of the students, who proceeded to such lengths that Fichte was compelled to reside out of Jena. The third storm, however, was the most violent. In 1798 Fichte, who, with F.I. Niethammer (1766-1848), had edited the *Philosophical Journal* since 1795, received from his friend F.K. Forberg (1770-1848) an essay on the "Development of the Idea of Religion." With much of the essay he entirely agreed, but he thought the exposition in so many ways defective and calculated to create an erroneous impression, that he prefaced it with a short paper *On the Grounds of our Belief in a Divine Government of the Universe*, in which God is defined as the moral order of the universe, the eternal law of right which is the foundation of all our being. The cry of atheism was raised, and the electoral government of Saxony, followed by all the German states except Prussia, suppressed the *Journal* and confiscated the copies found in their universities. Pressure was put by the German powers on Charles Augustus, grand-duke of Saxe-Weimar, in whose dominions Jena university was situated, to reprove and dismiss the offenders. Fichte's defences (*Appellation an das Publicum gegen die Anklage des Atheismus*, and *Gerichtliche Verantwortung der Herausgeber der phil. Zeitschrift*, 1799), though masterly, did not make it easier for the liberal-minded grand-duke to pass the matter over, and an unfortunate letter, in which he threatened to resign in case of reprimand, turned the scale against him. The grand-duke accepted his threat as a request to resign, passed censure, and extended to him permission to withdraw from his chair at Jena; nor would he alter his decision, even though Fichte himself endeavoured to explain away the unfortunate letter.

Berlin was the only town in Germany open to him. His residence there from 1799 to 1806 was unbroken save for a course of lectures during the summer of 1805 at Erlangen, where he had been named professor. Surrounded by friends, including Schlegel and Schleiermacher, he continued his literary work, perfecting the *Wissenschaftslehre*. The most remarkable of the works from this period are—(1) the *Bestimmung des Menschen* (Vocation of Man, 1800), a book which, for beauty of style, richness of content, and elevation of thought, may be ranked with the Meditations of Descartes; (2) *Der geschlossene Handelsstaat*, 1800 (The Exclusive or Isolated Commercial State), a very remarkable treatise, intensely socialist in tone, and inculcating organized protection; (3) *Sonnenklarer Bericht an das grössere Publicum über die neueste Philosophie*, 1801. In 1801 was also written the *Darstellung der Wissenschaftslehre*, which was not published till after his death. In 1804 a set of lectures on the *Wissenschaftslehre* was given at Berlin, the notes of which were published in the *Nachgelassene Werke*, vol. ii. In 1804 were also delivered the noble lectures entitled *Grundzüge des gegenwärtigen Zeitalters* (Characteristics of the Present Age, 1804), containing a most admirable analysis of the *Aufklärung*, tracing the position of such a movement of thought in the natural evolution of the general human consciousness, pointing out its inherent defects, and indicating as the ultimate goal of progress the life of reason in its highest aspect as a belief in the divine order of the universe. The philosophy of history sketched in this work has something of value with much that is fantastic. In 1805 and 1806 appeared the *Wesen des Gelehrten* (Nature of the Scholar) and the *Anweisung zum seligen Leben oder Religionslehre* (Way to a Blessed Life), the latter the most important work of this Berlin period. In it the union between the finite self-consciousness and the infinite ego or God is handled in an almost mystical manner. The knowledge and love of God is the end of life; by this means only can we attain blessedness (*Seligkeit*), for in God alone have we a permanent, enduring object of desire. The infinite God is the all; the world of independent objects is the result of reflection or self-consciousness, by which the infinite unity is broken up. God is thus over and above the distinction of subject and object; our knowledge is but a reflex or picture of the infinite essence. Being is not thought.

The disasters of Prussia in 1806 drove Fichte from Berlin. He retired first to Stargard, then to Königsberg (where he lectured for a time), then to Copenhagen, whence he returned to the capital in August 1807. From this time his published writings are practical in character; not till after the appearance of the *Nachgelassene Werke* was it known in what shape his final speculations had been thrown out. We may here note the order of these posthumous writings as being of importance for

tracing the development of Fichte's thought. From the year 1806 we have the remarkable *Bericht über die Wissenschaftslehre* (*Werke*, vol. viii.), with its sharp critique of Schelling; from 1810 we have the *Thatsachen des Bewusstseyns*, published in 1817, of which another treatment is given in lectures of 1813 (*Nachgel. Werke*, vol. i.). Of the *Wissenschaftslehre* we have, in 1812-1813, four separate treatments contained in the *Nachgel Werke*. As these consist mainly of notes for lectures, couched in uncouth phraseology, they cannot be held to throw much light on Fichte's views. Perhaps the most interesting are the lectures of 1812 on *Transcendental Logic* (*Nach. Werke*, i. 106-400).

From 1812 we have notes of two courses on practical philosophy, *Rechtslehre* (*Nach. Werke*, vol. ii.) and *Sittenlehre* (*ib.* vol. iii.). A finished work in the same department is the *Staatslehre*, published in 1820. This gives the Fichtean utopia organized on principles of pure reason; in too many cases the proposals are identical with principles of pure despotism.

During these years, however, Fichte was mainly occupied with public affairs. In 1807 he drew up an elaborate and minute plan for the proposed new university of Berlin. In 1507-1808 he delivered at Berlin, amidst danger and discouragement, his noble addresses to the German people (*Reden an die deutsche Nation*). Even if we think that in these pure reason is sometimes overshadowed by patriotism, we cannot but recognize the immense practical value of what he recommended as the only true foundation for national prosperity.

In 1810 he was elected rector of the new university founded in the previous year. This post he resigned in 1812, mainly on account of the difficulties he experienced in his endeavour to reform the student life of the university.

In 1813 began the great effort of Germany for national independence. Debarred from taking an active part, Fichte made his contribution by way of lectures. The addresses on the idea of a true war (*Über den Begriff eines wahrhaften Kriegs*, forming part of the *Staatslehre*) contain a very subtle contrast between the positions of France and Germany in the war.

In the autumn of 1813 the hospitals of Berlin were filled with sick and wounded from the campaign. Among the most devoted in her exertions was Fichte's wife, who, in January 1814, was attacked with a virulent hospital fever. On the day after she was pronounced out of danger Fichte was struck down. He lingered for some days in an almost unconscious state, and died on the 27th of January 1814.

The philosophy of Fichte, worked out in a series of writings, and falling chronologically into two distinct periods, that of Jena and that of Berlin, seemed in the course of its development to undergo a change so fundamental that many critics have sharply separated and opposed to one another an earlier and a later phase. The ground of the modification, further, has been sought and apparently found in quite external influences, principally that of Schelling's *Naturphilosophie*, to some extent that of Schleiermacher. But as a rule most of those who have adopted this view have done so without the full and patient examination which the matter demands; they have been misled by the difference in tone and style between the earlier and later writings, and have concluded that underlying this was a fundamental difference of philosophic conception. One only, Erdmann, in his *Entwicklung d. deut. Spek. seit Kant*, § 29, seems to give full references to justify his opinion, and even he, in his later work, *Grundriss der Gesch. der Philos.* (ed. 3), § 311, admits that the difference is much less than he had at the first imagined. He certainly retains his former opinion, but mainly on the ground, in itself intelligible and legitimate, that, so far as Fichte's philosophical reputation and influence are concerned, attention may be limited to the earlier doctrines of the *Wissenschaftslehre*. This may be so, but it can be admitted neither that Fichte's views underwent radical change, nor that the *Wissenschaftslehre* was ever regarded as in itself complete, nor that Fichte was unconscious of the apparent difference between his earlier and later utterances. It is demonstrable by various passages in the works and letters that he never looked upon the *Wissenschaftslehre* as containing the whole system; it is clear from the chronology of his writings that the modifications supposed to be due to other thinkers were from the first implicit in his theory; and if one fairly traces the course of thought in the early writings, one can see how he was inevitably led on to the statement of the later and, at first sight, divergent views. On only one point, the position assigned in the *Wissenschaftslehre* to the absolute ego, is there any obscurity; but the relative passages are far from decisive, and from the early work, *Neue Darstellung der Wissenchaftslehre*, unquestionably to be included in the Jena period, one can see that from the outset the doctrine of the absolute ego was held in a form differing only in statement from the later theory.

Fichte's system cannot be compressed with intelligibility. We shall here note only three points:—(*a*) the origin in Kant; (*b*) the fundamental principle and method of the *Wissenschaftslehre*; (*c*) the connexion with the later writings. The most important works for (*a*) are the "Review of Aenesidemus," and the *Second Introduction to the Wissenschaftslehre*; for (*b*) the great treatises of the Jena period; for (*c*) the *Thatsachen des Bewusstseyns* of 1810.

(*a*) The Kantian system had for the first time opened up a truly fruitful line of philosophic speculation, the transcendental consideration of knowledge, or the analysis of the conditions under which cognition is possible. To Kant the fundamental condition was given in the synthetical unity of consciousness. The primitive fact under which might be gathered the special conditions of that synthesis which we call cognition was this unity. But by Kant there was no attempt made to show that the said special conditions were necessary from the very nature of consciousness itself. Their necessity was discovered and proved in a manner which might be called empirical. Moreover, while Kant in a quite similar manner pointed out that intuition had special conditions, space and time, he did not show any link of connexion between these and the primitive conditions of pure cognition. Closely connected with this remarkable defect in the Kantian view—lying, indeed, at the foundation of it—was the

doctrine that the matter of cognition is altogether *given*, or thrown into the *form* of cognition from without. So strongly was this doctrine emphasized by Kant, that he seemed to refer the *matter* of knowledge to the action upon us of a non-ego or *Ding-an-sich*, absolutely beyond consciousness. While these hints towards a completely intelligible account of cognition were given by Kant, they were not reduced to system, and from the way in which the elements of cognition were related, could not be so reduced. Only in the sphere of practical reason, where the intelligible nature prescribed to itself its own laws, was there the possibility of systematic deduction from a single principle.

The peculiar position in which Kant had left the theory of cognition was assailed from many different sides and by many writers, specially by Schultze (Aenesidemus) and Maimon. To the criticisms of the latter, in particular, Fichte owed much, but his own activity went far beyond what they supplied to him. To complete Kant's work, to demonstrate that all the necessary conditions of knowledge can be deduced from a single principle, and consequently to expound the complete system of reason, that is the business of the *Wissenschaftslehre*. By it the theoretical and practical reason shall be shown to coincide; for while the categories of cognition and the whole system of pure thought can be expounded from one principle, the ground of this principle is scientifically, or to cognition, inexplicable, and is made conceivable only in the practical philosophy. The ultimate basis for the activity of cognition is given by the will. Even in the practical sphere, however, Fichte found that the contradiction, insoluble to cognition, was not completely suppressed, and he was thus driven to the higher view, which is explicitly stated in the later writings though not, it must be confessed, with the precision and scientific clearness of the *Wissenschaftslehre*.

(*b*) What, then, is this single principle, and how does it work itself out into system? To answer this one must bear in mind what Fichte intended by designating all philosophy *Wissenschaftslehre*, or theory of science. Philosophy is to him the rethinking of actual cognition, the *theory* of knowledge, the complete, systematic exposition of the principles which lie at the basis of all reasoned cognition. It traces the necessary acts by which the cognitive consciousness comes to be what it is, both in form and in content. Not that it is a natural history, or even a *phenomenology* of consciousness; only in the later writings did Fichte adopt even the genetic method of exposition; it is the complete statement of the pure principles of the understanding in their rational or necessary order. But if complete, this *Wissenschaftslehre* must be able to deduce the whole organism of cognition from certain fundamental axioms, themselves unproved and incapable of proof; only thus can we have a *system* of reason. From these primary axioms the whole body of necessary thoughts must be developed, and, as Socrates would say, the argument itself will indicate the path of the development.

Of such primitive principles, the absolutely necessary conditions of possible cognition, only three are thinkable—one perfectly unconditioned both in form and matter; a second, unconditioned in form but not in matter; a third, unconditioned in matter but not in form. Of these, evidently the first must be the fundamental; to some extent it conditions the other two, though these cannot be deduced from it or proved by it. The statement of these principles forms the introduction to *Wissenschaftslehre*.

The method which Fichte first adopted for stating these axioms is not calculated to throw full light upon them, and tends to exaggerate the apparent airiness and unsubstantiality of his deduction. They may be explained thus. The primitive condition of all intelligence is that the ego shall posit, affirm or be aware of itself. The ego is the ego; such is the first pure act of conscious intelligence, that by which alone consciousness can come to be what it is. It is what Fichte called a Deed-act (*Thathandlung*); we cannot be aware of the process,—the ego *is* not until it has affirmed itself,—but we are aware of the result, and can see the necessity of the act by which it is brought about. The ego then posits itself, as real. What the ego posits is real. But in consciousness there is equally given a primitive act of op-positing, or contra-positing, formally distinct from the act of position, but materially determined, in so far as what is op-posited must be the negative of that which was posited. The non-ego—not, be it noticed, the world as we know it—is op-posed in consciousness to the ego. The ego is not the non-ego. How this act of op-positing is possible and necessary, only becomes clear in the practical philosophy, and even there the inherent difficulty leads to a higher view. But third, we have now an absolute antithesis to our original thesis. Only the ego is real, but the non-ego is posited in the ego. The contradiction is solved in a higher synthesis, which takes up into itself the two opposites. The ego and non-ego *limit* one another, or determine one another; and, as limitation is negation of part of a divisible quantum, in this third act, the divisible ego is op-posed to a divisible non-ego.

From this point onwards the course proceeds by the method already made clear. We progress by making explicit the oppositions contained in the fundamental synthesis, by uniting these opposites, analysing the new synthesis, and so on, until we reach an ultimate pair. Now, in the synthesis of the third act two principles may be distinguished:—(1) the non-ego determines the ego; (2) the ego determines the non-ego. As determined the ego is theoretical, as determining it is practical; ultimately the opposed principles must be united by showing how the ego is both determining and determined.

It is impossible to enter here on the steps by which the theoretical ego is shown to develop into the complete system of cognitive categories, or to trace the deduction of the processes (productive imagination, intuition, sensation, understanding, judgment, reason) by which the quite indefinite non-ego comes to assume the appearance of definite objects in the forms of time and space. All this evolution is the necessary consequence of the determination of the ego by the non-ego. But it is clear that the non-ego cannot really determine the ego. There is no reality beyond the ego itself. The contradiction can only be suppressed if the ego itself opposes to itself the non-ego, places it as an *Anstoss* or plane on which its own activity breaks and from which it is reflected. Now, this op-positing of the *Anstoss* is the necessary condition of the practical ego, of the will. If the ego be a striving power, then of necessity a limit must be set by which its striving is manifest. But how can the infinitely active ego posit a limit to its own activity? Here we come to the *crux* of Fichte's system, which is only partly

cleared up in the *Rechtslehre* and *Sittenlehre*. If the ego be pure activity, free activity, it can only become aware of itself by positing some limit. We cannot possibly have any cognition of how such an act is possible. But as it is a free act, the ego cannot be determined to it by anything beyond itself; it cannot be aware of its own freedom otherwise than as determined by other free egos. Thus in the *Rechtslehre* and *Sittenlehre*, the multiplicity of egos is deduced, and with this deduction the first form of the *Wissenschaftslehre* appeared to end.

(*c*) But in fact deeper questions remained. We have spoken of the ego as becoming aware of its own freedom, and have shown how the existence of other egos and of a world in which these egos may act are the necessary conditions of consciousness of freedom. But all this is the work of the ego. All that has been expounded follows if the ego comes to consciousness. We have therefore to consider that the absolute ego, from which spring all the individual egos, is not subject to these conditions, but freely determines itself to them. How is this absolute ego to be conceived? As early as 1797 Fichte had begun 317
to see that the ultimate basis of his system was the absolute ego, in which is no difference of subject and object; in 1800 the *Bestimmung des Menschen* defined this absolute ego as the infinite moral will of the universe, God, in whom are all the individual egos, from whom they have sprung. It lay in the nature of the thing that more precise utterances should be given on this subject, and these we find in the *Thatsachen des Bewusstseyns* and in all the later lectures. God in them is the absolute Life, the absolute One, who becomes conscious of himself by self-diremption into the individual egos. The individual ego is only possible as opposed to a non-ego, to a world of the senses; thus God, the infinite will, manifests himself in the individual, and the individual has over against him the non-ego or thing. "The individuals do not make part of the being of the one life, but are a pure form of its absolute freedom." "The individual is not conscious of himself, but the Life is conscious of itself in individual form and as an individual." In order that the Life may act, though it is not necessary that it *should act*, individualization is necessary. "Thus," says Fichte, "we reach a final conclusion. Knowledge is not mere knowledge of itself, but of being, and of the one being that truly is, viz. God.... This one possible object of knowledge is never known in its purity, but ever broken into the various forms of knowledge which are and can be shown to be necessary. The demonstration of the necessity of these forms is philosophy or *Wissenschaftslehre*" (*Thats. des Bewuss. Werke*, ii. 685). This ultimate view is expressed throughout the lectures (in the *Nachgel. Werke*) in uncouth and mystical language.

It will escape no one (1) how the idea and method of the *Wissenschaftslehre* prepare the way for the later Hegelian dialectic, and (2) how completely the whole philosophy of Schopenhauer is contained in the later writings of Fichte. It is not to the credit of historians that Schopenhauer's debt should have been allowed to pass with so little notice.

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(R. AD.; X.)

FICHTELGEBIRGE, a mountain group of Bavaria, forming the centre from which various mountain ranges proceed,—the Elstergebirge, linking it to the Erzgebirge, in a N.E., the Frankenwald in a N.W., and the Böhmerwald in a S.E. direction. The streams to which it gives rise flow towards the four cardinal points,—*e.g.* the Eger eastward and the Saale northward, both to the Elbe; the Weisser Main westward to the Rhine, and the Naab southward to the Danube. The chief points of the mass are the Schneeberg and the Ochsenkopf, the former having a height of 3448, and the latter of 3356 ft. The

whole district is pretty thickly populated, and there is great abundance of wood, as well as of iron, vitriol, sulphur, copper, lead and many kinds of marble. The inhabitants are employed chiefly in the iron mines, at forges and blast furnaces, and in charcoal burning and the manufacture of blacking from firewood. Although surrounded by railways and crossed by the lines Nuremberg-Eger and Regensburg-Oberkotzau, the Fichtelgebirge, owing principally to its raw climate and bleakness, is not much visited by strangers, the only important points of interest being Alexandersbad (a delightfully situated watering-place) and the granite labyrinth of Luisenburg.

See A. Schmidt, *Führer durch das Fichtelgebirge* (1899); Daniel, *Deutschland*; and Meyer, *Conversations-Lexikon* (1904).

FICINO, MARSILIO (1433-1499), Italian philosopher and writer, was born at Figline, in the upper Arno valley, in the year 1433. His father, a physician of some eminence, settled in Florence, and attached himself to the person of Cosimo de' Medici. Here the young Marsilio received his elementary education in grammar and Latin literature at the high school or studio pubblico. While still a boy, he showed promise of rare literary gifts, and distinguished himself by his facility in the acquisition of knowledge. Not only literature, but the physical sciences, as then taught, had a charm for him; and he is said to have made considerable progress in medicine under the tuition of his father. He was of a tranquil temperament, sensitive to music and poetry, and debarred by weak health from joining in the more active pleasures of his fellow-students. When he had attained the age of eighteen or nineteen years, Cosimo received him into his household, and determined to make use of his rare disposition for scholarship in the development of a long-cherished project. During the session of the council for the union of the Greek and Latin churches at Florence in 1439, Cosimo had made acquaintance with Gemistos Plethon, the Neo-Platonic sage of Mistra, whose discourses upon Plato and the Alexandrian mystics so fascinated the learned society of Florence that they named him the second Plato. It had been the dream of this man's whole life to supersede both forms of Christianity by a semi-pagan theosophy deduced from the writings of the later Pythagoreans and Platonists. When, therefore, he perceived the impression he had made upon the first citizen of Florence, Gemistos suggested that the capital of modern culture would be a fit place for the resuscitation of the once so famous Academy of Athens. Cosimo took this hint. The second half of the 15th century was destined to be the age of academies in Italy, and the regnant passion for antiquity satisfied itself with any imitation, however grotesque, of Greek or Roman institutions. In order to found his new academy upon a firm basis Cosimo resolved not only to assemble men of letters for the purpose of Platonic disputation at certain regular intervals, but also to appoint a hierophant and official expositor of Platonic doctrine. He hoped by these means to give a certain stability to his projected institution, and to avoid the superficiality of mere enthusiasm. The plan was good; and with the rare instinct for character which distinguished him, he made choice of the right man for his purpose in the young Marsilio.

Before he had begun to learn Greek, Marsilio entered upon the task of studying and elucidating Plato. It is known that at this early period of his life, while he was yet a novice, he wrote voluminous treatises on the great philosopher, which he afterwards, however, gave to the flames. In the year 1459 John Argyropoulos was lecturing on the Greek language and literature at Florence, and Marsilio became his pupil. He was then about twenty-three years of age. Seven years later he felt himself a sufficiently ripe Greek scholar to begin the translation of Plato, by which his name is famous in the history of scholarship, and which is still the best translation of that author Italy can boast. The MSS. on which he worked were supplied by this patron Cosimo de' Medici and by Amerigo Benci. While the translation was still in progress Ficino from time to time submitted its pages to the scholars, Angelo Poliziano, Cristoforo Landino, Demetrios Chalchondylas and others; and since these men were all members of the Platonic Academy, there can be no doubt that the discussions raised upon the text and Latin version greatly served to promote the purpose of Cosimo's foundation. At last the book appeared in 1482, the expenses of the press being defrayed by the noble Florentine, Filippo Valori. About the same time Marsilio completed and published his treatise on the Platonic doctrine of immortality (*Theologia Platonica de immortalitate animae*), the work by which his claims to take rank as a philosopher must be estimated. This was shortly followed by the translation of Plotinus into Latin, and by a voluminous commentary, the former finished in 1486, the latter in 1491, and both published at the cost of Lorenzo de' Medici just one month after his death. As a supplement to these labours in the field of Platonic and Alexandrian philosophy, Marsilio next devoted his energies to the translation of Dionysius the Areopagite, whose work on the celestial hierarchy, though recognized as spurious by the Neapolitan humanist, Lorenzo Valla, had supreme attraction for the mystic and uncritical intellect of Ficino.

It is not easy to value the services of Marsilio Ficino at their proper worth. As a philosopher, he can advance no claim to originality, his laborious treatise on Platonic theology being little better than a mass of ill-digested erudition. As a scholar, he failed to recognize the distinctions between different periods of antiquity and various schools of thought. As an exponent of Plato he suffered from the fatal error of confounding Plato with the later Platonists. It is true that in this respect he did not differ widely from the mass of his contemporaries. Lorenzo Valla and Angelo Poliziano, almost alone among the scholars of that age, showed a true critical perception. For the rest, it was enough that an author

should be ancient to secure their admiration. The whole of antiquity seemed precious in the eyes of its discoverers; and even a thinker so acute as Pico di Mirandola dreamed of the possibility of extracting the essence of philosophical truth by indiscriminate collation of the most divergent doctrines. Ficino was, moreover, a firm believer in planetary influences. He could not separate his philosophical from his astrological studies, and caught eagerly at any fragment of antiquity which seemed to support his cherished delusions. It may here be incidentally mentioned that this superstition brought him into trouble with the Roman Church. In 1489 he was accused of magic before Pope Innocent VIII., and had to secure the good offices of Francesco Soderini, Ermolao Barbaro, and the archbishop Rinaldo Orsini, in order to purge himself of a most perilous imputation. What Ficino achieved of really solid, was his translation. The value of that work cannot be denied; the impulse which it gave to Platonic studies in Italy, and through them to the formation of the new philosophy in Europe, is indisputable. Ficino differed from the majority of his contemporaries in this that, while he felt the influence of antiquity no less strongly than they did, he never lost his faith in Christianity, or contaminated his morals by contact with paganism. For him, as for Petrarch, St Augustine was the model of a Christian student. The cardinal point of his doctrine was the identity of religion and philosophy. He held that philosophy consists in the study of truth and wisdom, and that God alone is truth and wisdom,—so that philosophy is but religion, and true religion is genuine philosophy. Religion, indeed, is common to all men, but its pure form is that revealed through Christ; and the teaching of Christ is sufficient to a man in all circumstances of life. Yet it cannot be expected that every man should accept the faith without reasoning; and here Ficino found a place for Platonism. He maintained that the Platonic doctrine was providentially made to harmonize with Christianity, in order that by its means speculative intellects might be led to Christ. The transition from this point of view to an almost superstitious adoration of Plato was natural; and Ficino, we know, joined in the hymns and celebrations with which the Florentine Academy honoured their great master on the day of his birth and death. Those famous festivals in which Lorenzo de' Medici delighted had indeed a pagan tone appropriate to the sentiment of the Renaissance; nor were all the worshippers of the Athenian sage so true to Christianity as his devoted student.

Of Ficino's personal life there is but little to be said. In order that he might have leisure for uninterrupted study, Cosimo de' Medici gave him a house near S. Maria Nuova in Florence, and a little farm at Montevecchio, not far from the villa of Careggi. Ficino, like nearly all the scholars of that age in Italy, delighted in country life. At Montevecchio he lived contentedly among his books, in the neighbourhood of his two friends, Pico at Querceto, and Poliziano at Fiesole, cheering his solitude by playing on the lute, and corresponding with the most illustrious men of Italy. His letters, extending over the years 1474-1494, have been published, both separately and in his collected works. From these it may be gathered that nearly every living scholar of note was included in the list of his friends, and that the subjects which interested him were by no means confined to his Platonic studies. As instances of his close intimacy with illustrious Florentine families, it may be mentioned that he held the young Francesco Guicciardini at the font, and that he helped to cast the horoscope of the Casa Strozzi in the Via Tornabuoni.

At the age of forty Ficino took orders, and was honoured with a canonry of S. Lorenzo. He was henceforth assiduous in the performance of his duties, preaching in his cure of Novoli, and also in the cathedral and the church of the Angeli at Florence. He used to say that no man was better than a good priest, and none worse than a bad one. His life corresponded in all points to his principles. It was the life of a sincere Christian and a real sage,—of one who found the best fruits of philosophy in the practice of the Christian virtues. A more amiable and a more harmless man never lived; and this was much in that age of discordant passions and lawless licence. In spite of his weak health, he was indefatigably industrious. His tastes were of the simplest; and while scholars like Filelfo were intent on extracting money from their patrons by flattery and threats, he remained so poor that he owed the publication of all his many works to private munificence. For his old patrons of the house of Medici Ficino always cherished sentiments of the liveliest gratitude. Cosimo he called his second father, saying that Ficino had given him life, but Cosimo new birth,—the one had devoted him to Galen, the other to the divine Plato,—the one was physician of the body, the other of the soul. With Lorenzo he lived on terms of familiar, affectionate, almost parental intimacy. He had seen the young prince grow up in the palace of the Via Larga, and had helped in the development of his rare intellect. In later years he did not shrink from uttering a word of warning and advice, when he thought that the master of the Florentine republic was too much inclined to yield to pleasure. A characteristic proof of his attachment to the house of Medici was furnished by a yearly custom which he practised at his farm at Montevecchio. He used to invite the contadini who had served Cosimo to a banquet on the day of Saints Cosimo and Damiano (the patron saints of the Medici), and entertained them with music and singing. This affection was amply returned. Cosimo employed almost the last hours of his life in listening to Ficino's reading of a treatise on the highest good; while Lorenzo, in a poem on true happiness, described him as the mirror of the world, the nursling of sacred muses, the harmonizer of wisdom and beauty in complete accord. Ficino died at Florence in 1499.

Besides the works already noticed, Ficino composed a treatise on the Christian religion, which was first given to the world in 1476, a translation into Italian of Dante's *De monarchia*, a life of Plato, and numerous essays on ethical and semi-philosophical subjects. Vigour of reasoning and originality of view were not his characteristics as a writer; nor will the student who has raked these dust-heaps of miscellaneous learning and old-fashioned mysticism discover more than a few sentences of genuine enthusiasm and simple-hearted aspiration to repay his trouble and reward his patience. Only in familiar letters, prolegomena, and prefaces do we find the man Ficino, and learn to know his thoughts

and sentiments unclouded by a mist of citations; these minor compositions have therefore a certain permanent value, and will continually be studied for the light they throw upon the learned circle gathered round Lorenzo in the golden age of humanism.

The student may be referred for further information to the following works:—*Marsilii Ficini opera* (Basileae, 1576); *Marsilii Ficini vita*, auctore Corsio (ed. Bandini, Pisa, 1771); Roscoe's *Life of Lorenzo de' Medici*; Pasquale Villari, *La Storia di Girolamo Savonarola* (Firenze, Le Monnier, 1859); Von Reumont, *Lorenzo de' Medici* (Leipzig, 1874).

(J. A. S.)

FICKSBURG, a town of Orange Free State 110 m. by rail E. by N. of Bloemfontein. Pop. (1904) 1954, of whom 1021 were whites. The town is situated near the north bank of the Caledon river and is the capital of one of the finest agricultural and stock-raising regions of the province. It has direct railway communication with Natal and an extensive trade. In the neighbourhood are petroleum wells and a diamond mine. In the fossilized ooze of the Wonderkop, a table mountain of the adjacent Wittebergen, are quantities of petrified fish.

FICTIONS, or legal fictions, in law, the term used for false averments, the truth of which is not permitted to be called in question. English law as well as Roman law abounds in fictions. Sometimes they are merely the condensed expression of a rule of law,—*e.g.*, the fiction of English law that husband and wife were one person, and the fiction of Roman law that the wife was the daughter of the husband. Sometimes they must be regarded as reasons invented in order to justify a rule of law according to an implied ethical standard. Of this sort seems to be the fiction or presumption that every one knows the law, which reconciles the rule that ignorance is no excuse for crime with the moral commonplace that it is unfair to punish a man for violating a law of whose existence he was unaware. Again, some fictions are deliberate falsehoods, adopted as true for the purpose of establishing a remedy not otherwise attainable. Of this sort are the numerous fictions of English law by which the different courts obtained jurisdiction in private business, removed inconvenient restrictions in the law relating to land, &c.

What to the scientific jurist is a stumbling-block is to the older writers on English law a beautiful device for reconciling the strict letter of the law with common sense and justice. Blackstone, in noticing the well-known fiction by which the court of king's bench established its jurisdiction in common pleas (viz. that the defendant was in custody of the marshal of the court), says, "These fictions of law, though at first they may startle the student, he will find upon further consideration to be highly beneficial and useful; especially as this maxim is ever invariably observed, that no fiction shall extend to work an injury; its proper operation being to prevent a mischief or remedy an inconvenience that might result from the general rule of law. So true it is that *in fictione juris semper subsistit aequitas*." Austin, on the other hand, while correctly assigning as the cause of many fictions the desire to combine the necessary reform with some show of respect for the abrogated law, makes the following harsh criticism as to others:—"Why the plain meanings which I have now stated should be obscured by the fictions to which I have just adverted I cannot conjecture. A wish on the part of the authors of the fictions to render the law as *uncognoscible* as may be is probably the cause which Mr Bentham would assign. I judge not, I confess, so uncharitably; I rather impute such fictions to the sheer imbecility (or, if you will, to the active and sportive fancies) of their grave and venerable authors, than to any deliberate design, good or evil." Bentham, of course, saw in fictions the instrument by which the great object of his abhorrence, *judiciary law*, was produced. It was the means by which judges usurped the functions of legislators. "A fiction of law." he says, "may be defined as a wilful falsehood, having for its object the stealing legislative powers by and for hands which could not or durst not openly claim it, and but for the delusion thus produced could not exercise it." A partnership, he says, was formed between the kings and the judges against the interests of the people. "Monarchs found force, lawyers fraud; thus was the capital found" (*Historical Preface to the second edition of the Fragment on Government*).[1]

Sir H. Maine (*Ancient Law*) supplies the historical element which is always lacking in the explanations of Austin and Bentham. Fictions form one of the agencies by which, in progressive societies, positive law is brought into harmony with public opinion. The others are equity and statutes. Fictions in this sense include, not merely the obvious falsities of the English and Roman systems, but any assumption which conceals a change of law by retaining the old formula after the change has been made. It thus includes both the case law of the English and the *Responsa Prudentum* of the Romans. "At a particular stage of social progress they are invaluable expedients for overcoming the rigidity of law; and, indeed, without one of them, the fiction of adoption, which permits the family tie to be artificially created, it is difficult to understand how society would ever have escaped from its

swaddling clothes, and taken its first steps towards civilization."

The bolder remedial fictions of English law have been to a large extent removed by legislation, and one great obstacle to any reconstruction of the legal system has thus been partially removed. Where the real remedy stood in glaring contrast to the nominal rule, it has been openly ratified by statute. In ejectment cases the mysterious sham litigants have disappeared. The bond of entail can be broken without having recourse to the collusive proceedings of fine and recovery. Fictions have been almost entirely banished from the procedure of the courts. The action for damages on account of seduction, which is still nominally an action by the father for loss of his daughter's services, is perhaps the only fictitious action now remaining.

Fictions which appear in the form of principles are not so easily dealt with by legislation. To expel them formally from the system would require the re-enactment of vast portions of law. A change in legal modes of speech and thought would be more effective. The legal mind instinctively seizes upon concrete aids to abstract reasoning. Many hard and revolting fictions must have begun their career as metaphors. In some cases the history of the change may still almost be traced. The conception that a man-of-war is a floating island, or that an ambassador's house is beyond the territorial limits of the country in which he resides, was originally a figure of speech designed to set a rule of law in a striking light. It is then gravely accepted as true in fact, and other rules of law are deduced from it. Its beginning is to be compared with such phrases as "an Englishman's house is his castle," which have had no legal offshoots and still remain mere figures of speech.

Constitutional law is of course honeycombed with fictions. Here there is hardly ever anything like direct legislative change, and yet real change is incessant. The rules defining the sovereign power and fixing the authority of its various members are in most points the same as they were at the last revolution,—in many points they have been the same since the beginning of parliamentary government. But they have long ceased to be true in fact; and it would hardly be too much to say that the entire series of formal propositions called the constitution is merely a series of fictions. The legal attributes of the king, and even of the House of Lords, are fictions. If we could suppose that the effects of the Reform Acts had been brought about, not by legislation, but by the decisions of law courts and the practice of House of Commons committees—by such assumptions as that freeholder includes lease-holder and that ten means twenty—we should have in the legal constitution of the House of Commons the same kind of fictions that we find in the legal statement of the attributes of the crown and the House of Lords. Here, too, fictions have been largely resorted to for the purpose of supporting particular theories,—popular or monarchical,—and such have flourished even more vigorously than purely legal fictions.

1 In the same essay Bentham notices the comparative rarity of fictions in Scots law. As to fiction in particular, compared with the work done by it in English law, the use made of it by the Scottish lawyers is next to nothing. No need have they had of any such clumsy instrument. They have two others "of their own making, by which things of the same sort have been done with much less trouble. *Nobile officium* gives them the creative power of legislation; this and the word desuetude together the annihilative." And he notices aptly enough that, while the English lawyers declared that James II. had abdicated the throne (which everybody knew to be false), the Scottish lawyers boldly said he had forfeited it.

FIDDES, RICHARD (1671-1725), English divine and historian, was born at Hunmanby and educated at Oxford. He took orders, and obtained the living of Halsham in Holderness in 1696. Owing to ill-health he applied for leave to reside at Wickham, and in 1712 he removed to London on the plea of poverty, intending to pursue a literary career. In London he met Swift, who procured him a chaplaincy at Hull. He also became chaplain to the earl of Oxford. After losing the Hull chaplaincy through a change of ministry in 1714, he devoted himself to writing. His best book is a *Life of Cardinal Wolsey* (London, 1724), containing documents which are still valuable for reference; of his other writings the *Prefatory Epistle containing some remarks to be published on Homer's Iliad* (London, 1714), was occasioned by Pope's proposed translation of the *Iliad*, and his *Theologia speculativa* (London, 1718), earned him the degree of D.D. at Oxford. In his own day he had a considerable reputation as an author and man of learning.

FIDDLE (O. Eng. *fithele*, *fidel*, &c., Fr. *vièle*, viole, *violon*; M. H. Ger. *videle*, mod. Ger. *Fiedel*), a popular term for the violin, derived from the names of certain of its ancestors. The word fiddle antedates the appearance of the violin by several centuries, and in England did not always represent an instrument of the same type. The word has first been traced in 1205 in Layamon's *Brut* (7002), "of harpe, of salteriun, of fithele and of coriun." In Chaucer's time the fiddle was evidently a well-known instrument:

"For him was lever have at his beddes hed
A twenty bokes, clothed in black or red.
Of Aristotle and his Philosophie,
Than robes riche or fidel or sautrie."
(*Prologue*, v. 298.)

The origin of the fiddle is of the greatest interest; it will be found inseparable from that of the violin both as regards the instruments and the etymology of the words; the remote common ancestor is the *ketharah* of the Assyrians, the parent of the Greek cithara. The Romans are responsible for the word fiddle, having bestowed upon a kind of cithara—probably then in its first transition—the name of *fidiculae* (more rarely *fidicula*), a diminutive form of *fides*. In Alain de Lille's *De planctu naturae* against the word *lira* stands as equivalent *vioel*, with the definition "Lira est quoddam genuē citharae vel fitola alioquin de reot. Hoc instrumentum est multum vulgare." This is a marginal note in writing of the 13th century.[1]

Some of the transitions from *fidicula* to fiddle are made evident in the accompanying table:

Latin	fidiculae
Medieval Latin	vitula, fitola.
French	vièle, vielle, viole.
Provencal	viula.
Spanish	viguela, vihuela, vigolo.
Old High German	fidula.
Middle High German	videle.
German	fiedel, violine.
Italian	viola, violino.
Dutch	vedel.
Danish	fiddel.
Anglo-Saxon	fithele.
Old English	fithele, fythal, fithel, fythylle, fidel, fidylle, (south) vithele.

For the descent of the guitar-fiddle, the first bowed ancestor of the violin, through many transitions from the cithara, see Cithara, Guitar and Guitar-Fiddle.

In the minnesinger and troubadour fiddles, of which evidences abound during the 12th, 13th and 14th centuries, are to be observed the structural characteristics of the violin and its ancestors in the course of evolution. The principal of these are first of all the shallow sound-chest, composed of belly and back, almost flat, connected by ribs (also present in the cithara), with incurvations more or less pronounced, an arched bridge, a finger-board and strings (varying in number), vibrated by means of a bow. The central rose sound-holes of stringed instruments whose strings are plucked by fingers, or plectrum have given place to smaller lateral sound-holes placed on each side of the strings. It is in Germany,[2] where contemporary drawings of fiddles of the 13th and 14th centuries furnish an authoritative clue, and in France, that the development may best be followed. The German minnesinger fiddle with sloping shoulders was the prototype of the viols, whereas the guitar-fiddle produced the violin through the intermediary of the Italian bowed *Lyra*.

From Julius Rühlmann's *Geschichte der Bogeninstrumente*.

Minnesinger Fiddle. Germany, 13th Century, from the Manesse MSS.

The fiddle of the Carolingian epoch,—such, for instance, as that mentioned by Otfrid of Weissenburg[3] in his *Harmony of the Gospels* (*c.* 868),

"Sih thar ouch al ruarit
This organo fuarit
Lira joh fidula," &c.,—

was in all probability still an instrument whose strings were plucked by the fingers, a cithara in transition.

(K. S.)

1 See C.E.H. de Coussemaker, Mémoire sur Hucbald (Paris, 1841).

2 See the Manesse MSS. reproduced in part by F.H. von der Hagen, *Heldenbilder* (Leipzig and Berlin, 1855) and *Bildersaal*. The fiddles are reproduced in J. Rühlmann's *Geschichte der Bogeninstrumente* (Brunswick, 1882), plates.

3 See Schiller's *Thesaurus antiq. Teut.* vol. i. p. 379.

FIDENAE, an ancient town of Latium, situated about 5 m. N. of Rome on the Via Salaria, which ran between it and the Tiber. It was for some while the frontier of the Roman territory and was often in the hands of Veii. It appears to have fallen under the Roman sway after the capture of this town, and is spoken of by classical authors as a place almost deserted in their time. It seems, however, to have had some importance as a post station. The site of the *arx* of the ancient town is probably to be sought on the hill on which lies the Villa Spada, though no traces of early buildings or defences are to be seen: pre-Roman tombs are to be found in the cliffs to the north. The later village lay at the foot of the hill on the eastern edge of the high-road, and its *curia*, with a dedicatory inscription to M. Aurelius by the *Senatus Fidenatium*, was excavated in 1889. Remains of other buildings may also be seen.

See T. Ashby in *Papers of the British School at Rome*, iii. 17.

FIDUCIARY (Lat. *fiduciaries*, one in whom trust, fiducia, is reposed), of or belonging to a position of trust, especially of one who stands in a particular relationship of confidence to another. Such relationships are, in law, those of parent and child, guardian and ward, trustee and *cestui que trust*, legal adviser and client, spiritual adviser, doctor and patient, &c. In many of these the law has attached special obligations in the case of gifts made to the "fiduciary," on whom is laid the onus of proving that no "undue influence" has been exercised. (See Contract; Children, Law Relating to; Infant; Trust.)

FIEF, a feudal estate in land, land held from a superior (see Feudalism). The word is the French form, which is represented in Medieval Latin as *feudum* or *feodum*, and in English as "fee" or "feu" (see Fee). The A. Fr. *feoffer*, to invest with a fief or fee, has given the English law terms "feoffee" and "feoffment" (*q.v.*).

FIELD, CYRUS WEST (1819-1892), American capitalist, projector of the first Atlantic cable, was born at Stockbridge, Massachusetts, on the 30th of November 1819. He was a brother of David Dudley Field. At fifteen he became a clerk in the store of A.T. Stewart & Co., of New York, and stayed there three years; then worked for two years with his brother, Matthew Dickinson Field, in a paper-mill at Lee, Massachusetts; and in 1840 went into the paper business for himself at Westfield, Massachusetts, but almost immediately became a partner in E. Root & Co., wholesale paper dealers in New York City, who failed in the following year. Field soon afterwards formed with a brother-in-law the firm of Cyrus W. Field & Co., and in 1853 had accumulated $250,000, paid off the debts of the Root company and retired from active business, leaving his name and $100,000 with the concern. In the same year he travelled with Frederick E. Church, the artist, through South America. In 1854 he became interested, through his brother Matthew, a civil engineer, in the project of Frederick Newton Gisborne (1824-1892) for a telegraph across Newfoundland; and he was attracted by the idea of a trans-Atlantic telegraphic cable, as to which he consulted S.F.B. Morse and Matthew F. Maury, head of the National Observatory at Washington. With Peter Cooper, Moses Taylor (1806-1882), Marshall Owen Roberts (1814-1880) and Chandler White, he formed the New York, Newfoundland & London Telegraph Company, which procured a more favourable charter than Gisborne's, and had a capital of $1,500,000. Having secured all the practicable landing rights on the American side of the ocean, he and John W. Brett, who was now his principal colleague, approached Sir Charles Bright (*q.v.*) in London, and in December 1556 the Atlantic Telegraph Company was organized by them in Great Britain, a government grant being secured of £14,000 annually for government messages, to be reduced to £10,000 annually when the cable should pay a 6% yearly dividend; similar grants were made by the United States government. Unsuccessful attempts to lay the cable were made in August 1857 and in June 1858, but the complete cable was laid between the 7th of July and the 5th of August 1858; for a time messages were transmitted, but in October the cable became useless, owing to the failure of its electrical insulation. Field, however, did not abandon the enterprise, and finally in July 1866, after a futile attempt in the previous year, a cable was laid and brought successfully into use. From the Congress of the United States he received a gold medal and a vote of thanks, and he received many other honours both at home and abroad. In 1877 he bought a controlling interest in the New York Elevated Railroad Company, controlling the Third and Ninth Avenue lines, of which he was president in 1877-1880. He worked with Jay Gould for the completion of the Wabash railway, and at the time of his greatest stock activity bought *The New York Evening Express* and *The Mail* and combined them as

The Mail and Express, which he controlled for six years. In 1879 Field suffered financially by Samuel J. Tilden's heavy sales (during Field's absence in Europe) of "Elevated" stock, which forced the price down from 200 to 164; but Field lost much more in the great "Manhattan squeeze" of the 24th of June 1887, when Jay Gould and Russell Sage, who had been supposed to be his backers in an attempt to bring the Elevated stock to 200, forsook him, and the price fell from 156½ to 114 in half an hour. Field died in New York on the 12th of July 1892.

See the biography by his daughter, Isabella (Field) Judson, *Cyrus W. Field, His Life and Work* (New York, 1896); H.M. Field, *History of the Atlantic Telegraph* (New York, 1866); and Charles Bright, *The Story of the Atlantic Cable* (New York, 1903).

FIELD, DAVID DUDLEY (1805-1894), American lawyer and law reformer, was born in Haddam, Connecticut, on the 13th of February 1805. He was the oldest of the four sons of the Rev. David Dudley Field (1781-1867), a well-known American clergyman and author. He graduated at Williams College in 1825, and settled in New York City, where he studied law, was admitted to the bar in 1828, and rapidly won a high position in his profession. Becoming convinced that the common law in America, and particularly in New York state, needed radical changes in respect to the unification and simplification of its procedure, he visited Europe in 1836 and thoroughly investigated the courts, procedure and codes of England, France and other countries, and then applied himself to the task of bringing about in the United States a codification of the common law procedure. For more than forty years every moment that he could spare from his extensive practice was devoted to this end. He entered upon his great work by a systematic publication of pamphlets and articles in journals and magazines in behalf of his reform, but for some years he met with a discouraging lack of interest. He appeared personally before successive legislative committees, and in 1846 published a pamphlet, "The Reorganization of the Judiciary," which had its influence in persuading the New York State Constitutional Convention of that year to report in favour of a codification of the laws. Finally in 1847 he was appointed as the head of a state commission to revise the practice and procedure. The first part of the commission's work, consisting of a code of civil procedure, was reported and enacted in 1848, and by the 1st of January 1850 the complete code of civil and criminal procedure was completed, and was subsequently enacted by the legislature. The basis of the new system, which was almost entirely Field's work, was the abolition of the existing distinction in forms of procedure between suits in law and equity requiring separate actions, and their unification and simplification in a single action. Eventually the civil code with some changes was adopted in twenty-four states, and the criminal code in eighteen, and the whole formed a basis of the reform in procedure in England and several of her colonies. In 1857 Field became chairman of a state commission for the reduction into a written and systematic code of the whole body of law of the state, excepting those portions already reported upon by the Commissioners of Practice and Pleadings. In this work he personally prepared almost the whole of the political and civil codes. The codification, which was completed in February 1865, was adopted only in small part by the state, but it has served as a model after which most of the law codes of the United States have been constructed. In 1866 he proposed to the British National Association for the Promotion of Social Science a revision and codification of the laws of all nations. For an international commission of lawyers he prepared *Draft Outlines of an International Code* (1872), the submission of which resulted in the organization of the international Association for the Reform and Codification of the Laws of Nations, of which he became president. In politics Field was originally an anti-slavery Democrat, and he supported Van Buren in the Free Soil campaign of 1848. He gave his support to the Republican party in 1856 and to the Lincoln administration throughout the Civil War. After 1876, however, he returned to the Democratic party, and from January to March 1877 served out in Congress the unexpired term of Smith Ely, elected mayor of New York City. During his brief Congressional career he delivered six speeches, all of which attracted attention, introduced a bill in regard to the presidential succession, and appeared before the Electoral Commission in Tilden's interest. He died in New York City on the 13th of April 1894.

Part of his numerous pamphlets and addresses were collected in his *Speeches, Arguments and Miscellaneous Papers* (3 vols., 1884-1890). See also the *Life of David Dudley Field* (New York, 1898), by Rev. Henry Martyn Field.

FIELD, EUGENE (1850-1895), American poet, was born at St Louis, Missouri, on the 2nd of September 1850. He spent his boyhood in Vermont and Massachusetts; studied for short periods at Williams and Knox Colleges and the University of Missouri, but without taking a degree; and worked as a journalist on various papers, finally becoming connected with the Chicago *News*. *A Little Book of Profitable Tales* appeared in Chicago in 1889 and in New York the next year; but Field's place in later American literature chiefly depends upon his poems of Christmas-time and childhood (of which "Little

Boy Blue" and "A Dutch Lullaby" are most widely known), because of their union of obvious sentiment with fluent lyrical form. His principal collections of poems are: *A Little Book of Western Verse* (1889); *A Second Book of Verse* (1892); *With Trumpet and Drum* (1892); and *Love Songs of Childhood* (1894). Field died at Chicago on the 4th of November 1895.

His works were collected in ten volumes (1896), at New York. His prose *Love-affairs of a Bibliomaniac* (1896) contains a Memoir by his brother Roswell Martin Field (b. 1851). See also Slason Thompson, *Eugene Field: a study in heredity and contradictions* (2 vols., New York, 1901).

FIELD, FREDERICK (1801-1885), English divine and biblical scholar, was born in London and educated at Christ's hospital and Trinity College, Cambridge, where he obtained a fellowship in 1824. He took orders in 1828, and began a close study of patristic theology. Eventually he published an emended and annotated text of Chrysostom's *Homiliae in Matthaeum* (Cambridge, 1839), and some years later he contributed to Pusey's *Bibliotheca Patrum* (Oxford, 1838-1870), a similarly treated text of Chrysostom's homilies on Paul's epistles. The scholarship displayed in both of these critical editions is of a very high order. In 1839 he had accepted the living of Great Saxham, in Suffolk, and in 1842 he was presented by his college to the rectory of Reepham in Norfolk. He resigned in 1863, and settled at Norwich, in order to devote his whole time to study. Twelve years later he completed the *Origenis Hexaplorum quae supersunt* (Oxford, 1867-1875), now well known as *Field's Hexapla*, a text reconstructed from the extant fragments of Origen's work of that name, together with materials drawn from the *Syro-hexaplar* version and the *Septuagint* of Holmes and Parsons (Oxford, 1798-1827). Field was appointed a member of the Old Testament revision company in 1870.

FIELD, HENRY MARTYN (1822-1907), American author and clergyman, brother of Cyrus Field, was born at Stockbridge, Massachusetts, on the 3rd of April 1822; he graduated at Williams College in 1838, and was pastor of a Presbyterian church in St Louis, Missouri, from 1842 to 1847, and of a Congregational church in West Springfield, Massachusetts, from 1850 to 1854. The interval between his two pastorates he spent in Europe. From 1854 to 1898 he was editor and for many years he was also sole proprietor of *The Evangelist*, a New York periodical devoted to the interests of the Presbyterian church. He spent the last years of his life in retirement at Stockbridge, Mass., where he died on the 26th of January 1907. He was the author of a series of books of travel, which achieved unusual popularity. His two volumes descriptive of a trip round the world in 1875-1876, entitled *From the Lakes of Killarney to the Golden Horn* (1876) and *From Egypt to Japan* (1877), are almost classic in their way, and have passed through more than twenty editions. Among his other publications are *The Irish Confederates and the Rebellion of 1798* (1850), *The History of the Atlantic Telegraph* (1866), *Faith or Agnosticism? the Field-Ingersoll Discussion* (1888), *Old Spain and New Spain* (1888), and *Life of David Dudley Field* (1898).

He is not to be confused with another Henry Martyn Field, the gynaecologist, who was born in 1837 at Brighton, Mass., and graduated at Harvard in 1859 and at the College of Physicians and Surgeons in New York City in 1862; he was professor of Materia Medica and therapeutics at Dartmouth from 1871 to 1887 and of therapeutics from 1887 to 1893.

FIELD, JOHN (1782-1837), English musical composer and pianist, was born at Dublin in 1782. He came of a musical family, his father being a violinist, and his grandfather the organist in one of the churches of Dublin. From the latter the boy received his first musical education. When a few years later the family settled in London, Field became the favourite pupil of the celebrated Clementi, whom he accompanied to Paris, and later, in 1802, on his great concert tour through France, Germany and Russia. Under the auspices of his master Field appeared in public in most of the great European capitals, especially in St Petersburg, and in that city he remained when Clementi returned to England. During his stay with the great pianist Field had to suffer many privations owing to Clementi's all but unexampled parsimony; but when the latter left Russia his splendid connexion amongst the highest circles of the capital became Field's inheritance. His marriage with a French lady of the name of Charpentier was anything but happy, and had soon to be dissolved. Field made frequent concert tours to the chief cities of Russia, and in 1820 settled permanently in Moscow. In 1831 he came to England for a short time, and for the next four years led a migratory life in France, Germany and Italy, exciting the admiration of amateurs wherever he appeared in public. In Naples he fell seriously ill, and lay

several months in the hospital, till a Russian family discovered him and brought him back to Moscow. There he lingered for several years till his death on the 11th of January 1837. Field's training and the cast of his genius were not of a kind to enable him to excel in the larger forms of instrumental music, and his seven concerti for the pianoforte are now forgotten. Neither do his quartets for strings and pianoforte hold their own by the side of those of the great masters. But his "nocturnes," a form of music highly developed if not actually created by him, remain all but unrivalled for their tenderness and dreaminess of conception, combined with a continuous flow of beautiful melody. They were indeed Chopin's models. Field's execution on the pianoforte was nearly allied to the nature of his compositions, beauty and poetical charm of touch being one of the chief characteristics of his style. Moscheles, who heard Field in 1831, speaks of his "enchanting legato, his tenderness and elegance and his beautiful touch."

FIELD, MARSHALL (1835-1906), American merchant, was born at Conway, Massachusetts, on the 18th of August 1835. Reared on a farm, he obtained a common school and academy education, and at the age of seventeen became a clerk in a dry goods store at Pittsfield, Mass. In 1856 he removed to Chicago, where he became a clerk in the large mercantile establishment of Cooley, Wadsworth & Company. In 1860 the firm was reorganized as Cooley, Farwell & Company, and he was admitted to a junior partnership. In 1865, with Potter Palmer (1826-1902) and Levi Z. Leiter (1834-1904), he organized the firm of Field, Palmer & Leiter, which subsequently became Field, Leiter & Company, and in 1881 on the retirement of Leiter became Marshall Field & Company. Under Field's management the annual business of the firm increased from $12,000,000 in 1871 to more than $40,000,000 in 1895, when it ranked as one of the two or three largest mercantile establishments in the world. He died in New York city on the 16th of January 1906. He had married, for the second time, in the previous year. Field's public benefactions were numerous; notable among them being his gift of land valued at $300,000 and of $100,000 in cash to the University of Chicago, an endowment fund of $1,000,000 to support the Field Columbian Museum at Chicago, and a bequest of $8,000,000 to this museum.

FIELD, NATHAN (1587-1633), English dramatist and actor, was baptized on the 17th of October 1587. His father, the rector of Cripplegate, was a Puritan divine, author of a *Godly Exhortation* directed against play-acting, and his brother Theophilus became bishop of Hereford. Nat. Field early became one of the children of Queen Elizabeth's chapel, and in that capacity he played leading parts in Ben Jonson's *Cynthia's Revels* (in 1600), in the *Poetaster* (in 1601), and in *Epicoene* (in 1608), and the title rôle in Chapman's *Bussy d'Ambois* (in 1606). Ben Jonson was his dramatic model, and may have helped his career. The two plays of which he was author were probably both written before 1611. They are boisterous, but well-constructed comedies of contemporary London life; the earlier one, *A Woman is a Weathercock* (printed 1612), dealing with the inconstancy of woman, while the second, *Amends for Ladies* (printed 1618), was written with the intention, as the title indicates, of retracting the charge. From Henslowe's papers it appears that Field collaborated with Robert Daborne and with Philip Massinger, one letter from all three authors being a joint appeal for money to free them from prison. In 1614 Field received £10 for playing before the king in *Bartholomew Fair*, a play in which Jonson records his reputation as an actor in the words "which is your Burbadge now?... Your best actor, your Field?" He joined the King's Players some time before 1619, and his name comes seventeenth on the list prefixed to the Shakespeare folio of 1623 of the "principal actors in all these plays." He retired from the stage before 1625, and died on the 20th of February 1633. Field was part author with Massinger in the *Fatal Dowry* (printed 1632), and he prefixed commendatory verses to Fletcher's *Faithful Shepherdess*.

His two plays were reprinted in J.P. Collier's *Five Old Plays* (1833), in Hazlitt's edition of *Dodsley's Old Plays*, and in *Nero and other Plays* (Mermaid series, 1888), with an introduction by Mr A.W. Verity.

FIELD, STEPHEN JOHNSON (1816-1899), American jurist, was born at Haddam, Connecticut, on the 4th of November 1816. He was the brother of David Dudley Field, Cyrus W. Field and Henry M. Field. At the age of thirteen he accompanied his sister Emilia and her husband the Rev. Josiah Brewer (the parents of the distinguished judge of the Supreme Court, David J. Brewer) to Smyrna, Turkey, for the purpose of studying Oriental languages, but after three years he returned to the United States, and in 1837 graduated at Williams College at the head of his class. He then studied law in his elder

brother's office, and in 1841 he was admitted to the New York bar. He was associated in practice there with his brother until 1848, and early in 1849 removed to California, settling soon afterward at Marysville, of which place, in 1850, he became the first alcalde or mayor. In the same year he was chosen a member of the first state legislature of California, in which he drew up and secured the enactment of two bodies of law known as the Civil and Criminal Practices Acts, based on the similar codes prepared by his brother David Dudley for New York. In the former act he embodied a provision regulating and giving authority to the peculiar customs, usages, and regulations voluntarily adopted by the miners in various districts of the state for the adjudication of disputed mining claims. This, as Judge Field truly says, "was the foundation of the jurisprudence respecting mines in the country," having greatly influenced legislation upon this subject in other states and in the Congress of the United States. He was elected, in 1857, a justice of the California Supreme Court, of which he became chief justice in 1859, on the resignation of Judge David S. Terry to fight the duel with the United States senator David C. Broderick which ended fatally for the latter. Field held this position until 1863, when he was appointed by President Lincoln a justice of the United States Supreme Court. In this capacity he was conspicuous for fearless independence of thought and action in his opinion in the test oath case, and in his dissenting opinions in the legal tender, conscription and "slaughter house" cases, which displayed unusual legal learning, and gave powerful expression to his strict constructionist theory of the implied powers of the Federal constitution. Originally a Democrat, and always a believer in states' rights, his strong Union sentiments caused him nevertheless to accept Lincoln's doctrine of coercion, and that, together with his anti-slavery sympathies, led him to act with the Republican party during the period of the Civil War. He was a member of the commission which revised the California code in 1873 and of the Electoral Commission in 1877, voting in favour of Tilden. In 1880 he received sixty-five votes on the first ballot for the presidential nomination at the Democratic National Convention at Cincinnati. In August 1889, as a result of a ruling in the course of the Sharon-Hill litigation, a notorious conspiracy case, he was assaulted in a California railway station by Judge David S. Terry, who in turn was shot and killed by a United States deputy marshall appointed to defend Justice Field against the carrying out of Terry's often-expressed threats. He retired from the Supreme Court on the 1st of December 1897 after a service of thirty-four years and six months, the longest in the court's history, and died in Washington on the 9th of April 1899.

His *Personal Reminiscences of Early Days in California*, originally privately printed in 1878, was republished in 1893 with George C. Gorham's *Story of the Attempted Assassination of Justice Field*.

FIELD, WILLIAM VENTRIS FIELD, Baron (1813-1907), English judge, second son of Thomas Flint Field, of Fielden, Bedfordshire, was born on the 21st of August 1813. He was educated at King's school, Bruton, Somersetshire, and entered the legal profession as a solicitor. In 1843, however, he ceased to practise as such, and entered at the Inner Temple, being called to the bar in 1850, after having practised for some time as a special pleader. He joined the Western circuit, but soon exchanged it for the Midland. He obtained a large business as a junior, and became a queen's counsel and bencher of his inn in 1864. As a Q.C. he had a very extensive common law practice, and had for some time been the leader of the Midland circuit, when in February 1875, on the retirement of Mr Justice Keating, he was raised to the bench as a justice of the queen's bench. Mr Justice Field was an excellent puisne judge of the type that attracts but little public attention. He was a first-rate lawyer, had a good knowledge of commercial matters, great shrewdness and a quick intellect, while he was also painstaking and scrupulously fair. When the rules of the Supreme Court 1883 came into force in the autumn of that year, Mr Justice Field was so well recognized an authority upon all questions of practice that the lord chancellor selected him to sit continuously at Judges' Chambers, in order that a consistent practice under the new rules might as far as possible be established. This he did for nearly a year, and his name will always, to a large extent, be associated with the settling of the details of the new procedure, which finally did away with the former elaborate system of "special pleading." In 1890 he retired from the bench and was raised to the peerage as Baron Field of Bakeham, becoming at the same time a member of the privy council. In the House of Lords he at first took part, not infrequently, in the hearing of appeals, and notably delivered a carefully-reasoned judgment in the case of the *Bank of England* v. *Vagliano Brothers* (5th of March 1891), in which, with Lord Bramwell, he differed from the majority of his brother peers. Before long, however, deafness and advancing years rendered his attendances less frequent. Lord Field died at Bognor on the 23rd of January 1907, and as he left no issue the peerage became extinct.

FIELD (a word common to many West German languages, cf. Ger. *Feld*, Dutch *veld*, possibly cognate with O.E. *folde*, the earth, and ultimately with root of the Gr. πλατός, broad), open country as opposed to woodland or to the town, and particularly land for cultivation divided up into separate portions by hedges, banks, stone walls, &c.; also used in combination with words denoting the crop

grown on such a portion of land, such as corn-field, turnip-field, &c. The word is similarly applied to a region with particular reference to its products, as oil-field, gold-field, &c. For the “open” or “common field” system of agriculture in village communities see Commons. Generally with a reference to their “wild” as opposed to their “domestic” nature “field” is applied to many animals, such as the “field-mouse.” There are many applications of the word; thus from the use of the term for the place where a battle is fought, and widely of the whole theatre of war, come such phrases as to “take the field” for the opening of a campaign, “in the field” of troops that are engaged in the operations of a campaign. It is frequently used figuratively in this sense, of the subject matter of a controversy, and also appears in military usage, in field-fortification, field-day and the like. A “field-officer” is one who ranks above a captain and below a general (see Officers); a field marshal is the highest rank of general officer in the British and many European armies (see Marshal). “Field” is used in many games, partly with the idea of an enclosed space, partly with the idea of the ground of military operations, for the ground in which such games as cricket, football, baseball and the like are played. Hence it is applied to those players in cricket and baseball who are not “in,” and “to field” is to perform the functions of such a player—to stop or catch the ball played by the “in” side. “The field” is used in hunting, &c., for those taking part in the sport, and in racing for all the horses entered for a race, and, in such expressions as “to back the field,” is confined to all the horses with the exception of the “favourite.” A common application of the word is to a surface, more or less wide, as of the sky or sea, or of such physical phenomena as ice or snow, and particularly of the ground, of a special “tincture,” on which armorial bearings are displayed (see Heraldry); it is thus used also of the “ground” of a flag, thus the white ensign of the British navy has a red St George’s cross on a white “field.” In scientific usage the word is also used of the sphere of observation or of operations, and has come to be almost equivalent to a department of knowledge. In physics, a particular application is that to the area which is influenced by some agent, as in the magnetic or electric field. The field of observation or view is the area within which objects can be seen through any optical instrument at any one position. A “field-glass” is the name given to a binocular glass used in the field (see Binocular Instrument); the older form of field-glass was a small achromatic telescope with joints. This terms is also applied, in an astronomical telescope or compound microscope, to that one of the two lenses of the “eye-piece” which is next to the object-glass; the other is called the “eye-glass.”

FIELDFARE (O.E. *fealo-for* = fallow-farer), a large species of thrush, the *Turdus pilaris* of Linnaeus —well known as a regular and common autumnal visitor throughout the British Islands and a great part of Europe, besides western Asia, and even reaching northern Africa. It is the *Veldjakker* and *Veld-lyster* of the Dutch, the *Wachholderdrossel* and *Kramtsvogel* of Germans, the *Litorne* of the French, and the *Cesena* of Italians. This bird is of all thrushes the most gregarious in. habit, not only migrating in large bands and keeping in flocks during the winter, but even commonly breeding in society—200 nests or more having been seen within a very small space. The birch-forests of Norway, Sweden and Russia are its chief resorts in summer, but it is known also to breed sparingly in some districts of Germany. Though its nest has been many times reported to have been found in Scotland, there is perhaps no record of such an incident that is not open to doubt; and unquestionably the missel-thrush (*T. viscivorus*) has been often mistaken for the fieldfare by indifferent observers. The head, neck, upper part of the back and the rump are grey; the wings, wing-coverts and middle of the back are rich hazel-brown; the throat is ochraceous; and the breast reddish-brown—both being streaked or spotted with black, while the belly and lower wing-coverts are white, and the legs and toes very dark-brown. The nest and eggs resemble those of the blackbird (*T. merula*), but the former is usually built high up in a tree. The fieldfare’s call-note is harsh and loud, sounding like *t’chatt’chat*: its song is low, twittering and poor. It usually arrives in Britain about the middle or end of October, but sometimes earlier, and often remains till the middle of May before departing for its northern breeding-places. In hard weather it throngs to the berry-bearing bushes which then afford it sustenance, but in open winters the flocks spread over the fields in search of animal food—worms, slugs and the larvae of insects. In very severe seasons it will altogether leave the country, and then return for a shorter or longer time as spring approaches. From *William of Palerne* (translated from the French c. 1350) to the writers of our own day the fieldfare has occasionally been noticed by British poets with varying propriety. Thus Chaucer’s association Of its name with frost is as happy as true, while Scott was more than unlucky in his well-known reference to its “lowly nest” in the Highlands.

Structurally very like the fieldfare, but differing greatly in many other respects, is the bird known in North America as the “robin”—its ruddy breast and familiar habits reminding the early British settlers in the New World of the household favourite of their former homes. This bird, the *Turdus migratorius* of Linnaeus, has a wide geographical range, extending from the Atlantic to the Pacific, and from Greenland to Guatemala, and, except at its extreme limits, is almost everywhere a very abundant species. As its scientific name imports, it is essentially a migrant, and gathers in flocks to pass the winter in the south, though a few remain in New England throughout the year. Yet its social instincts point rather in the direction of man than of its own kind, and it is not known to breed in companies, while it affects the homesteads, villages and even the parks and gardens of the large cities, where its fine song, its attractive plumage, and its great services as a destroyer of noxious insects, combine to make it justly popular.

(A. N.)

FIELDING, ANTHONY VANDYKE COPLEY (1787-1855), commonly called Copley Fielding, English landscape painter (son of a portrait painter), became at an early age a pupil of John Varley. He took to water-colour painting, and to this he confined himself almost exclusively. In 1810 he became an associate exhibitor in the Water-colour Society, in 1813 a full member, and in 1831 president of that body. He also engaged largely in teaching the art, and made ample profits. His death took place at Worthing in March 1855. Copley Fielding was a painter of much elegance, taste and accomplishment, and has always been highly popular with purchasers, without reaching very high in originality of purpose or of style: he painted in vast number all sorts of views (occasionally in oil-colour) including marine subjects in large proportion. Specimens of his work are to be seen in the water-colour gallery of the Victoria and Albert Museum, of dates ranging from 1829 to 1850. Among the engraved specimens of his art is the *Annual of British Landscape Scenery*, published in 1839.

(W. M. R.)

FIELDING, HENRY (1707-1754), English novelist and playwright, was born at Sharpham Park, near Glastonbury, Somerset, on the 22nd of April 1707. His father was Lieutenant Edmund Fielding, third son of John Fielding, who was canon of Salisbury and fifth son of the earl of Desmond. The earl of Desmond belonged to the younger branch of the Denbigh family, who, until lately, were supposed to be connected with the Habsburgs. To this claim, now discredited by the researches of Mr J. Horace Round (*Studies in Peerage*, 1901, pp. 216-249), is to be attributed the famous passage in Gibbon's *Autobiography* which predicts for *Tom Jones*—"that exquisite picture of human manners"—a diuturnity exceeding that of the house of Austria. Henry Fielding's mother was Sarah Gould, daughter of Sir Henry Gould, a judge of the king's bench. It is probable that the marriage was not approved by her father, since, though she remained at Sharpham Park for some time after that event, his will provided that her husband should have nothing to do with a legacy of £3000 left her in 1710. About this date the Fieldings moved to East Stour in Dorset. Two girls, Catherine and Ursula, had apparently been born at Sharpham Park; and three more, together with a son, Edmund, followed at East Stour. Sarah, the third of the daughters, born November 1710, and afterwards the author of *David Simple* and other works, survived her brother.

Fielding's education up to his mother's death, which took place in April 1718 at East Stour, seems to have been entrusted to a neighbouring clergyman, Mr Oliver of Motcombe, in whom tradition traces the uncouth lineaments of "Parson Trulliber" in *Joseph Andrews*. But he must have contrived, nevertheless, to prepare his pupil for Eton, to which place Fielding went about this date, probably as an oppidan. Little is known of his schooldays. There is no record of his name in the college lists; but, if we may believe his first biographer, Arthur Murphy, by no means an unimpeachable authority, he left "uncommonly versed in the Greek authors, and an early master of the Latin classics,"—a statement which should perhaps be qualified by his own words to Sir Robert Walpole in 1730:—

> "Tuscan and French are in my head;
> Latin I write, and Greek—I read."

But he certainly made friends among his class-fellows—some of whom continued friends for life. Winnington and Hanbury-Williams were among these. The chief, however, and the most faithful, was George, afterwards Sir George, and later Baron Lyttelton of Frankley.

When Fielding left Eton is unknown. But in November 1725 we hear of him definitely in what seems like a characteristic escapade. He was staying at Lyme (in company with a trusty retainer, ready to "beat, maim or kill" in his young master's behalf), and apparently bent on carrying off, if necessary by force, a local heiress, Miss Sarah Andrew, whose fluttered guardians promptly hurried her away, and married her to some one else (*Athenaeum*, 2nd June 1883). Her baffled admirer consoled himself by translating part of Juvenal's sixth satire into verse as "all the Revenge taken by an injured Lover." After this he must have lived the usual life of a young man about town, and probably at this date improved the acquaintance of his second cousin, Lady Mary Wortley Montagu, to whom he inscribed his first comedy, *Love in Several Masques*, produced at Drury Lane in February 1728. The moment was not particularly favourable, since it succeeded Cibber's *Provok'd Husband*, and was contemporary with Gay's popular *Beggar's Opera*. Almost immediately afterwards (March 16th) Fielding entered himself as "Stud. Lit." at Leiden University. He was still there in February 1729. But he had apparently left before the annual registration of February 1730, when his name is absent from the books (*Macmillan's Magazine*, April 1907); and in January 1730 he brought out a second comedy at the newly-opened theatre in Goodman's Fields. Like its predecessor, the *Temple Beau* was an essay in

the vein of Congreve and Wycherley, though, in a measure, an advance on *Love in Several Masques*.

With the *Temple Beau* Fielding's dramatic career definitely begins. His father had married again; and his Leiden career had been interrupted for lack of funds. Nominally, he was entitled to an allowance of £200 a year; but this (he was accustomed to say) "any body might pay that would." Young, handsome, ardent and fond of pleasure, he began that career as a hand-to-mouth playwright around which so much legend has gathered—and gathers. Having—in his own words—no choice but to be a hackney coachman or a hackney writer, he chose the pen; and his inclinations, as well as his opportunities, led him to the stage. From 1730 to 1736 he rapidly brought out a large number of pieces, most of which had merit enough to secure their being acted, but not sufficient to earn a lasting reputation for their author. His chief successes, from a critical point of view, the *Author's Farce* (1730) and *Tom Thumb* (1730, 1731), were burlesques; and he also was fortunate in two translations from Molière, the *Mock Doctor* (1732) and the *Miser* (1733). Of the rest (with one or two exceptions, to be mentioned presently) the names need only be recorded. They are *The Coffee-House Politician*, a comedy (1730); *The Letter Writers*, a farce (1731); *The Grub-Street Opera*, a burlesque (1731); *The Lottery*, a farce (1732); *The Modern Husband*, a comedy (1732); *The Covent Garden Tragedy*, a burlesque (1732); *The Old Debauchees*, a comedy (1732); *Deborah; or, a Wife for you all*, an after-piece (1733); *The Intriguing Chambermaid* (from Regnard), a two-act comedy (1734); and *Don Quixote in England*, a comedy, which had been partly sketched at Leiden.

Don Quixote was produced in 1734, and the list of plays may be here interrupted by an event of which the date has only recently been ascertained, namely, Fielding's first marriage. This took place on the 28th of November 1734 at St Mary, Charlcornbe, near Bath (*Macmillan's Magazine*, April 1907), the lady being a Salisbury beauty, Miss Charlotte Cradock, of whom he had been an admirer, if not a suitor, as far back as 1730. This is a fact which should be taken into consideration in estimating the exact Bohemianism of his London life, for there is no doubt that he was devotedly attached to her. After a fresh farce entitled *An Old Man taught Wisdom*, and the comparative failure of a new comedy, *The Universal Gallant*, both produced early in 1735, he seems for a time to have retired with his bride, who came into £1500, to his old home at East Stour. Around this rural seclusion fiction has freely accreted. He is supposed to have lived for three years on the footing of a typical 18th-century country gentleman; to have kept a pack of hounds; to have put his servants into impossible yellow liveries; and generally, by profuse hospitality and reckless expenditure, to have made rapid duck and drake of Mrs Fielding's modest legacy. Something of this is demonstrably false; much, grossly exaggerated. In any case, he was in London as late as February 1735 (the date of the "Preface" to *The Universal Gallant*); and early in March 1736 he was back again managing the Haymarket theatre with a so-called "*Great Mogul's* Company of *English* Comedians."

Upon this new enterprise fortune, at the outset, seemed to smile. The first piece (produced on the 5th of March) was *Pasquin, a Dramatick Satire on the Times* (a piece akin in its plan to Buckingham's *Rehearsal*), which contained, in addition to much admirable burlesque, a good deal of very direct criticism of the shameless political corruption of the Walpole era. Its success was unmistakable; and when, after bringing out the remarkable *Fatal Curiosity* of George Lillo, its author followed up *Pasquin* by the *Historical Register for the Year 1736*, of which the effrontery was even more daring than that of its predecessor, the ministry began to bethink themselves that matters were going too far. How they actually effected their object is obscure: but grounds were speedily concocted for the Licensing Act of 1737, which restricted the number of theatres, rendered the lord chamberlain's licence an indispensable preliminary to stage representation, and—in a word—effectually put an end to Fielding's career as a dramatist.

Whether, had that career been prolonged to its maturity, the result would have enriched the theatrical repertoire with a new species of burlesque, or reinforced it with fresh variations on the "wit-traps" of Wycherley and Congreve, is one of those inquiries that are more academic than, profitable. What may be affirmed is, that Fielding's plays, as we have them, exhibit abundant invention and ingenuity; that they are full of humour and high spirits; that, though they may have been hastily written, they were by no means thoughtlessly constructed; and that, in composing them, their author attentively considered either managerial hints, or the conditions of the market. Against this, one must set the fact that they are often immodest; and that, whatever their intrinsic merit, they have failed to rival in permanent popularity the work of inferior men. Fielding's own conclusion was, "that he left off writing for the stage, when he ought to have begun"—which can only mean that he himself regarded his plays as the outcome of imitation rather than experience. They probably taught him how to construct *Tom Jones*; but whether he could ever have written a comedy at the level of that novel, can only be established by a comparison which it is impossible to make, namely, a comparison with *Tom Jones* of a comedy written at the same age, and in similar circumstances.

Tumble-Down Dick; or, Phaeton in the Suds, *Eurydice* and *Eurydice hissed* are the names of three occasional pieces which belong to the last months of Fielding's career as a Haymarket manager. By this date he was thirty, with a wife and daughter. As a means of support, he reverted to the profession of his maternal grandfather; and, in November 1737, he entered the Middle Temple, being described in the books of the society as "of East Stour in Dorset." That he set himself strenuously to master his new profession, is admitted; though it is unlikely that he had entirely discarded the irregular habits which had grown upon him in his irresponsible bachelorhood. He also did a good deal of literary work, the best known of which is contained in the *Champion*, a "News-Journal" of the *Spectator* type undertaken with James Ralph, whose poem of "Night" is made notorious in the *Dunciad*. That the *Champion* was not without merit is undoubted; but the essay-type was for the moment out-worn, and

neither Fielding nor his coadjutor could lend it fresh vitality. Fielding contributed papers from the 15th of November 1739 to the 19th of June 1740. On the 20th of June he was called to the bar, and occupied chambers in Pump Court. It is further related that, in the diligent pursuit of his calling, he travelled the Western Circuit, and attended the Wiltshire sessions.

Although, with the *Champion*, he professed, for the time, to have relinquished periodical literature, he still wrote at intervals, a fact which, taken in connexion with his past reputation as an effective satirist, probably led to his being "unjustly censured" for much that he never produced. But he certainly wrote a poem "Of True Greatness" (1741); a first book of a burlesque epic, the *Vernoniad*, prompted by Vernon's expedition of 1739; a vision called the *Opposition*, and, perhaps, a political sermon entitled the *Crisis* (1741). Another piece, now known to have been attributed to him by his contemporaries (*Hist. MSS. Comm., Rept.* 12, App. Pt. ix., p. 204), is the pamphlet entitled *An Apology for the Life of Mrs Shamela Andrews*, a clever but coarse attack upon the prurient side of Richardson's *Pamela*, which had been issued in 1740, and was at the height of its popularity. *Shamela* followed early in 1741. Richardson, who was well acquainted with Fielding's four sisters, at that date his neighbours at Hammersmith, confidently attributed it to Fielding (*Corr.* 1804, iv. 286, and unpublished letter at South Kensington); and there are suggestive points of internal evidence (such as the transformation of *Pamela's* "MR B." into "Mr Booby") which tend to connect it with the future *Joseph Andrews*. Fielding, however, never acknowledged it, or referred to it; and a great deal has been laid to his charge that he never deserved ("Preface" to *Miscellanies*, 1743).

But whatever may be decided in regard to the authorship of *Shamela*, it is quite possible that it prompted the more memorable *Joseph Andrews*, which made its appearance in February 1742, and 326
concerning which there is no question. Professing, on his title-page, to imitate Cervantes, Fielding set out to cover *Pamela* with Homeric ridicule by transferring the heroine's embarrassments to a hero, supposed to be her brother. Allied to this purpose was a collateral attack upon the slipshod *Apology* of the playwright Colley Cibber, with whom, for obscure reasons, Fielding had long been at war. But the avowed object of the book fell speedily into the background as its author warmed to his theme. His secondary speedily became his primary characters, and Lady Booby and Joseph Andrews do not interest us now as much as Mrs Slipslop and Parson Adams—the latter an invention that ranges in literature with Sterne's "Uncle Toby" and Goldsmith's "Vicar." Yet more than these and others equally admirable in their round veracity, is the writer's penetrating outlook upon the frailties and failures of human nature. By the time he had reached his second volume, he had convinced himself that he had inaugurated a new fashion of fiction; and in a "Preface" of exceptional ability, he announced his discovery. Postulating that the epic might be "comic" or "tragic," prose or verse, he claimed to have achieved what he termed the "Comic Epos in Prose," of which the action was "ludicrous" rather than "sublime," and the personages selected from society at large, rather than the restricted ranks of conventional high life. His plan, it will be observed, was happily adapted to his gifts of humour, satire, and above all, irony. That it was matured when it began may perhaps be doubted, but it was certainly matured when it ended. Indeed, except for the plot, which, in his picaresque first idea, had not preceded the conception, *Joseph Andrews* has all the characteristics of *Tom Jones*, even (in part) to the initial chapters.

Joseph Andrews had considerable success, and the exact sum paid for it by Andrew Millar, the publisher, according to the assignment now at South Kensington, was £183:11s., one of the witnesses being the author's friend, William Young, popularly supposed to be the original of Parson Adams. It was with Young that Fielding undertook what, with exception of "a very small share" in the farce of *Miss Lucy in Town* (1742), constituted his next work, a translation of the *Plutus* of Aristophanes, which never seems to have justified any similar experiments. Another of his minor works was a *Vindication of the Dowager Duchess of Marlborough* (1742), then much before the public by reason of the *Account of her Life* which she had recently put forth. Later in the same year, Garrick applied to Fielding for a play; and a very early effort, *The Wedding Day*, was hastily patched together, and produced at Drury Lane in February 1743 with no great success. It was, however, included in Fielding's next important publication, the three volumes of *Miscellanies* issued by subscription in the succeeding April. These also comprised some early poems, some essays, a Lucianic fragment entitled a *Journey from this World to the Next*, and, last but not least, occupying the entire final volume, the remarkable performance entitled the *History of the Life of the late Mr Jonathan Wild the Great*.

It is probable that, in its composition, *Jonathan Wild* preceded *Joseph Andrews*. At all events it seems unlikely that Fielding would have followed up a success in a new line by an effort so entirely different in character. Taking for his ostensible hero a well-known thief-taker, who had been hanged in 1725, he proceeds to illustrate, by a mock-heroic account of his progress to Tyburn, the general proposition that greatness without goodness is no better than badness. He will not go so far as to say that all "Human Nature is Newgate with the Mask on"; but he evidently regards the description as fairly applicable to a good many so-called great people. Irony (and especially Irony neat) is not a popular form of rhetoric; and the remorseless pertinacity with which Fielding pursues his demonstration is to many readers discomforting and even distasteful. Yet—in spite of Scott—*Jonathan Wild* has its softer pages; and as a purely intellectual conception it is not surpassed by any of the author's works.

His actual biography, both before and after *Jonathan Wild*, is obscure. There are evidences that he laboured diligently at his profession; there are also evidences of sickness and embarrassment. He had become early a martyr to the malady of his century—gout, and the uncertainties of a precarious livelihood told grievously upon his beautiful wife, who eventually died of fever in his arms, leaving him

for the time so stunned and bewildered by grief that his friends feared for his reason. For some years his published productions were unimportant. He wrote “Prefaces” to the *David Simple* of his sister Sarah in 1744 and 1747; and, in 1745-1746 and 1747-1748, produced two newspapers in the ministerial interest, the *True Patriot* and the *Jacobite’s Journal*, both of which are connected with, or derive from, the rebellion of 1745, and were doubtless, when they ceased, the pretext of a pension from the public service money (*Journal of a Voyage to Lisbon*, “Introduction”). In November 1747 he married his wife’s maid, Mary Daniel, at St Bene’t’s, Paul’s Wharf; and in December 1748, by the interest of his old school-fellow, Lyttelton, he was made a principal justice of peace for Middlesex and Westminster, an office which put him in possession of a house in Bow Street, and £300 per annum “of the dirtiest money upon earth” (*ibid.*), which might have been more had he condescended to become what was known as a “trading” magistrate.

For some time previously, while at Bath, Salisbury, Twickenham and other temporary resting-places, he had intermittently occupied himself in composing his second great novel, *Tom Jones; or, the History of a Foundling*. For this, in June 1748, Millar had paid him £600, to which he added £100 more in 1749. In the February of the latter year it was published with a dedication to Lyttelton, to whose pecuniary assistance to the author during the composition it plainly bears witness. In *Tom Jones* Fielding systematically developed the “new Province of Writing” he had discovered incidentally in *Joseph Andrews*. He paid closer attention to the construction and evolution of the plot; he elaborated the initial essays to each book which he had partly employed before, and he compressed into his work the flower and fruit of his forty years’ experience of life. He has, indeed, no character quite up to the level of Parson Adams, but his Westerns and Partridges, his Allworthys and Blifils, have the inestimable gift of life. He makes no pretence to produce “models of perfection,” but pictures of ordinary humanity, rather perhaps in the rough than the polished, the natural than the artificial, and his desire is to do this with absolute truthfulness, neither extenuating nor disguising defects and shortcomings. One of the results of this unvarnished naturalism has been to attract more attention to certain of the episodes than their inventor ever intended. But that, in the manners of his time, he had chapter and verse for everything he drew is clear. His sincere purpose was, he declared, “to recommend goodness and innocence,” and his obvious aversions are vanity and hypocrisy. The methods of fiction have grown more sophisticated since his day, and other forms of literary egotism have taken the place of his once famous introductory essays, but the traces of *Tom Jones* are still discernible in most of our manlier modern fiction.

Meanwhile, its author was showing considerable activity in his magisterial duties. In May 1749, he was chosen chairman of quarter sessions for Westminster; and in June he delivered himself of a weighty charge to the grand jury. Besides other pamphlets, he produced a careful and still readable *Enquiry into the Causes of the late Increase of Robbers*, &c. (1751), which, among its other merits, was not ineffectual in helping on the famous Gin Act of that year, a practical result to which the “Gin Lane” and “Beer Street” of his friend Hogarth also materially contributed. These duties and preoccupations left their mark on his next fiction, *Amelia* (1752), which is rather more taken up with social problems and popular grievances than its forerunners. But the leading personage, in whom, as in the Sophia Western of *Tom Jones*, he reproduced the traits of his first wife, is certainly, as even Johnson admitted, “the most pleasing heroine of all the romances.” The minor characters, too, especially Dr Harrison and Colonel Bath, are equal to any in *Tom Jones*. The book nevertheless shows signs, not of failure but of fatigue, perhaps of haste—a circumstance heightened by the absence of those “prolegomenous” chapters over which the author had lingered so lovingly in *Tom Jones*. In 1749 he had been dangerously ill, and his health was visibly breaking. The £1000 which Millar is said to have given for *Amelia* must have been painfully earned.

Early in 1752 his still indomitable energy prompted him to start a third newspaper, the *Covent Garden Journal*, which ran from the 4th of January to the 25th of November. It is an interesting contemporary record, and throws a good deal of light on his Bow Street duties. But it has no great literary value, and it unhappily involved him in harassing and undignified hostilities with Smollett, Dr John Hill, Bonnell Thornton and other of his contemporaries. To the following year belong pamphlets on “Provision for the Poor,” and the case of the strange impostor, Elizabeth Canning (1734-1773).[1] By 1754 his own case, as regards health, had grown desperate; and he made matters worse by a gallant and successful attempt to break up a “gang of villains and cut-throats,” who had become the terror of the metropolis. This accomplished, he resigned his office to his half-brother John (afterwards Sir John) Fielding. But it was now too late. After fruitless essay both of Dr Ward’s specifics and the tar-water of Bishop Berkeley, it was felt that his sole chance of prolonging life lay in removal to a warmer climate. On the 26th of June 1754 he accordingly left his little country house at Fordhook, Ealing, for Lisbon, in the “Queen of Portugal,” Richard Veal master. The ship, as often, was tediously wind-bound, and the protracted discomforts of the sick man and his family are narrated at length in the touching posthumous tract entitled the *Journal of a Voyage to Lisbon*, which, with a fragment of a comment on Bolingbroke’s then recently issued essays, was published in February 1755 “for the Benefit of his [Fielding’s] Wife and Children.” Reaching Lisbon at last in August 1754, he died there two months later (8th October), and was buried in the English cemetery, where a monument was erected to him in 1830. *Luget Britannia gremio non dari fovere natum* is inscribed upon it.

His estate, including the proceeds of a fair library, only covered his just debts (*Athenaeum*, 25th Nov. 1905); but his family, a daughter by his first, and two boys and a girl by his second wife, were faithfully cared for by his brother John, and by his friend Ralph Allen of Prior Park, Bath, the Squire Allworthy of *Tom Jones*. His will (undated) was printed in the *Athenaeum* for the 1st of February 1890.

There is but one absolutely authentic portrait of him, a familiar outline by Hogarth, executed from memory for Andrew Millar's edition of his works in 1762. It is the likeness of a man broken by ill-health, and affords but faint indication of the handsome Harry Fielding who in his salad days "warmed both hands before the fire of life." Far too much stress, it is now held, has been laid by his first biographers upon the unworshipful side of his early career. That he was always profuse, sanguine and more or less improvident, is as probable as that he was always manly, generous and sympathetic. But it is also plain that, in his later years, he did much, as father, friend and magistrate, to redeem the errors, real and imputed, of a too-youthful youth.

As a playwright and essayist his rank is not elevated. But as a novelist his place is a definite one. If the *Spectator* is to be credited with foreshadowing the characters of the novel, Defoe with its earliest form, and Richardson with its first experiments in sentimental analysis, it is to Henry Fielding that we owe its first accurate delineation of contemporary manners. Neglecting, or practically neglecting, sentiment as unmanly, and relying chiefly on humour and ridicule, he set out to draw life precisely as he saw it around him, without blanks or dashes. He was, it may be, for a judicial moralist, too indulgent to some of its frailties, but he was merciless to its meaner vices. For reasons which have been already given, his high-water mark is *Tom Jones*, which has remained, and remains, a model in its way of the kind he inaugurated.

An essay on Fielding's life and writings is prefixed to Arthur Murphy's edition of his works (1762), and short biographies have been written by Walter Scott and William Roscoe. There are also lives by Watson (1807), Lawrence (1855), Austin Dobson ("Men of Letters," 1883, 1907) and G.M. Godden (1909). An annotated edition of the *Journal of a Voyage to Lisbon* is included in the "World's Classics" (1907).

(A. D.)

1 For a full account of this celebrated case see Howell, *State Trials* (1813), vol. xix.

FIELDING, WILLIAM STEVENS (1848-), Canadian journalist and statesman, was born in Halifax, Nova Scotia, on the 24th of November 1848. From 1864 to 1884 he was one of the staff of the *Morning Chronicle*, the chief Liberal paper of the province, and worked at all departments of newspaper life. In 1882 he entered the local legislature as Liberal member for Halifax, and from 1884 to 1896 was premier and provincial secretary of the province, but in the latter year became finance minister in the Dominion administration of Sir Wilfrid Laurier, and was elected to the House of Commons for Shelburne and Queen's county. He opposed Confederation in 1864-1867, and as late as 1886 won a provincial election on the promise to advocate the repeal of the British North America Act. His administration as finance minister of Canada was important, since in 1897 he introduced a new tariff, granting to the manufactures of Great Britain a preference, subsequently increased; and later he imposed a special surtax on German imports owing to unfriendly tariff legislation by that country. In 1902 he represented Canada at the Colonial Conference in London.

FIELD-MOUSE, the popular designation of such mouse-like British rodents as are not true or "house" mice. The term thus includes the long-tailed field mouse, *Mus* (*Micromys*) *sylvaticus*, easily recognized by its white belly, and sometimes called the wood-mouse; and the two species of short-tailed field-mice, *Microtus agrestis* and *Evotomys glareolus*, together with their representatives in Skomer island and the Orkneys (see Mouse and Vole).

FIELD OF THE CLOTH OF GOLD, the French *Camp du drap d'or*, the name given to the place between Guînes and Ardres where Henry VIII. of England met Francis I. of France in June 1520. The most elaborate arrangements were made for the accommodation of the two monarchs and their large retinues; and on Henry's part especially no efforts were spared to make a great impression in Europe by this meeting. Before the castle of Guînes a temporary palace, covering an area of nearly 12,000 sq. yds., was erected for the reception of the English king. It was decorated in the most sumptuous fashion, and like the chapel, served by thirty-five priests, was furnished with a profusion of golden ornaments. Some idea of the size of Henry's following may be gathered from the fact that in one month 2200 sheep and other viands in a similar proportion were consumed. In the fields beyond the castle, tents to the number of 2800 were erected for less distinguished visitors, and the whole scene

was one of the greatest animation. Ladies gorgeously clad, and knights, showing by their dress and bearing their anxiety to revive the glories and the follies of the age of chivalry, jostled mountebanks, mendicants and vendors of all kinds.

Journeying from Calais Henry reached his headquarters at Guînes on the 4th of June 1520, and Francis took up his residence at Ardres. After Cardinal Wolsey, with a splendid train had visited the French king, the two monarchs met at the Val Doré, a spot midway between the two places, on the 7th. The following days were taken up with tournaments, in which both kings took part, banquets and other entertainments, and after Wolsey had said mass the two sovereigns separated on the 24th. This meeting made a great impression on contemporaries, but its political results were very small.

The *Ordonnance* for the *Field* is printed by J.S. Brewer in the *Calendar of State Papers, Henry VIII.* vol. iii. (1867). See also J.S. Brewer, *Reign of Henry VIII.* (1884).

FIELDS, JAMES THOMAS (1817-1881), American publisher and author, was born in Portsmouth, New Hampshire, on the 31st of December 1817. At the age of seventeen he went to Boston as clerk in a bookseller's shop. Afterwards he wrote for the newspapers, and in 1835 he read an anniversary poem entitled "Commerce" before the Boston Mercantile Library Association. In 1839 he became junior partner in the publishing and bookselling firm known after 1846 as Ticknor & Fields, and after 1868 as Fields, Osgood & Company. He was the publisher of the foremost contemporary American writers, with whom he was on terms of close personal friendship, and he was the American publisher of some of the best-known British writers of his time, some of whom, also, he knew intimately. The first collected edition of De Quincey's works (20 vols., 1850-1855) was published by his firm. As a publisher he was characterized by a somewhat rare combination of keen business acumen and sound, discriminating literary taste, and as a man he was known for his geniality and charm of manner. In 1862-1870, as the successor of James Russell Lowell, he edited the *Atlantic Monthly*. In 1871 Fields retired from business and from his editorial duties, and devoted himself to lecturing and to writing. Of his books the chief were the collection of sketches and essays entitled *Underbrush* (1877) and the chapters of reminiscence composing *Yesterdays with Authors* (1871), in which he recorded his personal friendship with Wordsworth, Thackeray, Dickens, Hawthorne and others. He died in Boston on the 24th of April 1881.

His second wife, Annie Adams Fields (b. 1834), whom he married in 1854, published *Under the Olive* (1880), a book of verses; *James T. Fields: Biographical Notes and Personal Sketches* (1882); *Authors and Friends* (1896); *The Life and Letters of Harriet Beecher Stowe* (1897); and *Orpheus* (1900).

FIENNES, NATHANIEL (*c.* 1608-1669) English politician, second son of William, 1st Viscount Saye and Sele, by Elizabeth, daughter of John Temple, of Stow in Buckinghamshire, was born in 1607 or 1608, and educated at Winchester and at New College, Oxford, where as founder's kin he was admitted a perpetual fellow in 1624. After about five years' residence he left without taking a degree, travelled abroad, and in Switzerland imbibed or strengthened those religious principles and that hostility to the Laudian church which were to be the chief motive in his future political career. He returned to Scotland in 1639, and established communications with the Covenanters and the Opposition in England, and as member for Banbury in both the Short and Long Parliaments he took a prominent part in the attacks upon the church. He spoke against the illegal canons on the 14th of December 1640, and again on the 9th of February 1641 on the occasion of the reception of the London petition, when he argued against episcopacy as constituting a political as well as a religious danger and made a great impression on the House, his name being added immediately to the committee appointed to deal with church affairs. He took a leading part in the examination into the army plot; was one of the commissioners appointed to attend the king to Scotland in August 1641; and was nominated one of the committee of safety in July 1642. On the outbreak of hostilities he took arms immediately, commanded a troop of horse in the army of Lord Essex, was present at the relief of Coventry in August, and at the fight at Worcester in September, where he distinguished himself, and subsequently at Edgehill. Of the last two engagements he wrote accounts, viz. *True and Exact Relation of both the Battles fought by ... Earl of Essex ... against the Bloudy Cavaliers* (1642). (See also *A Narrative of the Late Battle before Worcester taken by a Gentleman of the Inns of Court from the mouth of Master Fiennes*, 1642). In February 1643 Fiennes was sent down to Bristol, arrested Colonel Essex the governor, executed the two leaders of a plot to deliver up the city, and received a commission himself as governor on the 1st of May 1643. On the arrival, however, of Prince Rupert on the 22nd of July the place was in no condition to resist an attack, and Fiennes capitulated. He addressed to Essex a letter in his defence (Thomason Tracts E. 65, 26), drew up for the parliament a *Relation concerning the Surrender* ... (1643), answered by Prynne and Clement Walker accusing him of treachery and cowardice, to which he opposed *Col. Fiennes his Reply*.... He was tried at St Albans

by the council of war in December, was pronounced guilty of having surrendered the place improperly, and sentenced to death. He was, however, pardoned, and the facility with which Bristol subsequently capitulated to the parliamentary army induced Cromwell and the generals to exonerate him completely. His military career nevertheless now came to an end. He went abroad, and it was some time before he reappeared on the political scene. In September 1647 he was included in the army committee, and on the 3rd of January 1648 he became a member of the committee of safety. He was, however, in favour of accepting the king's terms at Newport in December, and in consequence was excluded from the House by Pride's Purge. An opponent of church government in any form, he was no friend to the rigid and tyrannical Presbyterianism of the day, and inclined to Independency and Cromwell's party. He was a member of the council of state in 1654, and in June 1655 he received the strange appointment of commissioner for the custody of the great seal, for which he was certainly in no way fitted. In the parliament of 1654 he was returned for Oxford county and in that of 1656 for the university, while in January 1658 he was included in Cromwell's House of Lords. He was in favour of the Protector's assumption of the royal title and urged his acceptance of it on several occasions. His public career closes with addresses delivered in his capacity as chief commissioner of the great seal at the beginning of the sessions of January 20, 1658, and January 2, 1659, in which the religious basis of Cromwell's government is especially insisted upon, the feature to which Fiennes throughout his career had attached most value. On the reassembling of the Long Parliament he was superseded; he took no part in the Restoration, and died at Newton Tony in Wiltshire on the 16th of December 1669. Fiennes married (1), Elizabeth, daughter of the famous parliamentarian Sir John Eliot, by whom he had one son, afterwards 3rd Viscount Saye and Sele; and (2), Frances, daughter of Richard Whitehead of Tuderley, Hants, by whom he had three daughters.

Besides the pamphlets already cited, a number of his speeches and other political tracts were published (see Gen. Catalogue, British Museum). Wood also attributed to him *Monarchy Asserted* (1666) (reprinted in Somers Tracts, vi. 346 [ed. Scott]), but there seems no reason to ascribe to him with Clement Walker the authorship of Sprigge's *Anglia Rediviva*.

FIERI FACIAS, usually abbreviated *fi. fa.* (Lat. "that you cause to be made"), in English law, a writ of execution after judgment obtained in action of debt or damages. It is addressed to the sheriff, and commands him to make good the amount out of the goods of the person against whom judgment has been obtained. (See Execution.)

FIESCHI, GIUSEPPE MARCO (1790-1836), the chief conspirator in the attempt on the life of Louis Philippe in July 1835, was a native of Murato in Corsica. He served under Murat, then returned to Corsica, where he was condemned to ten years' imprisonment and perpetual surveillance by the police for theft and forgery. After a period of vagabondage he eluded the police and obtained a small post in Paris by means of forged papers; but losing it on account of his suspicious manner of living, he resolved to revenge himself on society. He took lodgings on the Boulevard du Temple, and there, with two members of the Société des Droits de l'Homme, Morey and Pépin by name, contrived an "infernal machine," constructed with twenty gun barrels, to be fired simultaneously. On the 28th of July 1835, as Louis Philippe was passing along the boulevard to the Bastille, accompanied by his three sons and a numerous staff, the machine was exploded. A ball grazed the king's forehead, and his horse, with those of the duke of Nemours and of the prince de Joinville, was shot; Marshal Mortier was killed, with seventeen other persons, and many were wounded; but the king and the princes escaped as if by miracle. Fieschi himself was severely wounded by the discharge of his machine, and vainly attempted to escape. The attentions of the most skilful physicians were lavished upon him, and his life was saved for the stroke of justice. On his trial he named his accomplices, displayed much bravado, and expected or pretended to expect ultimate pardon. He was condemned to death, and was guillotined on the 19th of February 1836. Morey and Pépin were also executed, another accomplice was sentenced to twenty years' imprisonment and one was acquitted. No less than seven plots against the life of Louis Philippe had been discovered by the police within the year, and apologists were not wanting in the revolutionary press for the crime of Fieschi.

See *Procès de Fieschi, precédé de sa vie privée, sa condamnation par la Cour des Pairs et celles de ses complices* (2 vols., 1836); also P. Thureau-Dangin, *Hist, de la monarchie de Juillet* (vol. iv. ch. xii., 1884).

FIESCO (DE' FIESCHI), **GIOVANNI LUIGI** (*c.* 1523-1547), count of Lavagna, was descended from one of the greatest families of Liguria, first mentioned in the 10th century. Among his ancestors were two popes (Innocent IV. and Adrian V.), many cardinals, a king of Sicily, three saints, and many generals and admirals of Genoa and other states. Sinibaldo Fiesco, his father, had been a close friend of Andrea Doria (*q.v.*), and had rendered many important services to the Genoese republic. On his death in 1532 Giovanni found himself at the age of nine the head of the family and possessor of immense estates. He grew up to be a handsome, intelligent youth, of attractive manners and very ambitious. He married Eleonora Cibò, marchioness of Massa, in 1540, a woman of great beauty and family influence. There were many reasons which inspired his hatred of the Doria family; the almost absolute power wielded by the aged admiral and the insolence of his nephew and heir Giannettino Doria, the commander of the galleys, were galling to him as to many other Genoese, and it is said that Giannettino was the lover of Fiesco's wife. Moreover, the Fiesco belonged to the French or popular party, while the Doria were aristocrats and Imperialists. When Fiesco determined to conspire against Doria he found friends in many quarters. Pope Paul III. was the first to encourage him, while both Pier Luigi Farnese, duke of Parma, and Francis I. of France gave him much assistance and promised him many advantages. Among his associates in Genoa were his brothers Girolamo and Ottobuono, Verrina and R. Sacco. A number of armed men from the Fiesco fiefs were secretly brought to Genoa, and it was agreed that on the 2nd of January 1547, during the interregnum before the election of the new doge, the galleys in the port should be seized and the city gates held. The first part of the programme was easily carried out, and Giannettino Doria, aroused by the tumult, rushed down to the port and was killed, but Andrea escaped from the city in time. The conspirators attempted to gain possession of the government, but unfortunately for them Giovanni Luigi, while crossing a plank from the quay to one of the galleys, fell into the water and was drowned. The news spread consternation among the Fiesco faction, and Girolamo Fiesco found few adherents. They came to terms with the senate and were granted a general amnesty. Doria returned to Genoa on the 4th thirsting for revenge, and in spite of the amnesty he confiscated the Fiesco estates; Girolamo had shut himself up, with Verrina and Sacco and other conspirators, in his castle of Montobbia, which the Genoese at Doria's instigation besieged and captured. Girolamo Fiesco and Verrina were tried, tortured and executed; all their estates were seized, some of which, including Torriglia, Doria obtained for himself. Ottobuono Fiesco, who had escaped, was captured eight years afterwards and put to death by Doria's orders.

There are many accounts of the conspiracy, of which perhaps the best is contained in E. Petit's *André Doria* (Paris, 1887), chs. xi. and xii., where all the chief authorities are quoted; see also Calligari, *La Congiura del Fiesco* (Venice 1892), and Gavazzo, *Nuovi documenti sulla congiura del conte Fiesco* (Genoa, 1886); E. Bernabò-Brea, in his *Sulla congiura di Giovanni Luigi Fieschi*, publishes many important documents, while L. Capelloni's *Congiura del Fiesco*, edited by Olivieri, and A. Mascardi's *Congiura del conte Giovanni Luigi de' Fieschi* (Antwerp, 1629) may be commended among the earlier works. The Fiesco conspiracy has been the subject of many poems and dramas, of which the most famous is that by Schiller. See also under DORIA, ANDREA; FARNESE.

(L. V.*)

FIESOLE (anc. *Faesulae*, *q.v.*), a town and episcopal see of Tuscany, Italy, in the province of Florence, from which it is 3 m. N.E. by electric tramway. Pop. (1901) town 4951, commune 16,816. It is situated on a hill 970 ft. above sea-level, and commands a fine view. The cathedral of S. Romolo is an early and simple example of the Tuscan Romanesque style; it is a small basilica, begun in 1028 and restored in 1256. The picturesque battlemented campanile belongs to 1213. The tomb of the bishop Leonardo Salutati (d. 1466). with a beautiful portrait bust by the sculptor, Mino da Fiesole (1431-1484), is fine. The 13th-century Palazzo Pretorio contains a small museum of antiquities. The Franciscan monastery commands a fine view. The church of S. Maria Primerana has some works of art, and S. Alessandro, which is attributed to the 6th century, contains fifteen ancient columns of cipollino. The inhabitants of Fiesole are largely engaged in straw-plaiting.

Below Fiesole, between it and Florence, lies San Domenico di Fiesole (485 ft.); in the Dominican monastery the painter, Fra Giovanni Angelico da Fiesole (1387-1455), lived until he went to S. Marco at Florence. Here, too, is the Badia di Fiesole, founded in 1028 and re-erected about 1456-1466 by a follower of Brunelleschi. It is an irregular pile of buildings, in fine and simple early Renaissance style; a small part of the original façade of 1028 in black and white marble is preserved. The interior of the Church is decorated with sculptures by pupils of Desiderio da Settignano. The slopes of the hill on which Fiesole stands are covered with fine villas. To the S.E. of Fiesole lies Monte Ceceri (1453 ft.), with quarries of grey *pietra serena*, largely used in Florence for building. To the E. of this lies the 14th-century castle of Vincigliata restored and fitted up in the medieval style.

FIFE, an eastern county of Scotland, bounded N. by the Firth of Tay, E. by the North Sea, S. by the

Firth of Forth, and W. by the shires of Perth, Kinross and Clackmannan. The Isle of May, Inchkeith, Inchcolm, Inchgarvie and the islet of Oxcar belong to the shire. It has an area of 322,844, acres or 504 sq. m. Its coast-line measure 108 m. The Lomond Hills to the S. and S.W. of Falkland, of which West Lomond is 1713 ft. high and East Lomond 1471 ft., Saline Hill (1178 ft.) to the N.W. of Dunfermline, and Benarty (1131 ft.) on the confines of Kinross are the chief heights. Of the rivers the Eden is the longest; formed on the borders of Kinross-shire by the confluence of Beattie Burn and Carmore Burn, it pursues a wandering course for 25 m. N.E., partly through the Howe, or Hollow of Fife, and empties into the North Sea. There is good trout fishing in its upper waters, but weirs prevent salmon from ascending it. The Leven drains the loch of that name and enters the Forth at the town of Leven after flowing eastward for 15 m. There are numerous factories at various points on its banks. The Ore, rising not far from Roscobie Hills to the north of Dunfermline, follows a mainly north-easterly course for 15 m. till it joins the Leven at Windygates. The old loch of Ore which was an expansion of its water was long ago reclaimed. Motray Water finds its source in the parish of Kilmany, a few miles W. by N. of Cupar, makes a bold sweep towards the north-east, and then, taking a southerly turn, enters the head-waters of St Andrews Bay, after a course of 12 m. The principal lochs are Loch Fitty, Loch Gelly, Loch Glow and Loch Lindores; they are small but afford some sport for trout, perch and pike. “Freshwater mussels” occur in Loch Fitty. There are no glens, and the only large valley is the fertile Stratheden, which supplies part of the title of the combined baronies of Stratheden (created 1836) and Campbell (created 1841).

Geology.—Between Damhead and Tayport on the northern side of the low-lying Howe of Fife the higher ground is formed of Lower Old Red Sandstone volcanic rocks, consisting of red and purple porphyrites and andesites and some coarse agglomerates, which, in the neighbourhood of Auchtermuchty, are rounded and conglomeratic. These rocks have a gentle dip towards the S.S.E. They are overlaid unconformably by the soft red sandstones of the Upper Old Red series which underlie the Howe of Fife from Loch Leven to the coast. The quarries in these rocks in Dura Den are famous for fossil fishes. Following the Old Red rocks conformably are the Carboniferous formations which occupy the remainder of the county, and are well exposed on the coast and in the numerous quarries. The Carboniferous rocks include, at the base, the Calciferous Sandstone series of dark shales with thin limestones, sandstones and coals. They are best developed around Fife Ness, between St Andrews and Elie, and again around Burntisland between Kirkcaldy and Inverkeithing Bay. In the Carboniferous Limestone series, which comes next in upward succession, are the valuable gas-coals and ironstones worked in the coal-fields of Dunfermline, Saline, Oakley, Torryburn, Kirkcaldy and Markinch. The true Coal Measures lie in the district around Dysart and Leven, East Wemyss and Kinglassie, and they are separated from the coal-bearing Carboniferous Limestone series by the sandstones and conglomerates of the Millstone Grit, Fourteen seams of coal are found in the Dysart Coal Measures, associated with sandstones, shales and clay ironstones. Fife is remarkably rich in evidences of former volcanic activity. Besides the Old Red Sandstone volcanic rocks previously mentioned, there are many beds of contemporaneous basaltic lavas and tuffs in the Carboniferous rocks; Saline Hill and Knock Hill were the sites of vents, which at that time threw out ashes; these interbedded rocks are well exposed on the shore between Burntisland and and Seafield Tower. There were also many intrusive sheets of dolerite and basalt forced into the lower Carboniferous rocks, and these now play an important part in the scenery of the county. They form the summits of the Lomond Hills and Benarty, and they may be followed from Cult Hill by the Cleish Hills to Blairadam; and again near Dunfermline, Burntisland, Torryburn, Auchtertool and St Andrews. Later, in Permian times, eastern Fife was the seat of further volcanic action, and great numbers of “necks” or vents pierce the Carboniferous rocks; Largo Law is a striking example. In one of these necks on the shore at Kincraig Point is a fine example of columnar basalt; the “Rock and Spindle” near St Andrews is another. Last of all in Tertiary times, east and west rifts in the Old Red Sandstone were filled by basalt dikes. Glacial deposits, ridges of gravel and sand, boulder clay, &c., brought from the N. W., cover much of the older rocks, and traces of old raised beaches are found round the coast and in the Howe cf Fife. In the 25-ft. beach in the East Neuk of Fife is an island sea-cliff with small caves.

Climate and Agriculture.—Since the higher hills all lie in the west, most of the county is exposed to the full force of the east winds from the North Sea, which often, save in the more sheltered areas, check the progress of vegetation. At an elevation of 500 or 600 ft. above the sea harvests are three or four weeks later than in the valleys and low-lying coast-land. The climate, on the whole, is mild, proximity to the sea qualifying the heat in summer and the cold in winter. The average annual rainfall is 31 in., rather less in the East Neuk district and around St Andrews, somewhat more as the hills are approached, late summer and autumn being the wet season. The average temperature for January is 38° F., for July 59.5°, and for the year 47.6°. Four-fifths of the total area is under cultivation, and though the acreage under grain is smaller than it was, the yield of each crop is still extraordinarily good, oats, barley, wheat being the order of acreage. Of the green crops most attention is given to turnips. Potatoes also do well. The acreage under permanent pasture and wood is very considerable. Cattle are mainly kept for feeding purposes, and dairy farming, though attracting more notice, has never been followed more than to supply local markets. Sheep-farming, however, is on the increase, and the raising of horses, especially farm horses, is an important pursuit. They are strong, active and hardy, with a large admixture, or purely, of Clydesdale blood. The ponies, hunters and carriage horses so bred are highly esteemed. The strain of pigs has been improved by the introduction of Berkshires. North of the Eden the soil, though generally thin, is fertile, but the sandy waste of Tents Moor is beyond redemption. From St Andrews southwards all along the coast the land is very productive. That adjacent to the East Neuk consists chiefly of clay and rich loam. From Leven to Inverkeithing it varies from a light sand to a rich clayey loam. Excepting Stratheden and Strathleven, which are mostly rich, fertile loam, the interior is principally cold and stiff clay or thin loam with strong clayey subsoil. Part

of the Howe of Fife is light and shingly and covered with heather. Some small peat mosses still exist, and near Lochgelly there is a tract of waste, partly moss and partly heath. The character of the farm management may be judged by its results. The best methods are pursued, and houses, steadings and cottages are all in good order, commodious and comfortable. Rabbits, hares, pheasants and partridges are common in certain districts; roe deer are occasionally seen; wild geese, ducks and teal haunt the lochs; pigeon-houses are fairly numerous; and grouse and blackcock are plentiful on the Lomond moors. The shire is well suited for fox-hunting, and there are packs in both the eastern and the western division of Fife.

Mining.—Next to Lanarkshire, Fife is the largest coal-producing county in Scotland. The coal-field may roughly be divided into the Dunfermline basin (including Halbeath, Lochgelly and Kelty), where the principal house coals are found, and the Wemyss or Dysart basin (including Methil and the hinterland), where gas-coal of the best quality is obtained. Coal is also extensively worked at Culross, Carnock, Falfield, Donibristle, Ladybank, Kilconquhar and elsewhere. Beds of ironstone, limestone, sandstone and shale lie in many places contiguous to the coal. Blackband ironstone is worked at Lochgelly and Oakley, where there are large smelting furnaces. Oil shale is worked at Burntisland and Airdrie near Crail. Among the principal limestone quarries are those at Charlestown, Burntisland and Cults. Freestone of superior quality is quarried at Strathmiglo, Burntisland and Dunfermline. Whinstone of unusual hardness and durability is obtained in nearly every district. Lead has been worked in the Lomond Hills and copper and zinc have been met with, though not in paying quantities. It is of interest to note that in the trap tufa at Elie there have been found pyropes (a variety of dark-red garnet), which are regarded as the most valuable of Scottish precious stones and are sold under the name of Elie rubies.

Other Industries.—The staple manufacture is linen, ranging from the finest damasks to the coarsest ducks and sackings. Its chief seats are at Kirkcaldy and Dunfermline, but it is carried on at many of the inland towns and villages, especially those situated near the Eden and Leven, on the banks of which rivers, as well as at Kirkcaldy, Dunfermline and Ceres, are found the bleaching-greens. Kirkcaldy is famous for its oil-cloth and linoleum. Most of the leading towns possess breweries and tanneries, and the largest distilleries are at Cameron Bridge and Burntisland. Woollen cloth is made to a small extent in several towns, and fishing-net at Kirkcaldy, Largo and West Wemyss. Paper is manufactured at Guardbridge, Markinch and Leslie; earthenware at Kirkcaldy; tobacco at Dunfermline and Kirkcaldy; engineering works and iron foundries are found at Kirkcaldy and Dunfermline; and shipbuilding is carried on at Kinghorn, Dysart, Burntisland, Inverkeithing and Tayport. From Inverkeithing all the way round the coast to Newburgh there are harbours at different points. They are mostly of moderate dimensions, the principal port being Kirkcaldy. The largest salmon fisheries are conducted at Newburgh and the chief seat of the herring fishery is Anstruther, but most of the coast towns take some part in the fishing either off the shore, or at stations farther north, or in the deep sea.

Communications.—The North British railway possesses a monopoly in the shire. From the Forth Bridge the main line follows the coast as far as Dysart and then turns northwards to Ladybank, where it diverges to the north-east for Cupar and the Tay Bridge. From Thornton Junction a branch runs to Dunfermline and another to Methil, and here begins also the coast line for Leven, Crail and St Andrews which touches the main line again at Leuchars Junction; at Markinch a branch runs to Leslie; at Ladybank there are branches to Mawcarse Junction, and to Newburgh and Perth; and at Leuchars Junction a loop line runs to Tayport and Newport, joining the main at Wormit. From the Forth Bridge the system also connects, via Dunfermline, with Alloa and Stirling in the W. and with Kinross and Perth in the N. From Dunfermline there is a branch to Charlestown, which on that account is sometimes called the port of Dunfermline.

Population and Government.—The population was 190,365 in 1891, and 218,840 in 1901, when 844 persons spoke Gaelic and English and 3 Gaelic only. The chief towns are the Anstruthers (pop. in 1901, 4233), Buckhaven (8828), Burntisland (4846), Cowdenbeath (7908), Cupar (4511), Dunfermline (25,250), Dysart (3562), Kelty (3986), Kirkcaldy (34,079), Leslie (3587), Leven (5577), Lochgelly (5472), Lumphinnans (2071), Newport (2869), St Andrews (7621), Tayport (3325) and Wemyss (2522). For parliamentary purposes Fife is divided into an eastern and a western division, each returning one member. It also includes the Kirkcaldy district of parliamentary burghs (comprising Burntisland, Dysart, Kinghorn and Kirkcaldy), and the St Andrews district (the two Anstruthers, Crail, Cupar, Kilrenny, Pittenweem and St Andrews); while Culross, Dunfermline and Inverkeithing are grouped with the Stirling district. As regards education the county is under school-board jurisdiction, and in respect of higher education its equipment is effective. St Andrews contains several excellent schools; at Cupar there is the Bell-Baxter school; at Dunfermline and Kirkcaldy there are high schools and at Anstruther there is the Waid Academy.

History.—In remote times the term Fife was applied to the peninsula lying between the estuaries of the Tay and Forth and separated from the rest of the mainland by the Ochil Hills. Its earliest inhabitants were Picts of the northern branch and their country was long known as Pictavia. Doubtless it was owing to the fact that the territory was long subject to the rule of an independent king that Fife itself came to be called distinctively The Kingdom, a name of which the natives are still proud. The Romans effected no settlement in the province, though it is probable that they temporarily occupied points here and there. In any case the Romans left no impression on the civilization of the natives. With the arrival of the missionaries—especially St Serf, St Kenneth, St Rule, St Adrian, St Moran and St Fillan—and conversion of the Picts went on apace. Interesting memorials of these devout missionaries exist in the numerous coast caves between Dysart and St Andrews and in the crosses and

sculptured stones, some doubtless of pre-Christian origin, to be seen at various places. The word Fife, according to Skene, seems to be identical with the Jutland *Fibh* (pronounced *Fife*) meaning "forest," and was probably first used by the Frisians to describe the country behind the coasts of the Forth and Tay, where Frisian tribes are supposed to have settled at the close of the 4th century. The next immigration was Danish, which left lasting traces in many place-names (such as the frequent use of *law* for hill). An ancient division of the Kingdom into Fife and Fothrif survived for a period for ecclesiastical purposes. The line of demarcation ran from Leven to the east of Cults, thence to the west of Collessie and thence to the east of Auchtermuchty. To the east of this line lay Fife proper. In 1426 the first shire of Kinross was formed, consisting of Kinross and Orwell, and was enlarged to its present dimensions by the transference from Fife of the parishes of Portmoak, Cleish and Tulliebole. Although the county has lain outside of the main stream of Scottish history, its records are far from dull or unimportant. During the reigns of the earlier Stuarts, Dunfermline, Falkland and St Andrews were often the scene of solemn pageantry and romantic episodes. Out of the seventy royal burghs in Scotland no fewer than eighteen are situated in the shire. However, notwithstanding the marked preference of the Stuarts, the Kingdom did not hesitate to play the leading part in the momentous dramas of the Reformation and the Covenant, and by the 18th century the people had ceased to regard the old royal line with any but sentimental interest, and the Jacobite risings of 1715 and 1745 evoked only the most lukewarm support.

See Sir Robert Sibbald, *History of the Sheriffdoms of Fife and Kinross*; Rev. J.W. Taylor, *Historical Antiquities of Fife* (1875); A.H. Millar, *Fife, Pictorial and Historical* (Cupar, 1895); Sheriff Aeneas Mackay, sketch of the *History of Fife* (Edinburgh, 1890); *History of Fife and Kinross* (Scottish County History series) (Edinburgh, 1896); John Geddie, *The Fringe of Fife* (Edinburgh, 1894).

FIFE (Fr. *fifre*; Med. Ger. *Schweizerpfeiff*, *Feldpfeiff*; Ital. *ottavino*), originally the small primitive cylindrical transverse flute, now the small B♭ military flute, usually conoidal in bore, used in a drum and fife band. The pitch of the fife lies between that of the concert flute and piccolo. The fife, like the flute, is an open pipe, for although the upper end is stopped by means of a cork, an outlet is provided by the embouchure which is never entirely closed by the lips. The six finger-holes of the primitive flute, with the open end of the tube for a key-note, gave the diatonic scale of the fundamental octave; the second octave was produced by overblowing the notes of the fundamental scale an octave higher; part of a third octave was obtained by means of the higher harmonics produced by using certain of the finger-holes as vent-holes. The modern fife has, in addition to the six finger-holes, 4, 5 or 6 keys. Mersenne describes and figures the fife, which had in his day the compass of a fifteenth.[1] The fife, which, he states, differed from the German flute only in having a louder and more brilliant tone and a shorter and narrower bore, was the instrument used by the Swiss with the drum. The sackbut, or serpent, was used as its bass, for, as Mersenne explains, the bass instrument could not be made long enough, nor could the hands reach the holes, although some flutes were actually made with keys and had the tube doubled back as in the bassoon.[2]

The words *fife* and the Fr. *fifre* were undoubtedly derived from the Ger. *Pfeiff*, the fife being called by Praetorius[3] *Schweizerpfeiff* and *Feldpfeiff*, while Martin Agricola,[4] writing a century earlier (1529), mentions the transverse flute by the names of *Querchpfeiff* or *Schweizerpfeiff*, which Sebastian Virdung[5] writes *Zwerchpfeiff*. The Old English spelling was *phife*, *phiphe* or *ffyffe*. The fife was in use in England in the middle of the 16th century, for at a muster of the citizens of London in 1540, *droumes* and ffyffes are mentioned. At the battle of St Quentin (1557) the list of the English army[6] employed states that one trumpet was allowed to each cavalry troop of 100 men, and a drum and fife to each hundred of foot. A drumme and *phife* were also employed at one shilling per diem for the "Trayne of Artillery."[7] This was the nucleus of the modern military band, and may be regarded as the first step in its formation. In England the adoption of the fife as a military instrument was due to the initiative of Henry VIII., who sent to Vienna for ten good drums and as many fifers.[8] Ralph Smith[9] gives rules for drummers and fifers who, in addition to the duty of giving signals in peace and war to the company, were expected to be brave, secret and ingenious, and masters of several languages, for they were oft sent to parley with the enemy and were entrusted with honourable but dangerous missions. In 1585 the drum and fife formed part of the furniture for war among the companies of the city of London.[10] Queen Elizabeth (according to Michaud, *Biogr. universelle*, tome xiii. p. 60) had a peculiar taste for noisy music, and during meals had a concert of twelve trumpets, two kettledrums, with fifes and drums. The fife became such a favourite military instrument during the 16th and 17th centuries in England that it displaced the bagpipe; it was, however, in turn superseded early in the 18th century by the hautboy (see Oboe), introduced from France. In the middle of the 18th century the fife was reintroduced into the British army band by the duke of Cumberland[11] in the Guards in 1745, commemorated by William Hogarth's picture of the "March of the Guards towards Scotland in 1745," in which are seen a drummer and fifer; and by Colonel Bedford into the royal regiment of artillery in 1748, at the end of the war, when a Hanoverian fifer, John Ulrich, was brought over from Flanders as instructor.[12] In 1747 the 19th regiment, known as Green Howards, also had the advantage of a Hanoverian fifer as teacher, a youth presented by his colonel to Lieutenant-Colonel Williams commanding the regiment at Bois-le-Duc. Drum and fife bands in a short time became common in all infantry regiments, while among the cavalry the trumpet prevailed.

For the acoustics, construction and origin of the fife see Flute. Illustrations of the fife may be seen in Cowdray's picture of an encampment at Portsmouth in 1548; in Sandford's "Coronation Procession of James II.," and in C.R. Day's *Descriptive Catalogue*, pl. i. (F) (description No. 42, p. 27).

(K. S.)

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1 *Harmonie universelle* (Paris, 1636), bk. v. prop. 9, pp. 241-244.

2 For an illustration of one of these bass flutes see article Flute, Fig. 2.

3 *Syntagma musicum* (Wolfenbüttel, 1618), pp. 40-41 of Reprint.

4 *Musica instrumentalis* (Wittenberg, 1529).

5 *Musica getutscht und auszgezogen* (Basel, 1511).

6 See Sir S.D. Scott, *The British Army*, vol. ii. p. 396.

7 See H.G. Farmer, *Memoirs of the Royal Artillery Band* (London, 1904).

8 *Id.*

9 *Id.*

10 Stowe's *Chronicles*, p. 702.

11 Grose, *Military Antiquities* (London, 1801), vol. ii.

12 See Colonel P. Forbes Macbean, *Memoirs of the Royal Regiment of Artillery*.

FIFTH MONARCHY MEN, the name of a Puritan sect in England which for a time supported the government of Oliver Cromwell in the belief that it was a preparation for the "fifth monarchy," that is for the monarchy which should succeed the Assyrian, the Persian, the Greek and the Roman, and during which Christ should reign on earth with His saints for a thousand years. These sectaries aimed at bringing about the entire abolition of the existing laws and institutions, and the substitution of a simpler code based upon the law of Moses. Disappointed at the delay in the fulfilment of their hopes, they soon began to agitate against the government and to vilify Cromwell; but the arrest of their leaders and preachers, Christopher Feake, John Rogers and others, cooled their ardour, and they were, perforce, content to cherish their hopes in secret until after the Restoration. Then, on the 6th of January 1661, a band of fifth monarchy men, headed by a cooper named Thomas Venner, who was one of their preachers, made an attempt to obtain possession of London. Most of them were either killed or taken prisoners, and on the 19th and 21st of January Venner and ten others were executed for high treason. From that time the special doctrines of the sect either died out, or became merged in a milder form of millenarianism, similar to that which exists at the present day.

For the proceedings of the sect see S.R. Gardiner, *History of the Commonwealth and Protectorate*, *passim* (London, 1894-1901); and for an account of the rising of 1661 see Sir John Reresby, *Memoirs*, 1634-1689, edited by J.J. Cartwright (London, 1875).

FIG, the popular name given to plants of the genus *Ficus*, an extensive group, included in the natural order Moraceae, and characterized by a remarkable development of the pear-shaped receptacle, the edge of which curves inwards, so as to form a nearly closed cavity, bearing the numerous fertile and sterile flowers mingled on its surface. The figs vary greatly in habit,—some being low trailing shrubs, others gigantic trees, among the most striking forms of those tropical forests to which they are chiefly indigenous. They have alternate leaves, and abound in a milky juice, usually acrid, though in a few instances sufficiently mild to be used for allaying thirst. This juice contains caoutchouc in large quantity.

FIGURE 1.—Fruiting Branch of Fig, *Ficus Carica*; about 2/7 nat. size.

1. Unripe fruit cut lengthwise; about ½ nat. size. 2. Female flower taken from 1; enlarged. 3. Ripe fruit cut lengthwise; about ½ nat. size.

Ficus Carica (figure 1), which yields the well-known figs of commerce, is a bush or small tree—rarely more than 18 or 20 ft. high,—with broad, rough, deciduous leaves, very deeply lobed in the cultivated varieties, but in the wild plant sometimes nearly entire. The green, rough branches bear the solitary, nearly sessile receptacles in the axils of the leaves. The male flowers are placed chiefly in the upper part of the cavity, and in most varieties are few in number. As it ripens, the receptacle enlarges greatly, and the numerous single-seeded pericarps or true fruits become imbedded in it. The fruit of the wild fig never acquires the succulence of the cultivated kinds. The fig seems to be indigenous to Asia Minor and Syria, but now occurs in a wild state in most of the countries around the Mediterranean. From the ease with which the nutritious fruit can be preserved, it was probably one of the earliest objects of cultivation, as may be inferred from the frequent allusions to it in the Hebrew Scriptures.[1] From a passage in Herodotus the fig would seem to have been unknown to the Persians in the days of the first Cyrus; but it must have spread in remote ages over all the districts around the Aegean and Levant. The Greeks are said to have received it from Caria (hence the specific name); but the fruit so improved under Hellenic culture that Attic figs became celebrated throughout the East, and special laws were made to regulate their exportation. From the contemptuous name given to informers against the violation of those enactments, συκοφάνται (σῦκον, φαίνω), our word sycophant is usually derived. The fig was one of the principal articles of sustenance among the Greeks; the Spartans especially used it largely at their public tables. From Hellas, at some prehistoric period, it was transplanted to Italy and the adjacent islands. Pliny enumerates many varieties, and alludes to those from Ebusus (the modern Iviza) as most esteemed by Roman epicures; while he describes those of home growth as furnishing a large portion of the food of the slaves, particularly those employed in agriculture, by whom great quantities were eaten in the fresh state at the periods of fig-harvest. In Latin myths the plant plays an important part. Held sacred to Bacchus, it was employed in religious ceremonies; and the fig-tree that overshadowed the twin founders of Rome in the wolf's cave, as an emblem of the future prosperity of the race, testified to the high value set upon the fruit by the nations of antiquity. The tree is now cultivated in all the Mediterranean countries, but the larger portion of our supply of figs comes from Asia Minor, the Spanish Peninsula and the south of France. Those of Asiatic Turkey are considered the best. The varieties are extremely numerous, and the fruit is of various colours, from deep purple to yellow, or nearly white. The trees usually bear two crops,—one in the early summer from the buds of the last year, the other in the autumn from those on the spring growth; the latter forms the chief harvest. Many of the immature receptacles drop off from imperfect fertilization, which circumstance has led, from very ancient times, to the practice of *caprification*.[2] Branches of the wild fig in flower are placed over the cultivated bushes. Certain hymenopterous insects, of the genera *Blastophaga* and *Sycophaga*, which frequent the wild fig, enter the minute orifice of the receptacle, apparently to deposit their eggs; conveying thus the pollen more completely to the stigmas, they ensure the fertilization and consequent ripening of the fruit. By some the nature of the process has been questioned, and the better maturation of the fruit attributed merely to the stimulus given by the puncture of the insect, as in the case of the apple; but the arrangement of the unisexual flowers in the fig renders the first theory the more probable. In some districts a straw or

small twig is thrust into the receptacle with a similar object. When ripe the figs are picked, and spread out to dry in the sun,—those of better quality being much pulled and extended by hand during the process. Thus prepared, the fruit is packed closely in barrels, rush baskets, or wooden boxes, for commerce. The best kind, known as elemi, are shipped at Smyrna, where the pulling and packing of figs form one of the most important industries of the people.

This fruit still constitutes a large part of the food of the natives of western Asia and southern Europe, both in the fresh and dried state. A sort of cake made by mashing up the inferior kinds serves in parts of the Archipelago as a substitute for bread. Alcohol is obtained from fermented figs in some southern countries; and a kind of wine, still made from the ripe fruit, was known to the ancients, and mentioned by Pliny under the name of *sycites*. Medicinally the fig is employed as a gentle laxative, when eaten abundantly often proving useful in chronic constipation; it forms a part of the well-known “confection of senna.” The milky juice of the stems and leaves is very acrid, and has been used in some countries for raising blisters. The wood is porous and of little value; though a piece, saturated with oil and spread with emery, is in France a common substitute for a hone.

The fig is grown for its fresh fruit (eaten as an article of dessert) in all the milder parts of Europe, and in the United States, with protection in winter, succeeds as far north as Pennsylvania. The fig was introduced into England by Cardinal Pole, from Italy, early in the 16th century. It lives to a great age, and along the southern coast of England bears fruit abundantly as a standard; but in Scotland and in many parts of England a south wall is indispensable for its successful cultivation out of doors.

Fig trees are propagated by cuttings, which should be put into pots, and placed in a gentle hotbed. They may be obtained more speedily from layers, which should consist of two or three years old shoots, and these, when rooted, will form plants ready to bear fruit the first or second year after planting. The best soil for a fig border is a friable loam, not too rich, but well drained; a chalky subsoil is congenial to the tree, and, to correct the tendency to over-luxuriance of growth, the roots should be confined within spaces surrounded by a wall enclosing an area of about a square yard. The sandy soil of Argenteuil, near Paris, suits the fig remarkably well; but the best trees are those which grow in old quarries, where their roots are free from stagnant water, and where they are sheltered from cold, while exposed to a very hot sun, which ripens the fruit perfectly. The fig succeeds well planted in a paved court against a building with a south aspect.

The fig tree naturally produces two sets of shoots and two crops of fruit in the season. The first shoots generally show young figs in July and August, but these in the climate of England very seldom ripen, and should therefore be rubbed off. The late or midsummer shoots likewise put forth fruit-buds, which, however, do not develop themselves till the following spring; and these form the only crop of figs on which the British gardener can depend.

The fig tree grown as a standard should get very little pruning, the effect of cutting being to stimulate the buds to push shoots too vigorous for bearing. When grown against a wall, it has been recommended that a single stem should be trained to the height of a foot. Above this a shoot should be trained to the right, and another to the left; from these principals two other subdivisions should be encouraged, and trained 15 in. apart; and along these branches, at distances of about 8 in., shoots for bearing, as nearly as possible of equal vigour, should be encouraged. The bearing shoots produced along the leading branches should be trained in at full length, and in autumn every alternate one should be cut back to one eye. In the following summer the trained shoots should bear and ripen fruit, and then be cut back in autumn to one eye, while shoots from the bases of those cut back the previous autumn should be trained for succession. In this way every leading branch will be furnished alternately with bearing and successional shoots.

When protection is necessary, as it may be in severe winters, though it is too often provided in excess, spruce branches have been found to answer the purpose exceedingly well, owing to the fact that their leaves drop off gradually when the weather becomes milder in spring, and when the trees require less protection and more light and air. The principal part requiring protection is the main stem, which is more tender than the young wood.

In forcing, the fig requires more heat than the vine to bring it into leaf. It may be subjected to a temperature of 50° at night, and from 60° to 65 ° C in the day, and this should afterwards be increased to 60° and 65° by night, and 70° to 75° by day, or even higher by sun heat, giving plenty of air at the same time. In this temperature the evaporation from the leaves is very great, and this must be replaced and the wants of the swelling fruit supplied by daily watering, by syringing the foliage, and by moistening the floor, this atmospheric moisture being also necessary to keep down the red spider. When the crop begins to ripen, a moderately dry atmosphere should be maintained, with abundant ventilation when the weather permits.

The fig tree is easily cultivated in pots, and by introducing the plants into heat in succession the fruiting season may be considerably extended. The plants should be potted in turfy loam mixed with charcoal and old mortar rubbish, and in summer top-dressings of rotten manure, with manure water two or three times a week, will be beneficial. While the fruit is swelling, the pots should be plunged in a bed of fermenting leaves.

The following are a few of the best figs; those marked F, are good forcing sorts, and those marked W. suitable for walls:—

Agen: brownish-green, turbinate.

Brown Ischia, F.: chestnut-coloured, roundish-turbinate.

Brown Turkey (Lee’s Perpetual), F., W.: purplish-brown, turbinate.

Brunswick, W.: brownish-green, pyriform.

Col di Signora Bianca, F.: greenish-yellow, pyriform.

Col di Signora Nero: dark chocolate, pyriform.

Early Violet, F.: brownish-purple, roundish.

Grizzly Bourjassotte: chocolate, round.

Grosse Monstreuse de Lipari: pale chestnut, turbinate.

Negro Largo, F.: black, long pyriform.

White Ischia, F.: greenish-yellow, roundish-obovate.

White Marseilles, F., W.: pale green, roundish-obovate.

The sycamore fig, *Ficus Sycomorus*, is a tree of large size, with heart-shaped leaves, which, from their fancied resemblance to those of the mulberry, gave origin to the name Συκόμορος. From the deep shade cast by its spreading branches, it is a favourite tree in Egypt and Syria, being often planted along roads and near houses. It bears a sweet edible fruit, somewhat like that of the common fig, but produced in racemes on the older boughs. The apex of the fruit is sometimes removed, or an incision made in it, to induce earlier ripening. The ancients, after soaking it in water, preserved it like the common fig. The porous wood is only fit for fuel.

FIGURE 2.—India-rubber Tree, *Ficus elastica*, showing spreading woody roots.

The sacred fig, peepul, or bo, *Ficus religiosa*, a large tree with heart-shaped, long-pointed leaves on slender footstalks, is much grown in southern Asia. The leaves are used for tanning, and afford lac, and a gum resembling caoutchouc is obtained from the juice; but in India it is chiefly planted with a religious object, being regarded as sacred by both Brahmans and Buddhists. The former believe that the last avatar of Vishnu took place beneath its shade. A gigantic bo, described by Sir J. Emerson Tennent as growing near Anarajapoora, in Ceylon, is, if tradition may be trusted, one of the oldest trees in the world. It is said to have been a branch of the tree under which Gautama Buddha became endued with his divine powers, and has always been held in the greatest veneration. The figs, however, hold as important a place in the religious fables of the East as the ash in the myths of Scandinavia.

Ficus elastica, the India-rubber tree (figure 2), the large, oblong, glossy leaves, and pink buds of which are so familiar in our greenhouses, furnishes most of the caoutchouc obtained from the East Indies. It grows to a large size, and is remarkable for the snake-like roots that extend in contorted masses around the base of the trunk. The small fruit is unfit for food.

Ficus bengalensis, or the Banyan, wild in parts of northern India, but generally planted throughout the country, has a woody stem, branching to a height of 70 to 100 ft. and of vast extent with heart-shaped entire leaves terminating in acute points. Every branch from the main body throws out its own roots, at first in small tender fibres, several yards from the ground; but these continually grow thicker until they reach the surface, when they strike in, increase to large trunks, and become parent trees, shooting out new branches from the top, which again in time suspend their roots, and these, swelling into trunks, produce other branches, the growth continuing as long as the earth contributes her sustenance. On the bank’s of the Nerbudda stood a celebrated tree of this kind, which is supposed to be that described by Nearchus, the admiral of Alexander the Great. This tree once covered an area so immense, that it was known to shelter no fewer than 7000 men, and though much reduced in size by the destructive power of the floods, the remainder was described by James Forbes (1749-1819), in his

Oriental Memoirs (1813-1815) as nearly 2000 ft. in circumference, while the trunks large and small exceeded 3000 in number. The tree usually grows from seeds dropped by birds on other trees. The leaf-axil of a palm forms a frequent receptacle for their growth, the palm becoming ultimately strangled by the growth of the fig, which by this time has developed numerous daughter stems which continue to expand and cover ultimately a large area. The famous tree in the Royal Botanic Gardens, Calcutta, began its growth at the end of the 18th century on a sacred date-palm. In 1907 it had nearly 250 aerial roots, the parent trunk was 42 ft. in girth, and its leafy crown had a circumference of 857 ft.; and it was still growing vigorously. Both this tree and *F. religiosa* cause destruction to buildings, especially in Bengal, from seeds dropped by birds germinating on the walls. The tree yields an inferior rubber, and a coarse rope is prepared from the bark and from the aerial roots.

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1 Of these the case of the Barren Fig-tree (Mark. xi. 12-14, 20-21: compare Matt. xxi. 18-20), which Jesus cursed and which then withered away, has been much discussed among theologians. The difficulty is in Mark xi. 13: "And seeing a fig-tree afar off having leaves, he came, if haply he might find anything thereon; and when he came to it he found nothing but leaves, for the time of figs was not yet." These last words obviously raise the question whether the expectation of Jesus of finding figs, and his cursing of the tree on finding none, were not unreasonable. Many ingenious solutions have been propounded, by suggested emendations of the text and otherwise, for which consult M'Clintock and Strong's *Cyclopaedia of Biblical Literature* (*sub* "Fig") and the *Encyclopaedia Biblica* ("Fig-tree"); the former demurs to the unreasonableness, and contends that the appearance of the leaves at this season (March) indicated a pretentious precocity in this particular fig-tree, so that Jesus was entitled to expect that it would also have fruit, even though the season had not arrived; the *Ency. Biblica*, on the other hand, supposes that some "early Christian," confounding parable with history, has misunderstood the parable in Luke xiii. 6-9, and, forgetting that the season was not one for figs, has transformed it here into the narrative of an act of Jesus. The probability seems to be that the words "for the time of figs was not yet" are an unintelligent gloss by an early reader, which has made its way into the text. For authorities see the works mentioned above.

2 From Lat. *caprificus*, a wild fig; O. Eng. *caprifig*.

FIGARO, a famous dramatic character first introduced on the stage by Beaumarchais in the *Barbier de Séville*, the *Mariage de Figaro*, and the *Folle Journée*. The name is said to be an old Spanish and Italian word for a wigmaker, connected with the verb *cigarrar*, to roll in paper. Many of the traits of the character are to be found in earlier comic types of the Roman and Italian stage, but as a whole the conception was marked by great originality; and Figaro soon, seized the popular imagination, and became the recognized representative of daring, clever and nonchalant roguery and intrigue. Almost immediately after its appearance, Mozart chose the *Marriage of Figaro* as the subject of an opera, and the *Barber of Seville* was treated first by Paisiello, and afterwards in 1816 by Rossini. In 1826 the name of the witty rogue was taken by a journal which continued till 1833 to be one of the principal Parisian periodicals, numbering among its contributors such men as Jules Janin, Paul Lacroix, Léon Gozlan, Alphonse Karr, Dr Veron, Jules Sandeau and George Sand. Various abortive attempts were made to restore the *Figaro* during the next twenty years; and in 1854 the efforts of M. de Villemessant were crowned with success (see NEWSPAPERS: *France*).

See Marc Monnier, *Les Aieux de Figaro* (1868); H. de Villemessant, *Mémoires d'un journaliste* (1867).

FIGEAC, a town of south-western France, capital of an arrondissement in the department of Lot, 47 m. E.N.E. of Cahors on the Orléans railway. Pop. (1906) 4330. It is enclosed by an amphitheatre of wooded and vine-clad hills, on the right bank of the Célé, which is here crossed by an old bridge. It is ill-built and the streets are narrow and dirty; on the outskirts shady boulevards have taken the place of the ramparts by which it was surrounded. The town is very rich in old houses of the 13th and 14th centuries; among them may be mentioned the Hôtel de Balène, of the 14th century, used as a prison. Another house, dating from the 15th century, was the birthplace of the Egyptologist J.F. Champollion, in memory of whom the town has erected an obelisk. The principal church is that of St Sauveur, which once belonged to the abbey of Figeac. It was built at the beginning of the 12th century, but restored later; the façade in particular is modern. Notre-Dame du Puy, in the highest part of the town, belongs to the 12th and 13th centuries. It has no transept and its aisles extend completely round the interior. The altar-screen is a fine example of carved woodwork of the end of the 17th century. Of the four obelisks which used to mark the limits of the authority of the abbots of Figeac, those to the south and the west of the town remain. Figeac is the seat of a subprefect and has a tribunal of first instance, and a communal college. Brewing, tanning, printing, cloth-weaving and the manufacture of agricultural implements are among the industries. Trade is in cattle, leather, wool, plums, walnuts and grain, and there are zinc mines in the neighbourhood.

Figeac grew up round an abbey founded by Pippin the Short in the 8th century, and throughout the middle ages it was the property of the monks. At the end of the 16th century the lordship was acquired by King Henry IV.'s minister, the duke of Sully, who sold it to Louis XIII. in 1622.

FIGUEIRA DA FOZ, or FIGUEIRA, a seaport of central Portugal, in the district of Coimbra, formerly included in the province of Beira; on the north bank of the river Mondego, at its mouth, and at the terminus of the Lisbon-Figueira and Guarda-Figueira railways. Pop. (1900) 6221. Figueira da Foz is an important fishing-station, and one of the headquarters of the coasting trade in grain, fruit, wine, olive oil, cork and coal; but owing to the bar at the mouth of the Mondego large ships cannot enter. Glass is manufactured, and the city attracts many visitors by its excellent climate and sea-bathing. A residential suburb, the Bairro Novo, exists chiefly for their accommodation, to the north-west of the old town. Figueira is connected by a tramway running 4 m. N. W. with Buarcos (pop. 5033) and with the coal-mines of Cape Mondego. Lavos (pop. 7939), on the south bank of the Mondego, was the principal landing-place of the British troops which came, in 1808, to take part in the Peninsular War. Figueira da Foz received the title and privileges of city by a decree dated the 20th of September 1882.

FIGUERAS, a town of north-eastern Spain, in the province of Gerona, 14 m. S. of the French frontier, on the Barcelona-Perpignan railway. Pop. (1900) 10,714. Figueras is built at the foot of the Pyrenees, and on the northern edge of El Ampurdan, a fertile and well-irrigated plain, which produces wine, olives and rice, and derives its name from the seaport of Ampurias, the ancient Emporiae. The castle of San Fernando, 1 m. N.W., is an irregular pentagonal structure, built by order of Ferdinand VI. (1746-1759), on the site of a Capuchin convent. Owing to its situation, and the rocky nature of the ground over which a besieger must advance, it is still serviceable as the key to the frontier. It affords accommodation for 16,000 men and is well provided with bomb-proof cover. In 1794 Figueras was surrendered to the French, but it was regained in 1795. During the Peninsular War it was taken by the French in 1808, recaptured by the Spaniards in 1811, and retaken by the French in the same year. In 1823, after a long defence, it was once more captured by the French. An annual pilgrimage from Figueras to the chapel of Nuestra Señora de Requesens, 15 m. N., commemorates the deliverance of the town from a severe epidemic of fever in 1612.

FIGULUS, PUBLIUS NIGIDIUS (*c.* 98-45 B.C.), Roman savant, next to Varro the most learned Roman of the age. He was a friend of Cicero, to whom he gave his support at the time of the Catilinarian conspiracy (Plutarch, *Cicero*, 20; Cicero, *Pro Sulla*, xiv. 42). In 58 he was praetor, sided with Pompey in the Civil War, and after his defeat was banished by Caesar, and died in exile. According to Cicero (*Timaeus*, 1), Figulus endeavoured with some success to revive the doctrines of Pythagoreanism. With this was included mathematics, astronomy and astrology, and even the magic arts. According to Suetonius (*Augustus*, 94) he foretold the greatness of the future emperor on the day of his birth, and Apuleius (*Apologia*, 42) records that, by the employment of "magic boys" (*magici pueri*), he helped to find a sum of money that had been lost. Jerome (the authority for the date of his death) calls him *Pythagoricus et magus*. The abstruse nature of his studies, the mystical character of his writings, and the general indifference of the Romans to such subjects, caused his works to be soon forgotten. Amongst his scientific, theological and grammatical works mention may be made of *De diis*, containing an examination of various cults and ceremonials; treatises on divination and the interpretation of dreams; on the sphere, the winds and animals. His *Commentarii grammatici* in at least 29 books was an ill-arranged collection of linguistic, grammatical and antiquarian notes. In these he expressed the opinion that the meaning of words was natural, not fixed by man. He paid especial attention to orthography, and sought to differentiate the meanings of cases of like ending by distinctive marks (the apex to indicate a long vowel is attributed to him). In etymology he endeavoured to find a Roman explanation of words where possible (according to him *frater* was = *fere alter*). Quintilian (*Instit. orat.* xi, 3. 143) speaks of a rhetorical treatise *De gestu* by him.

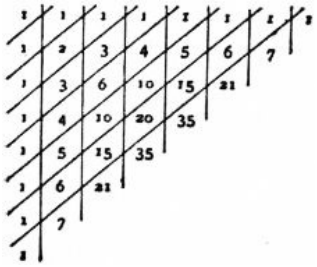
See Cicero, *Ad Fam.* iv. 13; scholiast on Lucan i. 639; several references in Aulus Gellius; Teuffel, *Hist. of Roman Literature*, 170; M. Hertz, De N.F. *studiis atque operibus* (1845); *Quaestiones Nigidianae* (1890), and edition of the fragments (1889) by A. Swoboda.

FIGURATE NUMBERS, in mathematics. If we take the sum of n terms of the series 1 + 1 + 1 + ..., *i.e.* n, as the nth term of a new series, we obtain the series 1 + 2 + 3 + ..., the sum of n terms of which is ½n · n + 1. Taking this sum as the nth term, we obtain the series 1 + 3 + 6 + 10 + ..., which has for the sum of n terms n (n + 1) (n + 2) / 3![1] This sum is taken as the nth term of the next series, and proceeding in this way we obtain series having the following nth terms:—

$$1,\ n,\ n(n+1)/2!,\ n(n+1)(n+2)/3!,\ \ldots n(n+1)\ \ldots(n+r-2)/(r-1)!.$$

The numbers obtained by giving n any value in these expressions are of the first, second, third, ... or rth order of figurate numbers.

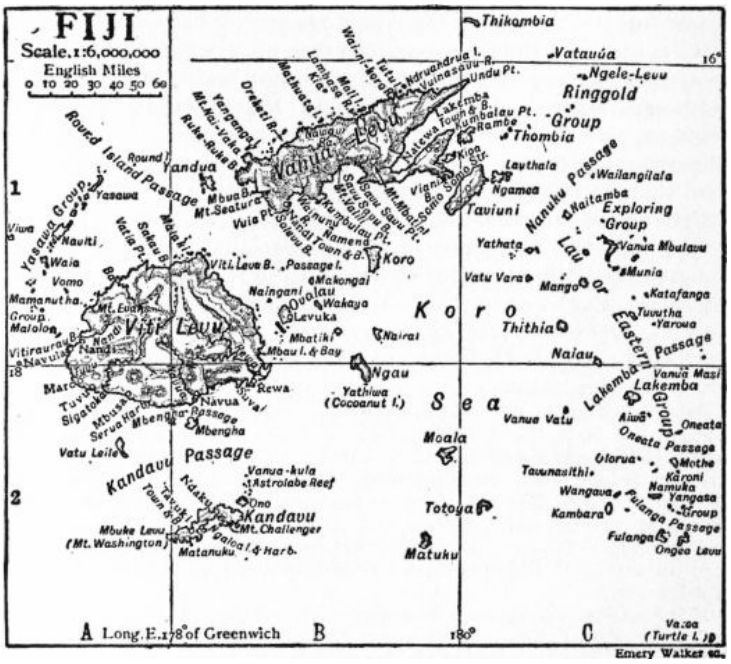
Pascal treated these numbers in his *Traité du triangle arithmetique* (1665), using them to develop a theory of combinations and to solve problems in probability. His table is here shown in its simplest form. It is to be noticed that each number is the sum of the numbers immediately above and to the left of it; and that the numbers along a line, termed a *base*, which cuts off an equal number of units along the top row and column are the coefficients in the binomial expansion of $(1 + x)^{r-1}$, where r represents the number of units cut off.



1 The notation n! denotes the product 1 · 2 · 3 · ... n, and is termed "factorial n."

FIJI (*Viti*), a British colony consisting of an archipelago in the Pacific Ocean, the most important in Polynesia, between 15° and 20° S., and on and about the meridian of 180°. The islands number about 250, of which some 80 are inhabited. The total land area is 7435 sq. m. (thus roughly equalling that of Wales), and the population is about 121,000. The principal island is Viti Levu, 98 m. in length (E. to W.) and 67 in extreme breadth, with an area of 4112 sq. m. Forty miles N.E. lies Vanua Levu, measuring 117 m. by 30, with an area of 2432 sq. m. Close off the south-eastern shore of Vanua Levu is Taviuni, 26 m. in length by 10 in breadth; Kandavu or Kadavu, 36 m. long and very narrow, is 41 m. S. of Viti Levu, and the three other main islands, lying east of Viti Levu in the Koro Sea, are Koro, Ngau or Gau, and Ovalau. South-east from Vanua Levu a loop of islets extends nearly to 20° S., enclosing the Koro Sea. North-west of Viti Levu lies another chain, the Yasawa or western group; and, finally, the colony includes the island of Rotumah (*q.v.*), 300 m. N.W. by N. of Vanua Levu.

The formation of the larger islands is volcanic, their surface rugged, their vegetation luxuriant, and their appearance very beautiful; their hills rise often above 3000, and, in the case of a few summits, above 4000 ft., and they contrast strongly with the low coral formation of the smaller members of the group. There is not much level country, except in the coral islets, and certain rich tracts along the coasts of the two large islands, especially near the mouths of the rivers. The large islands have a considerable extent of undulating country, dry and open on their lee sides. Streams and rivers are abundant, the latter very large in proportion to the size of the islands, affording a waterway to the rich districts along their banks. These and the extensive mud flats and deltas at their mouths are often flooded, by which their fertility is increased, though at a heavy cost to the cultivator. The Rewa, debouching through a wide delta at the south-east of Viti Levu, is navigable for small vessels for 40 m. There are also in this island the Navua and Sigatoka (flowing S.), the Nandi (W.), and the Ba (N.W.). The Dreketi, flowing W., is the chief stream of Vanua Levu. It breaches the mountains in a fine valley; for this island consists practically of one long range, whereas the main valleys and ranges separating them in Viti Levu radiate for the most part from a common centre. With few exceptions the islands are surrounded by barriers of coral, broken by openings opposite the mouths of streams. Viti Levu is the most important island not only from its size, but from its fertility, variety of surface, and population, which is over one-third of that of the whole group. The town of Suva lies on an excellent harbour at the south-east of the island, and has been the capital of the colony since 1882, containing the government buildings and other offices. Vanua Levu is less fertile than Viti Levu; it has good anchorages along its entire southern coast. Of the other islands, Taviuni, remarkable for a lake (presumably a crater-lake) at the top of its lofty central ridge, is fertile, but exceptionally devoid of harbours; whereas the well-timbered island of Kandavu has an excellent one. On the eastern shore of Ovalau, an island which contains in a small area a remarkable series of gorge-like valleys between commanding hills, is the town of Levuka, the capital until 1882. It stands partly upon the narrow shore, and partly climbs the rocky slope behind. The chief islands on the west of the chain enclosing the Koro Sea are Koro, Ngau, Moala and Totoya, all productive, affording good anchorage, elevated and picturesque. The eastern islands of the chain are smaller and more numerous, Vanua Batevu (one of the Exploring Group) being a centre of trade. Among others, Mago is remarkable for a subterranean outlet of the waters of the fertile valley in its midst.



The land is of recent geological formation, the principal ranges being composed of igneous rock, and showing traces of much volcanic disturbance. There are boiling springs in Vanua Levu and Ngau, and slight shocks of earthquake are occasionally felt. The tops of many of the mountains, from Kandavu in the S.W., through Nairai and Koro, to the Ringgold group in the N.E., have distinct craters, but their activity has long ceased. The various decomposing volcanic rocks—tufas, conglomerates and basalts—mingled with decayed vegetable matter, and abundantly watered, form a very fertile soil. Most of the high peaks on the larger islands are basaltic, and the rocks generally are igneous, with occasional upheaved coral found sometimes over 1000 ft. above the sea; but certain sedimentary rocks observed on Viti Levu seem to imply a nucleus of land of considerable age. Volcanic activity in the neighbourhood is further shown by the quantities of pumice-stone drifted on to the south coasts of Kandavu and Viti Levu; malachite, antimony and graphite, gold in small quantities, and specular iron-sand occur.

Climate.—The colony is beyond the limits of the perpetual S.E. trades, while not within the range of the N.W. monsoons. From April to November the winds are steady between S.E. and E.N.E., and the climate is cool and dry, after which the weather becomes uncertain and the winds often northerly, this being the wet warm season. In February and March heavy gales are frequent, and hurricanes sometimes occur, causing scarcity by destroying the crops. The rainfall is much greater on the windward than on the lee sides of the islands (about 110 in. at Suva), but the mean temperature is much the same, viz., about 80° F. In the hills the temperature sometimes falls below 50°. The climate, especially from November to April, is somewhat enervating to the Englishman, but not unhealthy. Fevers are hardly known. Dysentery, which is common, and the most serious disease in the islands, is said to have been unknown before the advent of Europeans.

Fauna.—Besides the dog and the pig, which (with the domestic fowl) must have been introduced in early times, the only land mammals are certain species of rats and bats. Insects are numerous, but the species few. Bees have been introduced. The avifauna is not remarkable. Birds of prey are few; the parrot and pigeon tribes are better represented. Fishes, of an Indo-Malay type, are numerous and varied; Mollusca, especially marine, and Crustaceae are also very numerous. These three form an important element in the food supply.

Flora.—The vegetation is mostly of a tropical Indo-Malayan character—thick jungle with great trees covered with creepers and epiphytes. The lee sides of the larger islands, however, have grassy plains suitable for grazing, with scattered trees, chiefly *Pandanus*, and ferns. The flora has also some Australian and New Zealand affinities (resembling in this respect the New Caledonia and New Hebrides groups), shown especially in these western districts by the *Pandanus*, by certain acacias and others. At an elevation of about 2000 ft. the vegetation assumes a more mountainous type. Among the many valuable timber trees are the vesi (*Afzelia bijuga*); the dilo (*Calophyllum Inophyllum*), the oil from its seeds being much used in the islands, as in India, in the treatment of rheumatism; the dakua (*Dammara Vitiensis*), allied to the New Zealand kauri, and others. The dakua or Fiji pine, however, has become scarce. Most of the fruit trees are also valuable as timber. The native cloth (*masi*) is beaten out from the bark of the paper mulberry cultivated for the purpose. Of the palms the cocoanut is by far the most important. The yasi or sandal-wood was formerly a valuable product, but is now rarely found. There are various useful drugs, spices and perfumes; and many plants are cultivated for their beauty, to which the natives are keenly alive. Among the plants used as pot-herbs are several ferns, and two or three Solanums, one of which, *S. anthropophagorum*, was one of certain plants always cooked with human flesh, which was said to be otherwise difficult of digestion. The use of the kava root, here called yanggona, from which the well-known national beverage is made, is said to have been introduced from Tonga. Of fruit trees, besides the cocoanut, there may be mentioned the many varieties of the bread-

fruit, of bananas and plantains, of sugar-cane and of lemon; the wi (*Spondias dulcis*), the kavika (*Eugenia malaccensis*), the ivi or Tahitian chestnut (*Inocarpus edulis*), the pine-apple and others introduced in modern times. Edible roots are especially abundant. The chief staple of life is the yam, the names of several months in the calendar having reference to its cultivation and ripening. The natives use no grain or pulse, but make a kind of bread (*mandrai*) from this, the taro, and other roots, as well as from the banana (which is the best), the bread-fruit, the ivi, the kavika, the arrowroot, and in times of scarcity the mangrove. This bread is made by burying the materials for months, till the mass is thoroughly fermented and homogeneous, when it is dug up and cooked by baking or steaming. This simple process, applicable to such a variety of substances, is a valuable security against famine.

People.—The Fijians are a people of Melanesian (Papuan) stock much crossed with Polynesians (Tongans and Samoans). They occupy the extreme east limits of Papuan territory and are usually classified as Melanesians; but they are physically superior to the pure examples of that race, combining their dark colour, harsh hirsute skin, crisp hair, which is bleached with lime and worn in an elaborately trained mop, and muscular limbs, with the handsome features and well proportioned bodies of the Polynesians. They are tall and well built. The features are strongly marked, but not unpleasant, the eyes deep set, the beard thick and bushy. The chiefs are fairer, much better-looking, and of a less negroid type of face than the people. This negroid type is especially marked on the west coasts, and still more in the interior of Viti Levu. The Fijians have other characteristics of both Pacific races, *e.g.* the quick intellect of the fairer, and the savagery and suspicion of the dark. They wear a minimum of covering, but, unlike the Melanesians, are strictly decent, while they are more moral than the Polynesians. They are cleanly and particular about their personal appearance, though, unlike other Melanesians, they care little for ornament, and only the women are tattooed. A partial circumcision is practised, which is exceptional with the Melanesians, nor have these usually an elaborate political and social system like that of Fiji. The status of the women is also somewhat better, those of the upper class having considerable freedom and influence. If less readily amenable to civilizing influences than their neighbours to the eastward, the Fijians show greater force of character and ingenuity. Possessing the arts of both races they practise them with greater skill than either. They understand the principle of division of labour and production, and thus of commerce. They are skilful cultivators and good boat-builders, the carpenters being an hereditary caste; there are also tribes of fishermen and sailors; their mats, baskets, nets, cordage and other fabrics are substantial and tasteful; their pottery, made, like many of the above articles, by women, is far superior to any other in the South Seas; but many native manufactures have been supplanted by European goods.

The Fijians were formerly notorious for cannibalism, which may have had its origin in religion, but long before the first contact with Europeans had degenerated into gluttony. The Fijian's chief table luxury was human flesh, euphemistically called by him "long pig," and to satisfy his appetite he would sacrifice even friends and relatives. The Fijians combined with this greediness a savage and merciless nature. Human sacrifices were of daily occurrence. On a chief's death wives and slaves were buried alive with him. When building a chief's house a slave was buried alive in the hole dug for each foundation post. At the launching of a war-canoe living men were tied hand and foot between two plantain stems making a human ladder over which the vessel was pushed down into the water. The people acquiesced in these brutal customs, and willingly met their deaths. Affection and a firm belief in a future state, in which the exact condition of the dying is continued, are the Fijians' own explanations of the custom, once universal, of killing sick or aged relatives. Yet in spite of this savagery the Fijians have always been remarkable for their hospitality, open-handedness and courtesy. They are a sensitive, proud, if vindictive, and boastful people, with good conversational and reasoning powers, much sense of humour, tact and perception of character. Their code of social etiquette is minute and elaborate, and the graduations of rank well marked. These are (1) chiefs, greater and lesser; (2) priests; (3) *Mata ni Vanua* (lit., eyes of the land), employés, messengers or counsellors; (4) distinguished warriors of low birth; (5) common people; (6) slaves.

The family is the unit of political society. The families are grouped in townships or otherwise (*qali*) under the lesser chiefs, who again owe allegiance to the supreme chief of the *matanitu* or tribe. The chiefs are a real aristocracy, excelling the people in physique, skill, intellect and acquirements of all sorts; and the reverence felt for them, now gradually diminishing, was very great, and had something of a religious character. All that a man had belonged to his chief. On the other hand, the chief's property practically belonged to his people, and they were as ready to give as to take. In a time of famine, a chief would declare the contents of the plantations to be common property. A system of feudal service-tenures (*lala*) is the institution on which their social and political fabric mainly depended. It allowed the chief to call for the labour of any district, and to employ it in planting, house or canoe-building, supplying food on the occasion of another chief's visit, &c. This power was often used with much discernment; thus an unpopular chief would redeem his character by calling for some customary service and rewarding it liberally, or a district would be called on to supply labour or produce as a punishment. The privilege might, of course, be abused by needy or unscrupulous chiefs, though they generally deferred somewhat to public opinion; it has now, with similar customary exactions of cloth, mats, salt, pottery, &c. been reduced within definite limits. An allied custom, *solevu*, enabled a district in want of any particular article to call on its neighbours to supply it, giving labour or something else in exchange. Although, then, the chief is lord of the soil, the inferior chiefs and individual families have equally distinct rights in it, subject to payment of certain dues; and the idea of permanent alienation of land by purchase was never perhaps clearly realized. Another curious custom was that of *vasu* (lit. nephew). The son of a chief by a woman of rank had almost unlimited rights over the property of his mother's family, or of her people. In time of war the chief claimed

absolute control over life and property. Warfare was carried on with many courteous formalities, and considerable skill was shown in the fortifications. There were well-defined degrees of dependence among the different tribes or districts: the first of these, *bati*, is an alliance between two nearly equal tribes, but implying a sort of inferiority on one side, acknowledged by military service; the second, *qali*, implies greater subjection, and payment of tribute. Thus A, being bati to B, might hold C in qali, in which case C was also reckoned subject to B, or might be protected by B for political purposes.

The former religion of the Fijians was a sort of ancestor-worship, had much in common with the creeds of Polynesia, and included a belief in a future existence. There were two classes of gods—the first immortal, of whom Ndengei is the greatest, said to exist eternally in the form of a serpent, but troubling himself little with human or other affairs, and the others had usually only a local recognition. The second rank (who, though far above mortals, are subject to their passions, and even to death) comprised the spirits of chiefs, heroes and other ancestors. The gods entered and spoke through their priests, who thus pronounced on the issue of every enterprise, but they were not represented by idols; certain groves and trees were held sacred, and stones which suggest phallic associations. The priesthood usually was hereditary, and their influence great, and they had generally a good understanding with the chief. The institution of Taboo existed in full force. The *mburé* or temple was also the council chamber and place of assemblage for various purposes.

The weapons of the Fijians are spears, slings, throwing clubs and bows and arrows. Their houses, of which the framework is timber and the rest lattice and thatch, are ingeniously constructed, with great taste in ornamentation, and are well furnished with mats, mosquito-curtains, baskets, fans, nets and cooking and other utensils. Their canoes, sometimes more than 100 ft. long, are well built. Ever excellent agriculturists, their implements were formerly digging sticks and hoes of turtlebone or flat oyster-shells. In irrigation they showed skill, draining their fields with built watercourses and bamboo pipes. Tobacco, maize, sweet potatoes, yams, kava, taro, beans and pumpkins, are the principal crops.

Fijians are fond of amusements. They have various games, and dancing, story-telling and songs are especially popular. Their poetry has well-defined metres, and a sort of rhyme. Their music is rude, and is said to be always in the major key. They are clever cooks, and for their feasts preparations are sometimes made months in advance, and enormous waste results from them. Mourning is expressed by fasting, by shaving the head and face, or by cutting off the little finger. This last is sometimes done at the death of a rich man in the hope that his family will reward the compliment; sometimes it is done vicariously, as when one chief cuts off the little finger of his dependent in regret or in atonement for the death of another.

A steady, if not a very rapid, decrease in the native population set in after 1875. A terrible epidemic of measles in that year swept away 40,000, or about one-third of the Fijians. Subsequent epidemics have not been attended by anything like this mortality, but there has, however, been a steady decrease, principally among young children, owing to whooping-cough, tuberculosis and croup. Every Fijian child seems to contract yaws at some time in its life, a mistaken notion existing on the part of the parents that it strengthens the child’s physique. Elephantiasis, influenza; rheumatism, and a skin disease, *thoko*, also occur. One per cent of the natives are lepers. A commission appointed in 1891 to inquire into the causes of the native decrease collected much interesting anthropological information regarding native customs, and provincial inspectors and medical officers were specially appointed to compel the natives to carry out the sanitary reforms recommended by the commission. A considerable sum was also spent in laying on good water to the native villages. The Fijians show no disposition to intermarry with the Indian coolies. The European half-castes are not prolific *inter se*, and they are subject to a scrofulous taint. The most robust cross in the islands is the offspring of the African negro and the Fijian. Miscegenation with the Micronesians, the only race in the Pacific which is rapidly increasing, is regarded as the most hopeful manner of preserving the native Fijian population. There is a large Indian immigrant population.

Trade, Administration, &c.—The principal industries are the cultivation of sugar and fruits and the manufacture of sugar and copra, and these three are the chief articles of export trade, which is carried on almost entirely with Australia and New Zealand. The fruits chiefly exported are bananas and pineapples. There are also exported maize, vanilla and a variety of fruits in small quantities; pearl and other shells and bêche-de-mer. There is a manufacture of soap from coconut oil; a fair quantity of tobacco is grown, and among other industries may be included boat-building and saw-milling. Regular steamship communications are maintained with Sydney, Auckland and Vancouver. Good bridle-tracks exist in all the larger islands, and there are some macadamized roads, principally in Viti Levu. There is an overland mail service by native runners. The export trade is valued at nearly £600,000 annually, and the imports at £500,000. The annual revenue of the colony is about £140,000 and the expenditure about £125,000. The currency and weights and measures are British. Besides the customs and stamp duties, some £18,000 of the annual revenue is raised from native taxation. The seventeen provinces of the colony (at the head of which is either a European or a *roko tui* or native official) are assessed annually by the legislative council for a fixed tax in kind. The tax on each province is distributed among districts under officials called *bulis*, and further among villages within these districts. Any surplus of produce over the assessment is sold to contractors, and the money received is returned to the natives.

Under a reconstruction made in 1904 there is an executive council consisting of the governor and four official members. The legislative council consists of the governor, ten official, six elected and two native members. The native chiefs and provincial representatives meet annually under the presidency

of the governor, and their recommendations are submitted for sanction to the legislative council. Suva and Levuka have each a municipal government, and there are native district and village councils. There is an armed native constabulary; and a volunteer and cadet corps in Suva and Levuka.

The majority of the natives are Wesleyan Methodists. The Roman Catholic missionaries have about 3000 adherents; the Church of England is confined to the Europeans and *kanakas* in the towns; the Indian coolies are divided between Mahommedans and Hindus. There are public schools for Europeans and half-castes in the towns, but there is no provision for the education of the children of settlers in the out-districts. By an ordinance of 1890 provision was made for the constitution of school boards, and the principle was first applied in Suva and Levuka. The missions have established schools in every native village, and most natives are able to read and write their own language. The government has established a native technical school for the teaching of useful handicrafts. The natives show themselves very slow in adopting European habits in food, clothing and house-building.

History.—A few islands in the north-east of the group were first seen by Abel Tasman in 1643. The southernmost of the group, Turtle Island, was discovered by Cook in 1773. Lieutenant Bligh, approaching them in the launch of the “Bounty,” 1789, had a hostile encounter with natives. In 1827 Dumont d’Urville in the “Astrolabe” surveyed them much more accurately, but the first thorough survey was that of the United States exploring expedition in 1840. Up to this time, owing to the evil reputation of the islanders, European intercourse was very limited. The labours of the Wesleyan missionaries, however, must always have a prominent place in any history of Fiji. They came from Tonga in 1835 and naturally settled first in the eastern islands, where the Tongan element, already familiar to them, preponderated. They perhaps identified themselves too closely with their Tongan friends, whose dissolute, lawless, tyrannical conduct led to much mischief; but it should not be forgotten that their position was difficult, and it was mainly through their efforts that many terrible heathen practices were stamped out.

About 1804 some escaped convicts from Australia and runaway sailors established themselves around the east part of Viti Levu, and by lending their services to the neighbouring chiefs probably led to their preponderance over the rest of the group. Na Ulivau, chief of the small island of Mbau, established before his death in 1829 a sort of supremacy, which was extended by his brother Tanoa, and by Tanoa’s son Thakombau, a ruler of considerable capacity. In his time, however, difficulties thickened. The Tongans, who had long frequented Fiji (especially for canoe-building, their own islands being deficient in timber), now came in larger numbers, led by an able and ambitious chief, Maafu, who, by adroitly taking part in Fijian quarrels, made himself chief in the Windward group, threatening Thakombau’s supremacy. He was harassed, too, by an arbitrary demand for £9000 from the American government, for alleged injuries to their consul. Several chiefs who disputed his authority were crushed by the aid of King George of Tonga, who (1855) had opportunely arrived on a visit; but he afterwards, taking some offence, demanded £12,000 for his services. At last Thakombau, disappointed in the hope that his acceptance of Christianity (1854) would improve his position, offered the sovereignty to Great Britain (1859) with the fee simple of 100,000 acres, on condition of her paying the American claims. Colonel Smythe, R.A., was sent out to report on the question, and decided against annexation, but advised that the British consul should be invested with full magisterial powers over his countrymen, a step which would have averted much subsequent difficulty.

Meanwhile Dr B. Seemann’s favourable report on the capabilities of the islands, followed by a time of depression in Australia and New Zealand, led to a rapid increase of settlers—from 200 in 1860 to 1800 in 1869. This produced fresh complications, and an increasing desire among the respectable settlers for a competent civil and criminal jurisdiction. Attempts were made at self-government, and the sovereignty was again offered, conditionally, to England, and to the United States. Finally, in 1871, a “constitutional government” was formed by certain Englishmen under King Thakombau; but this, after incurring heavy debt, and promoting the welfare of neither whites nor natives, came after three years to a deadlock, and the British government felt obliged, in the interest of all parties, to accept the unconditional cession now offered (1874). It had besides long been thought desirable to possess a station on the route between Australia and Panama; it was also felt that the Polynesian labour traffic, the abuses in which had caused much indignation, could only be effectually regulated from a point contiguous to the recruiting field, and the locality where that labour was extensively employed. To this end the governor of Fiji was also created “high commissioner for the western Pacific.” Rotumah (*q.v.*) was annexed in 1881.

At the time of the British annexation the islands were suffering from commercial depression, following a fall in the price of cotton after the American Civil War. Coffee, tea, cinchona and sugar were tried in turn, with limited success. The coffee was attacked by the leaf disease; the tea could not compete with that grown by the cheap labour of the East; the sugar machinery was too antiquated to withstand the fall in prices consequent on the European sugar bounties. In 1878 the first coolies were imported from India and the cultivation of sugar began to pass into the hands of large companies working with modern machinery. With the introduction of coolies the Fijians began to fall behind in the development of their country. Many of the coolies chose to remain in the colony after the termination of their indentures, and began to displace the European country traders. With a regular and plentiful supply of Indian coolies, the recruiting of *kanaka* labourers practically ceased. The settlement of European land claims, and the measures taken for the protection of native institutions, caused lively dissatisfaction among the colonists, who laid the blame of the commercial depression at the door of the government; but with returning prosperity this feeling began to disappear. In 1900 the government of New Zealand made overtures to absorb Fiji. The Aborigines Society protested to the

colonial office, and the imperial government refused to sanction the proposal.

See Smyth, *Ten Months in the Fiji Islands* (London, 1864); B. Seemann, *Flora Vitiensis* (London, 1865); and *Viti: Account of a Government Mission in the Vitian or Fijian Islands* (1860-1861); W.T. Pritchard, *Polynesian Reminiscences* (London, 1866); H. Forbes, *Two Years in Fiji* (London, 1875); Commodore Goodenough, *Journal* (London, 1876); H.N. Moseley, *Notes of a Naturalist in the "Challenger"* (London, 1879); Sir A.H. Gordon, *Story of a Little War* (Edinburgh, privately printed, 1879); J.W. Anderson, *Fiji and New Caledonia* (London, 1880); C.F. Gordon-Cumming, *At Home in Fiji* (Edinburgh, 1881); John Horne, *A Year in Fiji* (London, 1881); H.S. Cooper, *Our New Colony, Fiji* (London, 1882); S.E. Scholes, *Fiji and the Friendly Islands* (London, 1882); Princes Albert Victor and George of Wales, *Cruise of H. M. S. "Bacchante"* (London, 1886); A. Agassiz, *The Islands and Coral Reefs of Fiji* (Cambridge, Mass., U.S., 1899); H.B. Guppy, *Observations of a Naturalist in the Pacific* (1896-1899), vol. i.; *Vanua Levu, Fiji* (Phys. Geog. and Geology) (London, 1903); Lorimer Fison, *Tales from Old Fiji* (folk-lore, &c.) (London, 1904); B. Thomson, *The Fijians* (London, 1908).

FILANDER, the name by which the Aru Island wallaby (*Macropus brunii*) was first described. It occurs in a translation of C. de Bruyn's *Travels* (ii. 101) published in 1737.

FILANGIERI, CARLO (1784-1867), prince of Satriano, Neapolitan soldier and statesman, was the son of Gaetano Filangieri (1752-1788), a celebrated philosopher and jurist. At the age of fifteen he decided on a military career, and having obtained an introduction to Napoleon Bonaparte, then first consul, was admitted to the Military Academy at Paris. In 1803 he received a commission in an infantry regiment, and took part in the campaign of 1805 under General Davoust, first in the Low Countries, and later at Ulm, Maria Zell and Austerlitz, where he fought with distinction, was wounded several times and promoted. He returned to Naples as captain on Masséna's staff to fight the Bourbons and the Austrians in 1806, and subsequently went to Spain, where he followed Jerome Bonaparte in his retreat from Madrid. In consequence of a fatal duel he was sent back to Naples; there he served under Joachim Murat with the rank of general, and fought against the Anglo-Sicilian forces in Calabria and at Messina. On the fall of Napoleon he took part in Murat's campaign against Eugène Beauharnais, and later in that against Austria, and was severely wounded at the battle of the Panaro (1815). On the restoration of the Bourbon king Ferdinand IV. (I.), Filangieri retained his rank and command, but found the army utterly disorganized and impregnated with Carbonarism. In the disturbances of 1820 he adhered to the Constitutionalist party, and fought under General Pepe (*q.v.*) against the Austrians. On the reestablishment of the autocracy he was dismissed from the service, and retired to Calabria where he had inherited the princely title and estates of Satriano. In 1831 he was recalled by Ferdinand II. and entrusted with various military reforms. On the outbreak of the troubles of 1848 Filangieri advised the king to grant the constitution, which he did in February 1848, but when the Sicilians formally seceded from the Neapolitan kingdom Filangieri was given the command of an armed force with which to reduce the island to obedience. On the 3rd of September he landed near Messina, and after very severe fighting captured the city. He then advanced southwards, besieged and took Catania, where his troops committed many atrocities, and by May 1849 he had conquered the whole of Sicily, though not without much bloodshed. He remained in Sicily as governor until 1855, when he retired into private life, as he could not carry out the reforms he desired owing to the hostility of Giovanni Cassisi, the minister for Sicily. On the death of Ferdinand II. (22nd of May 1859) the new king Francis II. appointed Filangieri premier and minister of war. He promoted good relations with France, then fighting with Piedmont against the Austrians in Lombardy, and strongly urged on the king the necessity of an alliance with Piedmont and a constitution as the only means whereby the dynasty might be saved. These proposals being rejected, Filangieri resigned office. In May 1860, Francis at last promulgated the constitution, but it was too late, for Garibaldi was in Sicily and Naples was seething with rebellion. On the advice of Liborio Romano, the new prefect of police, Filangieri was ordered to leave Naples. He went to Marseilles with his wife and subsequently to Florence, where at the instance of General La Marmora he undertook to write an account of the Italian army. Although he adhered to the new government he refused to accept any dignity at its hands, and died at his villa of San Giorgio a Cremano near Naples on the 9th of October 1867.

Filangieri was a very distinguished soldier, and a man of great ability; although he changed sides several times he became really attached to the Bourbon dynasty, which he hoped to save by freeing it from its reactionary tendencies and infusing a new spirit into it. His conduct in Sicily was severe and harsh, but he was not without feelings of humanity, and he was an honest man and a good administrator.

His biography has been written by his daughter Teresa Filangieri Fieschi-Ravaschieri, *Il Generale Carlo Filangieri* (Milan, 1902), an interesting, although somewhat too laudatory volume based on the

general's own unpublished memoirs; for the Sicilian expedition see V. Finocchiaro, *La Rivoluzione siciliana del 1848-49* (Catania, 1906, with bibliography), in which Filangieri is bitterly attacked; see also under NAPLES; FERDINAND IV.; FRANCIS I.; FERDINAND II.; FRANCIS II.

(L. V.*)

FILANGIERI, GAETANO (1752-1788), Italian publicist, was born at Naples on the 18th of August 1752. His father, Caesar, prince of Arianiello, intended him for a military career, which he commenced at the early age of seven, but soon abandoned for the study of the law. At the bar his knowledge and eloquence early secured his success, while his defence of a royal decree reforming abuses in the administration of justice gained him the favour of the king, Charles, afterwards Charles III. of Spain, and led to several honourable appointments at court. The first two books of his great work, *La Scienza della legislazione*, appeared in 1780. The first book contained an exposition of the rules on which legislation in general ought to proceed, while the second was devoted to economic questions. These two books showed him an ardent reformer, and vehement in denouncing the abuses of his time. He insisted on unlimited free trade, and the abolition of the medieval institutions which impeded production and national well-being. Its success was great and immediate not only in Italy, but throughout Europe at large. In 1783 he married, resigned his appointments at court, and retiring to Cava, devoted himself steadily to the completion of his work. In the same year appeared the third book, relating entirely to the principles of criminal jurisprudence. The suggestion which he made in it as to the need for reform in the Roman Catholic church brought upon him the censure of the ecclesiastical authorities, and it was condemned by the congregation of the Index in 1784. In 1785 he published three additional volumes, making the fourth book of the projected work, and dealing with education and morals. In 1787 he was appointed a member of the supreme treasury council by Ferdinand IV., but his health, impaired by close study and over-work in his new office, compelled his withdrawal to the country at Vico Equense. He died somewhat suddenly on the 21st of July 1788, having just completed the first part of the fifth book of his *Scienza*. He left an outline of the remainder of the work, which was to have been completed in six books.

La Scienza della legislazione has gone through many editions, and has been translated into most of the languages of Europe. The best Italian edition is in 5 vols. 8vo. (1807). The Milan edition (1822) contains the *Opusculi scelti* and a life by Donato Tommasi. A French translation appeared in Paris in 7 vols. 8vo. (1786-1798); it was republished in 1822-1824, with the addition of the *Opuscles* and notes by Benjamin Constant. *The Science of Legislation* was translated into English by Sir R. Clayton (London, 1806).

FILARIASIS, the name of a disease due to the nematode *Filaria sanguinis hominis*. A milky appearance of the urine, due to the presence of a substance like chyle, which forms a clot, had been observed from time to time, especially in tropical and subtropical countries; and it was proved by Dr Wucherer of Bahia, and by Dr Timothy Lewis, that this peculiar condition is uniformly associated with the presence in the blood of minute eel-like worms, visible only under the microscope, being the embryo forms of a *Filaria* (see NEMATODA). Sometimes the discharge of lymph takes place at one or more points of the surface of the body, and there is in other cases a condition of naevoid elephantiasis of the scrotum, or lymph-scrotum. More or less of blood may occur along with the chylous fluid in the urine. Both the chyluria and the presence of filariae in the blood are curiously intermittent; it may happen that not a single filaria is to be seen during the daytime, while they swarm in the blood at night, and it has been ingeniously shown by Dr S. Mackenzie that they may be made to disappear if the patient sits up all night, reappearing while he sleeps through the day.

Sir P. Manson proved that mosquitoes imbibe the embryo filariae from the blood of man; and that many of these reach full development within the mosquito, acquiring their freedom when the latter resorts to water, where it dies after depositing its eggs. Mosquitoes would thus be the intermediate host of the filariae, and their introduction into the human body would be through the medium of water (see PARASITIC DISEASES).

FILDES, SIR LUKE (1844-), English painter, was born at Liverpool, and trained in the South Kensington and Royal Academy schools. At first a highly successful illustrator, he took rank later among the ablest English painters, with "The Casual Ward" (1874), "The Widower" (1876), "The Village Wedding" (1883), "An Al-fresco Toilette" (1889); and "The Doctor" (1891), now in the National

Gallery of British Art. He also painted a number of pictures of Venetian life and many notable portraits, among them the coronation portraits of King Edward VII. and Queen Alexandra. He was elected an associate of the Royal Academy in 1879, and academician in 1887; and was knighted in 1906.

See David Croal Thomson, *The Life and Work of Luke Fildes, R.A.* (1895).

FILE. 1. A bar of steel having sharp teeth on its surface, and used for abrading or smoothing hard surfaces. (The O. Eng. word is *féol*, and cognate forms appear in Dutch *vijl*, Ger. *Feile*, &c.; the ultimate source is usually taken to be an Indo-European root meaning to mark or scratch, and seen in the Lat. *pingere*, to paint.) Some uncivilized tribes polish their weapons with such things as rough stones, pieces of shark skin or fishes' teeth. The operation of filing is recorded in 1 Sam. xiii. 21; and, among other facts, the similarity of the name for the filing instrument among various European peoples points to an early practice of the art. A file differs from a *rasp* (which is chiefly used for working wood, horn and the like) in having its teeth cut with a chisel whose straight edge extends across its surface, while the teeth of the rasp are formed by solitary indentations of a pointed chisel. According to the form of their teeth, files may be *single-cut* or *double-cut*; the former have only one set of parallel ridges (either at right angles or at some other angle with the length); the latter (and more common) have a second set cut at an angle with the first. The double-cut file presents sharp angles to the filed surface, and is better suited for hard metals. Files are classed according to the fineness of their teeth (see Tool), and their shapes present almost endless varieties. Common forms are—the *flat* file, of parallelogram section, with uniform breadth and thickness, or tapering, or "bellied"; the *four-square* file, of square section, sometimes with one side "safe," or left smooth; and the so-called *three-square* file, having its cross section an equilateral triangle, the *half-round* file, a segment of a circle, the *round* or *rat-tail* file, a circle, which are generally tapered. The *float* file is like the *flat*, but single-cut. There are many others. Files vary in length from three-quarters of an inch (watchmakers') to 2 or 3 ft. and upwards (engineers'). The length is reckoned exclusively of the spike or tang which enters the handle. Most files are tapered; the *blunt* are nearly parallel, with larger section near the middle; a few are parallel. The *rifflers* of sculptors and a few other files are curvilinear in their central line.

In manufacturing files, steel blanks are forged from bars which have been sheared or rolled as nearly as possible to the sections required, and after being carefully annealed are straightened, if necessary, and then rendered clean and accurate by grinding or filing. The process of cutting them used to be largely performed by hand, but machines are now widely employed. The hand-cutter, holding in his left hand a short chisel (the edge of which is wider than the width of the file), places it on the blank with an inclination from the perpendicular of 12° or 14°, and beginning near the farther end (the blank is placed with the tang or handle end towards him) strikes it sharply with a hammer. An indentation is thus made, and the steel, slightly thrown up on the side next the tang, forms a ridge. The chisel is then transferred to the uncut surface and slid away from the operator till it encounters the ridge just made; the position of the next cut being thus determined, the chisel is again struck, and so on. The workman seeks to strike the blows as uniformly as possible, and he will make 60 or 80 cuts a minute. If the file is to be single-cut, it is now ready to be hardened, but if it is to be double-cut he proceeds to make the second series or course of cuts, which are generally somewhat finer than the first. Thus the surface is covered with teeth inclined towards the point of the file. If the file is flat and is to be cut on the other side, it is turned over, and a thin plate of pewter placed below it to protect the teeth. Triangular and other files are supported in grooves in lead. In cutting round and half-round files, a straight chisel is applied as tangent to the curve. The round face of a half-round file requires eight, ten or more courses to complete it. Numerous attempts were made, even so far back as the 18th century, to invent machinery for cutting files, but little success was attained till the latter part of the 19th century. In most of the machines the idea was to arrange a metal arm and hand to hold the chisel with a hammer to strike the blow, and so to imitate the manual process as closely as possible. The general principle on which the successful forms are constructed is that the blanks, laid on a moving table, are slowly traversed forward under a rapidly reciprocating chisel or knife.

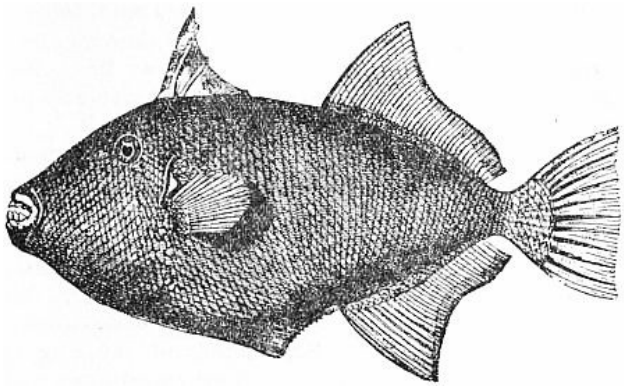
The filing of a flat surface perfectly true is the test of a good filer; and this is no easy matter to the beginner. The piece to be operated upon is generally fixed about the level of the elbow, the operator standing, and, except in the case of small files, grasping the file with both hands, the handle with the right, the farther end with the left. The great point is to be able to move the file forward with pressure in horizontal straight lines; from the tendency of the hands to move in arcs of circles, the heel and point of the file are apt to be alternately raised. This is partially compensated by the bellied form given to many files (which also counteracts the frequent warping effect of the hardening process, by which one side of a flat file may be rendered concave and useless). In bringing back the file for the next thrust it is nearly lifted off the work. Further, much delicacy and skill are required in adapting the pressure and velocity, ascertaining if foreign matters or filings remain interposed between the file and the work, &c. Files can be cleaned with a piece of the so-called *cotton-card* (used in combing cotton wool) nailed to a piece of wood. In *draw-filing*, which is sometimes resorted to to give a neat finish, the file is drawn sideways to and fro over the work. New files are generally used for a time on brass or

cast-iron, and when partially worn they are still available for filing wrought iron and steel.

2. A string or thread (through the Fr. *fil* and *file*, from Lat. *filum*, a thread); hence used of a device, originally a cord, wire or spike on which letters, receipts, papers, &c., may be strung for convenient reference. The term has been extended to embrace various methods for the preservation of papers in a particular order, such as expanding books, cabinets, and ingenious improvements on the simple wire file which enable any single document to be readily found and withdrawn without removing the whole series. From the devices used for filing the word is transferred to the documents filed, and thus is used of a catalogue, list, or collection of papers, &c. File is also employed to denote a row of persons or objects arranged one behind the other. In military usage a “file” is the opposite of a “rank,” that is, it is composed of a (variable) number of men aligned from front to rear one behind the other, while a rank contains a number of men aligned from right to left abreast. Thus a British infantry company, in line two deep, one hundred strong, has two ranks of fifty men each, and fifty “files” of two men each. Up to about 1600 infantry companies or battalions were often sixteen deep, one front rank man and the fifteen “coverers” forming a file. The number of ranks and, therefore, of men in the file diminished first to ten (1600), then to six (1630), then to three (1700), and finally to two (about 1808 in the British army, 1888 in the German). Denser formations when employed have been formed, not by altering the order of men within the unit, but by placing several units, one closely behind the other (“doubling” and “trebling” the line of battle, as it used to be called). In the 17th century a file formed a small command under the “file leader,” the whole of the front rank consisting therefore of old soldiers or non-commissioned officers. This use of the word to express a unit of command gave rise to the old-fashioned term “file firing,” to imply a species of fire (equivalent to the modern “independent”) in which each man in the file fired in succession after the file leader, and to-day a corporal or sergeant is still ordered to take one or more files under his charge for independent work. In the above it is to be understood that the men are facing to the front or rear. If they are turned to the right or left so that the company now stands two men broad and fifty deep, it is spoken of as being “in file.” From this come such phrases as “single file” or “Indian file” (one man leading and the rest following singly behind him).[1] The use of verbs “to file” and “to defile,” implying the passage from fighting to marching formation, is to be derived from this rather than from the resemblance of a marching column to a long flexible thread, for in the days when the word was first used the infantry company whether in battle or on the march was a solid rectangle of men, a file often containing even more men than a rank.

1 This may also be understood as meaning simply “a single file,” but the explanation given above is more probable, as it is essentially a marching and not a fighting formation that is expressed by the phrase.

FILE-FISH, or Trigger-Fish, the names given to fishes of the genus *Balistes* (and *Monacanthus*) inhabiting all tropical and subtropical seas. Their body is compressed and not covered with ordinary scales, but with small juxtaposed scutes. Their other principal characteristics consist in the structure of their first dorsal fin (which consists of three spines) and in their peculiar dentition. The first of the three dorsal spines is very strong, roughened in front like a file, and hollowed out behind to receive the second much smaller spine, which, besides, has a projection in front, at its base, fitting into a notch of the first. Thus these two spines can only be raised or depressed simultaneously, in such a manner that the first cannot be forced down unless the second has been previously depressed. The latter has been compared to a trigger, hence the name of Trigger-fish. Also the generic name *Balistes* 341
and the Italian name of “Pesce balistra” refer to this structure. Both jaws are armed with eight strong incisor-like and sometimes pointed teeth, by which these fishes are enabled, not only to break off pieces of madrepores and other corals on which they feed, but also to chisel a hole into the hard shells of Mollusca, in order to extract the soft parts. In this way they destroy an immense number of molluscs, and become most injurious to the pearl-fisheries. The gradual failure of those fisheries in Ceylon has been ascribed to this cause, although evidently other agencies must have been at work at the same time. The *Monacanthi* are distinguished from the *Balistes* in having only one dorsal spine and a velvety covering of the skin. Some 30 different species are known of *Balistes* and about 50 of *Monacanthus*. Two species (*B. maculatus* and *capriscus*), common in the Atlantic, sometimes wander to the British coasts.



Balistes vidua.

FILELFO, FRANCESCO (1398-1481), Italian humanist, was born in 1398 at Tolentino, in the March of Ancona. When he appeared upon the scene of human life, Petrarch and the students of Florence had already brought the first act in the recovery of classic culture to conclusion. They had created an eager appetite for the antique, had disinterred many important Roman authors, and had freed Latin scholarship to some extent from the barbarism of the middle ages. Filelfo was destined to carry on their work in the field of Latin literature, and to be an important agent in the still unaccomplished recovery of Greek culture. His earliest studies in grammar, rhetoric and the Latin language were conducted at Padua, where he acquired so great a reputation for learning that in 1417 he was invited to teach eloquence and moral philosophy at Venice. According to the custom of that age in Italy, it now became his duty to explain the language, and to illustrate the beauties of the principal Latin authors, Cicero and Virgil being considered the chief masters of moral science and of elegant diction. Filelfo made his mark at once in Venice. He was admitted to the society of the first scholars and the most eminent nobles of that city; and in 1419 he received an appointment from the state, which enabled him to reside as secretary to the consul-general (*baylo*) of the Venetians in Constantinople. This appointment was not only honourable to Filelfo as a man of trust and general ability, but it also gave him the opportunity of acquiring the most coveted of all possessions at that moment for a scholar—a knowledge of the Greek language. Immediately after his arrival in Constantinople, Filelfo placed himself under the tuition of John Chrysoloras, whose name was already well known in Italy as relative of Manuel, the first Greek to profess the literature of his ancestors in Florence. At the recommendation of Chrysoloras he was employed in several diplomatic missions by the emperor John Palaeologus. Before very long the friendship between Filelfo and his tutor was cemented by the marriage of the former to Theodora, the daughter of John Chrysoloras. He had now acquired a thorough knowledge of the Greek language, and had formed a large collection of Greek manuscripts. There was no reason why he should not return to his native country. Accordingly, in 1427 he accepted an invitation from the republic of Venice, and set sail for Italy, intending to resume his professorial career. From this time forward until the date of his death, Filelfo’s history consists of a record of the various towns in which he lectured, the masters whom he served, the books he wrote, the authors he illustrated, the friendships he contracted, and the wars he waged with rival scholars. He was a man of vast physical energy, of inexhaustible mental activity, of quick passions and violent appetites; vain, restless, greedy of gold and pleasure and fame; unable to stay quiet in one place, and perpetually engaged in quarrels with his compeers.

When Filelfo arrived at Venice with his family in 1427, he found that the city had almost been emptied by the plague, and that his scholars would be few. He therefore removed to Bologna; but here also he was met with drawbacks. The city was too much disturbed with political dissensions to attend to him; so Filelfo crossed the Apennines and settled in Florence. At Florence began one of the most brilliant and eventful periods of his life. During the week he lectured to large audiences of young and old on the principal Greek and Latin authors, and on Sundays he explained Dante to the people in the Duomo. In addition to these labours of the chair, he found time to translate portions of Aristotle, Plutarch, Xenophon and Lysias from the Greek. Nor was he dead to the claims of society. At first he seems to have lived with the Florentine scholars on tolerably good terms; but his temper was so arrogant that Cosimo de’ Medici’s friends were not long able to put up with him. Filelfo hereupon broke out into open and violent animosity; and when Cosimo was exiled by the Albizzi party in 1433, he urged the signoria of Florence to pronounce upon him the sentence of death. On the return of Cosimo to Florence, Filelfo’s position in that city was no longer tenable. His life, he asserted, had been already once attempted by a cut-throat in the pay of the Medici; and now he readily accepted an invitation from the state of Siena. In Siena, however, he was not destined to remain more than four years. His fame as a professor had grown great in Italy, and he daily received tempting offers from princes and republics. The most alluring of these, made him by the duke of Milan, Filippo Maria Visconti, he decided on accepting; and in 1440 he was received with honour by his new master in the capital of Lombardy.

Filelfo's life at Milan curiously illustrates the multifarious importance of the scholars of that age in Italy. It was his duty to celebrate his princely patrons in panegyrics and epics, to abuse their enemies in libels and invectives, to salute them with encomiastic odes on their birthdays, and to compose poems on their favourite themes. For their courtiers he wrote epithalamial and funeral orations; ambassadors and visitors from foreign states he greeted with the rhetorical lucubrations then so much in vogue. The students of the university he taught in daily lectures, passing in review the weightiest and lightest authors of antiquity, and pouring forth a flood of miscellaneous erudition. Not satisfied with these outlets for his mental energy, Filelfo went on translating from the Greek, and prosecuted a paper warfare with his enemies in Florence. He wrote, moreover, political pamphlets on the great events of Italian history; and when Constantinople was taken by the Turks, he procured the liberation of his wife's mother by a message addressed in his own name to the sultan. In addition to a fixed stipend of some 700 golden florins yearly, he was continually in receipt of special payments for the orations and poems he produced; so that, had he been a man of frugal habits or of moderate economy, he might have amassed a considerable fortune. As it was, he spent his money as fast as he received it, living in a style of splendour ill befitting a simple scholar, and indulging his taste for pleasure in more than questionable amusements. In consequence of this prodigality, he was always poor. His letters and his poems abound in impudent demands for money from patrons, some of them couched in language of the lowest adulation, and others savouring of literary brigandage.

During the second year of his Milanese residence Filelfo lost his first wife, Theodora. He soon married again; and this time he chose for his bride a young lady of good Lombard family, called Orsina Osnaga. When she died he took in wedlock for the third time a woman of Lombard birth, Laura 342
Magiolini. To all his three wives, in spite of numerous infidelities, he seems to have been warmly attached; and this is perhaps the best trait in a character otherwise more remarkable for arrogance and heat than for any amiable qualities.

On the death of Filippo Maria Visconti, Filelfo, after a short hesitation, transferred his allegiance to Francesco Sforza, the new duke of Milan; and in order to curry favour with this parvenu, he began his ponderous epic, the *Sforziad*, of which 12,800 lines were written, but which was never published. When Francesco Sforza died, Filelfo turned his thoughts towards Rome. He was now an old man of seventy-seven years, honoured with the friendship of princes, recognized as the most distinguished of Italian humanists, courted by pontiffs, and decorated with the laurel wreath and the order of knighthood by kings. Crossing the Apennines and passing through Florence, he reached Rome in the second week of 1475. The terrible Sixtus IV. now ruled in the Vatican; and from this pope Filelfo had received an invitation to occupy the chair of rhetoric with good emoluments. At first he was vastly pleased with the city and court of Rome; but his satisfaction ere long turned to discontent, and he gave vent to his ill-humour in a venomous satire on the pope's treasurer, Milliardo Cicala. Sixtus himself soon fell under the ban of his displeasure; and when a year had passed he left Rome never to return. Filelfo reached Milan to find that his wife had died of the plague in his absence, and was already buried. His own death followed speedily. For some time past he had been desirous of displaying his abilities and adding to his fame in Florence. Years had healed the breach between him and the Medicean family; and on the occasion of the Pazzi conspiracy against the life of Lorenzo de' Medici, he had sent violent letters of abuse to his papal patron Sixtus, denouncing his participation in a plot so dangerous to the security of Italy. Lorenzo now invited him to profess Greek at Florence, and thither Filelfo journeyed in 1481. But two weeks after his arrival he succumbed to dysentery, and was buried at the age of eighty-three in the church of the Annunziata.

Filelfo deserves commemoration among the greatest humanists of the Italian Renaissance, not for the beauty of his style, not for the elevation of his genius, not for the accuracy of his learning, but for his energy, and for his complete adaptation to the times in which he lived. His erudition was large but ill-digested; his knowledge of the ancient authors, if extensive, was superficial; his style was vulgar; he had no brilliancy of imagination, no pungency of epigram, no grandeur of rhetoric. Therefore he has left nothing to posterity which the world would not very willingly let die. But in his own days he did excellent service to learning by his untiring activity, and by the facility with which he used his stores of knowledge. It was an age of accumulation and preparation, when the world was still amassing and cataloguing the fragments rescued from the wrecks of Greece and Rome. Men had to receive the very rudiments of culture before they could appreciate its niceties. And in this work of collection and instruction Filelfo excelled, passing rapidly from place to place, stirring up the zeal for learning by the passion of his own enthusiastic temperament, and acting as a pioneer for men like Poliziano and Erasmus.

All that is worth knowing about Filelfo is contained in Carlo de' Rosmini's admirable *Vita di Filelfo* (Milan, 1808); see also W. Roscoe's *Life of Lorenzo de' Medici*, Vespasiano's *Vite di uomini illustri*, and J.A. Symonds's *Renaissance in Italy* (1877).

(J. A. S.)

A complete edition of Filelfo's Greek letters (based on the Codex Trevulzianus) was published for the first time, with French translation, notes and commentaries, by E. Legrand in 1892 at Paris (C. xii. of *Publications de l'école des lang. orient.*). For further references, especially to monographs, &c., on Filelfo's life and work, see Ulysse Chevalier, *Répertoire des sources hist., bio-bibliographie* (Paris, 1905), s.v. *Philelphe, François*.

FILEY, a seaside resort in the Buckrose parliamentary division of the East Riding of Yorkshire, England, 9-1/2 m. S.E. of Scarborough by a branch of the North Eastern railway. Pop. of urban district (1901) 3003. It stands upon the slope and summit of the cliffs above Filey Bay, which is fringed by a fine sandy beach. The northern horn of the bay is formed by Filey Brigg, a narrow and abrupt promontory, continued seaward by dangerous reefs. The coast-line sweeps hence south-eastward to the finer promontory of Flamborough Head, beyond which is the watering-place of Bridlington. The church of St Oswald at Filey is a fine cruciform building with central tower, Transitional Norman and Early English in date. There are pleasant promenades and good golf links, also a small spa which has fallen into disuse. Filey is in favour with visitors who desire a quiet resort without the accompaniment of entertainment common to the larger watering-places. Roman remains have been discovered on the cliff north of the town; the site was probably important, but nothing is certainly known about it.

FILIBUSTER, a name originally given to the buccaneers (*q.v.*). The term is derived most probably from the Dutch *vry buiter*, Ger. *Freibeuter*, Eng. *freebooter*, the word changing first into *fribustier*, and then into Fr. *flibustier*, Span. *filibustero*. *Flibustier* has passed into the French language, and *filibustero* into the Spanish language, as a general name for a pirate. The term “filibuster” was revived in America to designate those adventurers who, after the termination of the war between Mexico and the United States, organized expeditions within the United States to take part in West Indian and Central American revolutions. From this has sprung the modern use of the word to imply one who engages in private, unauthorized and irregular warfare against any state. In the United States it is colloquially applied to legislators who practise obstruction.

FILICAJA, VINCENZO DA (1642-1707), Italian poet, sprung from an ancient and noble family of Florence, was born in that city on the 30th of December 1642. From an incidental notice in one of his letters, stating the amount of house rent paid during his childhood, his parents must have been in easy circumstances, and the supposition is confirmed by the fact that he enjoyed all the advantages of a liberal education, first under the Jesuits of Florence, and then in the university of Pisa.

At Pisa his mind became stored, not only with the results of patient study in various branches of letters, but with the great historical associations linked with the former glory of the Pisan republic, and with one remarkable institution of which Pisa was the seat. To the tourist who now visits Pisa the banners and emblems of the order of St Stephen are mere matter of curiosity, but they had a serious significance two hundred years ago to the young Tuscan, who knew that these naval crusaders formed the main defence of his country and commerce against the Turkish, Algerine and Tunisian corsairs. After a five years’ residence in Pisa he returned to Florence, where he married Anna, daughter of the senator and marquis Scipione Capponi, and withdrew to a small villa at Figline, not far from the city. Abjuring the thought of writing amatory poetry in consequence of the premature death of a young lady to whom he had been attached, he occupied himself chiefly with literary pursuits, above all the composition of Italian and Latin poetry. His own literary eminence, the opportunities enjoyed by him as a member of the celebrated Academy Della Crusca for making known his critical taste and classical knowledge, and the social relations within the reach of a noble Florentine so closely allied with the great house of Capponi, sufficiently explain the intimate terms on which he stood with such eminent men of letters as Magalotti, Menzini, Gori and Redi. The last-named, the author of *Bacchus in Tuscany*, was not only one of the most brilliant poets of his time, and a safe literary adviser; he was the court physician, and his court influence was employed with zeal and effect in his friend’s favour. Filicaja’s rural seclusion was owing even more to his straitened means than to his rural tastes. If he ceased at length to pine in obscurity, the change was owing not merely to the fact that his poetical genius, fired by the deliverance of Vienna from the Turks in 1683, poured forth the right strains at the right time, but also to the influence of Redi, who not only laid Filicaja’s verses before his own sovereign, but had them transmitted with the least possible delay to the foreign princes whose noble deeds they sung. The first recompense came, however, not from those princes, but from Christina, the ex-queen of Sweden, who, from her circle of savants and courtiers at Rome, spontaneously and generously announced to Filicaja her wish to bear the expense of educating his two sons, enhancing her kindness by the delicate request that it should remain a secret.

The tide of Filicaja’s fortunes now turned. The grand-duke of Tuscany, Cosmo III., conferred on him an important office, the commissionership of official balloting. He was named governor of Volterra in 1696, where he strenuously exerted himself to raise the tone of public morality. Both there and at Pisa, where he was subsequently governor in 1700, his popularity was so great that on his removal the inhabitants of both cities petitioned for his recall. He passed the close of his life at Florence; the grand-duke raised him to the rank of senator, and he died in that city on the 24th of September 1707. He was buried in the family vault in the church of St Peter, and a monument was erected to his

memory by his sole surviving son Scipione Filicaja. In the six celebrated odes inspired by the great victory of Sobieski, Filicaja took a lyrical flight which has placed him at moments on a level with the greatest Italian poets. They are, however, unequal, like all his poetry, reflecting in some passages the native vigour of his genius and purest inspirations of his tastes, whilst in others they are deformed by the affectations of the *Seicentisti*. When thoroughly natural and spontaneous—as in the two sonnets "Italia, Italia, o tu cui feo la sorte" and "Dov' è, Italia, il tuo braccio? e a che ti serve;" in the verses "Alla beata Vergine," "Al divino amore;" in the sonnet "Sulla fede nelle disgrazie"—the truth and beauty of thought and language recall the verse of Petrarch.

Besides the poems published in the complete Venice edition of 1762, several other pieces appeared for the first time in the small Florence edition brought out by Barbera in 1864.

FILIGREE (formerly written *filigrain* or *filigrane*; the Ital. *filigrana*, Fr. *filigrane*, Span, *filigrana*, Ger. *Drahtgeflecht*), jewel work of a delicate kind made with twisted threads usually of gold and silver. The word, which is usually derived from the Lat. *filum*, thread, and *granum*, grain, is not found in Ducange, and is indeed of modern origin. According to Prof. Skeat it is derived from the Span. *filigrana*, from "*filar*, to spin, and *grano*, the grain or principal fibre of the material." Though filigree has become a special branch of jewel work in modern times it was anciently part of the ordinary work of the jeweller. Signor A. Castellani states, in his *Memoir on the Jewellery of the Ancients* (1861), that all the jewelry of the Etruscans and Greeks (other than that intended for the grave, and therefore of an unsubstantial character) was made by soldering together and so building up the gold rather than by chiselling or engraving the material.

The art may be said to consist in curling, twisting and plaiting fine pliable threads of metal, and uniting them at their points of contact with each other, and with the ground, by means of gold or silver solder and borax, by the help of the blowpipe. Small grains or beads of the same metals are often set in the eyes of volutes, on the junctions, or at intervals at which they will set off the wire-work effectively. The more delicate work is generally protected by framework of stouter wire. Brooches, crosses, earrings and other personal ornaments of modern filigree are generally surrounded and subdivided by bands of square or flat metal, giving consistency to the filling up, which would not otherwise keep its proper shape. Some writers of repute have laid equal stress on the *filum* and the *granum*, and have extended the use of the term filigree to include the granulated work of the ancients, even where the twisted wire-work is entirely wanting. Such a wide application of the term is not approved by current usage, according to which the presence of the twisted threads is the predominant fact.

The Egyptian jewellers employed wire, both to lay down on a background and to plait or otherwise arrange *à jour*. But, with the exception of chains, it cannot be said that filigree work was much practised by them. Their strength lay rather in their cloisonné work and their moulded ornaments. Many examples, however, remain of round plaited gold chains of fine wire, such as are still made by the filigree workers of India, and known as Trichinopoly chains. From some of these are hung smaller chains of finer wire with minute fishes and other pendants fastened to them. In ornaments derived from Phoenician sites, such as Cyprus and Sardinia, patterns of gold wire are laid down with great delicacy on a gold ground, but the art was advanced to its highest perfection in the Greek and Etruscan filigree of the 6th to the 3rd centuries B.C. A number of earrings and other personal ornaments found in central Italy are preserved in the Louvre and in the British Museum. Almost all of them are made of filigree work. Some earrings are in the form of flowers of geometric design, bordered by one or more rims each made up of minute volutes of gold wire, and this kind of ornament is varied by slight differences in the way of disposing the number or arrangement of the volutes. But the feathers and petals of modern Italian filigree are not seen in these ancient designs. Instances occur, but only rarely, in which filigree devices in wire are self-supporting and not applied to metal plates. The museum of the Hermitage at St Petersburg contains an amazingly rich collection of jewelry from the tombs of the Crimea. Many bracelets and necklaces in that collection are made of twisted wire, some in as many as seven rows of plaiting, with clasps in the shape of heads of animals of beaten work. Others are strings of large beads of gold, decorated with volutes, knots and other patterns of wire soldered over the surfaces. (See the *Antiquités du Bosphore Cimmérien*, by Gille, 1854; reissued by S. Reinach, 1892, in which will be found careful engravings of these objects.) In the British Museum a sceptre, probably that of a Greek priestess, is covered with plaited and netted gold wire, finished with a sort of Corinthian capital and a boss of green glass.

It is probable that in India and various parts of central Asia filigree has been worked from the most remote period without any change in the designs. Whether the Asiatic jewellers were influenced by the Greeks settled on that continent, or merely trained under traditions held in common with them, it is certain that the Indian filigree workers retain the same patterns as those of the ancient Greeks, and work them in the same way, down to the present day. Wandering workmen are given so much gold, coined or rough, which is weighed, heated in a pan of charcoal, beaten into wire, and then worked in the courtyard or verandah of the employer's house according to the designs of the artist, who weighs the complete work on restoring it and is paid at a specified rate for his labour. Very fine grains or

beads and spines of gold, scarcely thicker than coarse hair, projecting from plates of gold are methods of ornamentation still used.

Passing to later times we may notice in many collections of medieval jewel work (such as that in the South Kensington Museum) reliquaries, covers for the gospels, &c., made either in Constantinople from the 6th to the 12th centuries, or in monasteries in Europe, in which Byzantine goldsmiths' work was studied and imitated. These objects, besides being enriched with precious stones, polished, but not cut into facets, and with enamel, are often decorated with filigree. Large surfaces of gold are sometimes covered with scrolls of filigree soldered on; and corner pieces of the borders of book covers, or the panels of reliquaries, are not unfrequently made up of complicated pieces of plaited work alternating with spaces encrusted with enamel. Byzantine filigree work occasionally has small stones set amongst the curves or knots. Examples of such decoration can be seen in the South Kensington and British Museums.

In the north of Europe the Saxons, Britons and Celts were from an early period skilful in several kinds of goldsmiths' work. Admirable examples of filigree patterns laid down in wire on gold, from Anglo-Saxon tombs, may be seen in the British Museum—notably a brooch from Dover, and a sword-hilt from Cumberland.

The Irish filigree work is more thoughtful in design and more varied in pattern than that of any period or country that could be named. Its highest perfection must be placed in the 10th and 11th centuries. The Royal Irish Academy in Dublin contains a number of reliquaries and personal jewels, of which filigree is the general and most remarkable ornament. The "Tara" brooch has been copied and imitated, and the shape and decoration of it are well known. Instead of fine curls or volutes of gold thread, the Irish filigree is varied by numerous designs in which one thread can be traced through curious knots and complications, which, disposed over large surfaces, balance one another, but always with special varieties and arrangements difficult to trace with the eye. The long thread appears and disappears without breach of continuity, the two ends generally worked into the head and the tail of a serpent or a monster. The reliquary containing the "Bell of St Patrick" is covered with knotted work in many varieties. A two-handled chalice, called the "Ardagh cup," found near Limerick in 1868, is ornamented with work of this kind of extraordinary fineness. Twelve plaques on a band round the body of the vase, plaques on each handle and round the foot of the vase have a series of different designs of characteristic patterns, in fine filigree wire work wrought on the front of the repoussé ground. (See a paper by the 3rd earl of Dunraven in *Transactions of Royal Irish Academy*, xxiv. pt. iii. 1873.)

Much of the medieval jewel work all over Europe down to the 15th century, on reliquaries, crosses, croziers and other ecclesiastical goldsmiths' work, is set off with bosses and borders of filigree. Filigree work in silver was practised by the Moors of Spain during the middle ages with great skill, and was introduced by them and established all over the Peninsula, whence it was carried to the Spanish colonies in America. The Spanish filigree work of the 17th and 18th centuries is of extraordinary complexity (examples in the Victoria and Albert Museum), and silver filigree jewelry of delicate and artistic design is still made in considerable quantities throughout the country. The manufacture spread over the Balearic Islands, and among the populations that border the Mediterranean. It is still made all over Italy, and in Malta, Albania, the Ionian Islands and many other parts of Greece. That of the Greeks is sometimes on a large scale, with several thicknesses of wires alternating with larger and smaller bosses and beads, sometimes set with turquoises, &c., and mounted on convex plates, making rich ornamental headpieces, belts and breast ornaments. Filigree silver buttons of wire-work and small bosses are worn by the peasants in most of the countries that produce this kind of jewelry. Silver filigree brooches and buttons are also made in Denmark, Norway and Sweden. Little chains and pendants are added to much of this northern work.

Some very curious filigree work was brought from Abyssinia after the capture of Magdala—arm-guards, slippers, cups, &c., some of which are now in the South Kensington Museum. They are made of thin plates of silver, over which the wire-work is soldered. The filigree is subdivided by narrow borders of simple pattern, and the intervening spaces are made up of many patterns, some with grains set at intervals.

A few words must be added as to the granulated work which, as stated above, some writers have classed under the term of filigree, although the twisted wires may be altogether wanting. Such decoration consists of minute globules of gold, soldered to form patterns on a metal surface. Its use is rare in Egypt. (See J. de Morgan, *Fouilles à Dahchour*, 1894-1895, pl. xii.) It occurs in Cyprus at an early period, as for instance on a gold pendant in the British Museum from Enkomi in Cyprus (10th century B.C.). The pendant is in the form of a pomegranate, and has upon it a pattern of triangles, formed by more than 3000 minute globules separately soldered on. It also occurs on ornaments of the 7th century B.C. from Camirus in Rhodes. But these globules are large, compared with those which are found on Etruscan jewelry. Signor Castellani, who had made the antique jewelry of the Etruscans and Greeks his special study, with the intention of reproducing the ancient models, found it for a long time impossible to revive this particular process of delicate soldering. He overcame the difficulty at last, by the discovery of a traditional school of craftsmen at St Angelo in Vado, by whose help his well-known reproductions were executed.

For examples of antique work the student should examine the gold ornament rooms of the British Museum, the Louvre and the collection in the Victoria and Albert Museum. The last contains a large and very varied assortment of modern Italian, Spanish, Greek and other jewelry made for the peasants of various countries. It also possesses interesting examples of the modern work in granulated gold by

Castellani and Giuliano. The Celtic work is well represented in the Royal Irish Academy in Dublin.

FILLAN, SAINT, or Faelan, the name of the two Scottish saints, of Irish origin, whose lives are of a purely legendary character. The St Fillan whose feast is kept on the 20th of June had churches dedicated to his honour at Ballyheyland, Queen's county, Ireland, and at Loch Earn, Perthshire. The other, who is commemorated on the 9th of January, was specially venerated at Cluain Mavscua, Co. Westmeath, Ireland, and so early as the 8th or 9th century at Strathfillan, Perthshire, Scotland, where there was an ancient monastery dedicated to him, which, like most of the religious houses of early times, was afterwards secularized. The lay-abbot, who was its superior in the reign of William the Lion, held high rank in the Scottish kingdom. This monastery was restored in the reign of Robert Bruce, and became a cell of the abbey of canons regular at Inchaffray. The new foundation received a grant from King Robert, in gratitude for the aid which he was supposed to have obtained from a relic of the saint on the eve of the great victory of Bannockburn. Another relic was the saint's staff or crozier, which became known as the coygerach or quigrich, and was long in the possession of a family of the name of Jore or Dewar, who were its hereditary guardians. They certainly had it in their custody in the year 1428, and their right was formally recognized by King James III. in 1487. The head of the crozier, which is of silver-gilt with a smaller crozier of bronze inclosed within it, is now deposited in the National Museum of the Society of Antiquaries of Scotland.

The legend of the second of these saints is given in the Bollandist *Acta SS.* (1643), 9th of January, i. 594-595; A.P. Forbes, *Kalendars of Scottish Saints* (Edinburgh, 1872), pp. 341-346; D. O'Hanlon's *Lives of Irish Saints* (Dublin), n.d. pp. 134-144. See also *Historical Notices of St Fillan's Crozier*, by Dr John Stuart (Aberdeen, 1877).

FILLET (through Fr. *filet*, from the med. Lat. *filettum*, diminutive of *filum*, a thread), a band or ribbon used for tying the hair, the Lat. *vitta*, which was used as a sacrificial emblem, and also worn by vestal virgins, brides and poets. The word is thus applied to anything in the shape of a band or strip, as, in coining, to the metal ribbon from which the blanks are punched. In architecture, a "fillet" is a narrow flat band, sometimes called a "listel," which is used to separate mouldings one from the other, or to terminate a suite of mouldings as at the top of a cornice. In the fluted column of the Ionic and Corinthian Orders the fillet is employed between the flutes. It is a very important feature in Gothic work, being frequently worked on large mouldings; when placed on the front and sides of the moulding of a rib it has been termed the "keel and wings" of the rib.

In cooking, "fillet" is used of the "undercut" of a sirloin of beef, or of a thick slice of fish or meat; more particularly of a boned and rolled piece of veal or other meat, tied by a "fillet" or string.

FILLMORE, MILLARD (1800-1874), thirteenth president of the United States of America, came of a family of English stock, which had early settled in New England. His father, Nathaniel, in 1795, made a clearing within the limits of what is now the town of Summerhill, Cayuga county, New York, and there Millard Fillmore was born, on the 7th of January 1800. Until he was fifteen he could have acquired only the simplest rudiments of education, and those chiefly from his parents. At that age he was apprenticed to a fuller and clothier, to card wool, and to dye and dress the cloth. Two years before the close of his term, with a promissory note for thirty dollars, he bought the remainder of his time from his master, and at the age of nineteen began to study law. In 1820 he made his way to Buffalo, then only a village, and supported himself by teaching school and aiding the postmaster while continuing his studies.

In 1823 he was admitted to the bar, and began practice at Aurora, New York, to which place his father had removed. Hard study, temperance and integrity gave him a good reputation and moderate success, and in 1827 he was made an attorney and, in 1829, counsellor of the supreme court of the state. Returning to Buffalo in 1830 he formed, in 1832, a partnership with Nathan K. Hall (1810-1874), later a member of Congress and postmaster-general in his cabinet. Solomon G. Haven (1810-1861), member of Congress from 1851 to 1857, joined them in 1836. The firm met with great success. From 1829 to 1832 Fillmore served in the state assembly, and, in the single term of 1833-1835, the national House of Representatives, coming in as anti-Jackson, or in opposition to the administration. From 1837 to 1843, when he declined further service, he again represented his district in the House, this time as a member of the Whig party. In Congress he opposed the annexation of Texas as slave territory, was

an advocate of internal improvements and a protective tariff, supported J.Q. Adams in maintaining the right of offering anti-slavery petitions, advocated the prohibition by Congress of the slave trade between the states, and favoured the exclusion of slavery from the District of Columbia. His speech and tone, however, were moderate on these exciting subjects, and he claimed the right to stand free of pledges, and to adjust his opinions and his course by the development of circumstances. The Whigs having the ascendancy in the Twenty-Seventh Congress, he was made chairman of the House Committee of Ways and Means. Against a strong opposition he carried an appropriation of $30,000 to Morse's telegraph, and reported from his committee the Tariff Bill of 1842. In 1844 he was the Whig candidate for the governorship of New York, but was defeated. In November 1847 he was elected comptroller of the state of New York, and in 1848 he was elected vice-president of the United States on the ticket with Zachary Taylor as president. Fillmore presided over the senate during the exciting debates on the "Compromise Measures of 1850."

President Taylor died on the 9th of July 1850, and on the next day Fillmore took the oath of office as his successor. The cabinet which he called around him contained Daniel Webster, Thomas Corwin and John J. Crittenden. On the death of Webster in 1852, Edward Everett became secretary of state. Unlike Taylor, Fillmore favoured the "Compromise Measures," and his signing one of them, the Fugitive Slave Law, in spite of the vigorous protests of anti-slavery men, lost him much of his popularity in the North. Few of his opponents, however, questioned his own full persuasion that the Compromise Measures were vitally necessary to pacify the nation. In 1851 he interposed promptly but ineffectively in thwarting the projects of the "filibusters," under Narciso Lopez for the invasion of Cuba. Commodore Matthew Calbraith Perry's expedition, which opened up diplomatic relations with Japan, and the exploration of the valley of the Amazon by Lieutenants William L. Herndon (1813-1857) and Lardner Gibbon also occurred during his term. In the autumn of 1852 he was an unsuccessful candidate for nomination for the presidency by the Whig National Convention, and he went out of office on the 4th of March 1853. In February 1856, while he was travelling abroad, he was nominated for the presidency by the American or Know Nothing party, and later this nomination was also accepted by the Whigs; but in the ensuing presidential election, the last in which the Know Nothings and the Whigs as such took any part, he received the electoral votes of only one state, Maryland. Thereafter he took no public share in political affairs. Fillmore was twice married: in 1826 to Abigail Powers (who died in 1853, leaving him with a son and daughter), and in 1858 to Mrs. Caroline C. Mclntosh. He died at Buffalo on the 8th of March 1874.

> In 1907 the Buffalo Historical Society, of which Fillmore was one of the founders and the first president, published the *Millard Fillmore Papers* (2 vols., vol. x. and xi. of the Society's publications; edited by F.H. Severance), containing miscellaneous writings and speeches, and official and private correspondence. Most of his correspondence, however, was destroyed in pursuance of a direction in his son's will.

FILMER, SIR RORERT (d. 1653), English political writer, was the son of Sir Edward Filmer of East Sutton in Kent. He studied at Trinity College, Cambridge, where he matriculated in 1604. Knighted by Charles I. at the beginning of his reign, he was an ardent supporter of the king's cause, and his house is said to have been plundered by the parliamentarians ten times. He died on the 26th of May 1653.

Filmer was already a middle-aged man when the great controversy between the king and the Commons roused him into literary activity. His writings afford an exceedingly curious example of the doctrines held by the most extreme section of the Divine Right party. Filmer's theory is founded upon the statement that the government of a family by the father is the true original and model of all government. In the beginning of the world God gave authority to Adam, who had complete control over his descendants, even as to life and death. From Adam this authority was inherited by Noah; and Filmer quotes as not unlikely the tradition that Noah sailed up the Mediterranean and allotted the three continents of the Old World to the rule of his three sons. From Shem, Ham and Japheth the patriarchs inherited the absolute power which they exercised over their families and servants; and from the patriarchs all kings and governors (whether a single monarch or a governing assembly) derive their authority, which is therefore absolute, and founded upon divine right. The difficulty that a man "by the secret will of God may unjustly" attain to power which he has not inherited appeared to Filmer in no way to alter the nature of the power so obtained, for "there is, and always shall be continued to the end of the world, a natural right of a supreme father over every multitude." The king is perfectly free from all human control. He cannot be bound by the acts of his predecessors, for which he is not responsible; nor by his own, for "impossible it is in nature that a man should give a law unto himself"—a law must be imposed by another than the person bound by it. With regard to the English constitution, he asserted, in his *Freeholder's Grand Inquest touching our Sovereign Lord the King and his Parliament* (1648), that the Lords only give counsel to the king, the Commons only "perform and consent to the ordinances of parliament," and the king alone is the maker of laws, which proceed purely from his will. It is monstrous that the people should judge or depose their king, for they would then be judges in their own cause.

The most complete expression of Filmer's opinions is given in the *Patriarcha*, which was published in

1680, many years after his death. His position, however, was sufficiently indicated by the works which he published during his lifetime: the *Anarchy of a Limited and Mixed Monarchy* (1648), an attack upon a treatise on monarchy by Philip Hunton (1604?-1682), who maintained that the king's prerogative is not superior to the authority of the houses of parliament; the pamphlet entitled *The Power of Kings, and in particular of the King of England* (1648), first published in 1680; and his *Observations upon Mr Hobbes's Leviathan, Mr Milton against Salmasius, and H. Grotius De jure belli et pacis, concerning the Originall of Government* (1652). Filmer's theory, owing to the circumstances of the time, obtained a recognition which it is now difficult to understand. Nine years after the publication of the *Patriarcha*, at the time of the Revolution which banished the Stuarts from the throne, Locke singled out Filmer as the most remarkable of the advocates of Divine Right, and thought it worth while to attack him expressly in the first part of the *Treatise on Government*, going into all his arguments *seriatim*, and especially pointing out that even if the first steps of his argument be granted, the rights of the eldest born have been so often set aside that modern kings can claim no such inheritance of authority as he asserted.

FILMY FERNS, a general name for a group of ferns with delicate much-divided leaves and often moss-like growth, belonging to the genera *Hymenophyllum*, *Todea* and *Trichomanes*. They require to be kept in close cases in a cool fernery, and the stones and moss amongst which they are grown must be kept continually moist so that the evaporated water condenses on the very numerous divisions of the leaves.

FILON, PIERRE MARIE AUGUSTIN (1841-), French man of letters, son of the historian Charles Auguste Désiré Filon (1800-1875), was born in Paris in 1841. His father became professor of history at Douai, and eventually "*inspecteur d'académie*" in Paris; his principal works were *Histoire comparée de France et de l'Angleterre* (1832), *Histoire de l'Europe au XVI^e^ siècle* (1838), *La Diplomatie française sous Louis XV* (1843), *Histoire de l'Italie méridionale* (1849), *Histoire du sénat romain* (1850), *Histoire de la démocratie athénienne* (1854). Educated at the École normale, Augustin Filon was appointed tutor to the prince imperial and accompanied him to England, where he remained for some years. He is the author of *Guy Patin, sa vie, sa correspondance* (1862); *Nos grands-pères* (1887); *Prosper Mérimée* (1894); *Sous la tyrannie* (1900). On English subjects he has written chiefly under the pseudonym of Pierre Sandrié, *Les Mariages de Londres* (1875); *Histoire de la littérature anglaise* (1883); *Le Théâtre anglais* (1896), and *La Caricature en Angleterre* (1902).

FILOSA (A. Lang), one of the two divisions of Rhizopoda, characterized by protoplasm granular at the surface, and fine pseudopodia branching and usually acutely pointed at the tips.

FILTER (a word common in various forms to most European languages, adapted from the medieval Lat. *filtrum*, felt, a material used as a filtering agent), an arrangement for separating solid matter from liquids. In some cases the operation of filtration is performed for the sake of removing impurities from the filtrate or liquid filtered, as in the purification of water for drinking purposes; in others the aim is to recover and collect the solid matter, as when the chemist filters off a precipitate from the liquid in which it is suspended.

In regard to the purification of water, filtration was long looked upon as merely a mechanical process of straining out the solid particles, whereby a turbid water could be rendered clear. In the course of time it was noticed that certain materials, such as charcoal, had the power to some extent also of softening hard water and of removing organic matter, and at the beginning of the 19th century charcoal, both animal and vegetable, came into use for filtering purposes. Porous carbon blocks, made by strongly heating a mixture of powdered charcoal with oil, resin, &c., were introduced about a generation later, and subsequently various preparations of iron (spongy iron, magnetic oxide) found favour. Innumerable forms of filters made with these and other materials were put on the market, and

were extolled as removing impurities of every kind from water, and as affording complete protection against the communication of disease. But whatever merits they had as clarifiers of turbid water, the advent of bacteriology, and the recognition of the fact that the bacteria of certain diseases may be water-borne, introduced a new criterion of effectiveness, and it was perceived that the removal of solid particles, or even of organic impurities (which were realized to be important not so much because they are dangerous to health *per se* as because their presence affords grounds for suspecting that the water in which they occur has been exposed to circumstances permitting contamination with infective disease), was not sufficient; the filter must also prevent the passage of pathogenic organisms, and so render the water sterile bacteriologically. Examined from this point of view the majority of domestic filters were found to be gravely defective, and even to be worse than useless, since unless they were frequently and thoroughly cleansed, they were liable to become favourable breeding-places for microbes. The first filter which was more or less completely impermeable to bacteria was the Pasteur-Chamberland, which was devised in Pasteur's laboratory, and is made of dense biscuit porcelain. The filtering medium in this, as in other filters of the same kind, takes the form of a hollow cylinder or "candle," through the walls of which the water has to pass from the outside to the inside, the candles often being arranged so that they may be directly attached to a tap, whereby the rate of flow, which is apt to be slow, is accelerated by the pressure of the main. But even filters of this type, if they are to be fully relied upon, must be frequently cleaned and sterilized, and great care must be taken that the joints and connexions are watertight, and that the candles are without cracks or flaws. In cases where the water supply is known to be infected, or even where it is merely doubtful, it is wise to have recourse to sterilization by boiling, rather than trust to any filter. Various machines have been constructed to perform this operation, some of them specially designed for the use of troops in the field; those in which economy of fuel is studied have an exchange-heater, by means of which the incoming cold water receives heat from the outgoing hot water, which thus arrives at the point of outflow at a temperature nearly as low as that of the supply. Chemical methods of sterilization have also been suggested, depending on the use of iodine, chlorine, bromine, ozone, potassium permanganate, copper sulphate or chloride and other substances. For the sand-filtration of water on a large scale, in which the presence of a surface film containing zooglaea of bacteria is an essential feature, see Water Supply.

Filtration in the chemical laboratory is commonly effected by the aid of a special kind of unsized paper, which in the more expensive varieties is practically pure cellulose, impurities like ferric oxide, alumina, lime, magnesia and silica having been removed by treatment with hydrochloric and hydrofluoric acids. A circular piece of this paper is folded twice upon itself so as to form a quadrant, one of the folds is pulled out, and the cone thus obtained is supported in a glass or porcelain funnel having an apical angle of 60°. The liquid to be filtered is poured into the cone, preferably down a glass rod upon the sides of the funnel to prevent splashing and to preserve the apex of the filter-paper, and passes through the paper, upon which the solid matter is retained. In the case of liquids containing strong acids or alkalis, which the paper cannot withstand, a plug of carefully purified asbestos or glass-wool (spun glass) is often employed, contained in a bulb blown as an enlargement on a narrow "filter-tube." To accelerate the rate of filtration various devices are resorted to, such as lengthening the tube below the filtering material, increasing the pressure on the liquid being filtered, or decreasing it in the receiver of the filtrate. R.W. Bunsen may be regarded as the originator of the second method, and it was he who devised the small cone of platinum foil, sometimes replaced by a cone of parchment perforated with pinholes, arranged at the apex of the funnel to serve as a support for the paper, which is apt to burst under the pressure differences. In the so-called "Buchner funnel," the filtering vessel is cylindrical, and the paper receives support by being laid upon its flat perforated bottom. In filtering into a vacuum the flask receiving the filtrate should be connected to the exhaust through a second flask. The suction may be derived from any form of air-pump; a form often employed where water at fair pressure is available is the jet-pump, which in consequence is known as a filter-pump. Another method of filtering into a vacuum is to immerse a porous jar ("Pukall cell") in the liquid to be filtered, and attach a suction-pipe to its interior. A filtering arrangement devised by F.C. Gooch, which has come into common use in quantitative analysis where the solid matter has to be submitted to heating or ignition, consists of a crucible having a perforated bottom. By means of a piece of stretched rubber tubing, this crucible is supported in the mouth of an ordinary funnel which is connected with an exhausting apparatus; and water holding in suspension fine scrapings of asbestos, purified by boiling with strong hydrochloric acid and washing with water, is run through it, so that the perforated bottom is covered with a layer of felted asbestos. The crucible is then removed from the rubber support, weighed and replaced; the liquid is filtered through in the ordinary way; and the crucible with its contents is again removed, dried, ignited and weighed. A perforated cone, similarly coated with asbestos and fitted into a conical funnel, is sometimes employed.

In many processes of chemical technology filtration plays an important part. A crude method consists of straining the liquid through cotton or other cloth, either stretched on wooden frames or formed into long narrow bags ("bag-filters"). Occasionally filtration into a vacuum is practised, but more often, as in filter-presses, the liquid is forced under pressure, either hydrostatic or obtained from a force-pump or compressed air, into a series of chambers partitioned off by cloth, which arrests the solids, but permits the passage of the liquid portions. For separating liquids from solids of a fibrous or crystalline character "hydro-extractors" or "centrifugals" are frequently employed. The material is placed in a perforated cage or "basket," which is enclosed in an outer casing, and when the cage is rapidly rotated by suitable gearing, the liquid portions are forced out into the external casing.

FIMBRIA, GAIUS FLAVIUS (d. 84 B.C.), Roman soldier and a violent partisan of Marius. He was sent to Asia in 86 B.C. as legate to L. Valerius Flaccus, but quarrelled with him and was dismissed. Taking advantage of the absence of Flaccus at Chalcedon and the discontent aroused by his avarice and severity, Fimbria stirred up a revolt and slew Flaccus at Nicomedia. He then assumed the command of the army and obtained several successes against Mithradates, whom he shut up in Pitane on the coast of Aeolis, and would undoubtedly have captured him had Lucullus co-operated with the fleet. Fimbria treated most cruelly all the people of Asia who had revolted from Rome or sided with Sulla. Having gained admission to Ilium by declaring that, as a Roman, he was friendly, he massacred the inhabitants and burnt the place to the ground. But in 84 Sulla crossed over from Greece to Asia, made peace with Mithradates, and turned his arms against Fimbria, who, seeing that there was no chance of escape, committed suicide. His troops were made to serve in Asia till the end of the third Mithradatic War.

See ROME: *History*; and arts, on SULLA and MARIUS.

FIMBRIATE (from Lat. *fimbriae*, fringe), a zoological and botanical term, meaning fringed. In heraldry, "fimbriate" or "fimbriated" refers to a narrow edge or border running round a bearing.

FINALE (Ital. for "end"), a term in music for the concluding movement in an instrumental composition, whether symphony, concerto or sonata, and, in dramatic music, the concerted piece which ends each act. Of instrumental finales, the great choral finale to Beethoven's 9th symphony, and of operatic finales, that of Mozart's *Nozze di Figaro*, to the second act, and to the last act of Verdi's *Falstaff* may be mentioned. In the Wagnerian opera the finale has no place.

FINANCE. The term "finance," which comes into English through French, in its original meaning denoted a payment (*finatio*). In the later middle ages, especially in Germany, it acquired the sense of usurious or oppressive dealing with money and capital. The specialized use of the word as equivalent to the management of the public expenditure and receipts first became prominent in France during the 16th century and quickly spread to other countries. The plural form (*Les Finances*) was particularly reserved for this application, while the singular came to denote business activity in respect to monetary dealings (as in the expression *la haute finance*). For the Germans the phrase "science of finance" (*Finanzwissenschaft*) refers exclusively to the economy of the state. English and American writers are less definite in their employment of the term, which varies with the convenience of the author.

A work on "finance" may deal with the Money Market or the Stock Exchange; it may treat of banking and credit organization, or it may be devoted to state revenue and expenditure, which is on the whole the prevailing sense. The expressions "science of finance" and "public finance" have been suggested as suitable to delimit the last mentioned application. At all events, the broad sense is quite intelligible. "Financial" means what is concerned with business, and the idea of a balance between effort and return is also prominent. In the present article attention will be directed to "public finance"; for the other aspects of the subject reference may be made (*inter alia*) to the following:—BANKS AND BANKING; COMPANY; EXCHANGE; MARKET; STOCK EXCHANGE. See also ENGLISH FINANCE, and the sections on finance under headings of countries.

Finance, regarded as state house-keeping, or "political economy" (see ECONOMICS) in the older sense of the term, deals with (1) the expenditure of the state; (2) state revenues; (3) the balance between expenditure and receipts; (4) the organization which collects and applies the public funds. Each of these large divisions presents a series of problems of which the practical treatment is illustrated in the financial history of the great nations of the world. Thus the amount and character of public expenditure necessarily depends on the functions that the state undertakes to perform—national defence, the maintenance of internal order, and the efficient equipment of the state organization; such are the tasks that all governments have to discharge, and for their cost due provision has to be made.

The widening sphere of state activity, so marked a characteristic of modern civilization, involves outlay for what may be best described as “developmental” services. Education, relief of distress, regulation of labour and trade, are duties now in great part performed by public agencies, and their increasing prominence involves augmented expense. The first problem on this side of expenditure is the due balancing of outlay by income. The financier has to “cover” his outlay. There is, further, the duty of establishing a proper proportion between the several forms of expenditure. Not only has there to be a strict control over the total national expense; supervision has to be carried into each department of the state. No one branch of public activity is entitled to make unlimited calls on the state’s revenue. The claims of the “expert” require to be carefully scrutinized. The great financiers have made their reputation quite as much by rigorous control over extravagance in expenditure as by dexterity in devising new forms of revenue. Unfortunately they have not been able to reduce their methods to rule. As yet no more definite principle has been discovered than the somewhat obvious one of measuring the proposed items of outlay (1) against each other, (2) against the sacrifice that additional taxation involves. Of almost equal importance is the rule that the utmost return is to be obtained for the given outlay. The canon of *economy* is as fundamental in regard to public expenditure as it will appear, later, to be in respect to revenue. Just application of the outlay of the state, so that no class receives undue advantage, and the use of public funds for “reproductive,” in preference to “unproductive” objects, are evident general principles whose difficulty lies in their application to the circumstances of each particular case.

Far greater progress has been made in the formulation of general canons as to the nature, growth and treatment of the public revenues. Historically, there is, first, the tendency towards increase in state income to balance the advance in outlay. A second general feature is the relative decline of the receipts from state property and industries in contrast to the expansion of taxation. Regarded as an organized system, the body of receipts has to be made conformable to certain general conditions. Thus there should be revenue sufficient to meet the public requirements. Otherwise the financial organization has failed in one of its essential purposes. In order continuously to attain this end, the revenue must be flexible, or, as is often said, elastic enough to vary in response to pressure. Frequently recurring deficits are, in themselves, a condemnation of the methods under which they are found. Again, the rule of “economy” in raising revenue, or, in other words, taking as little as possible from the contributors over and above what the state receives, holds good for the whole and for each part of public revenue. In like manner the principle of formal justice has the same claim in respect to revenue as to expenditure. No class of person should bear more than his or its proper share. In fact the special maxims usually placed under the head of taxation have really a wider scope as governing the whole financial system. The recognition of even the most elementary rules has been a very slow process, as the course of financial history abundantly proves. Until the 18th century no scientific treatment of financial problems was attained, though there had been great advances on the administrative side.

A brief description of the historical evolution of the earlier financial forms will be the most effective illustration of this statement. The theory of well-organized public finance is also discussed under Taxation and National Debt.

The earliest forms of public revenue are those obtained from the property of the chief or ruler. Land, cattle and slaves are the principal kinds of wealth, and they are all constituents of the king’s revenue; enforced work contributed by members of the community, and the furnishing commodities on requisition, further aid in the maintenance of the primitive state. Financial organization makes its 348
earliest appearance in the great Eastern monarchies, in which tribute was regularly collected and the oldest and most general form of taxation—that levied on the produce of land—was established. In its normal shape this impost consisted in a given proportion of the yield, or of certain portions of the yield, of the soil; one-fourth as in India, one-fifth as in Egypt, or two separate levies of a tenth as in Palestine, are examples of what may from the last instance be called the “tithe” system. Dues of various kinds were gradually added to the land revenue, until, as in the later Egyptian monarchy, the forms of revenue reached a bewildering complexity. But no Eastern state advanced beyond the condition generally characterized as the “patrimonial,” *i.e.* an organization on the model of the household. The part played by money economy was small, and it is noticeable that the revenues were collected by the monarch’s servants, the farming out of taxes being completely unknown. Tribute, however, was paid by subject communities as a whole, and was collected by them for transmission to the conquerors.

Ancient Greek.

A much higher stage was reached in the financial methods of the Greek states, or more correctly speaking of Athens, the best-known specimen of the class. Instead of the comparatively simple expedients of the barbarian monarchies, as indicated above, the Athenian city state by degrees developed a rather complex revenue system. Some of the older forms are retained. The city owned public land which was let on lease and the rents were farmed out by auction. A specially valuable property of Athens was the possession of the silver mines at Laurium, which were worked on lease by slave labour. The produce, at first distributed amongst the citizens, was later a part of the state income, and forms the subject of some of the suggestions respecting the revenue in the treatise formerly ascribed to Xenophon. The reverence that attached to the precious metals caused undue exaltation of the services rendered by this property.

One of the characteristics of the ancient state was its extensive control over the persons and property of its citizens. In respect to finance this authority was strikingly manifested in the burdens

imposed on wealthy citizens by the requirements of the "liturgies" (λειτουργίαι), which consisted in the provision of a chorus for theatrical performances, or defraying the expenses of the public games, or, finally, the equipment of a ship, "the trierarchy," which was economically and politically the most important. Athenian statesmanship in the time of Demosthenes was gravely exercised to make this form of contribution more effective. The grouping into classes and the privilege of exchanging property, granted to the contributor against any one whom he believed entitled to take his place, are marks of the defective economic and financial organization of the age.

Amongst taxes strictly so called were the market dues or tolls, which in some cases approximated to excise duties, though in their actual mode of levy they were closely similar to the *octrois* of modern times. Of greater importance were the customs duties on imports and exports. These at the great period of Athenian history were only 2%. The prohibition of export of corn was an economic rather than a financial provision. In the treatment of her subject allies Athens was more rigorous, general import and export duties of 5% being imposed on their trade. The high cost of carriage, and the need of encouraging commerce in a community relying on external sources for its food supply, help to explain the comparatively low rates adopted. Neither as financial nor as protective expedients were the custom duties of classical societies of much importance.

Direct taxation received much greater expansion. A special levy on the class of resident aliens (μετοίκιον), probably paralleled by a duty on slaves, was in force. A far more important source of revenue was the general tax on property (εἰσφορά), which according to one view existed as early as the time of Solon, who made it a part of his constitutional system. Modern inquiry, however, tends towards the conclusion that it was under the stress of the Peloponnesian War that this impost was introduced (428 B.C.). At first it was only levied at irregular intervals; afterwards, in 378 B.C., it became a permanent tax based on elaborate valuation under which the richer members paid on a larger quota of their capital; in the case of the wealthiest class the taxable quota was taken as one-fifth, smaller fractions being adopted for those belonging to the other divisions. The assessment (τίμημα) included all the property of the contributor, whose accuracy in making full returns was safeguarded by the right given to other citizens to proceed against him for fraudulent under-valuation. A further support was provided in the reform of 378 B.C. by the establishment of the symmories, or groups of tax-paying citizens; the wealthier members of each group being responsible for the tax payments of all the members.

The scanty and obscure references to finance, and to economic matters generally, in classical literature do not elucidate all the details of the system; but the analogies of other countries, *e.g.* the mode of levying the *taille* in 18th century France and the "tenth and fifteenth" in medieval England, make it tolerably plain that in the 4th century B.C. the Athenian state had developed a mode of taxation on property which raised those questions of just distribution and effective valuation that present themselves in the latest tax systems of the modern world. Taken together with the liturgies, the "eisphora" placed a very heavy burden on the wealthier citizens, and this financial pressure accounts in great part for the hostility of the rich towards the democratic constitution that facilitated the imposition of graduated taxation and super-taxes—to use modern terms—on the larger incomes. The normal yield of the property tax is reported as 60 talents (£14,400); but on special occasions it reached 200 talents (£48,000), or about one-sixth of the total receipts.

On the administrative side also remarkable advances were made by the entrusting of military expenditure to the "generals," and in the 4th century B.C. by the appointment of an administrator whose duty it was to distribute the revenue of the state under the directions of the assembly. The absence of settled public law and the influence of direct democracy made a complete ministry of finance impossible.

The Athenian "hegemony" in its earlier and later phases had an important financial side. The confederacy of Delos made provision for the collection of a revenue (φόρος) from the members of the league, which was employed at first for defence against Persian aggression, but afterwards was at the disposal of Athens as the ruling state. The annual collection of 460 talents (£110,400) shows sufficiently the magnitude of the league.

Too little is known of the financial methods of the other Greek states and of the Macedonian kingdoms to allow of any definite account of their position. In the latter, particularly in Egypt, the methods of the earlier rulers probably survived. Their finance, like their social life generally, exhibited a blending of Hellenic and barbarian elements. The older land-taxes were probably accompanied by import dues and taxes on property.

Roman.

In the infancy of the Roman republic its revenues were of the kind usual in such communities. The public land yielded receipts which may indifferently be regarded as rents or taxes; the citizens contributed their services or commodities, and dues were raised on certain articles coming to market. With the progress of the Roman dominion the financial organization grew in extent. In order to meet the cost of the early wars a special contribution from property (*tributum ex censu*) was levied at times of emergency, though it was in some cases regarded as an advance to be repaid when the occasion of expense was over. Owing to the great military successes, and the consequent increase of the other sources of revenue, it became feasible to suspend the *tributum* in 167 B.C., and it was not again levied till after the death of Julius Caesar. From this date the expenses of the Roman state "were undisguisedly supported by the taxation of the provinces." Neither the state monopolies nor the public land in Italy afforded any

appreciable revenue. The other charges that affected Italy were the 5% duty on manumissions, and customs dues on seaborne imports. But with the acquisition of the important provinces of Sicily, Spain and Africa, the formation of a tax system based on the tributes of the dependencies became possible. To a great extent the pre-existing forms of revenue were retained, but were gradually systematized. In legal theory the land of conquered communities passed into the ownership of the Roman state; in practice a revenue was obtained through land taxes in the form of either tithes (*decumae*) or money payments (*stipendia*). To the latter were adjoined capitation and trade taxes (the *tributum capitis*). For pasture land a special rent was paid. In some provinces (*e.g.* Sicily) payment in produce was preferred, as affording the supply needed for the free distribution of corn at Rome.

The great form of indirect taxation consisted in the customs dues (*portoria*), which were collected at the provincial boundaries and varied in amount, though the maximum did not exceed 5%. Under the same head were included the town dues (or *octrois*). Further, the local administration was charged on the district concerned, and requisitions for the public service were frequently made on the provincial communities. Supplies of grain, ships and timber for military use were often demanded.

The methods of levy may be regarded as an additional tax. “Vexation,” as Adam Smith remarks, “though not strictly speaking expense, is certainly equivalent to the expense at which every man would be willing to redeem himself from it”; and the Roman system was extraordinarily vexatious. From an early date the collection of the taxes had been farmed out to companies of contractors (*societates vectigales*), who became a by-word for rapacity. Being bound to pay a stated sum to the public authorities these *publicani* naturally aimed at extracting the largest possible amount from the unfortunate provincials, and, as they belonged to the Roman capitalist class, they were able to influence the provincial governors. Undue claims on the part of the tax collectors were aggravated by the extortion of the public officials. The defects of the financial organization were a serious influence in the complex of causes that brought about the fall of the Republic.

One of the reasons that induced the subject populations to accept with pleasure the establishment of the Empire was the improvement in financial treatment that it secured. The corrupt and uneconomical method of farming out the collection of the revenue was, to a great extent, replaced by collection through the officials of the imperial household. The earlier Roman treasury (*aerarium*) was formally retained for the receipt of revenue from the senatorial provinces, but the officials were appointed by the Princeps and became gradually mere municipal officers. The real centre of finance was the *fiscus* or imperial treasury, which was under the exclusive control of the ruler (“res fiscales,” says Ulpian, “quasi propriae et privatae principis sunt”), and was administered by officials of his household. Under the Republic the Senate had been the financial authority, with the Censors as finance ministers and the Quaestors as secretaries of the treasury. Never very precise, this system in the 1st century B.C. fell into extreme decay. By means of his freedmen the emperor introduced the more rigorous economy of the Roman household into public finance. The census as a method of valuation was revived; the important and productive land taxes were placed on a more definite footing; while, above all, the substitution of direct collection by state officials for the letting out by auction of the tax-collection to the companies of *publicani* was made general. Thus some of the most valuable lessons as to the normal evolution of a system of finance are to be learned in this connexion. Of equal, or even greater moment is the failure of the administrative reforms of the Empire to secure lasting improvement, a result due to the absence of constitutional guarantees. The close relation between finance and general policy is most impressively illustrated in this failure of benevolent autocracy.

Viewed broadly, the financial resources of the earlier Empire were obtained from (1) the public land alike of the state and the Princeps; (2) the monopolies, principally of minerals; (3) the land tax; (4) the customs; (5) the taxes on inheritances, on sales and on the purchase of slaves (*vectigalia*). One result of the establishment of the Principate was the consolidation of the public domain. The old “public land” in Italy had nearly disappeared; but the royal possessions in the conquered provinces and the private properties of the emperor became ultimately a part of the property of the Fiscus. Such land was let either on five-year leases or in perpetuity to coloni. Mines were also taken over for public use and worked by slaves or, in later times, by convict labour. The tendency towards state monopoly became more marked in the closing days of the Empire, the 4th and 5th centuries A.D. Perhaps the most comprehensive of the fiscal reforms of the Empire was the reconstruction of the land tax, based on a census or (to use the French term) *cadastre*, in which the area, the modes of cultivation and the estimated productiveness of each holding were stated, the average of ten preceding years being taken as the standard. After the reconstruction under Diocletian at the end of the 3rd century A.D., fifteen years (the *indictio*)—though probably used as early as the time of Hadrian—was recognized as the period for revaluation. With the growing needs of the state this taxation became more rigorous and was one of the great grievances of the population, especially of the sections that were declining in status and passing into the condition of villenage. The *portoria*, or customs, received a better organization, though the varying rates for different provinces continued. By degrees the older maximum of 5% was exceeded, until in the 4th century 12½% was in some cases levied. Even at this higher rate the facilities for trade were greater than in medieval or (until the revolution in transport) modern times. In spite of certain prejudices against the import of luxuries and the export of gold, there is little indication of the influence of mercantilist or protectionist ideas. The nearest approach to excise was the duty of 1% on all sales, a tax that in Gibbon’s words “has ever been the occasion of clamour and discontent.” The higher charge of 4% on the purchase of slaves, and the still heavier 5% on successions after death, were likewise established at the beginning of the Empire and specially applied to the full citizens. Escheats and lapsed legacies (*caduca*) were further miscellaneous sources

of gain to the state.

Taken as a whole, the financial system of Imperial Rome shows a very high elaboration in *form*. The *patrimonium*, the *tributa* and the *vectigalia* are divisions parallel to the *domaine*, the *contributions directes* and the *contributions indirectes* of modern French administration; or the English "non-tax" revenue, inland revenue and "customs and excise." The careful regulations given in the Codes and the Digest show the observance of technical conditions as to assessment and accounting. In substance and spirit, however, Roman finance was essentially backward. Without altogether accepting Merivale's judgment that "their principles of finance were to the last rude and unphilosophical," it may be granted that Roman statesmen never seriously faced the questions of just distribution and maximum productiveness in the tax system. Still less did they perceive the connexion between these two aspects of finance. Mechanical uniformity and minute regulation are inadequate substitutes for observance of the canons of equality, certainty and economy in the operation of the tax system. Whether (as has been suggested) an Adam Smith in power could have saved the Empire is doubtful; but he would certainly have remodelled its finance. The most glaring fault was plainly the undue and increasing pressure on the productive classes. Each century saw heavier burdens imposed on the actual workers and on their employers, while expenditure was chiefly devoted to unproductive purposes. The distribution was also unfair as between the different territorial divisions. The capital and certain provincial towns were favoured at the expense of the provinces and the country districts. Again, the cost of collection, though less than under the farming-out system, was far too great. Some alleviation was indeed obtained by the apportionment of contributions amongst the districts liable, leaving to the community to decide as it thought best between its members. The allotment of the land-tax to units (*juga*) of equal value whatever might be the area, was a contrivance similar in character.

The gradual way in which the several provinces were brought under the general tax system, and the equally gradual extension of Roman citizenship, account further for the irregularity and increased weight of the taxes; as the absence of publicity and the growth of autocracy explain the sense of oppression and the hopelessness of resistance so vividly indicated in the literature of the later Empire. Exemptions at first granted to the citizens were removed, while the cost of local government which continually increased was placed on the middle-class of the towns as represented by the *decuriones*, or members of the municipalities.

The fact that no ingenuity of modern research has been able to construct a real budget of expenditure and receipt for any part of the long centuries of the Empire is significant as to the secrecy that surrounded the finances, especially in the later period. For at the beginning of the principate Augustus seems to have aimed at a complete estimate of the financial situation, though this may be regarded as due to the influence of the freer republican traditions which the reverence that soon attached to the emperor's dignity completely extinguished.

In addition to its value as illustrating the difficulties and defects that beset the development of a complex financial organization from the simpler forms of the city and the province, Roman finance is of special importance in consequence of its place as supplying a model or rather a guide for the administration of the states that arose on its ruins. The barbarian invaders, though they were accustomed to contributions to their chiefs and to the payment of commodities as tributes or as penalties, had no acquaintance with the working of a regular system of taxation. The more astute rulers utilized the machinery that they inherited from the Roman government. Under the Franks the land tax and the provincial customs continued as forms of revenue, while beside them the gifts and court fees of Teutonic origin took their place. Similar conditions appear in Theodoric's administration of Italy. The maintenance of Roman forms and terms is prominent in fiscal administration. But institutions that have lost their life and animating spirit can hardly be preserved for any length of time. All over western Europe the elaborate devices of the *census* and the stations for the collection of customs crumbled away; taxation as such disappeared, through the hostility of the clergy and the exemptions accorded to powerful subjects. This process of disintegration spread out over centuries. The efforts made from time to time by vigorous rulers to enforce the charges that remained legally due, proved quite ineffectual to restore the older fiscal system. The final result was a complete transformation of the ingredients of revenue. The character of the change may be best indicated as a substitution of private claims for public rights. Thus, the land-tax disappears in the 7th century and only comes into notice in the 9th century in the shape of private customary dues. The customs duties become the tolls and transit charges levied by local potentates on the diminishing trade of the earlier middle ages. This revolution is in accordance with—indeed it is one side of—the movement towards feudalism which was the great feature of this period. Finance is essentially a part of *public* law and administration. It could, therefore, hold no prominent place in a condition of society which hardly recognized the state, as distinct from the members of the community, united by feudal ties. The same conception may be expressed in another way, viz. by the statement that the kingdoms which succeeded the Roman Empire were organized on the patrimonial basis (*i.e.* the revenues passed into the hands of the king or, rather, his domestic officials), and thus in fact returned to the condition of pre-classical times. Notwithstanding the differing features in the several countries, retrogression is the common characteristic of European history from the 5th to the 10th century, and it was from the ruder state that this decline created that the rebuilding of social and political organization had to be accomplished. On the financial side the work, as already suggested, was aided by the ideas and institutions inherited from the Roman Empire. This influence was common to all the continental states and indirectly was felt even in England. Each of the great realms has, however, worked out its financial system on lines suitable to its own particular conditions, which are best considered in

connexion with the separate national histories.

Running through the different national systems there are some common elements the result not of inheritance merely but still more of necessity, or at the lowest of similarity in environment. Over and above the details of financial development there is a thread of connexion which requires treatment under Finance taken as a whole. As the great aim of this side of public activity is to secure funds for the maintenance of the state's life and working, the administration which operates for this end is the true nucleus of all national finance. The first sign of revival from the catastrophe of the invasions is the reorganization of the Imperial household under Charlemagne with the intention of establishing a more exact collection of revenue. The later German empire of Otto and the Frederics; the French Capetian monarchy and, in a somewhat different sphere, the medieval Italian and German cities show the same movement. The treasury is the centre towards which the special receipts of the ruler or rulers should be brought, and from it the public wants should be supplied. Feudalism, as the antithesis of this orderly treatment, had to be overthrown before national finance could become established. The development can be traced in the financial history of England, France and the German states; but the advance in the French financial organization of the 15th and 16th centuries affords the best illustration. The gradual unification operates on all the branches of finance,—expenditure, revenue, debt and methods of control. In respect to the first head there is a well-marked "integration" of the modes for meeting the cost of the public services. What were semi-private duties become public tasks, which, with the growing importance of "money-economy," have to be defrayed by state payments. Thus, the creation of the standing army in France by Charles VII. marks a financial change of the first order. The English navy, though more gradually developed, is an equally good illustration of the movement. All outlay by the state is brought into due co-ordination, and it becomes possible for constitutional government to supervise and direct it. This improvement, due to English initiative, has been adopted amongst the essential forms of financial administration on the continent. The immense importance of this view of public expenditure as representing the consumption of the state in its unified condition is obvious; it has affected, for the most part unconsciously, the conception of all modern peoples as to the functions of the state and the right of the people to direct them.

On the side of receipts a similar unifying process has been accomplished. The almost universal separation between "ordinary" and "extraordinary" receipts, taxation being put under the latter head, has completely ceased. It was, however, the fundamental division for the early French writers on finance, and it survives for England as late as Blackstone's *Commentaries*. The idea that the ruler possessed a normal income in certain rents and dues of a quasi-private character, which on emergency he might supplement by calls on the revenues of his subjects, was a bequest of feudalism which gave way before the increasing power of the state. In order to meet the unified public wants, an equally unified public fund was requisite. The great economic changes which depreciated the value of the king's domain contributed towards the result. Only by well-adjusted taxation was it possible to meet the public necessities. In respect to taxation also there has been a like course of readjustment. Separate charges, assigned for distinct purposes, have been taken into the national exchequer and come to form a part of the general revenue. There has been—taking long periods—a steady absorption of special taxes into more general categories. The replacement of the four direct taxes by the income tax in France, as proposed in 1909, is a very recent example. Equally important is the growth of "direct" taxation. As tax contributions have taken the places of the revenue from land and fees, so, it would seem, are the taxes on commodities likely to be replaced or at least exceeded by the imposts levied on income as such, in the shape either of income taxes proper or of charges on accumulated wealth. The recent history of the several financial systems of the world is decisive on this point. A clearer perception of the conditions under which the effective attainment of revenue is possible is another outcome of financial development. Security, and in particular the absence of arbitrary impositions, combined with convenient modes of collection, have come to be recognized as indispensable auxiliaries in financial administration which further aims at the selection of really productive forms of charge. Unproductiveness is, according to modern standard, the cardinal fault of any particular tax. How great has been the progress in these aspects is best illustrated in the case of English finance, but both French and German fiscal history can supply many instructive examples.

In a third direction the co-ordination of finance has been just as remarkable. Financial adjustment implies the conception of a balance, and this should be found in the relation of outlay and income. Under the pressure of war and other emergencies it has been found impossible to maintain this desirable equilibrium. But the use of the system of credit, and the general establishment of constitutional government, have enabled the difficulty to be surmounted by the creation on a vast scale of national debts. Apart from the special problems that this system of borrowing raises, there is the general one of its aid in making national finance continuous and orderly. Deficits can be transferred to the capital account, and the country's resources employed most usefully by repaying liabilities contracted in times of extreme need. The growth of this department, parallel with the general progress of finance, is significant of its function.

Finally, in all countries though with diversities due to national peculiarities, the modes of account and control have been brought into a more effective condition. Previous legislative sanction for both expenditure and receipts in all their particular forms is absolutely necessary; so is thorough scrutiny of the actual application of the funds provided. Either by administrative survey or by judicial examination care is taken to see that there has been no improper diversion from the designed purposes. It is only when the varied systems of financial organization are studied in their general bearing, and with regard to what may be called their frame-work, that their essential resemblance is

thoroughly realized. Such a real underlying unity is the reason and justification for regarding “public finance” as a distinct subject of study and as an independent division of political science.

Local Finance.—One of the most remarkable features of modern financial development has been the growth of the complementary system of local finance, which in extent and complication bids to rival that of the central authority. Under the constraining power of the Roman Empire the older city states were reduced to the position of municipalities, and their financial administration became dependent on the control of the Emperor—as is abundantly illustrated in the correspondence of Pliny and Trajan. After the fall of the Western Empire, a partial revival of city life, particularly in Italy and Germany, gave some scope for a return to the type of finance presented by the Athenian state. Florence affords an instructive specimen; but the passage from feudalism to the national state under the authority of monarchy made the cities and country districts parts of a larger whole. It is in this condition of subordination that the finance of localities has been framed and effectively organized. Though each great state has adopted its own methods, influenced by historical circumstances and by ideas of policy, there are general resemblances that furnish material for scientific treatment and allow of important generalizations being made.

Amongst these the first to be noticed is the essential *subordination* of local finance. Alike in expenditure, in forms of receipt, and in methods of administration the central government has the right of directing and supervising the work of municipal and provincial agencies. The modes employed are various, but they all rest on the sovereignty of the state, whether exercised by the central officials or by the courts. A second characteristic is the predominance of the *economic* element in the several tasks that local administrations have to perform, and the consequent tendency to treat the charges of local finance as payments for services rendered, or, in the usual phrase, to apply the “benefits” principle, in contrast to that of “ability,” which rightly prevails in national finance. Over a great part of municipal administration—particularly that engaged in supplying the needs of the individual citizens—the finance may be assimilated to that of the joint-stock company, with of course the necessary differences, viz. that the association is compulsory; and that dividends are paid, not in money, but in social advantage. The great expansion in recent years of what is known as *Municipal Trading* has brought this aspect of local finance into prominence. Water supply, transport and lighting have become public services, requiring careful financial management, and still retaining traces of their earlier private character.

Corresponding to the mainly economic nature of local expenditure there is the further limitation imposed on the side of revenue. Unlike the state in this, localities are limited in respect to the amount and form of their taxation. Several distinct influences combine to produce this result. The needs of the central government lead to its retention of the more profitable modes of procuring revenue. No modern country can surrender the chief direct and indirect taxes to the local administrations. Another limiting condition is found in the practical impossibility of levying by local agencies such imposts as the customs and the income-tax in their modern forms. The elaborate machinery that is requisite for covering the national area and securing the revenue against loss can only be provided by an authority that can deal with the whole territory. Hence the very general limitation of local revenues to certain typical forms. Though in some cases municipal taxation is imposed on commodities in the form of *octrois* or entry duties—as is notably the case in France—yet the prevailing tendency is towards the levy of direct charges on immovable property, which cannot escape by removal outside the tax jurisdiction. In addition to these “land” and “house” taxes, the employment of licence duties on trades, particularly those that are in special need of supervision, is a favourite method. Closely akin are the payments demanded for privileges to industrial undertakings given as “franchises,” very often in connexion with monopolies, *e.g.* gas-works and tramways. Over and above the peculiar revenues of local bodies there is the further resource—which emphasizes the subordinate position of local finance—of obtaining supplemental revenue from the central treasury, either by taxes additional to the charges of the state, and collected at the same time; or by donations from its funds, in the shape of grants for special services, or assignments of certain parts of the state’s receipts. Great Britain, France and Prussia furnish good examples of these different modes of preserving local administration from financial collapse.

The broad resemblance between the two parts of the entire system of public finance is seen in another direction. To national debts there has been added a great mass of municipal and local indebtedness, which seems likely to equal, or even exceed in magnitude the liabilities of the central governments. But here also the essential limitations of the newer form are easily perceptible. The sovereignty of the state enables it to deal as it thinks best with the public creditor. In its methods of borrowing, in its plans for repayment, or, in extremity, in its power of repudiation it is independent of external control. Local debt on the other hand can only be contracted under the sanction of the appropriate administrative organ of the state. The creditor has the right of claiming the aid of the law against the defaulting municipality; and the amounts, the terms, and the time of duration of local debt are supervised in order to prevent injustice to particular persons or improvidence with regard to the revenue and property of the local units. The chief reason for contracting local debt being the establishment of works that are, directly or indirectly, reproductive, the governing conditions are evidently to be found in the character and probable yield of those businesses. The principles of company investments are fully applicable: the creation of sinking-funds, the fixing the term of each loan to the time at which the return from its employment ceases, and the avoidance of the formation of fictitious capital, become guiding rules from this part of finance, and indicate the connexion with what the commercial world calls “financial operations.”

Finally, there is the same set of problems in respect to accounting and control in local as in central finance. Though the materials are simpler, the need for a well-prepared budget is existent in the case of the city, county or department, if there is to be clear and accurate financial management. Perhaps the greatest weakness of local finance lies in this direction. The public opinion that affects the national budget is unfortunately too often lacking in the most important towns, not excluding those in which political life is highly developed.

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(C. F. B.)

FINCH, FINCH-HATTON. This old English family has had many notable members, and has contributed in no small degree to the peerage. Sir Thomas Finch (d. 1563), who was knighted for his share in suppressing Sir T. Wyatt's insurrection against Queen Mary, was a soldier of note, and was the son and heir of Sir William Finch, who was knighted in 1513. He was the father of Sir Moyle Finch (d. 1614), who was created a baronet in 1611, and whose widow Elizabeth (daughter of Sir Thomas Heneage) was created a peeress as countess of Maidstone in 1623 and countess of Winchilsea in 1628; and also of Sir Henry Finch (1558-1625), whose son John, Baron Finch of Fordwich (1584-1660), is separately noticed. Thomas, eldest son of Sir Moyle, succeeded his mother as first earl of Winchilsea; and Sir Heneage, the fourth son (d. 1631), was the speaker of the House of Commons, whose son Heneage (1621-1682), lord chancellor, was created earl of Nottingham in 1675. The latter's second son Heneage (1649-1719) was created earl of Aylesford in 1714. The earldoms of Winchilsea and Nottingham became united in 1729, when the fifth earl of Winchilsea died, leaving no son, and the title passed to his cousin the second earl of Nottingham, the earldom of Nottingham having since then been held by the earl of Winchilsea. In 1826, on the death of the ninth earl of Winchilsea and fifth of Nottingham, his cousin George William Finch-Hatton succeeded to the titles, the additional surname of Hatton (since held in this line) having been assumed in 1764 by his father under the will of an aunt, a daughter of Christopher, Viscount Hatton (1632-1706), whose father was related to the famous Sir Christopher Hatton.

FINCH OF FORDWICH, JOHN FINCH, BARON (1584-1660), generally known as Sir John Finch, English judge, a member of the old family of Finch, was born on the 17th of September 1584, and was called to the bar in 1611. He was returned to parliament for Canterbury in 1614, and became recorder of the same place in 1617. Having attracted the notice of Charles I., who visited Canterbury in 1625, and was received with an address by Finch in his capacity as recorder, he was the following year appointed king's counsel and attorney-general to the queen and was knighted. In 1628 he was elected speaker of the House of Commons, a post which he retained till its dissolution in 1629. He was the speaker who was held down in his chair by Holles and others on the occasion of Sir John Eliot's resolution on tonnage and poundage. In 1634 he was appointed chief justice of the court of common pleas, and distinguished himself by the active zeal with which he upheld the king's prerogative. Notable also was the brutality which characterized his conduct as chief justice, particularly in the cases of William Prynne and John Langton. He presided over the trial of John Hampden, who resisted the payment of ship-money, and he was chiefly responsible for the decision of the judges that ship-money was constitutional. As a reward for his services he was, in 1640, appointed lord keeper, and was also created Baron Finch of Fordwich. He had, however, become so unpopular that one of the first acts of the Long Parliament, which met in the same year was his impeachment. He took refuge in Holland, but had to suffer the sequestration of his estates. When he was allowed to return to England is uncertain, but in 1660 he was one of the commissioners for the trial of the regicides, though he does not appear to have taken much part in the proceedings. He died on the 27th of November 1660 and was buried in St Martin's church near Canterbury, his peerage becoming extinct.

See Foss, *Lives of the Judges*; Campbell, *Lives of the Chief Justices*.

FINCH (Ger. *Fink*, Lat. *Fringilla*), a name applied (but almost always in composition—as bullfinch, chaffinch, goldfinch, hawfinch, &c.) to a great many small birds of the order *Passeres*, and now pretty generally accepted as that of a group or family—the *Fringillidae* of most ornithologists. Yet it is one the extent of which must be regarded as being uncertain. Many writers have included in it the buntings (*Emberizidae*), though these seem to be quite distinct, as well as the larks (*Alaudidae*), the tanagers (*Tanagridae*), and the weaver-birds (*Ploceidae*). Others have separated from it the crossbills, under the title of *Loxiidae*, but without due cause. The difficulty which at this time presents itself in regard to the limits of the *Fringillidae* arises from our ignorance of the anatomical features, especially those of the head, possessed by many exotic forms.

Taken as a whole, the finches, concerning which no reasonable doubt can exist, are not only little birds with a hard bill, adapted in most cases for shelling and eating the various seeds that form the chief portion of their diet when adult, but they appear to be mainly forms which predominate in and are highly characteristic of the Palaearctic Region; moreover, though some are found elsewhere on the globe, the existence of but very few in the Notogaean hemisphere can as yet be regarded as certain.

But even with this limitation, the separation of the undoubted *Fringillidae*[1] into groups is a difficult task. Were we merely to consider the superficial character of the form of the bill, the genus *Loxia* (in its modern sense) would be easily divided not only from the other finches, but from all other birds. The birds of this genus—the crossbills—when their other characters are taken into account, prove to be intimately allied on the one hand to the grosbeaks (*Pinicola*) and on the other through the redpolls (*Aegiothus*) to the linnets (*Linota*)—if indeed these two can be properly separated. The linnets, through the genus *Leucosticte*, lead to the mountain-finches (*Montifringilla*), and the redpolls through the siskins (*Chrysomitris*) to the goldfinches (*Carduelis*); and these last again to the hawfinches, one group of which (*Coccothraustes*) is apparently not far distant from the chaffinches (*Fringilla* proper), and the other (*Hesperiphona*) seems to be allied to the greenfinches (*Ligurinus*). Then there is the group of serins (*Serinus*), to which the canary belongs, that one is in doubt whether to refer to the vicinity of the greenfinches or that of the redpolls. The mountain-finches may be regarded as pointing first to the rock-sparrows (*Petronia*) and then to the true sparrows (*Passer*); while the grosbeaks pass into many varied forms and throw out a very well marked form—the bullfinches (*Pyrrhula*). Some of the modifications of the family are very gradual, and therefore conclusions founded on them are likely to be correct; others are further apart, and the links which connect them, if not altogether missing, can but be surmised. To avoid as much as possible prejudicing the case, we shall therefore take the different groups of *Fringillidae* which it is convenient to consider in this article in an alphabetical arrangement.

Of the Bullfinches the best known is the familiar bird (*Pyrrhula europaea*). The varied plumage of 353
the cock—his bright red breast and his grey back, set off by his coal-black head and quills—is naturally attractive; while the facility with which he is tamed, with his engaging disposition in confinement, makes him a popular cage-bird,—to say nothing of the fact (which in the opinion of so many adds to his charms) of his readily learning to “pipe” a tune, or some bars of one. By gardeners the bullfinch has long been regarded as a deadly enemy, from its undoubted destruction of the buds of fruit-trees in spring-time, though whether the destruction is really so much of a detriment is by no means so undoubted. Northern and eastern Europe is inhabited by a larger form (*P. major*), which differs in nothing but size and more vivid tints from that which is common in the British Isles and western Europe. A very distinct species (*P. murina*), remarkable for its dull coloration, is peculiar to the Azores, and several others are found in Asia from the Himalayas to Japan. A bullfinch (*P. cassini*) has been discovered in Alaska, being the first recognition of this genus in the New World.

The Canary (*Serinus canarius*) is indigenous to the islands whence it takes its name, as well, apparently, as to the neighbouring groups of the Madeiras and Azores, in all of which it abounds. It seems to have been imported into Europe at least as early as the first half of the 16th century,[2] and has since become the commonest of cage-birds. The wild stock is of an olive-green, mottled with dark brown above, and greenish-yellow beneath. All the bright-hued examples we now see in captivity have been induced by carefully breeding from any chance varieties that have shown themselves; and not only the colour, but the build and stature of the bird have in this manner been greatly modified. The ingenuity of “the fancy,” which might seem to have exhausted itself in the production of topknots, feathered feet, and so forth, has brought about a still further change from the original type. It has been found that by a particular treatment, in which the mixing of large quantities of vegetable colouring agents with the food plays an important part, the ordinary “canary yellow” may be intensified so as to verge upon a more or less brilliant flame colour.[3]

Very nearly resembling the canary, but smaller in size, is the Serin (*Serinus hortulanus*), a species which not long since was very local in Europe, and chiefly known to inhabit the countries bordering on the Mediterranean. It has pushed its way towards the north, and has even been several times taken in England (Yarrell’s *Brit. Birds*, ed. 4, ii. pp. 111-116). A closely allied species (*S. canonicus*) is peculiar to Palestine.

The Chaffinches are regarded as the type-form of *Fringillidae*. The handsome and sprightly *Fringilla coelebs*[4] is common throughout the whole of Europe. Conspicuous by his variegated plumage, his peculiar call note[5] and his glad song, the cock is almost everywhere a favourite. In Algeria the British chaffinch is replaced by a closely-allied species (*F. spodogenia*), while in the Atlantic Islands it is represented by two others (*F. tintillon* and *F. teydea*)—all of which, while possessing the general appearance of the European bird, are clothed in soberer tints.[6] Another species of true *Fringilla* is the brambling (*F. montifringilla*), which has its home in the birch forests of northern Europe and Asia, whence it yearly proceeds, often in flocks of thousands, to pass the winter in more southern countries. This bird is still more beautifully coloured than the chaffinch—especially in summer, when, the brown edges of the feathers being shed, it presents a rich combination of black, white and orange. Even in winter, however, its diversified plumage is sufficiently striking.

With the exception of the single species of bullfinch already noticed as occurring in Alaska, all the above forms of finches are peculiar to the Palaearctic Region.

(A. N.)

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1 About 200 species of these have been described, and perhaps 150 may really exist.

2 The earliest published description seems to be that of Gesner in 1555 (*Orn.* p. 234), but he had not seen the bird, an account of which was communicated to him by Raphael Seiler of Augsburg, under the name of *Suckeruögele*.

3 See also *The Canary Book*, by Robert L. Wallace; *Canaries and Cage Birds*, by W.A. Blackston; and Darwin's *Animals and Plants under Domestication*, vol. i. p. 295. An excellent monograph on the wild bird is that by Dr Carl Bolle (*Journ. für Orn.*, 1858, pp. 125-151).

4 This fanciful trivial name was given by Linnaeus on the supposition (which later observations do not entirely confirm) that in Sweden the hens of the species migrated southward in autumn, leaving the cocks to lead a celibate life till spring. It is certain, however, that in some localities the sexes live apart during the winter.

5 This call-note, which to many ears sounds like "pink" or "spink," not only gives the bird a name in many parts of Britain, but is also obviously the origin of the German *Fink* and the English *Finch*. The similar Celtic form *Pinc* is said to have given rise to the Low Latin *Pincio*, and thence come the Italian *Pincione*, the Spanish *Pinzon*, and the French *Pinson*.

6 This is especially the ease with *F. teydea* of the Canary Islands, which from its dark colouring and large size forms a kind of parallel to the Azorean *Pyrrhula murina*.

FINCHLEY, an urban district in the Hornsey parliamentary division of Middlesex, England, 7 m. N.W. of St Paul's cathedral, London, on a branch of the Great Northern railway. Pop. (1891) 16,647; (1901) 22,126. A part, adjoining Highgate on the north, lies at an elevation between 300 and 400 ft., while a portion in the Church End district lies lower, in the valley of the Dollis Brook. The pleasant, healthy situation has caused Finchley to become a populous residential district. Finchley Common was formerly one of the most notorious resorts of highwaymen near London; the Great North Road crossed it, and it was a haunt of Dick Turpin and Jack Sheppard, and was still dangerous to cross at night at the close of the 18th century. Sheppard was captured in this neighbourhood in 1724. The Common has not been preserved from the builder. In 1660 George Monk, marching on London immediately before the Restoration, made his camp on the Common, and in 1745 a regular and volunteer force encamped here, prepared to resist the Pretender, who was at Derby. The gathering of this force inspired Hogarth's famous picture, the "March of the Guards to Finchley."

FINCK, FRIEDRICH AUGUST VON (1718-1766), Prussian soldier, was born at Strelitz in 1718. He first saw active service in 1734 on the Rhine, as a member of the suite of Duke Anton Ulrich of Brunswick-Wolfenbüttel. Soon after this he transferred to the Austrian service, and thence went to Russia, where he served until the fall of his patron Marshal Münnich put an end to his prospects of advancement. In 1742 he went to Berlin, and Frederick the Great made him his aide-de-camp, with the rank of major. Good service brought him rapid promotion in the Seven Years' War. After the battle of Kolin (June 18th, 1757) he was made colonel, and at the end of 1757 major-general. At the beginning of 1759 Finck became lieutenant-general, and in this rank commanded a corps at the disastrous battle of Kunersdorf, where he did good service both on the field of battle and (Frederick having in despair handed over to him the command) in the rallying of the beaten Prussians. Later in the year he fought in concert with General Wunsch a widespread combat, called the action of Korbitz (Sept. 21st) in which the Austrians and the contingents of the minor states of the Empire were sharply defeated. For this action Frederick gave Finck the Black Eagle (Seyfarth, *Beilagen*, ii. 621-630). But the subsequent catastrophe of Maxen (see Seven Years' War) abruptly put an end to Finck's active career. Dangerously

exposed, and with inadequate forces, Finck received the king's positive order to march upon Maxen (a village in the Pirna region of Saxony). Unfortunately for himself the general dared not disobey his master, and, cut off by greatly superior numbers, was forced to surrender with some 11,000 men (21st Nov. 1759). After the peace, Frederick sent him before a court-martial, which sentenced him to be cashiered and to suffer a term of imprisonment in a fortress. At the expiry of this term Finck entered the Danish service as general of infantry. He died at Copenhagen in 1766.

He left a work called *Gedanken über militärische Gegenstände* (Berlin, 1788). See *Denkwürdigkeiten der militärischen Gesellschaft*, vol. ii. (Berlin, 1802-1805), and the report of the Finck court-martial in *Zeitschrift für Kunst, Wissenschaft und Geschichte des Krieges*, pt. 81 (Berlin, 1851). There is a life of Finck in MS. in the library of the Great General Staff.

FINCK, HEINRICH (d. *c.* 1519), German musical composer, was probably born at Bamberg, but nothing is certainly known either of the place or date of his birth. Between 1492 and 1506 he was a musician in, and later possibly conductor of the court orchestra of successive kings of Poland at Warsaw. He held the post of conductor at Stuttgart from 1510 till about 1519, in which year he probably died. His works, mostly part songs and other vocal compositions, show great musical knowledge, and amongst the early masters of the German school he holds a high position. They are found scattered amongst ancient and modern collections of songs and other musical pieces (see R. Eitner, *Bibl. der Musiksammelwerke des 16. und 17. Jahrh.*, Berlin, 1877). The library of Zwickau possesses a work containing a collection of fifty-five songs by Finck, printed about the middle of the 16th century.

FINCK, HERMANN (1527-1558), German composer, the great-nephew of Heinrich Finck, was born on the 21st of March 1527 in Pirna, and died at Wittenberg on the 28th of December 1558. After 1553 he lived at Wittenberg, where he was organist, and there, in 1555, was published his collection of "wedding songs." Few details of his life have been preserved. His theoretical writing was good, particularly his observations on the art of singing and of making ornamentations in song. His most celebrated work is entitled *Practica musica, exempla variorum signorum, proportionum, et canonum, judicium de tonis ac quaedam de arte suaviter et artificiose cantandi continens* (Wittenberg, 1556). It is of great historic value, but very rare.

FINDEN, WILLIAM (1787-1852), English line engraver, was born in 1787. He served his apprenticeship to one James Mitan, but appears to have owed far more to the influence of James Heath, whose works he privately and earnestly studied. His first employment on his own account was engraving illustrations for books, and among the most noteworthy of these early plates were Smirke's illustrations to Don Quixote. His neat style and smooth finish made his pictures very attractive and popular, and although he executed several large plates, his chief work throughout his life was book illustration. His younger brother, Edward Finden, worked in conjunction with him, and so much demand arose for their productions that ultimately a company of assistants was engaged, and plates were produced in increasing numbers, their quality as works of art declining as their quantity rose. The largest plate executed by William Finden was the portrait of King George IV. seated on a sofa, after the painting by Sir Thomas Lawrence. For this work he received two thousand guineas, a sum larger than had ever before been paid for an engraved portrait. Finden's next and happiest works on a large scale were the "Highlander's Return" and the "Village Festival," after Wilkie. Later in life he undertook, in co-operation with his brother, aided by their numerous staff, the publication as well as the production of various galleries of engravings. The first of these, a series of landscape and portrait illustrations to the life and works of Byron, appeared in 1833 and following years, and was very successful. But by his *Gallery of British Art* (in fifteen parts, 1838-1840), the most costly and best of these ventures, he lost the fruits of all his former success. Finden's last undertaking was an engraving on a large scale of Hilton's "Crucifixion." The plate was bought by the Art Union for £1470. He died in London on the 20th of September 1852.

FINDLATER, ANDREW (1810-1885), Scottish editor, was born in 1810 near Aberdour, Aberdeenshire, the son of a small farmer. By hard study in the evening, after his day's work on the farm was finished, he qualified himself for entrance at Aberdeen University, and after graduating as M.A. he attended the Divinity classes with the idea of entering the ministry. In 1853 he began that connexion with the firm of W. & R. Chambers which gave direction to his subsequent activity. His first engagement was the editing of a revised edition of their *Information for the People* (1857). In this capacity he gave evidence of qualities and acquirements that marked him as a suitable editor for *Chambers's Encyclopaedia*, then projected, and his was the directing mind that gave it its character. Many of the more important articles were written by him. This work occupied him till 1868, and he afterwards edited a revised edition (1874). He also had charge of other publications for the same firm, and wrote regularly for the *Scotsman*. In 1864 he was made LL.D. of Aberdeen University. In 1877 he gave up active work for Chambers, but his services were retained as consulting editor. He died in Edinburgh on the 1st of January 1885.

FINDLAY, SIR GEORGE (1829-1893), English railway manager, was of pure Scottish descent, and was born at Rainhill, in Lancashire, on the 18th of May 1829. For some time he attended Halifax grammar school, but left at the age of fourteen, and began to learn practical masonry on the Halifax railway, upon which his father was then employed. Two years later he obtained a situation on the Trent Valley railway works, and when that line was finished in 1847 went up to London. There he was for a short time among the men employed in building locomotive sheds for the London & North-Western railway at Camden Town, and years afterwards, when he had become general manager of that railway, he was able to point out stones which he had dressed with his own hands. For the next two or three years he was engaged in a higher capacity as supervisor of the mining and brickwork of the Harecastle tunnel on the North Staffordshire line, and of the Walton tunnel on the Birkenhead, Lancashire & Cheshire Junction railway. In 1850 the charge of the construction of a section of the Shrewsbury & Hereford line was entrusted to him, and when the line was opened for traffic T. Brassey, the contractor, having determined to work it himself, installed him as manager. In the course of his duties he was brought for the first time into official relations with the London & North-Western railway, which had undertaken to work the Newport, Abergavenny & Hereford line, and he ultimately passed into the service of that company, when in 1862, jointly with the Great Western, it leased the railway of which he was manager. In 1864 he was moved to Euston as general goods manager, in 1872 he became chief traffic manager, and in 1880 he was appointed full general manager; this last post he retained until his death, which occurred on the 26th of March 1893 at Edgware, Middlesex. He was knighted in 1892. Sir George Findlay was the author of a book on the *Working and Management of an English Railway* (London, 1889), which contains a great deal of information, some of it not easily accessible to the general public, as to English railway practice about the year 1890.

FINDLAY, JOHN RITCHIE (1824-1898), Scottish newspaper owner and philanthropist, was born at Arbroath on the 21st of October 1824, and was educated at Edinburgh University. He entered first the publishing office and then the editorial department of the *Scotsman*, became a partner in the paper in 1868, and in 1870 inherited the greater part of the property from his great uncle, John Ritchie, the founder. The large increase in the influence and circulation of the paper was in a great measure due to his activity and direction, and it brought him a fortune, which he spent during his lifetime in public benefaction. He presented to the nation the Scottish National Portrait Gallery, opened in Edinburgh in 1889, and costing over £70,000; and he contributed largely to the collections of the Scottish National Gallery. He held numerous offices in antiquarian, educational and charitable societies, showing his keen interest in these matters, but he avoided political office and refused the offer of a baronetcy. The freedom of Edinburgh was given him in 1896. He died at Aberlour, Banffshire, on the 16th of October 1898.

FINDLAY, a city and the county-seat of Hancock county, Ohio, U.S.A., on Blanchard's Fork of the Auglaize river, about 42 m. S. by W. of Toledo. Pop. (1890) 18,553; (1900) 17,613, (1051 foreign-born); (1910) 14,858. It is served by the Cleveland, Cincinnati, Chicago & St Louis, the Cincinnati, Hamilton & Dayton, the Lake Erie & Western, and the Ohio Central railways, and by three interurban electric railways. Findlay lies about 780 ft. above sea-level on gently rolling ground. The city is the seat of Findlay College (co-educational), an institution of the Church of God, chartered in 1882 and opened in

1886; it has collegiate, preparatory, normal, commercial and theological departments, a school of expression, and a conservatory of music, and in 1907 had 588 students, the majority of whom were in the conservatory of music. Findlay is the centre of the Ohio natural gas and oil region, and lime and building stone abound in the vicinity. Among manufactures are refined petroleum, flour and grist-mill products, glass, boilers, bricks, tile, pottery, bridges, ditching machines, carriages and furniture. The total value of the factory product in 1905 was $2,925,309, an increase of 73.6% since 1900. The municipality owns and operates the water-works. Findlay was laid out as a town in 1821, was incorporated as a village in 1838, and was chartered as a city in 1890. The city was named in honour of Colonel James Findlay (*c.* 1775-1835), who built a fort here during the war of 1812; he served in this war under General William Hull, and from 1825 to 1833 was a Democratic representative in Congress.

FINE, a word which in all its senses goes back to the Lat. *finire*, to bring to an end (*finis*). Thus in the common adjectival meanings of elegant, thin, subtle, excellent, reduced in size, &c., it is in origin equivalent to "finished." In the various substantival meanings in law, with which this article deals, the common idea underlying them is an end or final settlement of a matter.

A fine, in the ordinary sense, is a pecuniary penalty inflicted for the less serious offences. Fines are necessarily discretionary as to amount; but a maximum is generally fixed when the penalty is imposed by statute. And it is an old constitutional maxim that fines must not be unreasonable. In Magna Carta, c. 111, it is ordained "*Liber homo non amercietur pro parvo delicto nisi secundum modum ipsius delicti, et pro magno delicto secundum magnitudinem delicti.*"

The term is also applied to payments made to the lord of a manor on the alienation of land held according to the custom of the manor, to payments made by a lessee on a renewal of a lease, and to other similar payments.

Fine also denotes a fictitious suit at law, which played the part of a conveyance of landed property. "A fine," says Blackstone, "may be described to be an amicable composition or agreement of a suit, either actual or fictitious, by leave of the king or his justices, whereby the lands in question become or are acknowledged to be the right of one of the parties. In its original it was founded on an actual suit commenced at law for the recovery of the possession of land or other hereditaments; and the possession thus gained by such composition was found to be so sure and effectual that fictitious actions were and continue to be every day commenced for the sake of obtaining the same security." Freehold estates could thus be transferred from one person to another without the formal delivery of possession which was generally necessary to a feoffment. This is one of the oldest devices of the law. A statute of 18 Edward I. describes it as the most solemn and satisfactory of securities, and gives a reason for its name—"Qui quidem finis sic vocatur, eo quod finis et consummatio omnium placitorum esse debet, et hac de causa providebatur." The action was supposed to be founded on a breach of covenant: the defendant, owning himself in the wrong,[1] makes overtures of compromise, which are authorized by the *licentia concordandi*; then followed the concord, or the compromise itself. These, then were the essential parts of the performance, which became efficient as soon as they were complete; the formal parts were the *notes*, or abstract of the proceedings, and the *foot* of the fine, which recited the final agreement. Fines were said to be of four kinds, according to the purpose they had in view, as, for instance, to convey lands in pursuance of a covenant, to grant revisionary interest only, &c. In addition to the formal record of the proceedings, various statutes required other solemnities to be observed, the great object of which was to give publicity to the transaction. Thus by statutes of Richard III. and Henry VII. the fine had to be openly read and proclaimed in court no less than sixteen times. A statute of Elizabeth required a list of fines to be exposed in the court of common pleas and at assizes. The reason for these formalities was the high and important nature of the conveyance, which, according to the act of Edward I. above mentioned, "precludes not only those which are parties and privies to the fine and their heirs, but all other persons in the world who are of full age, out of prison, of sound memory, and within the four seas, the day of the fine levied, unless they put in their claim on the foot of the fine within a year and a day." This barring by *non-claim* was abolished in the reign of Edward III., but restored with an extension of the time to five years in the reign of Henry VII. The effect of this statute, intentional according to Blackstone, unintended and brought about by judicial construction according to others, was that a tenant-in-tail could bar his issue by a fine. A statute of Henry VIII. expressly declares this to be the law. Fines, along with the kindred fiction of recoveries, were abolished by the Fines and Recoveries Act 1833, which substituted a deed enrolled in the court of chancery.

Fines are so generally associated in legal phraseology with recoveries that it may not be inconvenient to describe the latter in the present place. A recovery was employed as a means for evading the strict law of entail. The purchaser or alienee brought an action against the tenant-in-tail, alleging that he had no legal title to the land. The tenant-in-tail brought a third person into court, declaring that he had warranted his title, and praying that he might be ordered to defend the action. This person was called the *vouchee*, and he, after having appeared to defend the action, takes himself out of the way. Judgment for the lands is given in favour of the plaintiff; and judgment to recover lands

of equal value from the vouchee was given to the defendant, the tenant-in-tail. In real action, such lands when recovered would have fallen under the settlement of entail; but in the fictitious recovery the vouchee was a man of straw, and nothing was really recovered from him, while the lands of the tenant-in-tail were effectually conveyed to the successful plaintiff. A recovery differed from a fine, as to *form*, in being an action carried through to the end, while a fine was settled by compromise, and as to effect, by barring all reversions and remainders in estates tail, while a fine barred the issue only of the tenant. (See also EJECTMENT; PROCLAMATION.)

1 Hence called *cognizor*; the other party, the purchaser, is the *cognizee*.

FINE ARTS, the name given to a whole group of human activities, which have for their result what is collectively known as Fine Art. The arts which constitute the group are the five greater arts of architecture, sculpture, painting, music and poetry, with a number of minor or subsidiary arts, of which dancing and the drama are among the most ancient and universal. In antiquity the fine arts were not explicitly named, nor even distinctly recognized, as a separate class. In other modern languages besides English they are called by the equivalent name of the beautiful arts (*belle arti*, *beaux arts*, *schöne Künste*). The fine or beautiful arts then, it is usually said, are those among the arts of man which minister, not primarily to his material necessities or conveniences, but to his love of beauty; and if any art fulfils both these purposes at once, still as fulfilling the latter only is it called a fine art. Thus architecture, in so far as it provides shelter and accommodation, is one of the useful or mechanical arts, and one of the fine arts only in so far as its structures impress or give pleasure by the aspect of strength, fitness, harmony and proportion of parts, by disposition and contrast of light and shade, by colour and enrichment, by variety and relation of contours, surfaces and intervals. But this, the commonly accepted account of the matter, does not really cover the ground. The idea conveyed by the words "love of beauty," even stretched to its widest, can hardly be made to include the love of caricature and the grotesque; and these are admittedly modes of fine art. Even the terrible, the painful, the squalid, the degraded, in a word every variety of the significant, can be so handled and interpreted as to be brought within the province of fine art. A juster and more inclusive, although clumsier, account of the matter might put it that the fine arts are those among the arts of man which spring from his impulse to do or make certain things in certain ways for the sake, first, of a special kind of pleasure, independent of direct utility, which it gives him so to do or make them, and next for the sake of the kindred pleasure which he derives from witnessing or contemplating them when they are so done or made by others.

The nature of this impulse, and the several grounds of these pleasures, are subjects which have 356
given rise to a formidable body of speculation and discussion, the chief phases of which will be found summarized under the heading AESTHETICS. In the present article we have only to attend to the concrete processes and results of the artistic activities of man; in other words, we shall submit (1) a definition of fine art in general, (2) a definition and classification of the principal fine arts severally, (3) some observations on their historical development.

I. *Of Fine Art in General.*

According to the popular and established distinction between art and nature, the idea of Art (*q.v.*) only includes phenomena of which man is deliberately the cause; while the idea of Nature includes all phenomena, both in man and in the world outside him, which take place without forethought or studied initiative of his own. Art, accordingly, means every regulated operation or dexterity whereby we pursue ends which we know beforehand; and it means nothing but such operations and dexterities. What is true of art generally is of course also true of the special group of the fine arts. One of the essential qualities of all art is premeditation; and when Shelley talks of the skylark's profuse strains of "unpremeditated art," he in effect lays emphasis on the fact that it is only by a metaphor that he uses the word art in this case at all; he calls attention to that which (if the songs of birds are as instinctive as we suppose) precisely makes the difference between the skylark's outpourings and his own. We are slow to allow the title of fine art to natural eloquence, to charm or dignity of manner, to delicacy and tact in social intercourse, and other such graces of life and conduct, since, although in any given case they may have been deliberately cultivated in early life, or even through ancestral generations, they do not produce their full effect until they are so ingrained as to have become unreflecting and spontaneous. When the exigencies of a philosophic scheme lead some writers on aesthetics to include such acts or traits of beautiful and expressive behaviour among the deliberate artistic activities of mankind, we feel that an essential distinction is being sacrificed to the exigencies of a system. That distinction common parlance very justly observes, with its opposition of "art" to "nature" and its phrase of "second nature" for those graces which have become so habitual as to seem instinctive, whether originally the result of discipline or not. When we see a person in all whose ordinary movements there are freedom and beauty, we put down the charm of these with good reason to inherited and inbred aptitudes of which the person has never thought or long since ceased to think, and could not still be thinking without

Premeditation essential to art.

spoiling the charm by self-consciousness; and we call the result a gift of nature. But when we go on to notice that the same person is beautifully and appropriately dressed, since we know that it is impossible to dress without thinking of it, we put down the charm of this to judicious forethought and calculation and call the result a work of art.

The processes then of fine art, like those of all arts properly so called, are premeditated, and the property of every fine art is to give to the person exercising it a special kind of active pleasure, and a special kind of passive or receptive pleasure to the person witnessing the results of such exercise. This latter statement seems to imply that there exist in human societies a separate class producing works of fine art and another class enjoying them. Such an implication, in regard to advanced societies, is near enough the truth to be theoretically admitted (like the analogous assumption in political economy that there exist separate classes of producers and consumers). In developed communities the gifts and calling of the artist constitute in fact a separate profession of the creators or purveyors of fine art, while the rest of the community are its enjoyers or recipients. In the most primitive societies, apparently, this cannot have been so, and we can go back to an original or rudimentary stage of almost every fine art at which the separation between a class of producers or performers and a class of recipients hardly exists. Such an original or rudimentary stage of the dramatic art is presented by children, who will occupy themselves for ever with mimicry and make-believe for their own satisfaction, with small regard or none to the presence or absence of witnesses. The original or rudimentary type of the profession of imitative sculptors or painters is the cave-dweller of prehistoric ages, who, when he rested from his day's hunting, first took up the bone handle of his weapon, and with a flint either carved it into the shape, or on its surface scratched the outlines, of the animals of the chase. The original or rudimentary type of the architect, considered not as a mere builder but as an artist, is the savage who, when his tribe had taken to live in tents or huts instead of caves, first arranged the skins and timbers of his tent or hut in one way because it pleased his eye, rather than in some other way which was as good for shelter. The original type of the artificer or adorner of implements, considered in the same light, was the other savage who first took it into his head to fashion his club or spear in one way rather than another for the pleasure of the eye only and not for any practical reason, and to ornament it with tufts or markings. In none of these cases, it would seem, can the primitive artist have had much reason for pleasing anybody but himself. Again, the original or rudimentary type of lyric song and dancing arose when the first reveller clapped hands and stamped or shouted in time, in honour of his god, in commemoration of a victory, or in mere obedience to the blind stirring of a rhythmic impulse within him. To some very remote and solitary ancestral savage the presence or absence of witnesses at such a display may in like manner have been indifferent; but very early in the history of the race the primitive dancer and singer joined hands and voices with others of his tribe, while others again sat apart and looked on at the performance, and the rite thus became both choral and social. A primitive type of the instrumental musician is the shepherd who first notched a reed and drew sounds from it while his sheep were cropping. The father of all artists in dress and personal adornment was the first wild man who tattooed himself or bedecked himself with shells and plumes. In both of these latter instances, it may be taken as certain, the primitive artist had the motive of pleasing not himself only, but his mate, or the female whom he desired to be his mate, and in the last instance of all the further motive of impressing his fellow-tribesmen and striking awe or envy into his enemies. The tendency of recent speculation and research concerning the origins of art has been to ascribe the primitive artistic activities of man less and less to individual and solitary impulse, and more and more to social impulse and the desire of sharing and communicating pleasure. (The writer who has gone furthest in developing this view, and on grounds of the most careful study of evidence, has been Dr Yrjö Hirn of Helsingfors.) Whatever relative parts the individual and the social impulses may have in fact played at the outset, it is clear that what any one can enjoy or admire by himself, whether in the way of mimicry, of rhythmical movements or utterances, of imitative or ornamental carving and drawing, of the disposition and adornment of dwelling-places and utensils—the same things, it is clear, others are able also to enjoy or admire with him. And so, with the growth of societies, it came about that one class of persons separated themselves and became the ministers or producers of this kind of pleasures, while the rest became the persons ministered to, the participators in or recipients of the pleasures. Artists are those members of a society who are so constituted as to feel more acutely than the rest certain classes of pleasures which all can feel in their degree. By this fact of their constitution they are impelled to devote their active powers to the production of such pleasures, to the making or doing of some of those things which they enjoy so keenly when they are made and done by others. At the same time the artist does not, by assuming these ministering or creative functions, surrender his enjoying or receptive functions. He continues to participate in the pleasures of which he is himself the cause, and remains a conscious member of his own public. The architect, sculptor, painter, are able respectively to stand off from and appreciate the results of their own labours; the singer enjoys the sound of his own voice, and the musician of his own instrument; the poet, according to his temperament, furnishes the most enthusiastic or the most fastidious reader for his own stanzas. Neither, on the other hand, does the person who is a habitual recipient from others of the pleasures of fine art forfeit the privilege of producing them according to his capabilities, and of becoming, if he has the power, an *amateur* or occasional artist.

The active and the passive pleasures of fine art.

Most of the common properties which have been recognized by consent as peculiar to the group of fine arts will be found on examination to be implied in, or deducible from, the one fundamental character generally claimed for them, namely, that they exist independently of direct practical

Pleasures of fine art disinterested. necessity or utility. Let us take, first, a point relating to the frame of mind of the recipient, as distinguished from the producer, of the pleasures of fine art. It is an observation as old as Aristotle that such pleasures differ from most other pleasures of experience in that they are disinterested, in the sense that they are not such as nourish a man's body nor add to his riches; they are not such as can gratify him, when he receives them, by the sense of advantage or superiority over his fellow-creatures; they are not such as one human being can in any sense receive exclusively from the object which bestows them. Thus it is evidently characteristic of a beautiful building that its beauty cannot be monopolized, but can be seen and admired by the inhabitants of a whole city and by all visitors for all generations. The same thing is true of a picture or a statue, except in so far as an individual possessor may choose to keep such a possession to himself, in which case his pride in exclusive ownership is a sentiment wholly independent of his pleasure in artistic contemplation. Similarly, music is composed to be sung or played for the enjoyment of many at a time, and for such enjoyment a hundred years hence as much as to-day. Poetry is written to be read by all readers for ever who care for the ideas and feelings of the poet, and can apprehend the meaning and melody of his language. Hence, though we can speak of a class of the producers of fine art, we cannot speak of a class of its consumers, only of its recipients or enjoyers. If we consider other pleasures which might seem to be analogous to those of fine art, but to which common consent yet declines to allow that character, we shall see that one reason is that such pleasures are not in their nature thus disinterested. Thus the sense of smell and taste have pleasures of their own like the senses of sight and hearing, and pleasures neither less poignant nor very much less capable of fine graduation and discrimination than those. Why, then, is the title of fine art not claimed for any skill in arranging and combining them? Why are there no recognized arts of savours and scents corresponding in rank to the arts of forms, colours and sounds—or at least none among Western nations, for in Japan, it seems, there is a recognized and finely regulated social art of the combination and succession of perfumes? An answer commonly given is that sight and hearing are intellectual and therefore higher senses, that through them we have our avenues to all knowledge and all ideas of things outside us; while taste and smell are unintellectual and therefore lower senses, through which few such impressions find their way to us as help to build up our knowledge and our ideas. Perhaps a more satisfactory reason why there are no fine arts of taste and smell—or let us in deference to Japanese modes leave out smell, and say of taste only—is this, that savours yield only private pleasures, which it is not possible to build up into separate and durable schemes such that every one may have the benefit of them, and such as cannot be monopolized or used up. If against this it is contended that what the programme of a performance is in the musical art, the same is a *menu* in the culinary, and that practically it is no less possible to serve up a thousand times and to a thousand different companies the same dinner than the same symphony, we must fall back upon that still more fundamental form of the distinction between the aesthetic and non-aesthetic bodily senses, upon which the physiological psychologists of the English school lay stress. We must say that the pleasures of taste cannot be pleasures of fine art, because their enjoyment is too closely associated with the most indispensable and the most strictly personal of utilities, eating and drinking. To pass from these lower pleasures to the highest; consider the nature of the delight derived from the contemplation, by the person who is their object, of the signs and manifestations of love. That at least is a beautiful experience; why is the pleasure which it affords not an artistic pleasure either? Why, in order to receive an artistic pleasure from human signs and manifestations of this kind, are we compelled to go to the theatre and see them exhibited in favour of a third person who is not really their object any more than ourselves? This is so, for one reason, evidently, because of the difference between art and nature. Not to art, but to nature and life, belongs love where it is really felt, with its attendant train of vivid hopes, fears, passions and contingencies. To art belongs love displayed where it is not really felt; and in this sphere, along with reality and spontaneousness of the display, and along with its momentous bearings, there disappear all those elements of pleasure in its contemplation which are not disinterested—the elements of personal exultation and self-congratulation, the pride of exclusive possession or acceptance, all these emotions, in short, which are summed up in the lover's triumphant monosyllable, "Mine." Thus, from the lowest point of the scale to the highest, we may observe that the element of personal advantage or monopoly in human gratifications seems to exclude, them from the kingdom of fine art. The pleasures of fine art, so far as concerns their passive or receptive part, seem to define themselves as pleasures of gratified contemplation, but of such contemplation only when it is disinterested—which is simply another way of saying, when it is unconcerned with ideas of utility.

Modern speculation has tended in some degree to modify and obscure this old and established view of the pleasures of fine art by urging that the hearer or spectator is not after all so free from self-interest as he seems; that in the act of artistic contemplation he experiences an enhancement or expansion of his being which is in truth a gain of the egoistic kind; that in witnessing a play, for instance, a large part of his enjoyment consists in sympathetically identifying himself with the successful lover or the virtuous hero. All this may be true, but does not really affect the argument, since at the same time he is well aware that every other spectator or auditor present may be similarly engaged with himself. At most the objection only requires us to define a little more closely, and to say that the satisfactions of the ego excluded from among the pleasures of fine art are not these ideal, sympathetic, indirect satisfactions, which every one can share together, but only those which arise from direct, private and incommunicable advantage to the individual.

An objection and its answer.

Next, let us consider another generally accepted observation concerning the nature of the fine arts, and one, this time, relating to the disposition and state of mind of the practising artist himself. While

Fine arts cannot be practised by rule and precept.

for success in other arts it is only necessary to learn their rules and to apply them until practice gives facility, in the fine arts, it is commonly and justly said, rules and their application will carry but a little way towards success. All that can depend on rules, on knowledge, and on the application of knowledge by practice, the artist must indeed acquire, and the acquisition is often very complicated and laborious. But outside of and beyond such acquisitions he must trust to what is called genius or imagination, that is, to the spontaneous working together of an incalculably complex group of faculties, reminiscences, preferences, emotions, instincts in his constitution. This characteristic of the activities of the artist is a direct consequence or corollary of the fundamental fact that the art he practices is independent of utility. A utilitarian end is necessarily a determinate and prescribed end, and to every end which is determinate and prescribed there must be one road which is the best. Skill in any useful art means knowing practically, by rules and the application of rules, the best road to the particular ends of that art. Thus the farmer, the engineer, the carpenter, the builder so far as he is not concerned with the look of his buildings, the weaver so far as he is not concerned with the designing of the patterns which he weaves, possesses each his peculiar skill, but a skill to which fixed problems are set, and which, if it indulges in new inventions and combinations at all, can indulge them only for the sake of an improved solution of those particular problems. The solution once found, the invention once made, its rules can be written down, or at any rate its practice can be imparted to others who will apply it in their turn. Whereas no man can write down, in a way that others can act upon, how Beethoven conquered unknown kingdoms in the world of harmony, or how Rembrandt turned the aspects of gloom, squalor and affliction into pictures as worthy of contemplation as those into which the Italians before him had turned the aspects of spiritual exaltation and shadowless day. The reason why the operations of the artist thus differ from the operations of the ordinary craftsman or artificer is that his ends, being ends other than useful, are not determinate nor fixed as theirs are. He has large liberty to choose his own problems, and may solve each of them in a thousand different ways according to the prompting of his own ordering or creating instincts. The musical composer has the largest liberty of all. Having learned what is learnable in his art, having mastered the complicated and laborious rules of musical form, having next determined the particular class of the work which he is about to compose, he has then before him the whole inexhaustible world of appropriate successions and combinations of emotional sound. He is merely directed and not fettered, in the case of song, cantata, oratorio or opera, by the sense of the words which he has to set. The value of the result depends absolutely on his possessing or failing to possess powers which can neither be trained in nor communicated to any man. And this double freedom, alike from practical service and from the representation of definite objects, is what makes music in a certain sense the typical fine art, or art of arts. Architecture shares one-half of this freedom. It has not to copy or represent natural objects; for this service it calls in sculpture to its aid; but architecture is without the other half of freedom altogether. The architect has a sphere of liberty in the disposition of his masses, lines, colours, alternations of light and shadow, of plain and ornamented surface, and the rest; but upon this sphere he can only enter on condition that he at the same time fulfils the strict practical task of supplying the required accommodation, and obeys the strict mechanical necessities imposed by the laws of weight, thrust, support, resistance and other properties of solid matter. The sculptor again, the painter, the poet, has each in like manner his sphere of necessary facts, rules and conditions corresponding to the nature of his task. The sculptor must be intimately versed both in the surface aspects and the inner mechanism of the human frame alike in rest and motion, and in the rules and conditions for its representation in solid form; the painter in a much more extended range of natural facts and appearances, and the rules and conditions for representing them on a plane surface; the poet's art of words has its own not inconsiderable basis of positive and disciplined acquisition. So far as rules, precepts, formulas and other communicable laws or secrets can carry the artist, so far also the spectator can account for, analyse, and, so to speak, tabulate the effects of his art. But the essential character of the artist's operation, its very bloom and virtue, lies in those parts of it which fall outside this range of regulation on the one hand and analysis on the other. His merit varies according to the felicity with which he is able, in that region, to exercise his free choice and frame his individual ideal, and according to the tenacity with which he strives to grasp and realize his choice, or to attain perfection according to that ideal.

In this connexion the question naturally arises, In what way do the progress and expansion of mechanical art affect the power and province of fine art? The great practical movement of the world in our age is a movement for the development of mechanical inventions and multiplication of mechanical products. So far as these inventions are applied to purposes purely useful, and so far as their products to not profess to offer anything delightful to contemplation, this movement in no way concerns our argument. But there is a vast multitude of products which do profess qualities of pleasantness, and upon which the ornaments intended to make them pleasurable are bestowed by machinery; and in speaking of these we are accustomed to the phrases art-industry, industrial art, art manufactures and the like. In these cases the industry or ingenuity which directs the machine is not fine art at all, since the object of the machine is simply to multiply as easily and as perfectly as possible a definite and prescribed impress or pattern. This is equally true whether the machine is a simple one, like the engraver's press, for producing and multiplying impressions from an engraved plate, or a highly complex one, like the loom, in which elaborate patterns of carpet or curtain are set for weaving. In both cases there exists behind the mechanical industry an industry which is one of fine art in its degree. In the case of the engraver's press, there exists behind the industry of the printer the art of the engraver, which, if the engraver is also the free inventor of the design, is then a fine art, or,

Fine arts and machinery: "art manufactures."

if he is but the interpreter of the invention of another, is then in its turn a semi-mechanical skill applied in aid of the fine art of the first inventor. In the case of the weaver's loom there is, behind the mechanical industry which directs the loom at its given task, the fine art, or what ought to be the fine art, of the designer who has contrived the pattern. In the case of the engraving, the mechanical industry of printing only exists for the sake of bringing out and disseminating abroad the fine art employed upon the design. In the case of the carpet or curtain, the fine art is often only called in to make the product of the useful or mechanical industry of the loom acceptable, since the eye of man is so constituted as to receive pleasure or the reverse of pleasure from whatever it rests upon, and it is to the interest of the manufacturer to have his product so made as to give pleasure if it can. Whether the machine is thus a humble servant to the artist, or the artist a kind of humble purveyor to the machine, the fine art in the result is due to the former alone; and in any case it reaches the recipient at second-hand, having been put in circulation by a medium not artistic but mechanical.

Again, with reference not to the application of mechanical contrivances but to their invention; is not, it may be inquired, the title of artist due to the inventor of some of the astonishingly complex and astonishingly efficient machines of modern-times? Does he not spend as much thought, labour, genius as any sculptor or musician in perfecting his construction according to his ideal, and is not the construction when it is done—so finished, so responsive in all its parts, so almost human—is not that worthy to be called a work of fine art? The answer is that the inventor has a definite and practical end before him; his ideal is not *free*; he deserves all credit as the perfector of a particular instrument for a prescribed function, but an artist, a free follower of the fine arts, he is not; although we may perhaps have to concede him a narrow sphere for the play of something like an artistic sense when he contrives the proportion, arrangement, form or finish of the several parts of his machine in one way rather than another, not because they work better so but simply because their look pleases him better.

Perfected machines: are they works of fine art?

Returning from this digression, let us consider one common observation more on the nature of the fine arts. They are activities, it is said, which were put forth not because they need but because they like. They have the activity to spare, and to put it forth in this way pleases them. Fine art is to mankind what play is to the individual, a free and arbitrary vent for energy which is not needed to be spent upon tasks concerned with the conservation, perpetuation or protection of life. To insist on the superfluous or optional character of the fine arts, to call them the play or pastime of the human race as distinguished from its inevitable and sterner tasks, is obviously only to reiterate our fundamental distinction between the fine arts and the useful or necessary. But the distinction, as expressed in this particular form, has been interpreted in a great variety of ways and followed out to an infinity of conclusions, conclusions regarding both the nature of the activities themselves and the character and value of their results.

Fine arts called a kind of play.

For instance, starting from this saying that the aesthetic activities are a kind of play, the English psychology of association goes back to the spontaneous cries and movements of children, in which their superfluous energies find a vent. It then enumerates pleasures of which the human constitution is capable apart from direct advantage or utility. Such are the primitive or organic pleasures of sight and hearing, and the secondary or derivative pleasures of association or unconscious reminiscence and inference that soon become mixed up with these. Such are also the pleasures derived from following any kind of mimicry, or representation of things real or like reality. The association psychology describes the grouping within the mind of predilections based upon these pleasures; it shows how the growing organism learns to govern its play, or direct its superfluous energies, in obedience to such predilections, till in mature individuals, and still more in mature societies, a highly regulated and accomplished group of leisure activities are habitually employed in supplying to a not less highly cultivated group of disinterested sensibilities their appropriate artistic pleasures. It is by Herbert Spencer that this view has been most fully and systematically worked out.

The play idea as worked out by the English associationists.

Again, in the views of an ancient philosopher, Plato, and a modern poet, Schiller, the consideration that the artistic activities are in the nature of play, and the manifestations in which they result independent of realities and utilities, has led to judgments so differing as the following. Plato held that the daily realities of things in experience are not realities, indeed, but only far-off shows or reflections of the true realities, that is, of certain ideal or essential forms which can be apprehended as existing by the mind. Holding this, Plato saw in the works of fine art but the reflections of reflections, the shows of shows, and depreciated them according to their degree of remoteness from the ideal, typical or sense-transcending existences. He sets the arts of medicine, agriculture, shoemaking and the rest above the fine arts, inasmuch as they produce something serious or useful (σπουδαῖόντι). Fine art, he says, produces nothing useful, and makes only semblances (εἰδωλοποιϊκή), whereas what mechanical art produces are utilities, and even in the ordinary sense realities (αὐτοποιητική).

By Plato.

In another age, and thinking according to another system, Schiller, so far from holding thus cheap the kingdom of play and show, regarded his sovereignty over that kingdom as the noblest prerogative of man. Schiller wrote his famous *Letters on the Aesthetic Education of Man* in order to throw into popular currency, and at the same time to modify and follow up in a particular direction, certain metaphysical doctrines which had lately been launched upon the schools by Kant. The spirit of man, said Schiller after Kant, is placed between two worlds, the physical world or world of sense, and the moral world or world of will. Both of these are worlds of

By Schiller.

constraint or necessity. In the sensible world, the spirit of man submits to constraint from without; in the moral world, it imposes constraint from within. So far as man yields to the importunities of sense, in so far he is bound and passive, the subject of outward shocks and victim of irrational forces. So far as he asserts himself by the exercise of will, imposing upon sense and outward things the dominion of the moral law within him, in so far he is free and active, the rational lord of nature and not her slave. Corresponding to these two worlds, he has within him two conflicting impulses or impulsions of his nature, the one driving him towards one way of living, the other towards another. The one, or sense-impulsion (*Stofftrieb*), Schiller thinks of as that which enslaves the spirit of man as the victim of matter, the other or moral impulsion (*Formtrieb*) as that which enthrones it as the dictator of form. Between the two the conflict at first seems inveterate. The kingdom of brute nature and sense, the sphere of man's subjection and passivity, wages war against the kingdom of will and moral law, the sphere of his activity and control, and every conquest of the one is an encroachment upon the other. Is there, then, no hope of truce between the two kingdoms, no ground where the two contending impulses can be reconciled? Nay, the answer comes, there is such a hope; such a neutral territory there exists. Between the passive kingdom of matter and sense, where man is compelled blindly to feel and be, and the active kingdom of law and reason, where he is compelled sternly to will and act, there is a kingdom where both sense and will may have their way, and where man may give the rein to all his powers. But this middle kingdom does not lie in the sphere of practical life and conduct. It lies in the sphere of those activities which neither subserve any necessity of nature nor fulfil any moral duty. Towards activities of this kind we are driven by a third impulsion of our nature not less essential to it than the other two, the impulsion, as Schiller calls it, of Play (*Spieltrieb*). Relatively to real life and conduct, play is a kind of harmless show; it is that which we are free to do or leave undone as we please, and which lies alike outside the sphere of needs and duties. In play we may do as we like, and no mischief will come of it. In this sphere man may put forth all his powers without risk of conflict, and may invent activities which will give a complete ideal satisfaction to the contending faculties of sense and will at once, to the impulses which bid him feel and enjoy the shocks of physical and outward things, and the impulse which bids him master such things, control and regulate them. In play you may impose upon Matter what Form you choose, and the two will not interfere with one another or clash. The kingdom of Matter and the kingdom of Form thus harmonized, thus reconciled by the activities of play and show, will in other words be the kingdom of the Beautiful. Follow the impulsion of play, and to the beautiful you will find your road; the activities you will find yourself putting forth will be the activities of aesthetic creation—you will have discovered or invented the fine arts. "Midway"—these are Schiller's own words—"midway between the formidable kingdom of natural forces and the hallowed kingdom of moral laws, the impulse of aesthetic creation builds up a third kingdom unperceived, the gladsome kingdom of play and show, wherein it emancipates man from all compulsion alike of physical and of moral forces." Schiller, the poet and enthusiast, thus making his own application of the Kantian metaphysics, goes on to set forth how the fine arts, or activities of play and show, are for him the typical, the ideal activities of the race, since in them alone is it possible for man to put forth his whole, that is his ideal self. "Only when he plays is man really and truly man." "Man ought only to play with the beautiful, and he ought to play with the beautiful only." "Education in taste and beauty has for its object to train up in the utmost attainable harmony the whole sum of the powers both of sense and spirit." And the rest of Schiller's argument is addressed to show how the activities of artistic creation, once invented, react upon other departments of human life, how the exercise of the play impulse prepares men for an existence in which the inevitable collision of the two other impulses shall be softened or averted more and more. That harmony of the powers which clash so violently in man's primitive nature, having first been found possible in the sphere of the fine arts, reflects itself, in his judgment, upon the whole composition of man, and attunes him, as an aesthetic being, into new capabilities for the conduct of his social existence.

Our reasons for dwelling on this wide and enthusiastic formula of Schiller's are both its importance in the history of reflection—it remained, indeed, for nearly a century a formula almost classical—and the measure of positive value which it still retains. The notion of a sphere of voluntary activity for the human spirit, in which, under no compulsion of necessity or conscience, we order matters as we like them apart from any practical end, seems coextensive with the widest conception of fine art and the fine arts as they exist in civilized and developed communities. It insists on and brings into the light the free or optional character of these activities, as distinguished from others to which we are compelled by necessity or duty, as well as the fact that these activities, superfluous as they may be from the points of view of necessity and of duty, spring nevertheless from an imperious and a saving instinct of our nature. It does justice to the part which is, or at any rate may be, filled in the world by pleasures which are apart from profit, and by delights for the enjoyment of which men cannot quarrel. It claims the dignity they deserve for those shows and pastimes in which we have found a way to make permanent all the transitory delights of life and nature, to turn even our griefs and yearnings, by their artistic utterance, into sources of appeasing joy, to make amends to ourselves for the confusion and imperfection of reality by conceiving and imaging forth the semblances of things clearer and more complete, since in contriving them we incorporate with the experiences we have had the better experiences we have dreamed of and longed for.

The strong points of Schiller's theory.

One manifestly weak point of Schiller's theory is that though it asserts that man ought only to play with the beautiful, and that he is his best or ideal self only when he does so, yet it does not sufficiently indicate what kinds of play are beautiful nor why we are moved to adopt them. It does not show how the delights of the eye and spirit in contemplating forms, colours and

Its weak

points.

movements, of the ear and spirit in apprehending musical and verbal sounds, or of the whole mind at once in following the comprehensive current of images called up by poetry—it does not clearly show how delights like these differ from those yielded by other kinds of play or pastime, which are by common consent excluded from the sphere of fine art.

Kinds of play which are not fine art.

The chase, for instance, is a play or pastime which gives scope for any amount of premeditated skill; it has pleasures, for those who take part in it, which are in some degree analogous to the pleasures of the artist; we all know the claims made on behalf of the noble art of venerie (following true medieval precedent) by the knights and woodmen of Sir Walter Scott's romances. It is an obvious reply to say that though the chase is play to us, who in civilized communities follow it on no plea of necessity, yet to a not remote ancestry it was earnest; in primitive societies hunting does not belong to the class of optional activities at all, but is among the most pressing of utilitarian needs. But this reply loses much of its force since we have learnt how many of the fine arts, however emancipated from direct utility now, have as a matter of history been evolved out of activities primarily utilitarian. It would be more to the point to remark that the pleasures of the sportsman are the only pleasures arising from the chase; his exertions afford pain to the victim, and no satisfaction to any class of recipients but himself; or at least the sympathetic pleasures of the lookers-on at a hunt or at a battle are hardly to be counted as pleasures of artistic contemplation. The issue which they witness is a real issue; the skilled endeavours with which they sympathize are put forth for a definite practical result, and a result disastrous to one of the parties concerned.

What then, it may be asked, about athletic games and sports, which hurt nobody, have no connexion with the chase, and give pleasure to thousands of spectators? Here the difference is, that the event which excites the spectator's interest and pleasure at a race or match or athletic contest is not a wholly unreal or simulated event; it is less real than life, but it is more real than art. The contest has no momentous practical consequences, but it is a contest, an ἄθλος, all the same, in which competitors put forth real strength, and one really wins and others are defeated. Such a struggle, in which the exertions are real and the issue uncertain, we follow with an excitement and a suspense different in kind from the feelings with which we contemplate a fictitious representation. For example, let the reader recall the feelings with which he may have watched a real fencing bout, and compare them with those with which he watches the simulated fencing bout in Shakespeare's *Hamlet*. The instance is a crucial one, because in the fictitious case the excitement is heightened by the introduction of the poisoned foil, and by the tremendous consequences which we are aware will turn, in the representation, on the issue. Yet because the fencing scene in *Hamlet* is a representation, and not real, we find ourselves watching it in a mood quite different from that in which we watch the most ordinary real fencing-match with vizors and blunt foils; a mood more exalted, if the representation is good, but amid the aesthetic emotions of which the fluctuations of strained, if trivial, suspense and the eagerness of sympathetic participation find no place. "The delight of tragedy," says Johnson, "proceeds from our consciousness of fiction; if we thought murders and treasons real, they would please no more." So does the peculiar quality of our pleasure in watching the fencing-match in *Hamlet*, or the wrestling-match in *As You Like It*, depend on our consciousness of fiction: if we thought the matches real they might please us still, but please us in a different way. Again, of athletics in general, they are pursuits to a considerable degree definitely utilitarian, having for their specific end the training and strengthening of individual human bodies. Nevertheless, in some systems the title of fine arts has been consistently claimed, if not for athletics technically so called, and involving the idea of competition and defeat, at any rate for gymnastics, regarded simply as a display of the physical frame of man cultivated by exercise—as, for instance, it was cultivated by the ancient Greeks—to an ideal perfection of beauty and strength.

The play theory in the light of anthropological research.

But apart from criticisms like these on the theory of Schiller, the Kantian doctrine of a metaphysical opposition between the senses and the reason has for most minds of to-day lost its validity, and with it falls away Schiller's derivative theory of a *Stofftrieb* and a *Formtrieb* contending like enemies for dominion over the human spirit, with a neutral or reconciling *Spieltrieb* standing between them. Even taking the existence of the *Spieltrieb*, or play-impulse, by itself as a plain and indubitable fact in human nature, the theory that this impulse is the general or universal source of the artistic activities of the race, which seemed adequate to thinkers so far apart as Schiller and Herbert Spencer, is found no longer to hold water. The tendency of recent thought and study on these subjects has been to abandon the abstract or dialectical method in favour of the methods of historical and anthropological inquiry. In the light of these methods it is claimed that the artistic activities of the race spring in point of fact from no single source but from a number of different sources. It is admitted that the play-impulse is one of these, and the allied and overlapping, but not identical, impulse of mimicry or imitation another. But it is urged at the same time that these twin impulses, rooted as they both are among the primordial faculties both of men and animals, are far from existing merely to provide a vent whereby the superfluous energies of sentient beings may discharge themselves at pleasure, but are indispensable utilitarian instincts, by which the young are led to practise and rehearse in sport those activities the exercise of which in earnest will be necessary to their preservation in the adult state. (The researches of Professor Karl Groos in this field seem to be conclusive.) A third impulse innate in man, though scarcely so primordial as the other two, and one which the animals cannot share with him, is the impulse of record or commemoration. Man instinctively desires, alike for safety, use and pleasure, to perpetuate and hand on the memory of his deeds and experiences whether by words or by works of his hands contrived for permanence. This

impulse of record is the most stimulating ally of the impulse of mimicry or imitation, and perhaps a large part of the arts usually put down as springing from the love of imitation ought rather to be put down as springing from the commemorative or recording impulse, using imitation as its necessary means. Granting the existence in primitive man of these three allied impulses of play, of mimicry, and of record, it is urged that they are so many distinct though contiguous sources from which whole groups of the fine arts have sprung, and that all three in their origin served ends primarily or in great part utilitarian. Examining any of the rudimentary artistic activities of primitive man already mentioned: the decoration of the person with tattooings or strings of shells or teeth or feathers had primarily the object of attracting or impressing the opposite sex, or terrifying an enemy, or indicating the tribal relations of the person so adorned; some of the same purposes were served by the scratches and tufts and markings on weapons or utensils; the *graffiti* or outline drawings of animals incised by cave-dwellers on bones are surmised to have sprung in like manner from the desire of conveying information, combined, probably, sometimes with that of obtaining magic power over the things represented; the erection of memorial shrines and images of all kinds, from the rudest upwards, had among other purposes the highly practical one of propitiating the spirits of the departed; and so on through the whole range of kindred activities. It is contended, next, that such activities only take on the character of rudimentary fine arts at a certain stage of their evolution. Before they can assume that character, they must come under the influence and control of yet another rooted and imperious impulse in mankind. That is the impulse of emotional self-expression, the instinct which compels us to seek relief under the stimulus of pent-up feeling; an instinct, it is added, second only in power to those which drive us to seek food, shelter, protection from enemies, and satisfaction for-sexual desires. According to a law of our constitution, the argument goes on, this need for emotional self-expression finds itself fully satisfied only by certain modes of activity; those, namely, which either have in themselves, or impress on their products, the property of rhythm, that is, of regular interval and recurrence, flow, order and proportion. Leaping, shouting, and clapping hands is the human animal's most primitive way of seeking relief under the pressure of emotion; so soon as one such animal found out that he both expressed and relieved his emotions best, and communicated them best to his fellows, when he moved in regular rhythm and shouted in regular time and with regular changes of pitch, he ceased to be a mere excited savage and became a primitive dancer, singer, musician—in a word, artist. So soon as another found himself taking pleasure in certain qualities of regular interval, pattern and arrangement of lines, shapes, and colours, apart from all questions of purpose or utility, in his tattooings and self-adornments, his decoration of tools or weapons or structures for shelter or commemoration, he in like manner became a primitive artist in ornamental and imitative design.

The special qualities of pleasure felt and communicated by doing things in one way rather than another, independently of direct utility, which we indicated at the outset as characteristic of the whole range of the fine arts, appear on this showing to be dependent primarily on the response of our organic sensibilities of nerve and muscle, eye, ear and brain to the stimulus of rhythm, (using the word in its widest sense) imparted either to our own actions and utterances or to the works of our hands. Such pleasures would seem to have been first experienced by man directly, in the endeavour to find relief with limbs and voice from states of emotional tension, and then incidentally, as a kind of by-product arising and affording similar relief in the development of a wide range of utilitarian activities. Into the nature of those organic sensibilities, and the grounds of the relief they afford us when gratified, it is the province of physiological and psychological aesthetics to inquire: our business here is only with the activities directed towards their satisfaction and the results of those activities in the works of fine art. On the whole the account of the matter yielded by the method of anthropological research, and here very briefly summarized, may be accepted as answering more closely to the complex nature of the facts than any of the accounts hitherto current; and so we may expand our first tentative suggestion of a definition into one more complete, which from the nature of the case cannot be very brief or simple and must run somehow thus: *Fine art is everything which man does or makes in one way rather than another, freely and with premeditation, in order to express and arouse emotion, in obedience to laws of rhythmic movement or utterance or regulated design, and with results independent of direct utility and capable of affording to many permanent and disinterested delight.*

II. *Of the Fine Arts severally.*

Architecture, *sculpture*, *painting*, *music* and *poetry* are by common consent, as has been said at the outset, the five principal or greater fine arts practised among developed communities of men. It is possible in thought to group these five arts in as many different orders as there are among them different kinds of relation or affinity. One thinker fixes his attention upon one kind of relations as the most important, and arranges his group accordingly; another upon another; and each, when he has done so, is very prone to claim for his arrangement the virtue of being the sole essentially and fundamentally true. For example, we may ascertain one kind of relations between the arts by inquiring which is the simplest or most limited in its effects, which next simplest, which another degree less simple, which least simple or most complex of them all. This, the relation of progressive complexity or comprehensiveness between the fine arts, is the relation upon which Auguste Comte fixed his attention, and it yields in his judgment the following order:—Architecture lowest in complexity, because both of the kinds of effects which it produces and of the material conditions and limitations under which it works; sculpture next; painting third; then music; and poetry

Modes in which the five greater arts have been classified.

highest, as the most complex or comprehensive art of all, both in its own special effects and in its resources for ideally calling up the effects of all the other arts as well as all the phenomena of nature and experiences of life. A somewhat similar grouping was adopted, though from the consideration of a wholly different set of relations, by Hegel. Hegel fixed his attention on the varying relations borne by the idea, or spiritual element, to the embodiment of the idea, or material element, in each art. Leaving aside that part of his doctrine which concerns, not the phenomena of the arts themselves, but their place in the dialectical world-plan or scheme of the universe, Hegel said in effect something like this. In certain ages and among certain races, as in Egypt and Assyria, and again in the Gothic age of Europe, mankind has only dim ideas for art to express, ideas insufficiently disengaged and realized, of which the expression cannot be complete or lucid, but only adumbrated and imperfect; the characteristic art of those ages is a symbolic art, with its material element predominating over and keeping down its spiritual; and such a symbolic art is architecture. In other ages, as in the Greek age, the ideas of men have come to be definite, disengaged, and clear; the characteristic art of such an age will be one in which the spiritual and material elements are in equilibrium, and neither predominates over nor keeps down the other, but a thoroughly realized idea is expressed in a thoroughly adequate and lucid form; this is the mode of expression called classic, and the classic art is sculpture. In other ages, again, and such are the modern ages of Europe, the idea grows in power and becomes importunate; the spiritual and material elements are no longer in equilibrium, but the spiritual element predominates; the characteristic arts of such an age will be those in which thought, passion, sentiment, aspiration, emotion, emerge in freedom, dealing with material form as masters or declining its shackles altogether; this is the romantic mode of expression, and the romantic arts are painting, music and poetry. A later systematizer, Lotze, fixed his attention on the relative degrees of freedom or independence which the several arts enjoy—their freedom, that is, from the necessity of either imitating given facts of nature or ministering, as part of their task, to given practical uses. In his grouping, instead of the order architecture, sculpture, painting, music, poetry, music comes first, because it has neither to imitate any natural facts nor to serve any practical end; architecture next, because, though it is tied to useful ends and material conditions, yet it is free from the task of imitation, and pleases the eye in its degree, by pure form, light and shade, and the rest, as music pleases the ear by pure sound; then, as arts all tied to the task of imitation, sculpture, painting and poetry, taken in progressive order according to the progressing comprehensiveness of their several resources.

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The thinker on these subjects has, moreover, to consider the enumeration and classification of the lesser or subordinate fine arts. Whole clusters or families of these occur to the mind at once; such as *dancing*, an art subordinate to music, but quite different in kind; *acting*, an art auxiliary to *poetry*, from which in kind it differs no less; *eloquence* in all kinds, so far as it is studied and not merely spontaneous; and among the arts which fashion or dispose material objects, *embroidery* and the weaving of patterns, *pottery*, *glassmaking*, *goldsmith's work* and *jewelry*, *joiner's work*, *gardening* (according to the claim of some), and a score of other dexterities and industries which are more than mere dexterities and industries because they add elements of beauty and pleasure to elements of serviceableness and use. To decide whether any given one of these has a right to the title of fine art, and, if so, to which of the greater fine arts it should be thought of as appended and subordinate, or between which two of them intermediate, is often no easy task.

Place of the minor or subordinate fine arts.

The weak point of all classifications of the kind of which we have above given examples is that each is intended to be final, and to serve instead of any other. The truth is, that the relations between the several fine arts are much too complex for any single classification to bear this character. Every classification of the fine arts must necessarily be provisional, according to the particular class of relations which it keeps in view. And for practical purposes it is requisite to bear in mind not one classification but several. Fixing our attention, not upon complicated or problematical relations between the various arts, but only upon their simple and undisputed relations, and giving the first place in our consideration to the five greater arts of architecture, sculpture, painting, music and poetry, we shall find at least three principal modes in which every fine art either resembles or differs from the rest.

No one classification final or sufficient.

1. *The Shaping and the Speaking Arts* (*or Arts of Form and Arts of Utterance, or Arts of Space and Arts of Time*).—Each of the greater arts either makes something or not which can be seen and handled. The arts which make something which can be seen and handled are architecture, sculpture and painting. In the products or results of all these arts external matter is in some way or another manually put together, fashioned or disposed. But music and poetry do not produce any results of this kind. What music produces is something that can be heard, and what poetry produces is something that can be either heard or read—which last is a kind of ideal hearing, having for its avenue the eye instead of the ear, and for its material, written signs for words instead of the spoken words themselves. Now what the eye sees from any one point of view, it sees all at once; in other words, the parts of anything we see fill or occupy not time but space, and reach us from various points in space at a single simultaneous perception. If we are at the proper distance we see at one glance a house from the ground to the chimneys, a statue from head to foot, and in a picture at once the foreground and background, and everything that is within the four corners of the frame. There is, indeed, this distinction to be drawn, that in walking round or through a temple, church, house or any other building, new parts and proportions of the building unfold themselves to view; and the same thing happens in walking round a statue or turning it on a turntable: so that the spectator, by his own

First classification: the shaping and the speaking arts.

motions and the time it takes to effect them, can impart to architecture and sculpture something of the character of time arts. But their products, as contemplated from any one point of view, are in themselves solid, stationary and permanent in space. Whereas the parts of anything we hear, or, reading, can imagine that we hear, fill or occupy not space at all but time, and can only reach us from various points in time through a continuous series of perceptions, or, in the case of reading, of images raised by words in the mind. We have to wait, in music, while one note follows another in a theme, and one theme another in a movement; and in poetry, while one line with its images follows another in a stanza, and one stanza another in a canto, and so on. It is a convenient form of expressing both aspects of this difference between the two groups of arts, to say that architecture, sculpture and painting are arts which give shape to things in space, or, more briefly, shaping arts; and music and poetry arts which give utterance to things in time, or, more briefly, speaking arts. These simple terms of the *shaping* and the *speaking* arts (the equivalent of the Ger. *bildende und redende Künste*) are not usual in English; but they seem appropriate and clear; the simplest alternatives for their use is to speak of the *manual* and the *vocal* arts, or the arts of *space* and the arts of *time*. This is practically, if not logically, the most substantial and vital distinction upon which a classification of the fine arts can be based. The arts which surround us in space with stationary effects for the eye, as the house we live in, the pictures on the walls, the marble figure in the vestibule, are stationary, hold a different kind of place in our experience—not a greater or a higher place, but essentially a different place—from the arts which provide us with transitory effects in time, effects capable of being awakened for the ear or mind at any moment, as a symphony is awakened by playing and an ode by reading, but lying in abeyance until we bid that moment come, and passing away when the performance or the reading is over. Such, indeed, is the practical force of the distinction that in modern usage the expression *fine art*, or even *art*, is often used by itself in a sense which tacitly excludes music and poetry, and signifies the group of manual or shaping arts alone.

Intermediate class of arts of motion.

As between three of the five greater arts and the other two, the distinction on which we are now dwelling is complete. Buildings, statues, pictures, belong strictly to sight and space; to time and to hearing, real through the ear, or ideal through the mind in reading, belong music and poetry. Among the lesser or subordinate arts, however, there are several in which this distinction finds no place, and which produce, in space and time at once, effects midway between the stationary or stable, and the transitory or fleeting. Such is the *dramatic* art, in which the actor makes with his actions and gestures, or several actors make with the combination of their different actions and gestures, a kind of shifting picture, which appeals to the eyes of the witnesses while the sung or spoken words of the drama appeal to their ears; thus making of them spectators and auditors at once, and associating with the pure time art of words the mixed time-and-space art of bodily movements. As all movement whatsoever is necessarily movement through space, and takes time to happen, so every other fine art which is wholly or in part an act of movement partakes in like manner of this double character. Along with acting thus comes *dancing*. Dancing, when it is of the mimic character, may itself be a kind of acting; historically, indeed, the dancer's art was the parent of the actor's; whether apart from or in conjunction with the mimic element, dancing is an art in which bodily movements obey, accompany, and, as it were, express or accentuate in space the time effects of music. *Eloquence* or oratory in like manner, so far as its power depends on studied and premeditated gesture, is also an art which to some extent enforces its primary appeal through the ear in time by a secondary appeal through the eye in space. So much for the first distinction, that between the shaping or space arts and the speaking or time arts, with the intermediate and subordinate class of arts which, like acting, dancing, oratory, add to the pure time element a mixed time-and-space element. These last can hardly be called shaping arts, because it is his own person, and not anything outside himself, which the actor, the dancer, the orator disposes or adjusts; they may perhaps best be called arts of motion, or moving arts.

Second classification: the imitative and non-imitative arts.

2. *The Imitative and the Non-Imitative Arts.*—Each art either does or does not represent or imitate something which exists already in nature. Of the five greater fine arts, those which thus represent objects existing in nature are sculpture, painting and poetry. Those which do not represent anything so existing are music and architecture. On this principle we get a new grouping. Two shaping or space arts and one speaking or time art now form the imitative group of sculpture, painting and poetry; while one space art and one time art form the non-imitative group of music and architecture. The mixed space-and-time arts of the actor, and of the dancer, so far as he or she is also a mimic, belong, of course, by their very name and nature, to the imitative class.

The imitative functions of art according to Aristotle.

It was the imitative character of the fine arts which chiefly occupied the attention of Aristotle. But in order to understand the art theories of Aristotle it is necessary to bear in mind the very different meanings which the idea of imitation bore to his mind and bears to ours. For Aristotle the idea of imitation or representation (*mimēsis*) was extended so as to denote the expressing, evoking or making manifest of anything whatever, whether material objects or ideas or feelings. Music and dancing, by which utterance or expression is given to emotions that may be quite detached from all definite ideas or images, are thus for him varieties of imitation. He says, indeed, *most* music and dancing, as if he was aware that there were exceptions, but he does not indicate what the exceptions are; and under the head of imitative music, he distinctly reckons some kinds of instrumental music without words. But in our own more restricted usage, to imitate means to copy, mimic or represent some existing phenomenon, some definite reality of experience; and we can only call those imitative arts which bring before us such things, either directly by showing us their actual likeness, as sculpture does in solid form, and as painting does by means of lines and colours on a plane surface, or else indirectly, by calling up ideas or images of them in the mind, as poetry and literature do by means of words. It is by a stretch of ordinary usage that we apply the word imitation even to this last way of

representing things; since words are no true likeness of, but only customary signs for, the thing they represent. And those arts we cannot call imitative at all, which by combinations of abstract sound or form express and arouse emotions unattended by the recognizable likeness, idea or image of any definite thing.

Non-imitative character of music.

Now the emotions of music when music goes along with words, whether in the shape of actual song or even of the instrumental accompaniment of song, are no doubt in a certain sense attended with definite ideas; those, namely, which are expressed by the words themselves. But the same ideas would be conveyed to the mind equally well by the same words if they were simply spoken. What the music contributes is a special element of its own, an element of pure emotion, aroused through the sense of hearing, which heightens the effect of the words upon the feelings without helping to elucidate them for the understanding. Nay, it is well known that a song well sung produces its intended effect upon the feelings almost as fully though we fail to catch the words or are ignorant of the language to which they belong. Thus the view of Aristotle cannot be defended on the ground that he was familiar with music only in an elementary form, and principally as the direct accompaniment of words, and that in his day the modern development of the art, as an art for building up constructions of independent sound, vast and intricate fabrics of melody and harmony detached from words, was a thing not yet imagined. That is perfectly true; the immense technical and intellectual development of music, both in its resources and its capacities, is an achievement of the modern world; but the essential character of musical sound is the same in its most elementary as in its most complicated stage. Its privilege is to give delight, not by communicating definite ideas, or calling up particular images, but by appealing to certain organic sensibilities in our nerves of hearing, and through such appeal expressing on the one part and arousing on the other a unique kind of emotion. The emotion caused by music may be altogether independent of any ideas conveyable by words. Or it may serve to intensify and enforce other emotions arising at the same time in connexion with the ideas conveyed by words; and it was one of the contentions of Richard Wagner that in the former phase the art is now exhausted, and that only in the latter are new conquests in store for it. But in either case the music is the music, and *is like nothing else*; it is no representation or similitude of anything whatsoever.

An objection and its answer.

But does not instrumental music, it will be said, sometimes really imitate the sounds of nature, as the piping of birds, the whispering of woods, the moaning of storms or explosion of thunder; or does it not, at any rate, suggest these things by resemblances so close that they almost amount in the strict sense to imitation? Occasionally, it is true, music does allow itself these playful excursions into a region of quasi-imitation or mimicry. It modifies the character of its abstract sounds into something, so to speak, more concrete, and, instead of sensations which are like nothing else, affords us sensations which recognizably resemble those we receive from some of the sounds of nature. But such excursions are hazardous, and to make them often is the surest proof of vulgarity in a musician. Neither are the successful effects of the great composers in evoking ideas of particular natural phenomena generally in the nature of real imitations or representations; although passages such as the notes of the dove and nightingale in Haydn's *Creation*, and of the cuckoo in Beethoven's *Pastoral Symphony*, the bleating of the sheep in the *Don Quixote* symphony of Richard Strauss, must be acknowledged to be exceptions. Again, it is a recognized fact concerning the effect of instrumental music on those of its hearers who try to translate such effect into words, that they will all find themselves in tolerable agreement as to the meaning of any passage so long as they only attempt to describe it in terms of vague emotion, and to say such and such a passage expresses, as the case may be, dejection or triumph, effort or the relaxation of effort, eagerness or languor, suspense or fruition, anguish or glee. But their agreement comes to an end the moment they begin to associate, in their interpretation, definite ideas with these vague emotions; then we find that what suggests in idea to one hearer the vicissitudes of war will suggest to another, or to the same at another time, the vicissitudes of love, to another those of spiritual yearning and aspiration, to another, it may be, those of changeful travel by forest, field and ocean, to another those of life's practical struggle and ambition. The infinite variety of ideas which may thus be called up in different minds by the same strain of music is proof enough that the music is not *like* any particular thing. The torrent of varied and entrancing emotion which it pours along the heart, emotion latent and undivined until the spell of sound begins, that is music's achievement and its secret. It is this effect, whether coupled or not with a trained intellectual recognition of the highly abstract and elaborate nature of the laws of the relation, succession and combinations of sounds on which the effect depends, that has caused some thinkers, with Schopenhauer at their head, to find in music the nearest approach we have to a voice from behind the veil, a universal voice expressing the central purpose and deepest essence of things, unconfused by fleeting actualities or by the distracting duty of calling up images of particular and perishable phenomena. "Music," in Schopenhauer's own words, "reveals the innermost essential being of the world, and expresses the highest wisdom in a language the reason does not understand."

Definition of music.

Aristotle endeavoured to frame a classification of the arts, in their several applications and developments, on two grounds—the nature of the objects imitated by each, and the means or instruments employed in the imitation. But in the case of music, as it exists in the modern world, the first part of this endeavour falls to the ground, because the object imitated has, in the sense in which we now use the word imitation, no existence. The means employed by music are successions and combinations of vocal or instrumental sounds regulated according to the three conditions of time and pitch (which together make up melody) and harmony, or the relations of different strains of time and tone cooperant but not parallel. With these means, music either creates her independent constructions, or else accompanies, adorns, enforces the imitative art of speech—but herself imitates not; and may be best defined simply as *a speaking or time art, of which the business is to express and arouse emotion by successions and*

combinations of regulated sound.

That which music is thus among the speaking or time-arts, architecture is among the shaping or space-arts. As music appeals to our faculties for taking pleasure in non-imitative combinations of transitory sound, so architecture appeals to our faculties for taking pleasure in non-imitative combinations of stationary mass. Corresponding to the system of ear-effects or combinations of time, tone and harmony with which music works, architecture works with a system of eye-effects or combinations of mass, contour, light and shade; colour, proportion, interval, alternation of plain and decorated parts, regularity and variety in regularity, apparent stability, vastness, appropriateness and the rest. Only the materials of architecture are not volatile and intangible like sound, but solid timber, brick, stone, metal and mortar, and the laws of weight and force according to which these materials have to be combined are much more severe and cramping than the laws of melody and harmony which regulate the combinations of music. The architect is further subject, unlike the musician, to the dictates and precise prescriptions of utility. Even in structures raised for purposes not of everyday use and necessity, but of commemoration or worship, the rules for such commemoration and such worship have prescribed a more or less fixed arrangement and proportion of the parts or members, whether in the Egyptian temple or temple-tomb, the Greek temple or herōon, or in the churches of the middle ages and Renaissance in the West.

Non-imitative character of architecture.

Hence the effects of architecture are necessarily less full of various, rapturous and unforeseen enchantment than the effects of music. Yet for those who possess sensibility to the pleasures of the eye and the perfections of shaping art, the architecture of the great ages has yielded combinations which, so far as comparison is permissible between things unlike in their materials, fall little short of the achievements of music in those kinds of excellence which are common to them both. In the virtues of lucidity, of just proportion and organic interdependence of the several parts or members, in the mathematic subtlety of their mutual relations, and of the transitions from one part or member to another, in purity and finish of individual forms, in the character of one thing growing naturally out of another and everything serving to complete the whole—in these qualities, no musical combination can well surpass a typical Doric temple such as the Parthenon at Athens. None, again, can well surpass some of the great cathedrals of the middle ages in the qualities of sublimity, of complexity, in the power both of expressing and suggesting spiritual aspiration, in the invention of intricate developments and ramifications about a central plan, in the union of majesty in the main conception with fertility of adornment in detail. In fancifulness, in the unexpected, in capricious and far-sought opulence, in filling the mind with mingled enchantments of east and west and south and north, music can hardly do more than a building like St Mark’s at Venice does with its blending of Byzantine elements, Italian elements, Gothic elements, each carried to the utmost pitch of elaboration and each enriched with a hundred caprices of ornament, but all working together, all in obedience to a law, and “all beginning and ending with the Cross.”

Analogies of architecture and music.

In the case of architecture, however, as in the case of music, the non-imitative character must not be stated quite without exception or reserve. There have been styles of architecture in which forms suggesting or imitating natural or other phenomena have held a place among the abstract forms proper to the art. Often the mode of such suggestions is rather symbolical to the mind than really imitative to the eye; as when the number and relations of the heavenly planets were imaged by that race of astronomers, the Babylonians, in the seven concentric walls of their great temple, and in many other architectural constructions; or as when the shape of the cross was adopted, with innumerable slight varieties and modifications, for the ground plan of the churches of Christendom. Passing to examples of imitation more properly so called, it may be true, and was, at any rate, long believed, that the aisles of Gothic churches, when once the use of the pointed arch had been evolved as a principle of construction, were partly designed to evoke the idea of the natural aisles of the forest, and that the upsoaring forest trunks and meeting branches were more or less consciously imaged in their piers and vaultings. In the temple-palaces of Egypt, one of the regular architectural members, the sustaining pier, is often systematically wrought in the actual likeness of a conventionalized cluster of lotus stems, with lotus flowers for the capital. When we come to the fashion, not rare in Greek architecture, of carving this same sustaining member, the column, in complete human likeness, and employing caryatids, canephori, atlases or the like, to support the entablature of a building, it then becomes difficult to say whether we have to do with a work of architecture or of sculpture. The case, at any rate, is different from that in which the sculptor is called in to supply surface decoration to the various members of a building, or to fill with the products of his own art spaces in the building specially contrived and left vacant for that purpose. When the imitative feature is in itself an indispensable member of the architectural construction, to architecture rather than sculpture we shall probably do best to assign it.

Exceptional and limited admission of imitative forms in architecture.

Defining architecture, then (apart from its utility, which for the present we leave out of consideration), as *a shaping art, of which the function is to express and arouse emotion by combinations of ordered and decorated mass*, we pass from the characteristics of the non-imitative to those of the imitative group of arts, namely sculpture, painting and poetry.

Definition of architecture.

If we keep in mind the source and origin of these arts, we must remember what has already been observed, that they spring by no means from man’s love of imitation alone, but from his desire to record and commemorate experience, using the faculty of imitation as his means. Mnemosyne (Memory) was in Greek tradition the mother of the Muses; imitation, in the sense above defined, is but their instrument. Hence we might think “arts of

The imitative arts are arts

of record using imitation as their means.

record" a better name for this group than arts of imitation. The answer is—but a large part of pure architecture is also commemorative; from the pyramids and obelisks of Egypt down there are many monuments in which the impulse of men to perpetuate their own or others' memories has worked without any aid of imitation. Hence as the definition of a class of arts contrasted with architecture and music the name "arts of record" would fail; and we have to fall back on the current and established name of the "imitative arts." In considering them we cannot do better than follow that Aristotelian division which describes each art according, first, to the objects which it imitates, and, secondly, to the means it employs.

Taking sculpture first, as imitating a smaller range of objects than the other two, and imitating them more completely: sculpture may have for the objects of its imitation the shapes of whatever things possess length, breadth and magnitude. For its means or instruments it has solid form, which the sculptor either carves out of a hard substance, as in the case of wood and stone, or models in a yielding substance, as in the case of clay and wax, or casts in a dissolved or molten substance, as in the case of plaster and of metal in certain uses, or beats, draws or chases in a malleable and ductile substance, as in the case of metal in other uses, or stamps from dies or moulds, a method sometimes used in all soft or fusible materials. Thus a statue or statuette may either be carved straight out of a block of stone or wood, or first modelled in clay or wax, then moulded in plaster or some equivalent material, and then carved in stone or cast in bronze. A gem is wrought in stone by cutting and grinding. Figures in jeweller's work are wrought by beating and chasing; a medallion by beating and chasing or else by stamping from a die; a coin by stamping from a die; and so forth. The process of modelling (Gr. πλάττειν) in a soft substance being regarded as the typical process of the sculptor, the name *plastic art* has been given to his operations in general.

Sculpture as an imitative art.

In general terms, the task of sculpture is to imitate solid form with solid form. But sculptured form may be either completely or incompletely solid. Sculpture in completely solid form exactly reproduces, whether on the original or on a different scale, the relations or proportions of the object imitated in the three dimensions of length, breadth and depth or thickness. Sculpture in incompletely solid form reproduces the proportions of the objects with exactness only so far as concerns two of its dimensions, namely, those of length and breadth; while the third dimension, that of depth or thickness, it reproduces in a diminished proportion, leaving it to the eye to infer, from the partial degree of projection given to the work, the full projection of the object imitated. The former, or completely solid kind of sculpture, is called sculpture in the round; its works stand free, and can be walked round and seen from all points. The latter, or incompletely solid kind of sculpture, is called sculpture in relief; its works do not stand free, but are engaged in or attached to a background, and can only be seen from in front. According, in the latter kind of sculpture, to its degree of projection from the background, a work is said to be in high or in low relief. Sculpture in the round and sculpture in relief are alike in this, that the properties of objects which they imitate are their external forms as defined by their outlines—that is, by the boundaries and circumscriptions of their masses—and their light and shade—the lights and shadows, that is, which diversify the curved surfaces of the masses in consequence of their alternations and gradations of projection and recession. But the two kinds of sculpture differ in this. A work of sculpture in the round imitates the whole of the outlines by which the object imitated is circumscribed in the three dimensions of space, and presents to the eye, as the object itself would do, a new outline succeeding the last every moment as you walk round it. Whereas a work of sculpture in relief imitates only one outline of any object; it takes, so to speak, a section of the object as seen from a particular point, and traces on the background the boundary-line of that particular section, merely suggesting, by modelling the surface within such boundary according to a regular, but a diminished, ratio of projection, the other outlines which the object would present if seen from all sides successively.

Sculpture in the round and in relief.

As sculpture in the round reproduces the real relations of a solid object in space, it follows that the only kind of object which it can reproduce with pleasurable effect according to the laws of regulated or rhythmical design must be one not too vast or complicated, one that can afford to be detached and isolated from its surroundings, and of which all the parts can easily be perceived and apprehended in their organic relations. Further, it will need to be an object interesting enough to mankind in general to make them take delight in seeing it reproduced with all its parts in complete imitation. And again, it must be such that some considerable part of the interest lies in those particular properties of outline, play of surface, and light and shade which it is the special function of sculpture to reproduce. Thus a sculptured representation in the round, say, of a mountain with cities on it, would hardly be a sculpture at all; it could only be a model, and as a model might have value; but value as a work of fine art it could not have, because the object imitated would lack organic definiteness and completeness; it would lack universality of interest, and of the interest which it did possess, a very inconsiderable part would depend upon its properties of outline, surface, and light and shade. Obviously there is no kind of object in the world that so well unites the required conditions for pleasurable imitation in sculpture as the human body. It is at once the most complete of organisms, and the shape of all others the most subtle as well as the most intelligible in its outlines; the most habitually detached in active or stationary freedom; the most interesting to mankind, because its own; the richest in those particular effects, contours and modulations, contrasts, harmonies and transitions of modelled surface and circumscribing line, which it is the prerogative of sculpture to imitate. Accordingly the object of imitation for this art is pre-eminently the body of man or woman. That it has not been for the sake of representing men and women as such, but for the sake of representing gods in the likeness of men and women, that the human form has been most enthusiastically studied, does not affect this fact in the theory of the art, though it is a consideration of great importance in its history. Besides the human

Subjects proper for sculpture in the round.

form, sculpture may imitate the forms of those of the lower animals whose physical endowments have something of a kindred perfection, with other natural or artificial objects as may be needed merely by way of accessory or symbol. The body must for the purposes of this art be divested of covering, or covered only with such tissues as reveal, translate or play about without concealing it. Chiefly in lands and ages where climate and social use have given the sculptor the opportunity of studying human forms so draped or undraped has this art attained perfection, and become exemplary and enviable to that of other races.

Relief sculpture is more closely connected with architecture than the other kind, and indeed is commonly used in subordination to it. But if its task is thus somewhat different from that of sculpture in the round, its principal objects of imitation are the same. The human body remains the principal theme of the sculptor in relief; but the nature of his art allows, and sometimes compels, him to include other objects in the range of his imitation. As he has not to represent the real depth or projection of things, but only to suggest them according to a ratio which he may fix himself, so he can introduce into the third or depth dimension, thus arbitrarily reduced, a multitude of objects for which the sculptor in the round, having to observe the real ratio of the three dimensions, has no room. He cam place one figure in slightly raised outline emerging from behind the more fully raised outline of another, and by the same system can add to his representation rocks, trees, nay mountains and cities and birds on the wing. But the more he uses this liberty the less will he be truly a sculptor. Solid modelling, and real light and shade, are the special means or instrument of effect which the sculptor alone among imitative artists enjoys. Single outlines and contours, the choice of one particular section and the tracing of its circumscription, are means which the sculptor enjoys in common with the painter or draughtsman. And indeed, when we consider works executed wholly or in part in very low relief, whether Assyrian battle-pieces and hunting-pieces in alabaster or bronze, or the backgrounds carved in bronze, marble or wood by the Italian sculptors who followed the example set by Ghiberti at the Renaissance, we shall see that the principle of such work is not the principle of sculpture at all. Its effect depends little on qualities of surface-light and shadow, and mainly on qualities of contour, as traced by a slight line of shadow on the side away from the light, and a slight line of light on the side next to it. And we may fairly hesitate whether we shall rank the artist who works on this principle, which is properly a graphic rather than a plastic principle, among sculptors or among draughtsmen. The above are cases in which the relief sculptor exercises his liberty in the introduction of other objects besides human figures into his sculptured compositions. But there is another kind of relief sculpture in which the artist has less choice. That is, the kind in which the sculptor is called in to decorate with carved work parts of an architectural construction which are not adapted for the introduction of figure subjects, or for their introduction only as features in a scheme of ornament that comprises many other elements. To this head belongs most of the carving of capitals, mouldings, friezes (except the friezes of Greek temples), bands, cornices, and, in the Gothic style, of doorway arches, niches, canopies, pinnacles, brackets, spandrels and the thousand members and parts of members which that style so exquisitely adorned with true or conventionalized imitations of natural forms. This is no doubt a subordinate function of the art; and it is impossible, as we have seen already, to find a precise line of demarcation between carving, in this decorative use, which is properly sculpture, and that which belongs properly to architecture.

Subjects proper for sculpture in relief.

Leaving such discussions, we may content ourselves with the definition of sculpture as *a shaping art, of which the business is to express and arouse emotion by the imitation of natural objects, and principally the human body, in solid form, reproducing either their true proportions in three dimensions, or their proportions in the two dimensions of length and breadth only, with a diminished proportion in the third dimension of depth or thickness.*

Definition of sculpture.

In considering bas-relief as a form of sculpture, we have found ourselves approaching the confines of the second of the shaping imitative arts, the graphic art or art of painting. Painting, as to its means or instruments of imitation, dispenses with the third dimension altogether. It imitates natural objects by representing them as they are represented on the retina of the eye itself, simply as an assemblage of variously shaped and variously shaded patches of colour on a flat surface. Painting does not reproduce the third dimension of reality by any third dimension of its own whatever; but leaves the eye to infer the solidity of objects, their recession and projection, their nearness and remoteness, by the same perspective signs by which it also infers those facts in nature, namely, by the direction of their several boundary lines, the incidence and distribution of their lights and shadows, the strength or faintness of their tones of colour.

Painting as an imitative art.

Hence this art has an infinitely greater range and freedom than any form of sculpture. Near and far is all the same to it, and whatever comes into the field of vision can come also into the field of a picture; trees as well as persons, and clouds as well as trees, and stars as well as clouds; the remotest mountain snows, as well as the violet of the foreground, and far-off multitudes of people as well as one or two near the eye. Whatever any man has seen, or can imagine himself as seeing, that he can also fix by painting, subject only to one great limitation,—that of the range of brightness which he is able to attain in imitating natural colour illuminated by light. In this particular his art can but correspond according to a greatly diminished ratio with the effects of nature. But excepting this it can do for the eye almost all that nature herself does; or at least all that nature would do if man had only one eye since the three dimensions of space produce upon our binocular machinery of vision a particular stereoscopic effect of which a picture, with its two dimensions only, is incapable. The range of the art being thus almost unbounded, its selections have naturally been dictated by the varying interest felt in this or that subject of representation by the societies among whom the art has at

Range of objects imitable by painting.

various times been practised. As in sculpture, so in painting, the human form has always held the first place. For the painter, the intervention of costume between man and his environment is not a misfortune in the same degree as it is for the sculptor. For him, clothes of whatever fashion or amplitude have their own charm; they serve to diversify the aspect of the world, and to express the characters and stations, if not the physical frames, of his personages; and he is as happy or happier among the brocades of Venice as among the bare limbs of the Spartan palaestra. Along with man, there come into painting all animals and vegetation, all man's furniture and belongings, his dwelling-places, fields and landscape; and in modern times also landscape and nature for their own sakes, skies, seas, mountains and wildernesses apart from man.

Besides the two questions about any art, what objects does it imitate, and by the use of what means or instruments, Aristotle proposes (in the case of poetry) the further question, which of several possible forms does the imitation in any given case assume? We may transfer very nearly the same inquiry to painting, and may ask, concerning any painter, according to which of three possible systems he works. The three possible systems are (1) that which attends principally to the configuration and relations of natural objects as indicated by the direction of their boundaries, for defining which there is a convention in universal use, the convention, that is, of line; this may be called for short the system of *line*; (2) that which attends chiefly to their configuration and relations as indicated by the incidence and distribution of their lights and shadows—this is the system of *light-and-shade* or *chiaroscuro*; and (3) that which attends chiefly, not to their configuration at all, but to the distribution, qualities and relations of local colours upon their surface—this is the system of *colour*. It is not possible for a painter to imitate natural objects to the eye at all without either defining their boundaries by outlines, or suggesting the shape of their masses by juxtapositions of light and dark or of local colours. In the complete art of painting, of course, all three methods are employed at once. But in what is known as outline drawing and outline engraving, one of the three methods only is employed, line; in monochrome pictures, and in shaded drawings and engravings, two only, line with light-and-shade; and in the various shadeless forms of decorative painting and colour-printing, two only, line with colour. Even in the most accomplished examples of the complete art of painting, as was pointed out by Ruskin, we find that there almost always prevails a predilection for some one of these three parts of painting over the other two. Thus among the mature Italians of the Renaissance, Titian is above all things a painter in colour, Michelangelo in line, Leonardo in light-and-shade. Many academic painters in their day tried to combine the three methods in equal balance; to the impetuous spirit of the great Venetian, Tintoretto, it was alone given to make the attempt with a great measure of success. A great part of the effort of modern painting has been to get rid of the linear convention altogether, to banish line and develop the resources of the oil medium in imitating on canvas, more strictly than the early masters attempted, the actual appearance of things on the retina as an assemblage of coloured streaks and patches modified and toned in the play of light-and-shade and atmosphere.

The chief forms or modes of painting: line, light-and-shade and colour.

It remains to consider, for the purpose of our classification, what are the technical varieties of the painter's craft. Since we gave the generic name of painting to all imitation of natural objects by the assemblage of lines, colours and lights and darks on a single plane, we must logically include as varieties of painting not only the ordinary crafts of spreading or laying pictures on an opaque surface in fresco, oil, distemper or water-colour, but also the craft of arranging a picture to be seen by the transmission of light through a transparent substance, in glass painting; the craft of fitting together a multitude of solid cubes or cylinders so that their united surface forms a picture to the eye, as in mosaic; the craft of spreading vitreous colours in a state of fusion so that they form a picture when hardened, as in enamel; and even, it would seem, the crafts of weaving, tapestry, and embroidery, since these also yield to the eye a plane surface figured in imitation of nature. As drawing we must also count incised or engraved work of all kinds representing merely the outlines of objects and not their modellings, as for instance the *graffiti* on Greek and Etruscan mirror-backs and dressing-cases; while raised work in low relief, in which outlines are plainly marked and modellings neglected, furnishes, as we have seen, a doubtful class between sculpture and painting. In all figures that are first modelled in the solid and then variously coloured, sculpture and painting bear a common share; and by far the greater part both of ancient and medieval statuary was in fact tinted so as to imitate or at least suggest the colours of life. But as the special characteristic of sculpture, solidity in the third dimension, is in these cases present, it is to that art and not to painting that we shall still ascribe the resulting work.

Technical varieties of the painter's craft.

With these indications we may leave the art of painting defined in general terms as a *shaping or space art, of which the business is to express and arouse emotion by the imitation of all kinds of natural objects, reproducing on a plane surface the relations of their boundary lines, lights and shadows, or colours, or all three of these appearances together*.

Definition of painting.

The next and last of the imitative arts is the speaking art of poetry. The transition from sculpture and painting to poetry is, from the point of view not of our present but of our first division among the fine arts, abrupt and absolute. It is a transition from space into time, from the sphere of material forms to the sphere of immaterial images. Following Aristotle's method, we may define the objects of poetry's imitation or evocation, as everything of which the idea or image can be called up by words, that is, every force and phenomenon of nature, every operation and result of art, every fact of life and history, or every imagination of such a fact, every thought and feeling of the human spirit, for which mankind in the course of its long evolution has been able to create in speech an explicit and appropriate sign. The means or instruments of poetry's imitation are these verbal signs or words, arranged in lines, strophes or stanzas, so that

Poetry as an imitative art.

their sounds have some of the regulated qualities and direct emotional effect of music.

The three chief modes or forms of the imitation may still be defined as they were defined by Aristotle himself. First comes the *epic* or narrative form, in which the poet speaks alternately for himself and his characters, now describing their situations and feelings in his own words, and anon making each of them speak in the first person for himself. Second comes the *lyric* form, in which the poet speaks in his own name exclusively, and gives expression to sentiments which are purely personal. Third comes the *dramatic* form, in which the poet does not speak for himself at all, but only puts into the mouths of each of his personages successively such discourse as he thinks appropriate to the part. The last of these three forms of poetry, the dramatic, calls, if it is merely read, on the imagination of the reader to fill up those circumstances of situation, action and the rest, which in the first or epic form are supplied by the narrative between the speeches, and for which in the lyric or personal form there is no occasion. To avoid making this call upon the imagination, to bring home its effects with full vividness, dramatic poetry has to call in the aid of several subordinate arts, the shaping or space art of the scene-painter, the mixed time and space arts of the actor and the dancer. Occasionally also, or in the case of opera throughout, dramatic poetry heightens the emotional effect of its words with music. A play or drama is thus, as performed upon the theatre, not a poem merely, but a poem accompanied, interpreted, completed and brought several degrees nearer to reality by a combination of auxiliary effects of the other arts. Besides the narrative, the lyric and dramatic forms of poetry, the *didactic*, that is the teaching or expository form, has usually been recognized as a fourth. Aristotle refused so to recognize it, regarding a didactic poem in the light not so much of a poem as of a useful treatise. But from the *Works and Days* down to the *Loves of the Plants* there has been too much literature produced in this form for us to follow Aristotle here. We shall do better to regard didactic poetry as a variety corresponding, among the speaking arts, to architecture and the other manual arts of which the first purpose is use, but which are capable of accompanying and adorning use by a pleasurable appeal to the emotions.

The chief forms or modes of poetry.

We shall hardly make our definition of poetry, considered as an imitative art, too extended if we say that it is *a speaking or time art, of which the business is to express and arouse emotion by imitating or evoking all or any of the phenomena of life and nature by means of words arranged with musical regularity*.

Definition of poetry.

Neither the varieties of poetical form, however, nor the modes in which the several forms have been mixed up and interchanged—as such mixture and interchange are implied, for instance, by the very title of a group of Robert Browning’s poems, the *Dramatic Lyrics*,—the observation of neither of these things concerns us here so much as the observation of the relations of poetry in general, as an art of representation or imitation, to the other arts of imitation, painting and sculpture. Verbal signs have been invented for innumerable things which cannot be imitated or represented at all either in solid form or upon a coloured surface. You cannot carve or paint a sigh, or the feeling which finds utterance in a sigh; you can only suggest the idea of the feeling, and that in a somewhat imperfect and uncertain way, by representing the physical aspect of a person in the act of breathing the sigh. Similarly you cannot carve or paint any movement, but only figures or groups in which the movement is represented as arrested in some particular point of time; nor any abstract idea, but only figures or groups in which the abstract idea, as for example release, captivity, mercy, is symbolized in the concrete shape of allegorical or illustrative figures. The whole field of thought, of propositions, arguments, injunctions and exhortations is open to poetry but closed to sculpture and painting. Poetry, by its command over the regions of the understanding, of abstraction, of the movement and succession of things in time, by its power of instantaneously associating one image with another from the remotest regions of the mind, by its names for every shade of feeling and experience, exercises a sovereignty a hundred times more extended than that of either of the two arts of manual imitation. But, on the other hand, words do not as a rule bear any sensible resemblance to the things of which they are the signs. There are few things that words do not stand for or cannot call up; but they stand for things symbolically and at second hand, and call them up only in idea, and not in actual presentment to the senses. In strictness, the business of poetry should not be called imitation at all, but rather evocation. The strength of painting and sculpture lies in this, that though there are countless phenomena which they cannot represent at all, and countless more which they can only represent by symbolism and suggestion more or less ambiguous, yet there are a few which each can represent more fully and directly than poetry can represent any thing at all. These are, for sculpture, the forms or configurations of things, which that art represents directly to the senses both of sight and touch; and for painting the forms and colours of things and their relations to each other in space, air and light, which the art represents to the sense of sight, directly so far as regards surface appearance, and indirectly so far as regards solidity. For many delicate qualities and differences in these visible relations of things there are no words at all—the vocabulary of colours, for instance, is in all languages surprisingly scanty and primitive. And those visible qualities, for which words exist, the words still call up indistinctly and at second hand. Poetry is almost as powerless to bring before the mind’s eye with precision a particular shade of red or blue, a particular linear arrangement or harmony of colour-tones, as sculpture is to relate a continuous experience, or painting to enforce an exhortation or embellish an abstract proposition. The wise poet, as has been justly remarked, when he wants to produce a vivid impression of a visible thing, does not attempt to catalogue or describe its stationary beauties. Shakespeare, when he wants to make us realize the perfections of Perdita, puts into the mouth of Florizel, not, as a bad poet would have done, a description of her lilies and carnations, and the other charms which a painter could make us realize better, but the praises of her ways and movements; and with the final touch,

Relation of poetry as an Imitative art to painting and sculpture.

"When you do dance, I wish you
A wave o' the sea, that you might ever do
Nothing but that,"

he evokes a twofold image of beauty in motion, of which one half might be the despair of those painters who designed the dancing maidens of the walls of Herculaneum, and the other half the despair of all artists who in modern times have tried to fix upon their canvas the buoyancy and grace of dancing waves. In representing the perfections of form in a bride's slender foot, the speaking art, poetry, would find itself distanced by either of the shaping arts, painting or sculpture. Suckling calls up the charm of such a foot by describing it not at rest but in motion, and in the feet which

"Beneath the petticoat,
Like little mice, went in and out,"

leaves us an image which baffles the power of the other arts. Keats, when he tells of Madeline unclasping her jewels on St Agnes's Eve, does not attempt to conjure up their lustre to the eye, as a painter would have done, and a less poetical poet might have tried to do, but in the words "her warmed jewels" evoked instead a quality, breathing of the very life of the wearer, which painting could not even have remotely suggested.

The differences between the means and capacities of representation proper to the shaping arts of sculpture and painting and those proper to the speaking art of poetry were for a long while overlooked or misunderstood. The maxim of Simonides, that poetry is a kind of articulate painting, and painting a kind of mute poetry, was vaguely accepted until the days of Lessing, and first overthrown by the famous treatise of that writer on the Laocoön. Following in the main the lines laid down by Lessing, other writers have worked out the conditions of representation or imitation proper not only to sculpture and painting as distinguished from poetry, but to sculpture as distinguished from painting. The chief points established may really all be condensed under one simple law, *that the more direct and complete the imitation effected by any art, the less is the range and number of phenomena which that art can imitate*. Thus sculpture in the round imitates its objects much more completely and directly than any other single art, reproducing one whole set of their relations which no other art attempts to reproduce at all, namely, their solid relations in space. Precisely for this reason, such sculpture is limited to a narrow class of objects. As we have seen, it must represent human or animal figures; nothing else has enough either of universal interest or of organic beauty and perfection. Sculpture in the round must represent such figures standing free in full clearness and detachment, in combinations and with accessories comparatively simple, on pain of teasing the eye with a complexity and entanglement of masses and lights and shadows; and in attitudes comparatively quiet, on pain of violating, or appearing to violate, the conditions of mechanical stability. Being a stationary or space-art, it can only represent a single action, which it fixes and perpetuates for ever; and it must therefore choose for that action one as significant and full of interest as is consistent with due observation of the above laws of simplicity and stability. Such actions, and the facial expressions accompanying them, should not be those of sharp crisis or transition, because sudden movement or flitting expression, thus arrested and perpetuated in full and solid imitation by bronze or marble, would be displeasing and not pleasing to the spectator. They must be actions and expressions in some degree settled, collected and capable of continuance, and in their collectedness must at the same time suggest to the spectator as much as possible of the circumstances which have led up to them and those which will next ensue. These conditions evidently bring within a very narrow range the phenomena with which this art can deal, and explain why, as a matter of fact, the greater number of statues represent simply a single figure in repose, with the addition of one or two symbolic or customary attributes. Paint a statue (as the greater part both of Greek and Gothic statuary was in fact painted), and you bring it to a still further point of imitative completeness to the eye; but you do not thereby lighten the restrictions laid upon the art by its material, so long as it undertakes to reproduce in full the third or solid dimension of bodies. You only begin to lighten its restrictions when you begin to relieve it of that duty. We have traced how sculpture in relief, which is satisfied with only a partial reproduction of the third dimension, is free to introduce a larger range of objects, bringing forward secondary figures and accessories, indicating distant planes, indulging even in considerable violence and complexity of motion, since limbs attached to a background do not alarm the spectator by any idea of danger of fragility. But sculpture in the round has not this licence. It is true that the art has at various periods made efforts to escape from its natural limitations. Several of the later schools of antiquity, especially that of Pergamus in the 3rd and 2nd centuries B.C., strove hard both for violence of expression and complexity of design, not only in relief-sculptures, like the great altar-friezes now at Berlin, but in detached groups, such as (*pace* Lessing) the Laocoön itself. Many modern *virtuosi* of sculpture since Bernini have misspent their skill in trying to fix in marble both the restlessness of momentary actions and the flimsiness of fluttering tissues. In latter days Auguste Rodin, an innovating master with a real genius for his art, has attacked many problems of complicated grouping, more or less in the nature of the Greek *symplegmata*, but keeps these interlocked or contorted actions circumscribed within strict limiting lines, so that they do not by jutting or straggling suggest a kind of acrobatic challenge to the laws of gravity. The same artist and others inspired by him have further sought to emancipate sculpture from the necessity of rendering form in clear and complete definition, and to enrich it with a new power of mysterious suggestion, by leaving his figures wrought in part to the highest finish and vitality of surface, while other parts (according to a precedent set in some unfinished works of Michelangelo) remain scarcely emergent from the rough-hewn or unhewn block. But it may be doubted whether such experiments and expedients can permanently do much to enlarge the scope of the art.

General law of the relative means and capacities of the several imitative arts: sculpture.

Next we arrive at painting, in which the third dimension is dismissed altogether, and nothing is actually reproduced, in full or partially, except the effect made by the appearance of natural objects upon the retina of the eye. The consequence is that this art can range over distance and multitude, can represent complicated relations between its various figures and groups of figures, extensive backgrounds, and all those infinite subtleties of appearance in natural things which depend upon local colours and their modification in the play of light and shade and enveloping atmosphere. These last phenomena of natural things are in our experience subject to change in a sense in which the substantial or solid properties of things are not so subject. Colours, shadows and atmospheric effects are naturally associated with ideas of transition, mystery and evanescence. Hence painting is able to extend its range to another kind of facts over which sculpture has no power. It can suggest and perpetuate in its imitation, without breach of its true laws, many classes of facts which are themselves fugitive and transitory, as a smile, the glance of an eye, a gesture of horror or of passion, the waving of hair in the wind, the rush of horses, the strife of mobs, the whole drama of the clouds, the toss and gathering of ocean waves, even the flashing of lightning across the sky. Still, any long or continuous series of changes, actions or movements is quite beyond the means of this art to represent. Painting remains, in spite of its comparative width of range, tied down to the inevitable conditions of a space-art: that is to say, it has to delight the mind by a harmonious variety in its effects, but by a variety apprehended not through various points of time successively, but from various points in space at the same moment. The old convention which allowed painters to indicate sequence in time by means of distribution in space, dispersing the successive episodes of a story about the different parts of a single picture, has been abandoned since the early Renaissance; and Wordsworth sums up our modern view of the matter when he says that it is the business of painting

Means and capacities of painting.

> “to give
> To one blest moment snatched from fleeting time
> The appropriate calm of blest eternity.”

Lastly, a really unfettered range is only attained by the art which does not give a full and complete reproduction of any natural fact at all, but evokes or brings natural facts before the mind merely by the images which words convey. The whole world of movement, of continuity, of cause and effect, of the successions, alternations and interaction of events, characters and passions of everything that takes time to happen and time to declare, is open to poetry as it is open to no other art. As an imitative or, more properly speaking, an evocative art, then, poetry is subject to no limitations except those which spring from the poverty of human language, and from the fact that its means of imitation are indirect. Poetry’s account of the visible properties of things is from these causes much less full, accurate and efficient than the reproduction or delineation of the same properties by sculpture and painting. And this is the sum of the conditions concerning the respective functions of the three arts of imitation which had been overlooked, in theory at least, until the time of Lessing.

Means and capacities of poetry.

To the above law, in the form in which we have expressed it, it may perhaps be objected that the acted drama is at once the most full and complete reproduction of nature which we owe to the fine arts, and that at the same time the number of facts over which its imitation ranges is the greatest. The answer is that our law applies to the several arts only in that which we may call their pure or unmixed state. Dramatic poetry is in that state only when it is read or spoken like any other kind of verse. When it is witnessed on the stage, it is in a mixed or impure state; the art of the actor has been called in to give actual reproduction to the gestures and utterances of the personages, that of the costumier to their appearances and attire, that of the stage-decorator to their furniture and surroundings, that of the scene-painter to imitate to the eye the dwelling-places and landscapes among which they move; and only by the combination of all these subordinate arts does the drama gain its character of imitative completeness or reality.

The acted drama no real exception to the general law.

Throughout the above account of the imitative and non-imitative groups of fine arts, we have so far followed Aristotle as to allow the name of imitation to all recognizable representation or evocation of realities,—using the word “realities” in no metaphysical sense, but to signify the myriad phenomena of life and experience, whether as they actually and literally exist to-day, or as they may have existed in the past, or may be conceived to exist in some other world not too unlike our own for us to conceive and realize in thought. When we find among the ruins of a Greek temple the statue of a beautiful young man at rest, or above the altar of a Christian church the painting of one transfixed with arrows, we know that the statue is intended to bring to our minds no mortal youth, but the god Hermes or Apollo, the transfixed victim no simple captive, but Sebastian the holy saint. At the same time we none the less know that the figures in either case have been studied by the artist from living models before his eyes. In like manner, in all the representations alike of sculpture, painting and poetry the things and persons represented may bear symbolic meanings and imaginary names and characters; they may be set in a land of dreams, and grouped in relations and circumstances upon which the sun of this world never shone; in point of fact, through many ages of history they have been chiefly used to embody human ideas of supernatural powers; but it is from real things and persons that their lineaments and characters have been taken in the first instance, in order to be attributed by the imagination to another and more exalted order of existences.

Things unknown shadowed forth by imitation of things known.

The law which we have last laid down is a law defining the relations of sculpture, painting and poetry, considered simply as arts having their foundations at any rate in reality, and drawing from the

Imitation by art necessarily an idealized imitation.

imitation of reality their indispensable elements and materials. It is a law defining the range and character of those elements or materials in nature which each art is best fitted, by its special means and resources, to imitate. But we must remember that, even in this fundamental part of its operations, none of these arts proceeds by imitation or evocation pure and simple. None of them contents itself with seeking to represent realities, however literally taken, exactly as those realities are. A portrait in sculpture or painting, a landscape in painting, a passage of local description in poetry, may be representations of known things taken literally or for their own sakes, and not for the sake of carrying out thoughts to the unknown; but none of them ought to be, or indeed can possibly be, a representation of all the observed parts and details of such a reality on equal terms and without omissions. Such a representation, were it possible, would be a mechanical inventory and not a work of fine art.

Hence the value of a pictorial imitation is by no means necessarily in proportion to the number of facts which it records. Many accomplished pictures, in which all the resources of line, colour and light-and-shade have been used to the utmost of the artist's power for the imitation of all that he could see in nature, are dead and worthless in comparison with a few faintly touched outlines or lightly laid shadows or tints of another artist who could see nature more vitally and better. Unless the painter knows how to choose and combine the elements of his finished work so that it shall contain in every part suggestions and delights over and above the mere imitation, it will fall short, in that which is the essential charm of fine art, not only of any scrap of a great master's handiwork, such as an outline sketch of a child by Raphael or a colour sketch of a boat or a mackerel by Turner, but even of any scrap of the merest journeyman's handiwork produced by an artistic race, such as the first Japanese drawing in which a water-flag and kingfisher, or a spray of peach or almond blossom across the sky, is dashed in with a mere hint of colour, but a hint that tells a whole tale to the imagination. That only, we know, is fine art which affords keen and permanent delight to contemplation. Such delight the artist can never communicate by the display of a callous and pedantic impartiality in presence of the facts of life and nature. His representation of realities will only strike or impress others in so far as it concentrates their attention on things by which he has been struck and impressed himself. To arouse emotion, he must have felt emotion; and emotion is impossible without partiality. The artist is one who instinctively tends to modify and work upon every reality before him in conformity with some poignant and sensitive principle of preference or selection in his mind. He instinctively adds something to nature in one direction and takes away something in another, overlooking this kind of fact and insisting on that, suppressing many particulars which he holds irrelevant in order to insist on and bring into prominence others by which he is attracted and arrested.

Completeness not the test of value in a pictorial imitation.

The instinct by which an artist thus prefers, selects and brings into light one order of facts or aspects in the thing before him rather than the rest, is part of what is called the *idealizing* or *ideal* faculty. Interminable discussion has been spent on the questions,—What is the ideal, and how do we idealize? The answer has been given in one form by those thinkers (*e.g.* Vischer and Lotze) who have pointed out that the process of aesthetic idealization carried on by the artist is only the higher development of a process carried on in an elementary fashion by all men, from the very nature of their constitution. The physical organs of sense themselves do not retain or put on record all the impressions made upon them. When the nerves of the eye receive a multitude of different stimulations at once from different points in space, the sense of eyesight, instead of being aware of all these stimulations singly, only abstracts and retains a total impression of them together. In like manner we are not made aware by the sense of hearing of all the several waves of sound that strike in a momentary succession upon the nerves of the ear; that sense only abstracts and retains a total impression from the combined effect of a number of such waves. And the office which each sense thus performs singly for its own impressions, the mind performs in a higher degree for the impressions of all the senses equally, and for all the other parts of our experience. We are always dismissing or neglecting a great part of our impressions, and abstracting and combining among those which we retain. The ordinary human consciousness works like an artist up to this point; and when we speak of the ordinary or inartistic man as being impartial in the retention or registry of his daily impressions, we mean, of course, in the retention or registry of his impressions as already thus far abstracted and assorted in consciousness. The artistic man, whose impressions affect him much more strongly, has the faculty of carrying much farther these same processes of abstraction, combination and selection among his impressions.

Nature of the idealizing process.

The possession of this faculty is the artist's most essential gift. To attempt to carry farther the psychological analysis of the gift is outside our present object; but it is worth while to consider somewhat closely its modes of practical operation. One mode is this: the artist grows up with certain innate or acquired predilections which become a part of his constitution whether he will or no,—predilections, say, if he is a dramatic poet, for certain types of plot, character and situation; if he is a sculptor, for certain proportions and a certain habitual carriage and disposition of the limbs; if he is a figure painter, for certain schemes of composition and moulds of figure and airs and expressions of countenance; if a landscape painter, for a certain class of local character, sentiment and pictorial effect in natural scenery. To such predilections he cannot choose but make his representations of reality in large measure conform. This is one part of the transmuting process which the data of life and experience have to undergo at the hands of artists, and may be called the subjective or purely personal mode of idealization. But there is another part of that work which springs from an impulse in the artistic constitution not less imperious than the last named, and in a certain sense contrary to it. As an imitator or evoker of the facts of life and nature, the artist must recognize and accept the character of

Subjective and objective ideals.

those facts with which he has in any given case to deal. All facts cannot be of the cast he prefers, and in so far as he undertakes to deal with those of an opposite cast he must submit to them; he must study them as they actually are, must apprehend, enforce and bring into prominence their own dominant tendencies. If he cannot find in them what is most pleasing to himself, he will still be led by the abstracting and discriminating powers of his observation to discern what is most expressive and significant in *them*, he will emphasize and put on record this, idealizing the facts before him not in his direction but in their own. This is the second or objective half of the artist's task of idealization. It is this half upon which Taine dwelt almost exclusively, and on the whole with a just insight into the principles of the operation, in his well-known treatise *On the Ideal in Art*. Both these modes of idealization are legitimate; that which springs from inborn and overmastering personal preference in the artist for particular aspects of life and nature, and that which springs from his insight into the dominant and significant character of the phenomena actually before him, and his desire to emphasize and disengage them. But there is a third mode of idealizing which is less vital and genuine than either of these, and therefore less legitimate, though unfortunately far more common. This mode consists in making things conform to a borrowed and conventional standard of beauty and taste, which corresponds neither to any strong inward predilection of the artist nor to any vital characteristic in the objects of his representation. Since the rediscovery of Greek and Roman sculpture in the Renaissance, a great part of the efforts of artists have been spent in falsifying their natural instincts and misrepresenting the facts of nature in pursuit of a conventional ideal of abstract and generalized beauty framed on a false conception and a shallow knowledge of the antique. School after school from the 16th century downwards has been confirmed in this practice by academic criticism and theory, with resulting insipidities and insincerities of performance which have commonly been acclaimed in their day, but from which later generations have sooner or later turned away with a wholesome reaction of distaste.

Examples of the two modes and of their reconciliation.

The two genuine modes of idealization, the subjective and the objective, are not always easy to be reconciled. The greatest artist is no doubt he who can combine the strongest personal instincts of preference with the keenest power of observing characteristics as they are, yet in fact we find few in whom both these elements of the ideal faculty have been equally developed. To take an example among Florentine painters, Sandro Botticelli is usually thought of as one who could never escape from the dictation of his own personal ideals, in obedience to which he is supposed to have invested all the creations of his art with nearly the same conformation of brows, lips, cheeks and chin, nearly the same looks of wistful yearning and dejection. There is some truth in this impression, though it is largely based on the works not of the master himself, but of pupils who exaggerated his mannerisms. Leonardo da Vinci was strong in both directions; haunted in much of his work by a particular human ideal of intellectual sweetness and alluring mystery, he has yet left us a vast number of exercises which show him as an indefatigable student of objective characteristics and psychological expressions of an order the most opposed to this. And in this case again followers have over-emphasized the master's predilections, Luini, Sodoma and the rest borrowing and repeating the mysterious smile of Leonardo till it becomes in their work an affectation cloying however lovely. Among latter-day painters, Burne-Jones will occur to every reader as the type of an artist always haunted and dominated by ideals of an intensely personal cast partly engendered in his imagination by sympathy with the early Florentines. If we seek for examples of the opposite principle, of that idealism which idealizes above all things objectively, and seeks to disengage the very inmost and individual characters of the thing or person before it, we think naturally of certain great masters of the northern schools, as Dürer, Holbein and Rembrandt. Dürer's endeavour to express such characters by the most searching intensity of linear definition was, however, hampered and conditioned by his inherited national and Gothic predilection for the strained in gesture and the knotted and the gnarled in structure, against which his deliberate scholarly ambition to establish a canon of ideal proportion contended for the most part in vain. And Rembrandt's profound spiritual insight into human character and personality did not prevent him from plunging his subjects, ever deeper and deeper as his life advanced, into a mysterious shadow-world of his own imagination, where all local colours were broken up and crumbled, and where amid the struggle of gloom and gleam he could make his intensely individualized men and women breathe more livingly than in plain human daylight.

Caricature and the grotesque as modes of the ideal.

It is by the second mode of operation chiefly, that is by imaginatively discerning, disengaging and forcing into prominence their inherent significance, that the idealizing faculty brings into the sphere of fine art deformities and degeneracies to which the name beautiful or sublime can by no stretch of usage be applied. Hence arise creations like the Stryge of Notre-Dame and a thousand other grotesques of Gothic architectural carving. Hence, although on a lower plane and interpreted with a less transmuting intensity of insight and emphasis, the snarling or jovial grossness of the peasants of Adrian Brauwer and the best of his Dutch compeers. Hence Shakespeare's Caliban and figures like those of Quilp and Quasimodo in the romances of Dickens and Hugo; hence the cynic grimness of Goya's Caprices and the profound and bitter impressiveness of Daumier's caricatures of Parisian bourgeois life; or again, in an angrier and more insulting and therefore less understanding temper, the brutal energy of the political drawings of Gilray.

Unidealized imitation not fine art.

Sculpture, painting and poetry, then, are among the greater fine arts those which express and arouse emotion by imitating or evoking real and known things, either for their own sakes literally, or for the sake of shadowing forth things not known but imagined. In either case they represent their originals, not indiscriminately as they are, but sifted, simplified, enforced and enhanced to our apprehensions partly by the artist's power of making things conform to his own instincts and preferences, partly by his other power of interpreting and emphasizing the significant characters of the facts before him. Any

imitation that does not do one or other or both of these things in full measure fails in the quality of emotional expression and emotional appeal, and in so failing falls short, taken merely as imitation, of the standard of fine art.

But we must remember that idealized imitation, as such, is not the whole task of these arts nor their only means of appeal. There is another part of their task, logically though not practically independent of the relations borne by their imitations to the original phenomena of nature, and dependent on the appeal made through the eye and ear to our primal organic sensibilities by the properties of rhythm, pattern and regulated design in the arrangement of sounds, lines, masses, colours and light-and-shade. That appeal we noted as lying at the root of the art impulse in its most elementary stage. In its most developed stage every fine art is bound still to play upon the same sensibilities. In a work of sculpture the contours and interchanges of light and shadow are bound to be such as would please the eye, whether the statue or relief represented the figure of anything real in the world or not. The flow and balance of line, and the distribution of colours and light-and-shade, in a picture are bound to be such as would make an agreeable pattern although they bore no resemblance to natural fact (as, indeed, many subordinate applications of this art, in decorative painting and geometrical and other ornaments, do, we know, give pleasure though they represent nothing). The sound of a line or verse in poetry is bound to be such as would thrill the physical ear in hearing, or the mental ear in reading, with a delightful excitement even though the meaning went for nothing. If the imitative arts are to touch and elevate the emotions, if they are to afford permanent delight of the due pitch and volume, it is not a more essential law that their imitation, merely as such, should be of the order which we have defined as ideal, than that they should at the same time exhibit these independent effects which they share with the non-imitative group.

The appeal of the imitative arts depends partly on non-imitative elements.

So far we have assumed, without asserting, the necessity that the artist in whatever kind should possess a power of execution, or technique as it is called in modern phrase, adequate to the task of embodying and giving shape to his ideals. In thought it is possible to separate the conception of a work of art from its execution; in practice it is not possible, and half the errors in criticism and speculation about the fine arts spring from failing to realize that an artistic conception can only be brought home to us through and by its appropriate embodiment. Whatever the artist's cast of imagination or degree of sensibility may be in presence of the materials of life, it is essential that he should be able to express himself appropriately in the material of his particular art. To quote the writer (R.A.M. Stevenson) who has enforced this point most clearly and vividly, perhaps with some pardonable measure of over-statement: "It is a sensitiveness to the special qualities of some visible or audible medium of art which distinguishes the species artist from the genus man." And again: "There are as many separate faculties of imagination as there are separate mediums in which to conceive an image—clay, words, paint, notes of music." ... "Technique differs as the material of each art differs—differs as marble, pigments, musical notes and words differ." The artist who does not enjoy and has not with delighted labour mastered the effects of his own chosen medium will never be a master; the hearer, reader or spectator who cannot appreciate the qualities of skill, vitality and charm in the handling of the given material, or who fails to feel their absence when they are lacking, or who looks in one material primarily for the qualities appropriate to another, will never make a critic. The technique of the space-arts differs radically from that of the time-arts. So again do those of the imitative and the non-imitative arts differ among themselves. The non-imitative arts of music and architecture are in a certain degree alike in this, that the artist is in neither case his own executant (this at least is true of music so far as concerns its modern concerted and orchestral developments); the musical composer and the architect each imagines and composes a design in the medium of his own art which it is left for others to carry out under his direction. The technique in each case consists not in mastery of an instrument (though the musical composer may be, and often is, a master of some one of the instruments whose effects he in his mind's ear co-ordinates and combines); it lies in the power of knowing and conjuring up all the emotional resources and effects of the various materials at his command, and of conceiving and designing to their last detail vast and ordered structures, to be raised by subordinate executants from those materials, which shall adequately express his temperament and embody his ideals.

Necessity of due balance between conception and technique: the non-imitative arts and their technique.

In the imitative arts, on the other hand, the sculptor, unless he is a fraud, must be wholly his own executant in the original task of modelling his design in the soft material of clay or wax, though he must accept the aid of assistants whether in the casting of his work in bronze or in first roughing it out from the block in marble. Too many sculptors have been inclined further to trust to trained mechanical help in finishing their work with the chisel; with the result that the surface loses the touch which is the expression of personal temperament and personal feeling for the relations of his material to nature. The artist in love with the vital qualities of form, or those of his own handiwork in expressing such qualities in modelling-clay, will never stop until he learns how to translate them for himself in marble. Proceeding to that imitative art which leaves out the third dimension of nature, and by so doing enormously increases the range of objects and effects which come within its power—proceeding to the art of painting, the painter is in theory exclusively his own executant, and in practice mainly so, though in certain schools and periods the great artists have been accustomed to surround themselves with pupils to whom they have imparted their methods and who have helped them in the subordinate and preparatory parts of their work. But the painter fit to teach and lead can by no means escape the necessity of being himself a master of his material, and his handling of it must needs bear the immediate impress of his temperament. His emotional preferences among the visible facts of nature, his feeling for the relative importance and charm of line, colour,

The imitative arts and their technique: painting and sculpture.

light and shade, used whether for the interpretation and heightening of natural fact or for producing a pattern in itself harmonious and suggestive to the eye, his sense of the special modes of handling most effective for communicating the impression he desires, all these together inevitably appear in, and constitute, his style and technique. If he is careless or inexpert or conventional, or cold or without delight, in technique, though he may be animated by the noblest purposes and the loftiest ideas, he is a failure as a painter. At certain periods in the history of painting, as in the 13th and 14th centuries in Italy, the technique seems indeed to modern eyes wholly immature; but that was because there were many aspects of visible things which the art had not yet attempted or desired to portray, not because it did not put forth with delight its best traditional or newly acquired skill in portraying the special aspects with which it had so far attempted to grapple. At certain other periods, as in the later 16th and 17th centuries in the same country, the elements of inherited technical facility and academic pride of skill outweigh the sincerity and freshness of interest taken in the aspects of things to be portrayed, and the true balance is lost. At other times, as in much of the work of the 19th century, especially in England, painters have been diverted from their true task, and lost hold of intelligent and living technique altogether, in trying to please a public blind to the special qualities of their art, and prone to seek in it the effects, frivolous or serious, which are appropriate not to paint and canvas but to literature.

Lastly, the poet and literary artist must obviously be the exclusive master of his own technique. No one can help him: all depends on the keenness of his double sensibility to the thrill of life and to that of words, and to his power of maintaining a just balance between the two. If he is truly and organically sensitive to words alone, and has learnt life only through their medium and not through the energies of his own imagination, nor through personal sensibility to the impact of things and thoughts and passions and experience, then his work may be a miracle of accomplished verbal music, and may entrance the ear for the moment, but will never live to illuminate and sustain and console. If, on the other hand, he has imagination and sensibility in full measure, and lacks the inborn love of and gift for words and their magic, he will be but a dumb or stammering poet all his days. There is no better witness on this point than Wordsworth. His own prolonged lapses from verbal felicity, and continual habit of solemn meditation on themes not always inspiring, might make us hesitate to choose him as an example of that particular love and gift. But Wordsworth could never have risen to his best and greatest self had he not truly possessed the sensibilities which he attributes to himself in the Prelude:

Technique in poetry: the magic of words.

> “Twice five years
> Or less I might have seen, when first my mind
> With conscious pleasure opened to the charm
> Of words in tuneful order, found them sweet
> For their own sakes, a passion, and a power;
> And phrases pleased me chosen for delight,
> For pomp, or love.”

And again, expressing better than any one else the relation which words in true poetry hold to things, he writes:

> “Visionary power
> Attends the motions of the viewless winds,
> Embodied in the mystery of words;
> There darkness makes abode, and all the host
> Of shadowy things work endless changes,—there,
> As in a mansion like their proper home,
> Even forms and substances are circumfused
> By that transparent veil with light divine,
> And, through the turnings intricate of verse,
> Present themselves as objects recognized,
> In flashes, and with glory not their own.”

3. *The Serviceable and the Non-Serviceable Arts.*—It has been established from the outset that, though the essential distinction of fine art as such is to minister not to material necessity or practical use, but to delight, yet there are some among the arts of men which do both these things at once and are arts of direct use and of beauty or emotional appeal together. Under this classification a survey of the field of art at different periods of history would yield different results. In ruder times, we have seen, the utilitarian aim was still the predominant aim of art, and most of what we now call fine arts served in the beginning to fulfil the practical needs of individual and social life; and this not only among primitive or savage races. In ancient Egypt and Assyria the primary purpose of the relief-sculptures on palace and temple walls was the practical one of historical record and commemoration. Even as late as the middle ages and early Renaissance the primary business of the painter was to give instruction to the unlearned in Bible history and in the lives of the saints, and to rouse him to moods of religious and ethical exaltation. The pleasures of fine art proper among the manual-imitative group—the pleasures, namely, of producing and contemplating certain arrangements rather than others of design, proportion, pattern, colour and light and shade, and of putting forth and appreciating certain qualities of skill, truth and significance in idealized imitation,—these were, historically speaking, by-products that arose gradually in the course of practice and development. As time went on, the conscious aim of ministering to such pleasures displaced and

Third classification: the serviceable and the non-serviceable arts.

threw into the background the utilitarian ends for which the arts had originally been practised, and the pleasures became ends in themselves.

But even in advanced societies the double qualities of use and beauty still remain inseparable, among the five greater arts, in architecture. We build in the first instance for the sake of necessary shelter and accommodation, or for the commemoration, propitiation or worship of spiritual powers on whom we believe our welfare to depend. By and by we find out that the aspect of our constructions is pleasurable or the reverse. Architecture is the art of building at once as we need and as we like, and a practical treatise on architecture must treat the beauty and the utility of buildings as bound up together. But for our present purpose it has been proper to take into account one half only of the vocation of architecture, the half by which it impresses, gives delight and belongs to that which is the subject of our study, to fine art; and to neglect the other half of its vocation, by which it belongs to what is not the subject of our study, to useful or mechanical art. It is plain, however, that the presence or absence of this foreign element, the element of practical utility, constitutes a fair ground for a new and separate classification of the fine arts. If we took the five greater arts as they exist in modern times by themselves, architecture would on this ground stand alone in one division, as the directly useful or serviceable fine art; with sculpture, painting, music and poetry together in the other division, as fine arts unassociated with such use or service. Not that the divisions would, even thus, be quite sharply and absolutely separated. Didactic poetry, we have already acknowledged, is a branch of the poetic art which aims at practice and utility. Again, the hortatory and patriotic kinds of lyric poetry, from the strains of Tyrtaeus to those of Arndt or Rouget de Lisle or Wordsworth's sonnets written in war-time, may fairly be said to belong to a phase of fine art which aims directly at one of the highest utilities, the stimulation of patriotic feeling and self-devotion. So may the strains of music which accompany such poetry. The same practical character, as stimulating and attuning the mind to definite ends and actions, might indeed have been claimed for the greater part of the whole art of music as that art was practised in antiquity, when each of several prescribed and highly elaborated moods, or modes, of melody was supposed to have a known effect upon the courage and moral temper of the hearer. Compare Milton, when he tells of the Dorian mood of flutes and soft recorders which assuaged the sufferings and renewed the courage of Satan and his legions as they marched through hell. In modern music, of which the elements, much more complex in themselves than those of ancient music, have the effect of stirring our fibres to moods of rapturous contemplation rather than of action, military strains in march time are in truth the only purely instrumental variety of the art which may still be said to retain this character.

Among the greater arts, architecture alone exist primarily for service.

To reinforce, however, the serviceable or useful division of fine arts in our present classification, it is not among the greater arts that we must look. We must look among the lesser or auxiliary arts of the manual or shaping group. The weaver, the joiner, the potter, the smith, the goldsmith, the glass-maker, these and a hundred artificers who produce wares primarily for use, produce them in a form or with embellishments that have the secondary virtue of giving pleasure both to the producer and the user. Much ingenuity has been spent to little purpose in attempting to group and classify these lesser shaping arts under one or other of the greater shaping arts, according to the nature of the means employed in each. Thus the potter's art has been classed under sculpture, because he moulds in solid form the shapes of his cups, plates and ewers; the art of the joiner under that of the architect, because his tables, seats and cupboards are fitted and framed together, like the houses they furnish, out of solid materials previously prepared and cut; and the weaver and embroiderer, from the point of view of the effects produced by their art, among painters. But the truth is, that each one of these auxiliary handicrafts has its own materials and technical procedure, which cannot, without forcing and confusion, be described by the name proper to the materials and technical procedure of any of the greater arts. The only satisfactory classification of these handicrafts is that now before us, according to which we think of them all together in the same group with architecture, not because any one or more of them may be technically allied to that art, but because, like it, they all yield products capable of being practically useful and beautiful at the same time. Architecture is the art which fits and frames together, of stone, brick, mortar, timber or iron, the abiding and assembling places of man, all his houses, palaces, temples, monuments, museums, workshops, roofed places of meeting and exchange, theatres for spectacle, fortresses of defence, bridges, aqueducts, and ships for seafaring. The wise architect having fashioned any one of these great constructions at once for service and beauty in the highest degree, the lesser or auxiliary manual arts (commonly called "industrial" or "applied" arts) come in to fill, furnish and adorn it with things of service and beauty in a lower degree, each according to its own technical laws and capabilities; some, like pottery, delighting the user at once by beauty of form, delicacy of substance, and pleasantness of imitative or non-imitative ornament; some, like embroidery, by richness of tissue, and by the same twofold pleasantness of ornament; some, like goldsmith's work, by exquisiteness of fancy and workmanship proportionate to the exquisiteness of the material. To this vast group of workmen, whose work is at the same time useful and fine in its degree, the ancient Greek gave the place which is most just and convenient for thought, when he classed them all together under the name of τέκτονες, or artificers, and called the builder by the name of ἀρχιτέκτων, arch-artificer or artificer-in-chief. Modern usage has adopted the phrase "arts and crafts" as a convenient general name for their pursuits.

Other and minor arts of service subordinate to architecture.

III. *Of the History of the Fine Arts.*

Students of human culture have concentrated a great deal of attentive thought upon the history of fine art, and have put forth various comprehensive generalizations intended at once to sum up and to account for the phases and vicissitudes of that history. The most famous formulae are those of Hegel,

Current generalizations on the history of fine art: Hegel.

who regarded particular arts as being characteristic of and appropriate to particular forms of civilization and particular ages of history. For him, architecture was the symbolic art appropriate to ages of obscure and struggling ideas, and characteristic of the Egyptian and the Asiatic races of old and of the medieval age in Europe. Sculpture was the classical art appropriate to ages of lucid and self-possessed ideas, and characteristic of the Greek and Roman period. Painting, music and poetry were the romantic arts, appropriate to the ages of complicated and overmastering ideas, and characteristic of modern humanity in general. In the working out of these generalizations Hegel brought together a mass of judicious and striking observations; and that they contain on the whole a preponderance of truth may be admitted. It has been objected against them, from the philosophical point of view, that they too much mix up the definition of what the several arts theoretically are with considerations of what in various historical circumstances they have practically been. From the historical point of view there can be taken what seems a more valid objection, that these formulae of Hegel tend too much to fix the attention of the student upon the one dominant art chosen as characteristic of any period, and to give him false ideas of the proportions and relations of the several arts at the same period—of the proportions and relations which poetry, say, really bore to sculpture among the Greeks and Romans, or sculpture to architecture among the Christian nations of the middle age. The truth is, that the historic survey gained over any field of human activity from the height of generalizations so vast in scope as these are must needs, in the complexity of earthly affairs, be a survey too distant to give much guidance until its omissions are filled up by a great deal of nearer study; and such nearer study is apt to compel the student in the long run to qualify the theories with which he has started until they are in danger of disappearing altogether.

Another systematic exponent of the universe, whose system is very different from that of Hegel, Herbert Spencer, brought the doctrine of evolution to bear, not without interesting results, upon the history of the fine arts and their development. Herbert Spencer set forth how the manual group of fine arts, architecture, sculpture and painting, were in their first rudiments bound up together, and how each of them in the course of history has liberated itself from the rest by a gradual process of separation. These arts did not at first exist in the distinct and developed forms in which we have above described them. There were no statues in the round, and no painted panels or canvases hung upon the wall. Only the rudiments of sculpture and painting existed, and that only as ornaments applied to architecture, in the shape of tiers of tinted reliefs, representing in a kind of picture-writing the exploits of kings upon the walls of their temple-palaces. Gradually sculpture took greater salience and roundness, and tended to disengage itself from the wall, while painting found out how to represent solidity by means of its own, and dispensed with the raised surface upon which it was first applied. But the old mixture and union of the three arts, with an undeveloped art of painting and an undeveloped art of sculpture still engaged in or applied to the works of architecture, continued on the whole to prevail through the long cycles of Egyptian and Assyrian history. In the Egyptian palace-temple we find a monument at once political and religious, upon the production of which were concentrated all the energies and faculties of all the artificers of the race. With its incised and pictured walls, its half-detached colossi, its open and its colonnaded chambers, the forms of the columns and their capitals recalling the stems and blossoms of the lotus and papyrus, with its architecture everywhere taking on the characters and covering itself with the adornments of immature sculpture and painting—this structure exhibits within its single fabric the origins of the whole subsequent group of shaping arts. From hence it is a long way to the innumerable artistic surroundings of later Greek and Roman life, the many temples with their detached and their engaged statues, the theatres, the porticoes, the baths, the training-schools, the stadiums, with free and separate statues both of gods and men adorning every building and public place, the frescoes upon the walls, the panel pictures hung in temples and public and private galleries. In the terms of the Spencerian theory of evolution, the advance from the early Egyptian to the later Greek stage is an advance from the one to the manifold, from the simple to the complex, from the homogeneous to the heterogeneous, and affords a striking instance of that vast and ceaseless process of differentiation and integration which it is the law of all things to undergo. In the Christian monuments of the early middle age, again, the arts, owing to the political and social cataclysm in which Roman civilization went down, have gone back to the rudimentary stage, and are once more attached to and combined with each other. The single monument, the one great birth of art, in that age, is the Gothic church. In this we find the art of applied sculpture exercised in fashions infinitely rich and various, but entirely in the service and for the adornment of the architecture; we find painting exercised in fashions more rudimentary still, principally in the forms of translucent imagery in the chancel windows and tinted decorations on the walls and vaultings. From this stage again the process of the differentiation of the arts is repeated. It is by a new evolution or unfolding, and by one carried to much further and more complicated stages than the last had reached, that the arts since the middle age have come to the point where we find them to-day; when architecture is applied to a hundred secular and civil uses with not less magnificence, or at least not less desire of magnificence, than that with which it fulfilled its two only uses in the middle age, the uses of worship and of defence; when detached sculptures adorn, or are intended to adorn, all our streets and commemorate all our likenesses; when the subjects of painting have been extended from religion to all life and nature, until this one art has been divided into the dozen branches of history, landscape, still life, genre, anecdote and the rest. Such being in brief the successive stages, and such the reiterated processes, of evolution among the shaping or space arts, the action of the same law can be traced, it is urged, in the growth of the speaking or time arts also. Originally poetry and music, the two great speaking arts, were not separated from each

Herbert Spencer and the evolution theory.

other and from the art of bodily motion, dancing. The father of song, music and dancing, all three, was that primitive man of whom so much has already been said, he who first clapped hands and leapt and shouted in time at some festival of his tribe. From the clapping, or rudimentary rhythmical noise, has been evolved the whole art of instrumental music, down to the entrancing complexity of the modern symphony. From the shout, or rudimentary emotional utterance, has proceeded by a kindred evolution the whole art of vocal music down to the modern opera or oratorio. From the leap, or rudimentary expression of emotion by rhythmical movements of the body, has descended every variety of dancing, from the stately figures of the tragic chorus of the Greeks to the *kordax* of their comedy or the complexities of the modern ballet.

Weak and strong points of Spencer's generalization.

That the theory of evolution serves usefully to group and to interpret many facts in the history of art we shall not deny, though it would be easy to show that Herbert Spencer's instances and applications are not sufficient to sustain all the conclusions that he seems to draw from them. Thus, it is perfectly true that the Egyptian or Assyrian palace wall is an instance of rudimentary painting and rudimentary sculpture in subservience to architecture. But it is not less true that races who had no architecture at all, but lived in caverns of the earth, exhibit, as we have already had occasion to notice, excellent rudiments of the other two shaping arts in a different form, in the carved or incised handles of their weapons. And it is almost certain that, among the nations of oriental antiquity themselves, the art of decorating solid walls so as to please the eye with patterns and presentations of natural objects was borrowed from the precedent of an older art which works in easier materials, namely, the art of the weaver. It would be in the perished textile fabrics of the earliest dwellers in the valleys of the Euphrates and the Nile that we should find, if anywhere, the origins of the systems of surface design, whether conventional or imitative, which those races afterwards applied to the decoration of their solid constructions. Not, therefore, in any one exclusive type of primitive artistic activity, but in a score of such types equally, varying according to race, region and circumstances, shall we find so many germs or nuclei from which whole families of fine arts have in the course of the world's history differentiated and unfolded themselves. And more than once during that history, a cataclysm of political and social forces has not only checked the process of the evolution of the fine arts, but from an advanced stage of development has thrown them back again to a primitive stage. Recent research has shown how the Minoan and Mycenaean civilizations in the Mediterranean basin, with their developed fine arts, must have perished and been effaced before the second growth of art from new rudiments took place in Greece. The great instance of the downfall of the Roman civilization need not be requoted. By Spencer's application of the theory of evolution, not less than by Hegel's theory of the historic periods, attention is called to the fact that Christian Europe, during several centuries of the middle age, presents to our study a civilization analogous to the civilization of the old oriental empires in this respect, that its ruling and characteristic manual art is architecture, to which sculpture and painting are, as in the oriental empires, once more subjugated and attached. It does not of course follow that such periods of fusion or mutual dependence among the arts are periods of bad art. On the contrary, each stage of the evolution of any art has its own characteristic excellence. The arts can be employed in combination, and yet be all severally excellent. When music, dancing, acting and singing were combined in the performance of the Greek chorus, the combination no doubt presented a relative perfection of each of the four elements analogous to the combined perfection, in the contemporary Doric temple, of pure architectural form, sculptured enrichment of spaces specially contrived for sculpture in the pediments and frieze, and coloured decoration over all. The extreme differentiation of any art from every other art, and of the several branches of one art among themselves, does not by any means tend to the perfection of that art. The process of evolution among the fine arts may go, and indeed in the course of history has gone, much too far for the health of the arts severally. Thus an artist of our own day is usually either a painter only or a sculptor only; but yet it is acknowledged that the painter who can model a statue, or the sculptor who can paint a picture, is likely to be the more efficient master of both arts; and in the best days of Florentine art the greatest men were generally painters, sculptors, architects and goldsmiths all at once. In like manner a landscape painter who paints landscape only is apt not to paint it so well as one who paints the figure too; and in recent times the craft of engraving had almost ceased to be an art from the habit of allotting one part of the work, as skies, to one hand, another part, as figures, to a second, and another part, as landscape, to a third. This kind of continually progressing subdivision of labour, which seems to be the necessary law of industrial processes, is fatal to any skill which demands, as skill in the fine arts, we have seen, demands, the free exercise and direction of a highly complex cluster both of faculties and sensibilities.

Reaction against over-evolution amongst the fine arts.

In the second half of the 19th century a reaction set in against such over-differentiation of the several manual arts and crafts. This reaction is chiefly identified in England with the name of William Morris, who insisted by precept and example that one form of artistic activity was as worthy as another, and himself both practised and trained others in the practice of glass-painting, weaving, embroidery, furniture and wall-paper designing, and book decoration alike. His example has been to some extent followed in most European countries, and efforts have been made to reunite the functions of artist and craftsman, and to set a limit to the process of differentiation among the various manual arts. In the vocal or time arts also, a reformer of high genius and force of character, Richard Wagner, rose to contend that in music the process of evolution and differentiation had gone much too far. Music, he urged, as separated from words and actions, independent orchestral and instrumental music, had reached its utmost development, and its further advance could only be an advance into the inane; while operatic music had broken itself up into a number of set and separate

forms, as aria, scena, recitative, which corresponded to no real varieties of instinctive emotional utterance, and in the aimless production of which the art was in danger of paralysing and stultifying itself. This process, he declared, must be checked; music and words must be brought back again into close connexion and mutual dependence; the artificial opera forms must be abolished, and a new and homogeneous music-drama be created, of which the author must combine in himself the functions of poet, composer, inventor, and director of scenery and stage appliances, so that the entire creation should bear the impress of a single mind; to the creation of such a music-drama he accordingly devoted all the energies of his being.

It is thus evident that the evolution theory, though it furnishes us with some instructive points of view for the history of the fine arts as for other things, is far from being the whole key to that history.

Taine's philosophy or natural history of the fine arts.

Another key, employed with results perhaps less really luminous than they are certainly showy and attractive, is that supplied by Taine. Taine's philosophy, which might perhaps be better called a natural history, of fine art consists in regarding the fine arts as the necessary result of the general conditions under which they are at any time produced—conditions of race and climate, of religion, civilization and manners. Acquaint yourself with these conditions as they existed in any given people at any given period, and you will be able to account for the characters assumed by the arts of that people at that period, and to reason from one to the other, as a botanist can account for the flora of any given locality, and can reason from its soil, exposure and temperature, to the orders of vegetation which it will produce. This method of treating the history of the fine arts, again, is one which can be pursued with profit in so far as it makes the student realize the connexion of fine arts with human culture in general, and teaches him how the arts of any age and country are not an independent or arbitrary phenomenon, but are essentially an outcome, or efflorescence, to use a phrase of Ruskin's, of deep-seated elements in the civilization which produces them. But it is a method which, rashly used, is very apt to lead to a hasty and one-sided handling both of history and of art. It is easy to fasten on certain obvious relations of fine art to general civilization when you know a few of the facts of both, and to say, the cloudy skies and mongrel industrial population of Protestant Amsterdam at such and such a date had their inevitable reflection in the art of Rembrandt; the wealth and pomp of the full-fleshed burghers and burgesses of Catholic Antwerp had theirs in the art of Rubens. But to do this in the precise and conclusive manner of Taine's treatises on the philosophy of art always means to ignore a large range of conditions or causes for which no corresponding effect is on the surface apparent, and generally also a large number of effects for which appropriate causes cannot easily be discovered at all.

These considerations have resulted in a reaction against Taine's theories which goes probably too far. It is no complete confutation of his philosophy of art-history to contend, as has been done somewhat contemptuously by Professor Ernst Grosse and others, that the great artist, so far from representing the general tendencies of his time and environment, is commonly a solitary innovator and revolutionist, and has to educate and create his own public, often through years of obloquy or neglect. This is sometimes true when the traditions and ideals of art are undergoing revolution or swift experimental change, but hardly ever true in times of stable tradition and accepted ideals; and when true it only shows that the tendencies the innovating genius represents are tendencies which have till his time been working underground, and which he is born to bring into light and evidence. A new and revolutionary impulse in art, as in thought or politics, is like a yeast or ferment working at first secretly, affecting for a while only a few spirits, as a new epidemic may for a while only affect a few constitutions, and then gradually ripening and strengthening till it communicates itself to thousands. In its inception such a ferment is not, indeed, one of the obvious phenomena of the society in which it takes root, but it is none the less one of the most vital and significant phenomena. The truth is, that this particular efflorescence of human culture depends for its character at any given time upon combinations of causes which are by no means simple, but generally highly complex, obscure and nicely balanced. For instance, the student who should try to reason back from the holy and beatified character which prevails in much of the devotional painting of the Italian schools down to the Renaissance would be much mistaken were he to conclude, "like art, like life, thoughts and manners." He would not understand the relation of the art to the general civilization of those days unless he were to remember that one of the chief functions of the imagination is to make up for the shortcomings of reality, and to supply to contemplation images of that which is most lacking in actual life; so that the visions at once peaceful and ardent embodied by the religious schools of art in the Italian cities are to be explained, not by the peace, but rather in great part by the dispeace, of contemporary existence, and by the longing of the human spirit to escape into happier and more calm conditions.

Criticisms and counter-criticisms on Taine's methods.

Any one of the three modes of generalization to which we have referred might no doubt yield, however, supposing in the student the due gifts of patience and of caution, a working clue to guide him through that immense region of research, the history of the fine arts. But it is hardly possible to pursue to any purpose the history of the two great groups, the shaping group and the speaking group, together. At some stages of the world's history the manual and the monumental arts have flourished, as in Egypt and Assyria, when there was no fine art of words at all, and the only literature was that of records cut in hieroglyph or cuneiform on palace walls and temples, and on tablets, seals and cylinders. At other times and in other communities there has existed a great tradition and inheritance of poetry and song when the manual arts were only beginning to

Difficulty of combining the study of the manual with that of the vocal group of fine

arts.

emerge again from the wreck of an old civilization, as in the Homeric age of Greece, or where they had never flourished at all except by imitation and importation, as in Palestine. In historic Greece all three divisions of the art of poetry, the epic, lyric and the dramatic, had been perfected, and two of them had again declined, before sculpture had reached maturity or painting had passed beyond the stage of its early severity. The European poetry of the middle ages, abundant and rich as it was alike in France and Provence, in Germany and Scandinavia, can yet not take rank, among the creations of human genius, beside the great masterpieces of Romanesque and Gothic architecture; it was in Italy only that Dante, before the end of that age, carried poetry to a place of equality if not of primacy among the arts. Taking the England of the Elizabethan age, we find the great outburst of our national genius in poetry contemporary with nothing more interesting in the manual arts than the gradual and only half-intelligent transformation of late Gothic architecture by the adoption of Italian Renaissance forms imported principally by way of Flanders or France, together with a fine native skill shown in the art of miniature portrait-painting, and none at all worth mentioning in other branches of painting or in sculpture. If the course of poetry and that of the manual arts have thus run independently throughout almost the whole field of history, those of music and the manual arts have been more widely separated still. In ancient Greece music and poetry were, we know, most intimately connected, but of the true nature of Greek music we know but little, of that of the earlier middle ages less still, and throughout the later middle ages and the earlier Renaissance the art remained undeveloped, whether in the service of the church or in secular and popular use, and in both cases in strict subservience to words. The growth of independent music is entirely the work of the modern world, and will probably rank in the esteem of posterity as its highest spiritual achievement and claim to gratitude, when the mechanical inventions and applications of applied science, which now occupy so disproportionate a part of the attention of humanity, have become a normal and unregarded part of its existence.

Moments in history there have no doubt been when literature and the manual arts, and even music, have been swept simultaneously along a single stream of ideas and feelings. Such a moment was experienced in France in 1830 and the following years, when (to choose only a few of the greatest names) Hugo in poetry, Delacroix in painting, and Berlioz in music were roused to a high pitch of consentaneous inspiration by the new ideas and feelings of romanticism. But such moments are rare and exceptional. On the other hand, it is very possible to take the whole of the shaping or manual group of fine arts together and to pursue their history connectedly throughout the course of civilization. By the history of art what is usually meant is indeed the history of these three arts with that of some of their subordinate and connected crafts. Leaving aside the arts of the races of the farther East, which, profoundly interesting as they are, have but gradually and late become known to us, and the relations of which with the arts of the nearer East and the Mediterranean are still quite obscure—leaving these aside, the history of the manual arts of architecture, painting and sculpture falls naturally into several great periods or divisions to some extent overlapping each other but in the main consecutive.

These periods are roughly as follows:—

Main divisions of the history of art.

1. The period of the great civilizations of Mesopotamia and the Nile, beginning approximately about 5000 B.C. and ending, roughly speaking (but some of them much earlier), with the spread of Greek power and Greek ideas under Alexander. On the main characteristics of the art of these empires we have already had occasion to touch.

2. The Minoan and Mycenaean period, partly contemporary with the above and dating probably from about 2500 to about 1000 B.C.; our knowledge of this is due entirely to quite recent researches, confined at present to certain points in Greece and Asia Minor, in Crete and other islands in the Mediterranean basin; enough has already been revealed to prove the existence of an original and highly developed palace-architecture and of forms of relief-painting and of all the minor and decorative arts more free and animated than anything known to Egypt or Assyria. (See Crete and Aegean Civilization.)

3. The Greek and Roman period, from about 700 B.C. to the final triumph of Christianity, say A.D. 400. During the first two or three centuries of this period the Hellenic race, beginning again after the cataclysm which had swallowed up the earlier Mediterranean civilizations, carried to perfection its most characteristic art, that of sculpture, in the endeavour to embody worthily its ideas of the supernatural powers governing the world. Putting aside the monstrous gods of Egypt and the East, it found its ideals in varieties of the human form as presented by the most harmoniously developed specimens of the race under conditions of the greatest health, activity and grace. In the figures of Greek sculpture, both decorative and independent, and no doubt in Greek painting also (but of that we can only judge from such specimens of the minor handicrafts, chiefly vase-paintings, as have come down to us)—in these were set for the whole Western world the types and standards of human beauty, and in their grouping and arrangement the types and standards of rhythmical composition and design. Gradually human portraiture and themes of everyday life took their place beside representations of the gods and heroes. New schools struck out new tendencies within certain limits. But in the general standards of form and design there was in the imitative arts relatively little change, though towards the end there was much failure of skill, throughout the whole period. The one great change was in architecture. Greece had been content with the constructive system of columns and horizontal entablature, and under that system had invented and perfected her three successive modes or orders of architecture—the Doric, Ionic and Corinthian. The genius of Rome invented the round arch, and by help of that system erected throughout her subject world a thousand vast constructions—temple,

palace, bath, amphitheatre, forum, aqueduct, triumphal gate and the rest—on a scale of monumental grandeur such as Greece had never known.

4. The Christian period, from about 400 to about 1400. The decay or petrifaction of the imitative arts which had set in during the latter days of Rome continued during all the earlier centuries of the Christian period, while the Western world was in process of remaking. Free painting and free sculpture practically ceased to exist. Roman architecture underwent modifications under the influence of the church and of the new conditions of life; the Byzantine form, touched at certain times and places with oriental influences, developed itself wherever the Eastern Empire still stood erect in decay; the Romanesque form, as it is called, in the barbarian-conquered regions of the west and north. Sculpture existed for centuries only in rudimentary and subordinate forms as applied to architecture; painting only in forms of rigid though sometimes impressive hieratic imagery, whether as mosaic in the apses and vaults of churches, as rude illumination in MSS. and service-books, or as still ruder altar-painting carried on according to a frozen mechanical tradition. As time went on and medieval institutions developed themselves, a gradual vitality dawned in all these arts. In architecture the introduction of the pointed or Gothic arch at the beginning of the 13th century led to almost as great a revolution as that brought about by the use of the round or vaulted arch among the Romans. The same vital impulse that informed the new Gothic architecture breathed into the still quite subordinate arts of sculpture and painting (the latter now including the craft of glass-painting for church windows) a new spirit whether of devotional intensity or sweetness, or of human pathos or rugged humour, with a new technical skill for its embodiment. We have not set down, as is usually done, a specifically Gothic period in art, for this reason. The characteristic of the whole Christian period is that its dominant art is architecture, chiefly employed in the service of the church, with painting and sculpture only subordinately introduced for its enrichment. It makes no essential difference that from the 5th to the 12th century the forms of this art were derived with various modifications from the round-arched architecture of the Empire, and that by the 13th century new forms both of construction and decoration, in which the round arch was replaced by the pointed, had been invented in France, and from thence spread abroad to Germany and Scandinavia, Great Britain, Spain, and last and most superficially to Italy. The essential difference only begins when the imitative arts, sculpture and painting, begin to emancipate and detach themselves, to exist and strive after perfection on their own account. This happened first and very partially in Italy with the artificers of the 13th and 14th centuries—with the sculptors Nicola, Giovanni, and Andrea Pisano; the Sienese group of painters, Duccio, Simone Martini, and the Lorenzetti; and the Florentine group, Cimabue (if Cimabue is not a myth), Giotto and the Giotteschi. The development of the rapid and flowing craft of fresco in place of 374
the laborious and piecemeal craft of mosaic (henceforth for several centuries almost lost) was a great aid to this movement. After a period of something like stagnation, the movement received a vigorous fresh impulse soon after 1400, at about which date in Italy (not till near a century later in northern Europe) the beginning of the Renaissance is usually fixed.

5. The Renaissance period, from about 1400 to about 1600. The passion for classic literature, stimulated by the influence of Greek scholars into Italy after the fall of Constantinople; the enthusiastic revival of classic forms of architecture by architects like Brunelleschi and Alberti; the achievements in sculpture and painting of masters like Donatello and Masaccio, based on a new and impassioned study of nature and the antique together; these are the outstanding and universally known symptoms of the Italian Renaissance in the second and third quarters of the 15th century. Promptly and contemptuously in Italy, much more gradually and incompletely in the north, Gothic principles of construction and decoration were cast aside for classical principles, as reformulated by eager spirits from a combined study of Roman remains and of the text of Vitruvius. To the ideal types of devout and prayer-worn, ascetic and spiritualized humanity (tempered in certain subjects with elements of the homely and the grotesque), which the spirit of the middle ages had dictated to the sculptor and the painter, succeeded ideals of physical power, beauty and grace rivalling the Hellenic. The personages of the Christian faith and story were brought into visible kindred with those of ancient paganism. In the hands of certain artists a fortunate blending of the two ideals yielded results of a poignant and unique charm, which for us, who are the heirs both of antiquity and the middle ages, is far from being yet exhausted. At the same time, the love alike of republics, great princes, churchmen, nobles and merchants for works of art gave employment to sculptors and painters on themes other than ecclesiastical. The taste for civic or personal commemoration, for portraiture, for illustrations of allegory, romance and classic fable, covered with pictures the walls of council halls, of public and private palaces, and of villas. The invention of the oil medium by the painters of Flanders, and its gradual adoption by the Venetians and other schools of Italy for all purposes except the external decorations of buildings, added enormously to the resources of the art in rivalry with nature, and to the splendour of its results as objects of pride and luxury. The glories of matured Italian art reacted, not always favourably, on the north. The great days of Flemish painting had been from about 1430 to 1500, before any appreciable influence of the Renaissance had touched the schools of Brussels, of Bruges or of Antwerp. By about 1520 the artists of those schools had begun, except in portraiture, to lose their native vigour and originality by contact with the alien south. Among the great artists of Germany in the first half of the 16th century the work of one or two, like Burgkmair and Holbein, shows Italian influence reconciled not unsuccessfully with native instinct; but Dürer, the greatest of them, remained in all essentials Gothic and German to the end. During the last half of the century, the Netherlands and Germany alike yielded little but work of mongrel Teutonized Italian or Italianized Teutonic type, until towards its close Rubens accomplished, in the fire of his prodigious temperament, a true fusion of Flemish and Venetian qualities, at the same time closing gloriously the Renaissance

period properly so called, and handing on an example which irresistibly affected a great part of modern painting.

6. Modern period, from about 1600 to the present time. During this period architecture remained in all European countries, until the 19th century, more or less completely under the influence of the Italian Renaissance. The principles of the classical revival had during a century or more of transition been gradually absorbed, first by France, then by Germany, the Low Countries, and Spain, and last by England, each country modifying the style according to its degree of knowledge or ignorance, its needs, instincts and traditions. Sculpture, which in the hands of the great masters of the earlier and later Renaissance in Italy had almost equalled its ancient glories, nay, in those of Michelangelo had actually surpassed them in the qualities at least of superhuman energy and intellectual expression—sculpture lost the sense of its true limitations, and entered, with the work of Bernini and even earlier, into an extravagant or "baroque" period of relaxed and bulging line, of exaggerated and ostentatious virtuosity. In this it followed the lead given by Italian architecture, by Jesuit church architecture especially, at and after the height of the Catholic reaction. From the monumental and memorial purposes which sculpture principally serves, it remained still, except in purely iconic uses, attached to or dependent on architecture. Not so painting, which asserted its independence more and more. In Protestant countries the old ecclesiastical patronage of the art had quite died out; in those that remained Catholic it continued, and even received a new stimulus from the anti-Protestant reaction. The demand for religious art was supplied with abundance of traditional facility, of technical accomplishment and devotional display, but with a loss of the old sincerity and inspiration. Almost all painting, even for the most extensive and monumental phases of decoration in church or palace or civic hall, was on canvas stretched over or fitted into its allotted space in the architecture, and the art of fresco, even in Venice, its last stronghold, was for a time neglected or forgotten. Portable paintings for princely or private galleries and cabinets became the chief and most characteristic products of the art. The subjects of painting multiplied themselves. All manner of new aspects of life and nature were brought within the technical compass of the painter. Besides devotional and classical subjects and portraiture, daily life in all its phases, down to the homeliest and grossest, the life of the parlour and the tavern, of field and shore and sea, with landscape in all its varieties, took their place as material for the painter. The truths of indoor and outdoor atmosphere were translated on canvas for the first time. The Dutchmen from about 1620 to 1670 were the most active innovators and path-breakers of modern art along all these lines. The greatest of them, Rembrandt, dealt, as has been said, like a master and a magician with the problems of human individuality as revealed in a mysterious colour and shadow world of his own invention. At the same time a painter of no less power in Spain, Velazquez, viewing the world in the natural light of every day, showed for the first time how vitally and subtly paint could render the relief and mutual values of figures and objects in space, the essential truth of their visible relations and reactions in the enveloping atmosphere. The achievement of these two victorious innovators has only come to be fully understood in our own day. The simultaneous conquest of Claude le Lorrain, on the other hand, over the atmospheric glow of summer and sunset on the Roman Campagna and the adjacent hills and coasts, found acceptance instantly, less perhaps for its own sake than because of the classical associations of the scenery which he depicted. The vast widening of the field of the painter's art and multiplication of its subjects, which thus took place at the dawn of the modern period, were gains attended by one drawback, the loss, namely, of the sense of high seriousness and universal appeal which belonged to the art while its themes had been those of religion and classic story almost exclusively.

Classical and romantic revivals.

During the three hundred or so years of the modern period, academical schools attempting, more or less unsuccessfully, to carry on the great Italian and classical traditions of the Renaissance have not ceased to exist side by side with those which have striven to express new ways of seeing and feeling. Sometimes, as in France first under Louis XIV., and again for forty years from the beginning of the Revolution to the dawn of romanticism, such schools have succeeded in crushing out and discrediting all efforts in other directions. Between these two epochs, say from 1710 to 1780, French 18th-century ideals of social elegance and brilliant frivolity expressed themselves in forms of great accomplishment and vivacity both in poetry and sculpture, from the days of Watteau to those of Fragonard and Clodion. At the same time England produced one of the finest and at the same time most national and downright masters of the brush in Hogarth; two of the greatest aristocratic portrait-painters of the world in Reynolds and Gainsborough, each of whom modified according to his own instincts the tradition imported in the previous century by Van Dyck, the greatest pupil of Rubens (Reynolds fusing with this influence those of Rembrandt and the Venetians in almost equal shares). Pastoral landscape in the hands of Gainsborough, classical, following Claude, in those of Wilson—these together with the humble but wholesome discipline of topographical illustration led on to the ambitious, wide-ranging and often inspired experiments of Turner, and to the narrower but more secure achievements of Constable in the same field, and made this country the acknowledged pioneer of modern landscape art. In the meantime the wave of classical enthusiasm which passed over Europe in the later years of the 18th century had produced in architecture generally a return to severer principles and purer lines, in reaction from the baroque and the rococo Renaissance styles of the preceding century and a half. In Italian sculpture, the same movement inspired during the Napoleonic period the over-honeyed accomplishment of Canova and his school; in northern sculpture, the more truly antique but almost wholly imitative work of Thorwaldsen, and the pure and rhythmic grace of the English Flaxman, a true master of design though scarcely of sculpture strictly so called. The same movement again was partly responsible in English painting and illustration from about 1770 to 1820 for much pastoral and idyllic

work of agreeable but shallow elegance. In French painting the classic movement struck deeper. Along with much would-be Roman attitudinizing there was much real, if rigid, power in the work of David, much accomplished purity and sweetness in that of Prud'hon. The last and truest classic of France, and at the same time in portraiture the greatest realist, Ingres, held high the standard of his cause even through and past the great romantic revival which began with Géricault and culminated in Delacroix and the school of landscape painters who had received their inspiration from Constable. The main instincts embodied in the Romantic movement were the awakening of the human spirit to an eager retrospective love of the past, and especially of the medieval past, and simultaneously to a new passion for the beauties of nature, and especially of wild nature. Germany and England preceded France in this double awakening; in both countries the movement inspired a fine literature, but in neither did it express itself so fully and self-consciously through literature and the other arts together as it did in France when the hour struck. The revival of medieval sentiment in Germany had inspired comparatively early in the century the learned but somewhat aridly ascetic and essentially unpainterlike work of the group of artists who styled themselves *Nazarener*. In England the same revival expressed itself during a great part of the Victorian age in an enthusiastic return to the early Gothic ecclesiastical styles of architecture, a return unsuccessful upon the whole, because in pursuit of archaeological and grammatical detail the root qualities of right proportion and organic design were too often neglected.

The pre-Raphaelites.

Allied with this Gothic revival, and stimulated like it by the persuasive conviction and brilliant resource of Ruskin in criticism was the pre-Raphaelite movement in painting. Among the artists identified with this movement there was little really in common except in impatience of the prevailing modes of empty academic convention or anecdotic frivolity. The name covered for a while the essentially divergent aims of a vigorous unintellectual craftsman like Millais, fired for a few years in youth by contact with more imaginative temperaments, of a strenuous imitator of unharmonized local colours and unsubordinated natural facts like Holman Hunt, and of born poets and impassioned medievalists like Rossetti and after him Burne-Jones. Meantime in France, putting aside the work of the great Delacroix, the impulse of 1830 expressed itself best and most lastingly in the monumental work of Daumier both in caricature and romance, the impressive and significant treatment of peasant life and labour by J.F. Millet, the vitally truthful pastoral and landscape work of Troyon, Corot, Daubigny and the rest.

Contemporary tendencies.

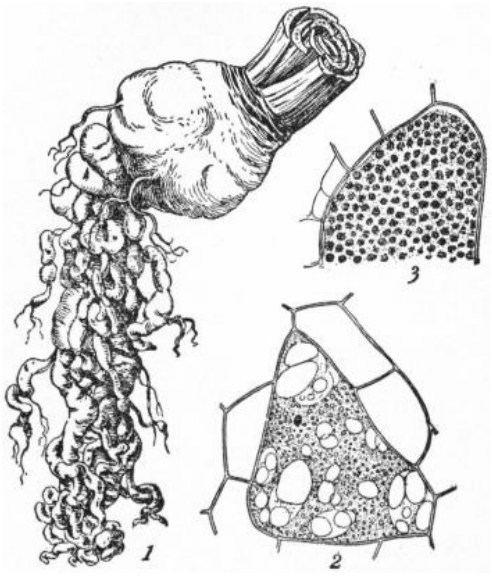
Since the exhaustion of the Romantic movement, the other movements that have been taking place in European art have been too numerous and too rapid to be touched on here to any purpose. Both in sculpture and painting France has taken and held the lead. Mention has already been made of the special tendency in recent sculpture identified with the name and influence of Rodin. In painting there has been the fertilizing and transforming influence of Japan on the decorative ideals of the West; there have been successively the Realist movement, the movements of the Impressionists, the Luminists, the Neo-impressionists, the Independents, movements initiated almost always in Paris, and in other countries eagerly adopted and absorbed, or angrily controverted and denounced, or simply neglected and ignored according to the predilection of this or that group of artists and critics; there has been a vast amount of heterogeneous, hurried, confident and clamant innovating activity in this direction and in that, much of it perhaps doomed to futility in the eyes of posterity, but at any rate there has not been stagnation.

BIBLIOGRAPHY.—To attempt in this place anything like a full bibliography covering so vast a field would be idle. Many of the books necessary to a first-hand study of the subject are cited in the article AESTHETICS. The following are some of the most important writings actually referred to in the text, English translations being mentioned where they exist: Aristotle, *Poetics*, edited with critical notes and a translation by S.H. Butcher (1898); S.H. Butcher, *Aristotle's Theory of Poetry and Fine Art*, with a critical text and a translation of the *Poetics* (1902); Plato, *Republic*, bk. x. 596 ff., 600 ff. (Grote, iii. 117 ff.; Jowett, iii. 489 ff.); B. Bosanquet, *Introduction to Hegel's Philosophy of Fine Art* (*Ästhetik*), translation with notes and prefatory essay (1896); *The Philosophy of Art, an Introduction to the Science of Aesthetics*, by Hegel and C.L. Michelet, trans. Hastie (1886); Schiller, *Briefe über die ästhetische Erziehung des Menschen* (trans, by G.J. Weiss, with preface by J. Chapman, 1845; also in Bohn's Standard Library, 1846); Herbert Spencer, *First Principles*, ch. xxii.; Gottfried Semper, *Der Stil* (1860-1863); Hippolyte Taine, *De l'idéal dans l'art* (1867), *Philosophie de l'art en Grèce* (1869), *Philosophie de l'art en Italie*, *Philosophic de l'art dans les Pays-Bas* (translations in 5 vols. by J. Durand, New York, 1889); Karl Groos, *Die Spiele der Menschen* (1899; trans, by E.L. Baldwin, 1901), and *Die Spiele der Tiere* (2nd ed., 1907; trans, by E.L. Baldwin, 1898); Ernst Grosse, *Die Anfänge der Kunst* (1894; trans, in the Anthropological Series, 1894); Yrjö Hirn, *The Origins of Art* (1900); G. Baldwin Brown, *The Fine Arts* (2nd ed., 1902); Felix Clay, *The Origins of the Sense of Beauty* (1908). For a general history of the manual or shaping group of arts, C.J.F. Schnasse, *Geschichte der bildenden Künste* (2nd ed., 1866-1879), though in parts obsolete, is still unsuperseded. A very summary general view is given in Salomon Reinach, *The Story of Art through the Ages* (trans. by Florence Simmonds, 1904); a general history of the same group was undertaken by Giulio Carotti (English translation by Alice Todd, 1909).

(S. C.)

FINGER, one of the five members with which the hand is terminated, a digit; sometimes the word is restricted to the four digits other than the thumb. The word is common to Teutonic languages, cf. Dutch *vinger* and Ger. *Finger*; probably the ultimate origin is to be found in the root of the words appearing in Greek πέντε, Lat. *quinque*, five. (See SKELETON: *Appendicular*.)

FINGER-AND-TOE, CLUB ROOT or ANBURY, a destructive plant-disease known botanically as *Plasmodiophora Brassicae*, which attacks cabbages, turnips, radishes and other cultivated and wild members of the order Cruciferae. It is one of the so-called Slime-fungi or Myxogastres. The presence of the disease is indicated by nodules or warty outgrowths on the root, which sometimes becomes much swollen and ultimately rots, emitting an unpleasant smell. The disease is contracted from spores present in the soil, which enter the root. The parasite develops within the living cells of the plant, forming a glairy mass of protoplasm known as the *plasmodium*, the form of which alters from time to time. The cells which have been attacked increase enormously in size and the disease spreads from cell to cell. Ultimately the plasmodium becomes resolved into numerous minute round spores which, on the decay of the root, are set free in the soil. A preventive is quicklime, the application of which destroys the spores in the soil. It is important that diseased plants should be burned, also that cruciferous weeds, such as shepherd's purse, charlock, &c., should not be allowed to grow in places where plants of the same order are in cultivation.



Finger-and-Toe (*Plasmodiophora Brassicae*).

1, Turnip attacked by the disease, reduced.
2, A cell of the tissue containing the plasmodium; the smaller cells at the sides are unaffected.
3, Infected cell, showing spore formation. 2, 3, highly magnified.

FINGER-PRINTS. The use of finger-prints as a system of identification (*q.v.*) is of very ancient origin, and was known from the earliest days in the East when the impression of his thumb was the monarch's sign-manual. A relic of this practice is still preserved in the formal confirmation of a legal document by "delivering" it as one's "act and deed." The permanent character of the finger-print was first put forward scientifically in 1823 by J.E. Purkinje, an eminent professor of physiology, who read a paper before the university of Breslau, adducing nine standard types of impressions and advocating a system of classification which attracted no great attention. Bewick, the English draughtsman, struck with the delicate qualities of the lineation, made engravings of the impression of two of his finger-tips and used them as signatures for his work. Sir Francis Galton, who laboured to introduce finger-prints, points out that they were proposed for the identification of Chinese immigrants when registering their arrival in the United States. In India, Sir William Herschel desired to use finger-prints in the courts of the Hugli district to prevent false personation and fix the identity upon the executants of documents. The Bengal police under the wise administration of Sir E.R. Henry, afterwards chief commissioner of the London metropolitan police, usefully adopted finger-prints for the detection of crime, an example followed in many public departments in India. A transfer of property is attested by the thumb-mark, so are documents when registered, and advances made to opium-growers or to labourers on account of wages, or to contracts signed under the emigration law, or medical certificates to vouch for the

persons examined, all tending to check the frauds and impostures constantly attempted.

The prints depend upon a peculiarity seen in the human hand and to some extent in the human foot. The skin is traversed in all directions by creases and ridges, which are ineradicable and show no change from childhood to extreme old age. The persistence of the markings of the finger-tips has been proved beyond all question, and this universally accepted quality has been the basis of the present system of identification. The impressions, when examined, show that the ridges appear in certain fixed patterns, from which an alphabet of signs or a system of notation has been arrived at for convenience of record. As the result of much experiment a fourfold scheme of classification has been evolved, and the various types employed are styled “arches,” “loops,” “whorls” and “composites.” There are seven subclasses, and all are perfectly distinguishable by an expert, who can describe each by its particular symbol in the code arranged, so that the whole “print” can be read as a distinct and separate expression. Very few, and the simplest, appliances are required for taking the print—a sheet of white paper, a tin slab, and some printer’s ink. Scars or malformations do not interfere with the result.

The unchanging character of the finger-prints has repeatedly helped in the detection of crime. We may quote the case of the thief who broke into a residence and among other things helped himself to a glass of wine, leaving two finger-prints upon the tumbler which were subsequently found to be identical with those of a notorious criminal who was arrested, pleaded guilty and was convicted. Another burglar effected entrance by removing a pane of glass from a basement window, but, unhappily for him, left his imprints, which were referred to the registry and found to agree exactly with those of a convict at large; his address was known, and when visited some of the stolen property was found in his possession. In India a murderer was identified by the brown mark of a blood-stained thumb he had left when rummaging amongst the papers of the deceased. This man was convicted of theft but not of the murder.

The keystone to the whole system is the central office where the register or index of all criminals is kept for ready reference. The operators need no special gifts or lengthy training; method and accuracy suffice, and abundant checks exist to obviate incorrect classification and reduce the liability to error.

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(A. G.)

FINGO, or FENGU (*Ama-Fengu*, “wanderers”), a Bantu-Negro people, allied to the Zulu family, who have given their name to the district of Fingoland, the S.W. portion of the Transkei division of the Cape province. The Fingo tribes were formed from the nations broken up by Chaka and his Zulu; after some years of oppression by the Xosa they appealed to the Cape government in 1835, and were permitted by Sir Benjamin D’Urban to settle on the banks of the Great Fish river. They have been always loyal to the British, and have steadily advanced in social respects. They have largely adapted themselves to western culture, wearing European clothes, supporting their schools by voluntary contributions, editing newspapers, translating English poetry, and setting their national songs to correct music. The majority call themselves Christians and many of them have intermarried with Europeans. (See KAFFIRS.)

FINIAL (a variant of “final”; Lat. *finis*, end), an architectural term for the termination of a pinnacle, gable end, buttress, or canopy, consisting of a bunch of foliage, which bears a close affinity to the crockets (*q.v.*) running up the gables, turrets or spires, and in some cases may be formed by uniting four or more crockets together. Sometimes the term is incorrectly applied to a small pinnacle of which it is only the termination (see EPI).

FINIGUERRA, MASO [*i.e.* TOMMASO] (1426-1464), Florentine goldsmith, draughtsman, and engraver, whose name is distinguished in the history of art and craftsmanship for reasons which are partly mythical. Vasari represents him as having been the first inventor of the art of engraving (using

that word in its popular sense of taking impressions on paper from designs engraved on metal plates), and Vasari's account was universally accepted and repeated until recent research proved it erroneous. What we actually know from contemporary documents of Finiguerra, his origin, his life, and his work, is as follows. He was the son of Antonio, and grandson of Tommaso Finiguerra or Finiguerri, both goldsmiths of Florence, and was born in Sta Lucia d'Ognissanti in 1426. He was brought up to the hereditary profession of goldsmith and was early distinguished for his work in niello. In his twenty-third year (1449) we find note of a sulphur cast from a niello of his workmanship being handed over by the painter Alessio Baldovinetti to a customer in payment or exchange for a dagger received. In 1452 Maso delivered and was paid for a niellated silver pax commissioned for the baptistery of St John by the consuls of the gild of merchants or Calimara. By this time he seems to have left his father's workshop: and we know that he was in partnership with Piero di Bartolommeo di Sali and the great Antonio Pollaiuolo in 1457, when the firm had an order for a pair of fine silver candlesticks for the church of San Jacopo at Pistoia. In 1459 we find Finiguerra noted in the house-book of Giovanni Rucellai as one of several distinguished artists with whose works the Casa Rucellai was adorned. In 1462 he is recorded as having supplied another wealthy Florentine, Cino di Filippo Rinuccini, with waist-buckles, and in the years next following with forks and spoons for christening presents. In 1463 he drew cartoons, the heads of which were coloured by Alessio Baldovinetti, for five or more figures for the sacristy of the duomo, which was being decorated in wood inlay by a group of artists with Giuliano da Maiano at their head. On the 14th of December 1464 Maso Finiguerra made his will, and died shortly afterwards.

These documentary facts are supplemented by several writers of the next generation with statements more or less authoritative. Thus Baccio Bandinelli says that Maso was among the young artists who worked under Ghiberti on the famous gates of the baptistery; Benvenuto Cellini that he was the finest master of his day in the art of niello engraving, and that his masterpiece was a pax of the Crucifixion in the baptistery of St John; that being no great draughtsman, he in most cases, including that of the above-mentioned pax, worked from drawings by Antonio Pollaiuolo. Vasari, on the other hand, allowing that Maso was a much inferior draughtsman to Pollaiuolo, mentions nevertheless a number of original drawings by him as existing in his own collection, "with figures both draped and nude, and histories drawn in water-colour." Vasari's account was confirmed and amplified in the next century by Baldinucci, who says that he has seen many drawings by Finiguerra much in the manner of Masaccio; adding that Maso was beaten by Pollaiuolo in competition for the reliefs of the great silver altar-table commission by the merchants' gild for the baptistery of St John (this famous work is now preserved in the Opera del Duomo). But the paragraph of Vasari which has chiefly held the attention of posterity is that in which he gives this craftsman the credit of having been the first to print off impressions from niello plates on sulphur casts and afterwards on sheets of paper, and of having followed up this invention by engraving copper-plates for the express purpose of printing impressions from them, and thus became the inventor and father of the art of engraving in general. Finiguerra, adds Vasari, was succeeded in the practice of engraving at Florence by a goldsmith called Baccio Baldini, who, not having much invention of his own, borrowed his designs from other artists and especially from Botticelli. In the last years of the 18th century Vasari's account of Finiguerra's invention was held to have received a decisive and startling confirmation under the following circumstances. There was in the baptistery at Florence (now in the Bargello) a beautiful 15th-century niello pax of the Coronation of the Virgin. The Abate Gori, a savant and connoisseur of the mid-century, had claimed this conjecturally for the work of Finiguerra; a later and still more enthusiastic virtuoso, the Abate Zani, discovered first, in the collection of Count Seratti at Leghorn, a sulphur cast from the very same niello (this cast is now in the British Museum), and then, in the National library at Paris, a paper impression corresponding to both. Here, then, he proclaimed, was the actual material first-fruit of Finiguerra's invention and proof positive of Vasari's accuracy.

Zani's famous discovery, though still accepted in popular art histories and museum guides, is now discredited among serious students. For one thing, it has been proved that the art of printing from engraved copper-plates had been known in Germany, and probably in Italy also, for years before the date of Finiguerra's alleged invention. For another, Maso's pax for the baptistery, if Cellini is to be trusted, represented not a Coronation of the Virgin but a Crucifixion. In the next place, its recorded weight does not at all agree with that of the pax claimed by Gori and Zani to be his. Again, and perhaps this is the strongest argument of any, all authentic records agree in representing Finiguerra as a close associate in art and business of Antonio Pollaiuolo. Now nothing is more marked than the special style of Pollaiuolo and his group; and nothing is more unlike it than the style of the Coronation pax, the designer of which must obviously have been trained in quite a different school, namely that of Filippo Lippi. So this seductive identification has to be abandoned, and we have to look elsewhere for traces of the real work of Finiguerra. The only fully authenticated specimens which exist are the above-mentioned tarsia figures, over half life-size, executed from his cartoons for the sacristy of the duomo. But his hand has lately been conjecturally recognized in a number of other things: first in a set of drawings of the school of Pollaiuolo at the Uffizi, some of which are actually inscribed "Maso Finiguerra" in a 17th-century writing, probably that of Baldinucci himself; and secondly in a very curious and important book of nearly a hundred drawings by the same hand, acquired in 1888 for the British Museum. The Florence series depicts for the most part figures of the studio and the street, to all appearance members of the artist's own family and workshop, drawn direct from life. The museum volume, on the other hand, is a picture-chronicle, drawn from imagination, and representing parallel figures of sacred and profane history, in a chronological series from the Creation to Julius Caesar, dressed and accoutred with inordinate richness according to the quaint pictures which Tuscan popular

fancy in the mid-15th century conjured up to itself of the ancient world. Except for the differences naturally resulting from the difference of subject, and that the one series are done from life and the other from imagination, the technical style and handling of the two are identical and betray unmistakably a common origin. Both can be dated with certainty, from their style, costumes, &c., within a few years of 1460. Both agree strictly with the accounts of Finiguerra's drawings left us by Vasari and Baldinucci, and disagree in no respect with the character of the inlaid figures of the sacristy. That the draughtsman was a goldsmith is proved on every page of the picture-chronicle by his skill and extravagant delight in the ornamental parts of design—chased and jewelled cups, helmets, shields, breastplates, scabbards and the like,—as well as by the symmetrical metallic forms into which he instinctively conventionalizes plants and flowers. That he was probably also an engraver in niello appears from the fact that figures from the Uffizi series of drawings are repeated among the rare anonymous Florentine niello prints of the time (the chief collection of which, formerly belonging to the marquis of Salamanca, is now in the cabinet of M. Edmond de Rothschild in Paris). That he was furthermore an engraver on copper seems certain from the fact that the general style and many particular figures and features of the British Museum chronicle drawings are exactly repeated in some of those primitive 15th-century Florentine prints which used to be catalogued loosely under the names of Baldini or Botticelli, but have of late years been classed more cautiously as anonymous prints in the "fine manner" (in contradistinction to another contemporary group of prints in the "broad manner"). The fine-manner group of primitive Florentine engravings itself falls into two divisions, one more archaic, more vigorous and original than the other, and consisting for the most part of larger and more important prints. It is this division which the drawings of the Chronicle series most closely resemble; so closely as almost to compel the conclusion that drawings and engravings are by the same hand. The later division of fine-manner prints represent a certain degree of technical advance from the earlier, and are softer in style, with elements of more classic grace and playfulness; their motives moreover are seldom original, but are borrowed from various sources, some from German engravings, some from Botticelli or a designer closely akin to him, some from the pages of the British Museum Chronicle-book itself, with a certain softening and attenuating of their rugged spirit; as though the book, after the death of the original draughtsman-engraver, had remained in his workshop and continued to be used by his successors. We thus find ourselves in presence of a draughtsman of the school of Pollaiuolo, some of whose drawings bear an ancient attribution to Finiguerra, while all agree with what is otherwise known of him, and one or two are exactly repeated in extant works of niello, the craft which was peculiarly his own; others being intimately related to the earliest or all but the earliest works of Florentine engraving, the kindred craft which tradition avers him to have practised, and which Vasari erroneously believed him to have invented. Surely, it has been confidently argued, this draughtsman must be no other than the true Finiguerra himself. The argument has not yet been universally accepted, but neither has any competent criticism appeared to shake it; so that it may be regarded for the present as holding the field.

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(S. C.)

FINISHING. The term *finishing*, as specially applied in the textile industries, embraces the process or processes to which bleached, dyed or printed fabrics of any description are subjected, with the object of imparting a characteristic appearance to the surface of the fabric, or of influencing its handle or feel. Strictly speaking, certain operations might be classed under this heading which are conducted previous to bleaching, dyeing, &c; *e.g.* mercerizing (*q.v.*), stretching and crabbing, singeing (see BLEACHING); but as these are not undertaken by the finisher, only those will be dealt with here which are not mentioned under other headings. By the various treatments to which the fabric is subjected in finishing, it is often so altered in appearance that it is impossible to recognize in it the same material that came from the loom or from the bleacher or dyer. On the other hand, one and the same fabric, subjected to different processes of finishing, may be made to represent totally different classes of material. In other cases, however, the appearance of the finished article differs but slightly from that of the piece on leaving the loom.

All processes of finishing are purely mechanical in character, and the most important of them depend upon the fact that in their ordinary condition (*i.e.* containing their normal amount of moisture), or better still in a damp state, the textile fibres are plastic, and consequently yield to pressure or tension, ultimately assuming the shape imparted to them. The old-fashioned box press, formerly largely used for household linen, owed its efficacy to this principle. At elevated temperatures the damp fibres become very much more plastic than at the ordinary temperature, the simplest form of finishing appliance based on this fact being the ordinary flat iron. Indeed it may safely be stated that most of the modern finishing processes have been evolved from the household operations of washing (milling), brushing, starching, mangling, ironing and pressing.

Cotton Pieces.—In the ordinary process of bleaching, cotton goods are subjected during the various operations to more or less continual longitudinal tension, and while becoming elongated, shrink more or less considerably in width. In order to bring them back to their original width, they are stretched or "stentered" by means of specially constructed machines. The most effective of these is the so-called stentering frame, which consists essentially of two slightly diverging endless chains carrying clips or pins which hold the piece in position as it traverses the machine. The length of a frame may vary from 20 to 30 yds. On the upper part of the frame the chains run in slots, and by means of set screws the distance between the two chains can be set within the required limits. The pieces are fed on to one end of the machine in the damp state by hand and are then naturally slack. But before they have travelled many yards they become taut, the stretching increasing as they travel along. Simultaneously with the stretching, the pieces are dried by a current of hot air which is blown through from below, so that on arriving at the end of the machine they are not only stretched to the required degree but are also dry. The machine used for stentering is more fully described under MERCERIZING (*q.v.*). In case the goods come straight from the loom to be finished, stentering is not necessary.

Pieces intended to receive a "pure" finish pass on without further treatment to the ordinary finishing processes such as calendering, hot pressing, raising, &c. But in the majority of cases they are previously impregnated, according to the finish desired, with stiffening or softening agents, weighting materials, &c. Usually, starch constitutes the main stiffening agent, with additions of china clay, barium compounds, &c., for weighting purposes, and Turkey red oil, with or without the addition of some vegetable oil or fat, as the softening agent. Magnesium sulphate is also largely used in order to give "body" to the cloth, which it does by virtue of its property of crystallizing in fine felted needle-shaped crystals throughout the mass of the fabric. When starch is used in filling, it is advisable to add some anti-septic, such as zinc chloride, sodium silicofluoride, phenol or salicylic acid, in order to prevent or retard subsequent development of mildew. The impregnation of the pieces with the filling is effected in two ways, viz. either throughout the thickness of the cloth or on one surface only (back starching). When the whole piece is to be impregnated the operation is conducted in a starching mangle, which is similar in construction to an ordinary household mangle, though naturally larger and more elaborate in construction. The pieces run at full width through a trough situated immediately below the bowls and containing the filling (starch paste, &c.), then between the bowls, the pressure ("nip") of which regulates the amount of filling taken up, and thence over a range of steam-heated drying cylinders (see BLEACHING). In case one side only of the goods is to be stiffened—and this is usually necessary in the case of printed goods,—a so-called back-starching mangle is employed.

The construction of the machine varies, but the simplest form consists essentially of a wooden bowl *a* (Fig. 1) which runs in the starch paste contained in trough *t*. The pieces pass from the batch-roller B, through scrimp rails S and over the bowl under tension, touching the surface from which they gather the starch paste. By means of the fixed "doctor" blade *d*, which extends across the piece, the paste is levelled on the surface of the fabric and excess scraped off, falling back into the trough. The goods are then dried with the face side to the cylinders.

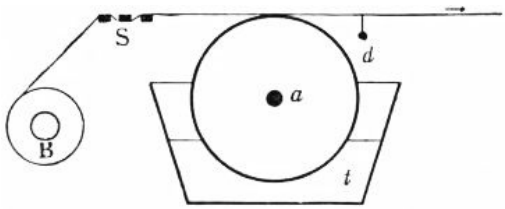


FIG. 1.—Principle of Back-Starching Machine.

Some goods come into the market with no further treatment after starching other than running through a mangle with a little softening and then drying, but in the great majority of cases they are subjected to further operations.

Damping.—When deprived of their natural moisture by drying on the cylinder drying machine, cotton goods are not in a fit condition to undergo the subsequent operations of calendering, beetling, &c., since the fibres in the dry state have lost their plasticity. The pieces are consequently damped to the desired degree, and this is usually effected in a damping machine in passing through which they meet with a fine spray of water.

A simple and effective device for this purpose is shown in section in Fig. 2. It consists essentially of a brass roller *r* running in water contained in a trough or box *t*. Touching the brass roller is a brush roller *b* which revolves at a high speed, thus spraying the water, which it takes up continuously from the wet revolving brass roller in all directions, and consequently also against the piece which passes in a stretched condition over the top of the box, being drawn from the batch roller B, over scrimp rails S, and batched again on the other side on roller R. The level of the water in the trough is kept constant.

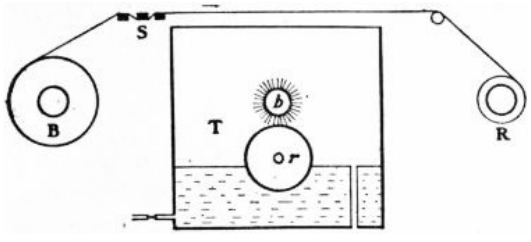


FIG. 2.—Principle of Damping Machine.

Calendering.—The calender may be regarded as an elaboration of the ordinary mangle, from which, however, it differs essentially inasmuch as one or more of the rollers or bowls are made of steel or iron and can be treated either by gas or steam; the other bowls are made of compressed cotton or paper. Three distinct forms of calender are in use, viz. the ordinary calender, the friction calender and the embossing calender.

The number of bowls in an ordinary calender varies between two and six according to the character

of the finish for which it is intended. In a modern five-bowl calender the bottom bowl is made of cast iron, the second of compressed cotton or paper, the third of iron being hollow and fitted with steam heating apparatus. The fourth bowl is made of compressed cotton, and the fifth of cast iron. The pieces are simply passed through for “swissing,” *i.e.* for the production of an ordinary plain finish. The same calender may also be used for “chasing,” in which two pieces are passed through, face to face, in order to produce an imitation linen finish. Moiré or “watered” effects are produced in a similar way, but these effects are frequently imitated in the embossing calender.

The friction calender, the object of which is to produce a high gloss on the fabric, differs from the ordinary calender inasmuch as one of the bowls is caused to revolve at a greater speed than the others. In an ordinary three-bowl friction calender the bottom bowl is made of cast iron, the middle one of compressed cotton or paper, and the top one (the friction bowl) of highly polished chilled iron. The last-named bowl, which has a greater peripheral speed than the others, is hollow and can be heated either by steam or gas.

The embossing calender is usually constructed of two bowls, one of which is of steel and the other of compressed cotton or paper. The steel roller, which is hollow and can be heated either by steam or gas, is engraved with the pattern which it is desired to impart to the piece. If the pattern is deep, as is the case in the production of book cloths, it is necessary to run the machine empty under pressure until the pattern of the steel bowl has impressed itself into the cotton or paper bowls, but if the effect desired only consists of very fine lines, this is not necessary; for instance, in the production of the Schreiner finish, which is intended to give the pieces (especially after mercerizing) the appearance of silk, the steel roller is engraved with fine diagonal lines which are so close together (about 250 to the in.) as to be undistinguishable by the naked eye.

Beetling is a process by which a peculiar linen-like appearance and a leathery feel or handle are imparted to cotton fabrics, the process being also employed for improving the appearance of linen goods. For the best class of beetle finish, the pieces are first impregnated with sago starch and the other necessary ingredients (softening, &c.) and are dried on cylinders. They are then damped on a water mangle, and beamed on to the heavy iron bowl of the beetling machine.

A beetling machine of the kind, with four sets of “fallers,” is shown in Fig. 3. The fallers are made of beech wood, are about 8 ft. long, 5½ in. deep and 4 in. wide, and are kept in their vertical position by two pairs of guide rails. Each faller is provided with a tappet or wooden peg driven in at one side, which engages with the teeth or “wipers” of the revolving shaft in the front of the machine. The effect of this mechanism is to lift the faller a distance of about 13 in. and then let it drop on to the cloth wound on the beam. This lifting and dropping of the fallers on to the beam takes place in rhythmical and rapid succession. To ensure even treatment the beam turns slowly round and also has a to-and-fro movement imparted to it. The treatment may last, according to the finish which it is desired to obtain, from one to sixty hours.

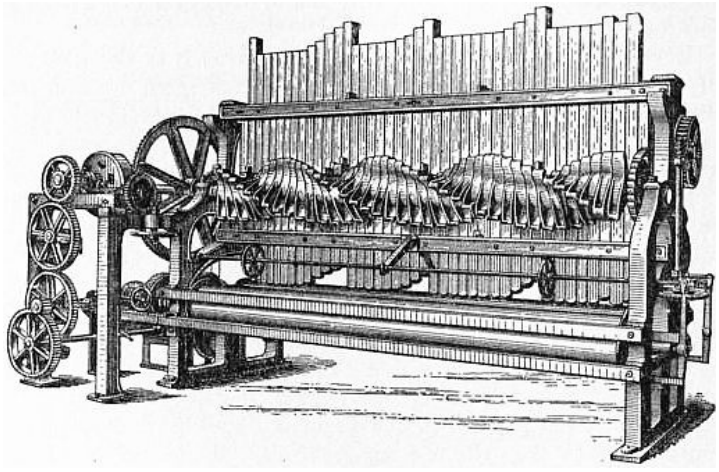


Fig. 3.—Beetling Machine (Edmeston & Sons).

Beetling was originally used for linen goods, but to-day is almost entirely applied to cotton for the production of so-called *linenettes*.

Hot-pressing is used to a limited extent in order to obtain a soft finish on cotton goods, but as this operation is more used for wool, it will be described below.

Raising.—This operation, which was formerly only used for woollen goods (teasing), has come largely into use for cotton pieces, partly in consequence of the introduction of the direct cotton colours by which the cotton is dyed evenly throughout (see Dyeing), and partly in consequence of new and improved machinery having been devised for the purpose. Starting with a plain bleached, dyed or printed fabric, the process consists in principle in raising or drawing out the ends of individual fibres from the body of the cloth, so as to produce a nap or soft woolly surface on the face.

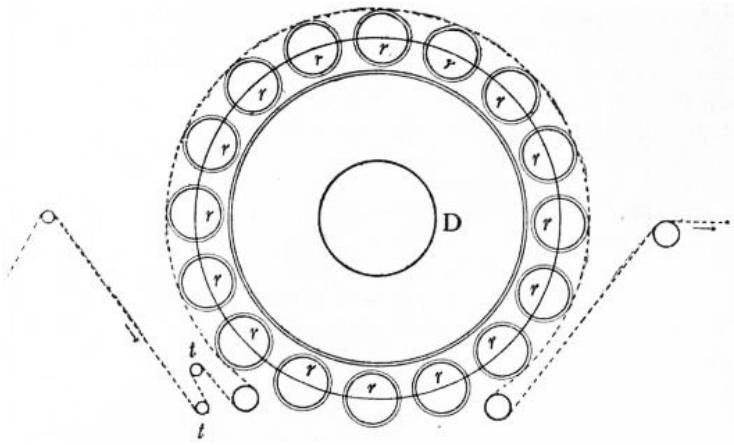


Fig. 4.—Raising.

This is effected by passing the fabric slowly round a large drum D, which is surrounded, as shown in the diagram, (Fig. 4), by a number of small cylinders or rollers, *r*, covered with steel wire brushes or "carding," such as is used in carding engines (see Cotton-Spinning Machinery).

The rollers *r*, which are all driven by one and the same belt (not shown in the figure), revolve at a high rate of speed, and can be made to do so either in the same direction as that followed by the piece as it travels through the machine or in the opposite one. In addition to their revolving round their own axes, the raising rollers may be either kept stationary or may be moved round the drum D in either direction.

In the more modern machines there are two sets of raising rollers, of which each alternate one is caused to revolve in the direction followed by the piece, while the other is made to revolve in the opposite direction. By passing through an arrangement of this kind several times, or through several such machines in succession, the ends of the fibres are gradually drawn out to the desired extent.

After raising, the pieces are sheared (for better class work) in order to produce greater regularity in the length of the nap. The raised style of finishing is used chiefly for the production of uniformly white or coloured flannelettes but is also used for such as are dyed in the yarn, and to a limited extent for printed fabrics. 380

Woollen and Worsted Pieces.—Although both of these classes of material are made from wool, their treatment in finishing differs so materially that it is necessary to deal with them separately. *Unions* or fabrics consisting of a cotton warp with a worsted weft are in general treated like worsteds.

In the finishing of woollen pieces the most important operation is that of *milling*, which consists in subjecting the pieces to mechanical friction, usually in an alkaline medium (soap or soap and soda) but sometimes in an acid (sulphuric acid) medium, in order to bring about felting and consequent "fulling" of the fabric. This felting of the wool is due to the peculiar structure of the fibre, the scales of which all protrude in one direction, so that the individual fibres can slip past each other in one direction more readily than in the opposite one and thus become more and more interlocked as the milling proceeds. If the pieces contain *burrs* these are usually removed by a process known as "carbonizing," which generally, but not necessarily, precedes the milling. Their removal depends upon the fact that the burrs, which consist in the main of cellulose, are disintegrated at elevated temperatures by dilute mineral acids. The pieces are run through sulphuric acid of from 4° to 6° Tw., squeezed or hydro-extracted, and dried over cylinders and then in stoves. The acid is thus concentrated and attacks the burrs, which fall to dust, while leaving the wool intact. For the removal of the acid the fabric is first washed in water and then in weak soda. Carbonizing is also sometimes used for worsteds.

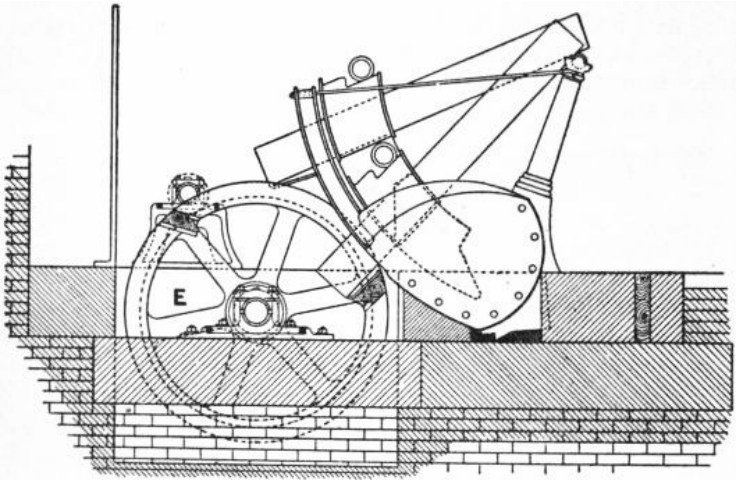


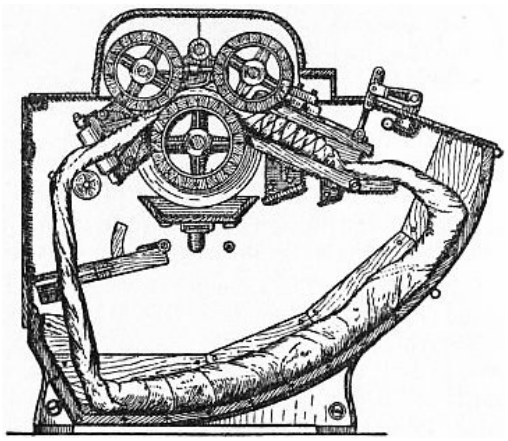
Fig. 5.—Milling Stocks.

Milling was formerly all done in milling or fulling stocks (see Fig. 5), in which the cloth saturated

with a strong solution of soap (with or without other additions such as stale urine, potash, fuller's earth, &c.) is subjected to the action of heavy wooden hammers, which are raised by the cams attached to the wheel (E) on the revolving shaft, and fall with their own weight on to the bundles of cloth. The shape of the hammer-head causes the cloth to turn slowly in the cavity in which the milling takes place. Occasionally, the cloth is taken out, straightened, washed if necessary, and then returned to the stocks to undergo further treatment, the process being continued until the material is uniformly shrunk or milled to the desired degree.

In the more modern forms of milling machines the principle adopted is to draw the pieces in rope form, saturated with soap solution and sewn together end to end so as to form an endless band, between two or more rollers, on leaving which they are forced down a closed trough ending in an aperture the size of which can be varied, but which in any case is sufficiently small to cause a certain amount of force to be necessary to push the pieces through. A machine of this kind is shown in Fig. 6. It is evident that for coloured goods which have to be milled only such colouring matters must be chosen for dyeing that are absolutely fast to soap.

After the pieces have been milled down to the desired degree, they present an uneven and, undesirable appearance on the surface, the ends of many of the fibres which previously projected having been turned and thus become embedded in the body of the cloth. In order to bring these hairs to the surface again, the fabric is subjected to *teasing* or *raising*, an operation identical in principle with one which has already been noticed under the finishing of cotton. In place of the steel wire brushes it is the usual practice to employ teasels for the treatment of woollen goods.



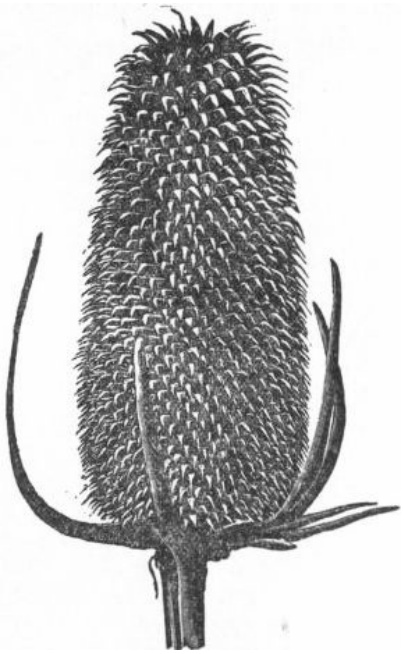
From Ganswindt, *Technologie der Appretur*.

Fig. 6.—Roller Milling Machine.

The teasel (see Fig. 7) is the dried head (fruit) of a kind of thistle (*Dipsacus fullorum*), the horny sharp spikes of which turn downwards at their extremity, and, while possessing the necessary sharpness and strength for raising the fibres, are not sufficiently rigid to cause any material damage to the cloth. For raising, the teasels are fixed in rows on a large revolving drum, and the piece to be treated is drawn lengthways underneath the drum, being guided by rollers or rods so as to just touch the teasels as they sweep past. In the raising of woollen goods it is necessary that the pieces should be damp or moist while undergoing this treatment.

After teasing, the pieces are stretched and dried. At this stage they still have an irregular appearance, for although the raising has brought all the loose ends of the fibres to the surface, these vary considerably in length and thus give rise to an uneven nap.

By the next operation of *shearing* or *cropping*, the long hairs are cut off arid a uniform surface is thus obtained. Shearing was in former times done by hand, by means of shears, but is to-day universally effected by means of a cutting device which works on the same principle as an ordinary lawn-mower, in which a number of spiral blades set on the surface of a rapidly revolving roller pass continuously over a straight fixed blade underneath, the roller being set so that the spiral blades just touch the fixed blade. Before the piece comes to the shearing device the nap is raised by means of a rotary brush. Shearing may be effected either transversely, in which case the fixed blade is parallel to the warp, or longitudinally with the fixed blade parallel to the weft. In the first case, the piece being stretched on a table, over which the cutter, carried on rails, travels from selvedge to selvedge. The length of the piece that can be shorn in one operation will naturally depend upon the length of the blade, but in any case the process is necessarily intermittent, many operations being required before the whole piece is shorn. In the longitudinal shearing machines the process is continuous, the pieces passing from the beam in the stretched condition over the rotary brush, under the fixed blade, and then being again brushed before being beamed on the other side of the machine. Shearing once is generally insufficient, and for this reason many of the modern machines are constructed with duplicate arrangements so as to effect the shearing twice in the same operation. In the finishing of certain woollen goods the pieces, after having been milled, raised and sheared, go through these operations again in the same sequence.



From Ganswindt, *Technologie der Appretur*.

Fig. 7.—Teasel used for Raising.

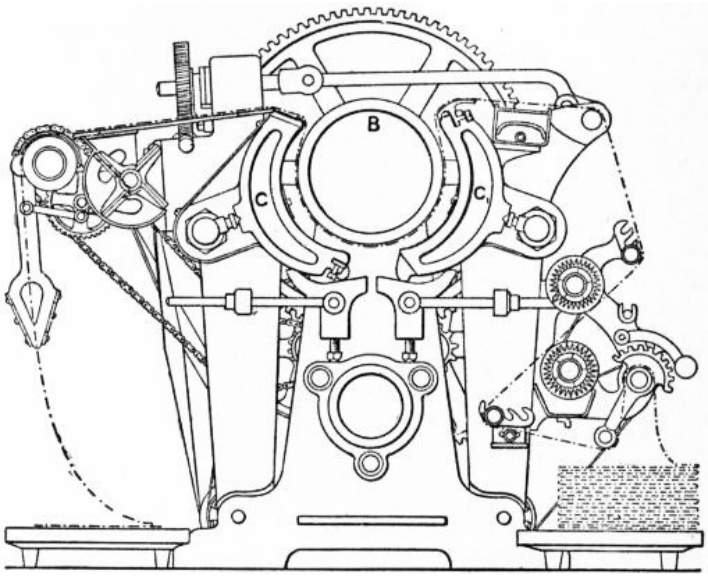
After these operations the goods are pressed either in the hydraulic press or in the continuous press, and according to the character of the material and the finish desired may or may not be steamed under pressure, all of which operations are described below.

New cloth, as it comes into the hands of the tailor, frequently shows an undesirable gloss or sheen, which is removed before making up by a process known as shrinking, in which the material is simply damped or steamed.

Worsteds and Unions.—The pieces are first singed by gas or hot plate (see BLEACHING), and are then usually subjected to a process known as "crabbing," the object of which is to "set" the wool fibres. If this operation is omitted, especially in the case of unions, the fabric will "cockle," or assume an uneven surface on being wetted. In crabbing the pieces are drawn at full breadth and under as much tension as they will stand through boiling water, and are wound or beamed on to a roller under the pressure of a superposed heavy iron roller, the operation being conducted two or three times as required. From the crabbing machine the pieces are wound on to a perforated shell or steel cylinder which is closed at one end. The open end is then attached to a steam pipe, and steam, at a pressure of 30 to 45 lb, is allowed to enter until it makes its way through all the layers of cloth to the outside, when the steam is turned off and the whole allowed to cool. Since those layers of the cloth which are nearest the shell are acted upon for a longer period than those at the outside, it is necessary to re-wind and repeat the operation, the outside portions coming this time nearest to the shell. The principle of the process depends upon the fact that at elevated temperatures moist wool becomes plastic, and then easily assumes the shape imparted to it by the great tension under which the pieces are wound. On cooling the shape is retained, and since the temperature at which the pieces were steamed under tension exceeds any to which they are submitted in the subsequent processes, the "setting" of the fibres is permanent. After crabbing, the pieces are washed or "scoured" in soap either on the winch or at full width. In some cases the crabbing precedes the scouring. The goods are then dyed and finished.

The nature of the finishing process will vary considerably according to the special character of the goods under treatment. Thus, for certain classes of goods cold pressing is sufficient, while in other cases the pieces are steamed under pressure in a manner analogous to the treatment after crabbing ("decatizing"). The treatment in most common use for worsteds and unions is hot pressing, which may be effected either in the hydraulic press or in the continuous press, but in most cases in the former.

In pressing in the hydraulic press the pieces are folded down by hand on a table, a piece of press paper (thin hand-made cardboard with a glossed and extremely hard surface) being inserted between each lap. After a certain number of laps, a steel or iron press plate is inserted, and the folding proceeds in this way until the pile is sufficiently high, when it is placed in the press. The press being filled, the hydraulic ram is set in motion until the reading on the gauge shows that the desired amount of pressure has been obtained. The heating of the press plates was formerly done in ovens, previous to their insertion in the piece, but although this practice is still in vogue in rare instances, the heating is now effected either by means of steam which is caused to circulate through the hollow steel plates, or in the more modern forms of presses by means of an electric current. After the pieces have thus been subjected to the combined effects of heat and pressure for the desired length of time, they are allowed to cool in the press. It is evident that portions of the pieces, viz. the folds, thus escape the finishing process, and for this reason it is necessary to repeat the process, the folds now being made to lie in the middle of the press papers.



From Ganswindt,' *Technologie der Appretur*.

FIG. 8.—Continuous Press.

The continuous press, which is used for certain classes of worsteds, but more especially for woollen goods, consists in principle of a polished steam-heated steel cylinder against which either one or two steam-heated chilled iron cheeks are set by means of levers and adjusting screws. The pieces to be

pressed are drawn slowly between the cheeks and the bowl. A machine of the kind is shown in section in Fig. 8. In working, the cheeks C, C_1 are pressed against the bowl B. The course followed by the cloth to be finished is shown by the dotted line, the finished material being mechanically folded down on the left-hand side of the machine. The pieces thus acquire a certain amount of finish which is, however, not comparable with that produced in the hydraulic press.

Pile Fabrics, such as velvets, velveteens, corduroys, plushes, sealskins, &c., require a special treatment in finishing, and great care must be taken in all operations to prevent the pile being crushed or otherwise damaged. Velveteens and corduroys are singed before boiling or bleaching. Velveteens dyed in black or in dark shades are brushed with an oil colour (*e.g.* Prussian blue for blacks), and dried over-night in a hot stove in order to give them a characteristic bloom. Regularity in the pile and gloss are obtained by shearing and brushing. Corduroys are stiffened at the back by the application of "bone-size" (practically an impure form of glue) in a machine similar to that used for back-starching. The face of the fabric is waxed with beeswax by passing the piece under a revolving drum, on the surface of which bars of this material are fixed parallel to the axis. The bars just touch the surface of the fabric as it passes through the machine. The gloss is then obtained by brushing with circular brushes which run partly in the direction of the piece and partly diagonally. In the finishing of velvets, shearing and brushing are the most important operations. The same applies to sealskins and other long pile fabrics, but with these an additional operation, viz. that of "batting," is employed after dyeing and before shearing and brushing, which consists in beating the back of the stretched fabric with sticks in order to shake out the pile and cause it to stand erect.

For the finishing of silk pieces the operations and machinery employed are similar in character to some of those used for cotton and worsteds. Most high-class silks require no further treatment other than simple damping and pressing after they leave the loom. Inferior qualities are frequently filled or back-filled with glue, sugar, gum tragacanth, dextrin, &c., after which they are dried, damped and given a light calender finish. Moiré or watered effects are produced by running two pieces face to face through a calender or by means of an embossing calender. In the latter case the pattern repeats itself. For the production of silk crape the dyed (generally black) piece is impregnated with a solution of shellac in methylated spirit and dried. It is then "goffered," an operation which is practically identical with embossing (see above), and may either be done on an embossing calender or by means of heated brass plates in which the design is engraved to the desired depth and pattern.

The measuring, wrapping, doubling, folding, &c., of piece goods previous to making up are done in the works by specially constructed machinery.

Finishing of Yarn.—The finishing of yarn is not nearly so important as the finishing of textiles in the piece, and it will suffice to draw attention to the main operations. Cotton yarns are frequently "gassed," *i.e.* drawn through a gas flame, in order to burn or singe off the projecting fibres and thus to produce a clean thread which is required for the manufacture of certain classes of fabrics. The most important finishing process for cotton yarn is "mercerizing" (*q.v.*), by means of which a permanent silk-like gloss is obtained. The "polishing" of cotton yarn, by means of which a highly glazed product, similar in appearance to horsehair, is obtained, is effected by impregnating the yarn with a paste consisting essentially of starch, beeswax or paraffin wax and soap, and then subjecting the damp material to the action of revolving brushes until dry. Woollen yarn is not subjected to any treatment, but worsted yarns (especially twofold) have to be "set" before scouring and dyeing in order to prevent curling. This is effected by stretching the yarn tight on a frame, which is immersed in boiling water and then allowing it to cool in this condition.

A peculiar silk-like gloss and feel is sometimes imparted to yarns made from lustre wool by a treatment with a weak solution of chlorine (bleaching powder and hydrochloric acid) followed by a treatment with soap.

Worsted and mohair yarns intended for the manufacture of braids are singed by gas, a process technically known as "Genapping."

Silk yarn is subjected to various mechanical processes before weaving. The most important of these are stretching, shaking, lustreing and glossing. Stretching and shaking are simple operations the nature of which is sufficiently indicated by their names, and by these means the hanks are stretched to their original length and straightened out by hand or on a specially devised machine. In *lustreing*, the yarn is stretched slightly beyond its original length between two polished revolving cylinders (one of which is steam heated) contained in a box or chest into which steam is admitted. In *glossing*, the yarn is twisted tight, first in one direction and then in the other, on a machine, this alternating action being continued until the maximum gloss is obtained.

The so-called "scrooping" process, which gives to silk a peculiar feel and causes it to crackle or crunch when compressed by the hand, is a very simple operation, and consists in treating the yarn after dyeing in a bath of dilute acid (acetic, tartaric or sulphuric) and then drying without washing. Heavily weighted black silks are passed after dyeing through an emulsion of olive oil in soap and dried without washing, in order to give additional lustre to the material or rather to restore some of the lustre which has been lost in weighting.

(E. K.)

FINISTÈRE, or Finisterre, the most western department of France, formed from part of the old province of Brittany. Pop. (1906) 795,103. Area, 2713 sq. m. It is bounded W. and S. by the Atlantic Ocean, E. by the departments of Côtes-du-Nord and Morbihan, and N. by the English Channel. Two converging chains of hills run from the west towards the east of the department and divide it into three zones conveying the waters in three different directions. North of the Arrée, or more northern of the two chains, the waters of the Douron, Penzé and Flèche flow northward to the sea. The Elorn, however, after a short northerly course, turns westward and empties into the Brest roads. South of the Montagnes Noires, the Odet, Aven, Isole and Ellé flow southward; while the waters of the Aulne, flowing through a region enclosed by the two chains with a westward declination, discharge into the Brest roads. The rivers are all small, and none of the hills attain a height of 1300 ft. The coast is generally steep and rocky and at some points dangerous, notably off Cape Raz and the Île de Sein; it is indented with numerous bays and inlets, the chief of which—the roadstead of Brest and the Bays of Douarnenez and Audierne—are on the west. The principal harbours are those of Brest, Concarneau, Morlaix, Landerneau, Quimper and Douarnenez. Off the coast lie a number of islands and rocks, the principal of which are Ushant (*q.v.*) N.W. of Cape St Mathieu, and Batz off Roscoff. The climate is temperate and equable, but humid; the prevailing winds are the W., S.W. and N.W. Though more than a third of the department is covered by heath, waste land and forest, it produces oats, wheat, buckwheat, rye and barley in quantities more than sufficient for its population. In the extreme north the neighbourhood of Roscoff, and farther south the borders of the Brest roadstead, are extremely fertile and yield large quantities of asparagus, artichokes and onions, besides melons and other fruits. The cider apple is abundant and furnishes the chief drink of the inhabitants. Hemp and flax are also grown. The farm and dairy produce is plentiful, and great attention is paid to the breeding and feeding of cattle and horses. The production of honey and wax is considerable. The fisheries of the coast, particularly the pilchard fishery, employ a great many hands and render this department an excellent nursery of seamen for the French navy. Coal, though found in Finistère, is not mined; there are quarries of granite, slate, potter’s clay, &c. The lead mines of Poullaouen and Huelgoat, which for several centuries yielded a considerable quantity of silver, are no longer worked. The preparation of sardines is carried on on a large scale at several of the coast-towns. The manufactures include linens, woollens, sail-cloth, ropes, agricultural implements, paper, leather, earthenware, soda, soap, candles, and fertilizers and chemicals derived from seaweed. Brest has important foundries and engineering works; and shipbuilding is carried on there and at other seaports. Brest and Morlaix are the most important commercial ports. Trade is in fish, vegetables and fruit. Coal is the chief import. The department is served by the Orleans and Western railways. The canal from Nantes to Brest has 51 m. of its length in the department. The Aulne is navigable for 17 m., and many of the smaller rivers for short distances.

Finistère is divided into the arrondissements of Quimperlé, Brest, Châteaulin, Morlaix and Quimper (43 cantons, 294 communes), the town of Quimper being the capital of the department and the seat of a bishopric. The department belongs to the region of the XI. army corps and to the archiepiscopal province and académie (educational division) of Rennes, where its court of appeal is also situated.

The more important places are Quimper, Brest, Morlaix, Quimperlé, St Pol-de-Léon, Douarnenez, Concarneau, Roscoff, Penmarc’h and Pont-l’Abbé. Finistère abounds in menhirs and other megalithic monuments, of which those of Penmarc’h, Plouarzal and Crozon are noted. The two religious structures characteristic of Brittany—calvaries and charnel-houses—are frequently met with. The calvaries of Plougastel-Daoulas, Pleyben, St Thégonnec, Lampaul-Guimiliau, which date from the 17th century, and that of Guimiliau (16th century), and the charnel-houses of Sizun and St Thégonnec (16th century) and of Guimiliau (17th century) may be instanced as the most remarkable. Daoulas has the remains of a fine church and cloister in the Romanesque style. The chapel of St Herbot (16th century) near Loqueffret, the churches of St Jean-du-Doigt and Locronan, which belong to the 15th and 16th centuries, those of Ploaré, Roscoff, Penmarc’h and Pleyben of the 16th century, that of Le Folgoët (14th and 16th centuries), and the huge château of Kerjean (16th century) are of architectural interest. Religious festivals, and processions known as “pardons,” are held in many places, notably at Locronan, St Jean-du-Doigt, St Herbot and Le Faou.

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