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Anjar to Apollo

Articles in This Slice

ANJAR, a fortified town of India, and the capital of a district of the same name in the native state of Cutch, in the presidency of Bombay. The country is dry and sandy, and entirely depends on well irrigation for its water supply. The town is situated nearly 10 miles from the Gulf of Cutch. It suffered severely from an earthquake in 1819, which destroyed a large number of houses, and occasioned the loss of several lives. In 1901 the population was 18,014. The town and district of Anjar were both ceded to the British in 1816, but in 1822 they were again transferred to the Cutch government in consideration of an annual money payment. Subsequently it was discovered that this obligation pressed heavily upon the resources of the native state, and in 1832 the pecuniary equivalent for Anjar, both prospectively and inclusive of the arrears which had accrued to that date, was wholly remitted by the British government.

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ANJOU, the old name of a French territory, the political origin of which is traced to the ancient Gallic state of the *Andes*, on the lines of which was organized, after the conquest by Julius Caesar, the Roman *civitas* of the *Andecavi*. This was afterwards preserved as an administrative district under the Franks with the name first of *pagus*, then of *comitatus*, or countship of Anjou. This countship, the extent of which seems to have been practically identical with that of the ecclesiastical diocese of Angers, occupied the greater part of what is now the department of Maine-et-Loire, further embracing, to the north, Craon, Bazouges (Château-Gontier), Le Lude, and to the east, Château-la-Vallière and Bourgueil, while to the south, on the other hand, it included neither the present town of Montreuil-Bellay, nor Vihiers, Cholet, Beaupréau, nor the whole district lying to the west of the Ironne and Thouet, on the left bank of the Loire, which formed the territory of the Mauges. It was bounded on the north by the countship of Maine, on the east by that of Touraine, on the south by that of Poitiers and by the Mauges, on the west by the countship of Nantes.

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From the outset of the reign of Charles the Bald, the integrity of Anjou was seriously menaced by a two-fold danger: from Brittany and from Normandy. Lambert, a former count of Nantes, after devastating Anjou in concert with Nominoé, duke of Brittany, had by the end of the year 851 succeeded in occupying all the western part as far as the Mayenne. The principality, which he thus carved out for himself, was occupied, on his death, by Erispoé, duke of Brittany; by him it was handed down to his successors, in whose hands it remained till the beginning of the 10th century. All this time the Normans had not ceased ravaging the country; a brave man was needed to defend it, and finally towards 861, Charles the Bald entrusted it to Robert the Strong (*q.v.*), but he unfortunately met with his death in 866 in a battle against the Normans at Brissarthe. Hugh the Abbot succeeded him in the countship of Anjou as in most of his other duties, and on his death (886) it passed to Odo (*q.v.*), the eldest son of Robert the Strong, who, on his accession to the throne of France (888), probably handed it over to his brother Robert. In any case, during the last years of the 9th century, in Anjou as elsewhere the power was delegated to a viscount, Fulk the Red (mentioned under this title after 898), son of a certain Ingelgerius.

In the second quarter of the 10th century Fulk the Red had already usurped the title of

count, which his descendants kept for three centuries. He was succeeded first by his son Fulk II. the Good (941 or 942-*c.* 960), and then by the son of the latter, Geoffrey I. *Grisegonelle* (Greytunic) (*c.* 960-21st of July 987), who inaugurated a policy of expansion, having as its objects the extension of the boundaries of the ancient countship and the reconquest of those parts of it which had been annexed by the neighbouring states; for, though western Anjou had been recovered from the dukes of Brittany since the beginning of the 10th century, in the east all the district of Saumur had already by that time fallen into the hands of the counts of Blois and Tours. Geoffrey Greytunic succeeded in making the count of Nantes his vassal, and in obtaining from the duke of Aquitaine the concession in fief of the district of Loudun. Moreover, in the wars of king Lothaire against the Normans and against the emperor Otto II. he distinguished himself by feats of arms which the epic poets were quick to celebrate. His son Fulk III. Nerra (*q.v.*) (21st of July 987-21st of June 1040) found himself confronted on his accession with a coalition of Odo I., count of Blois, and Conan I., count of Rennes. The latter having seized upon Nantes, of which the counts of Anjou held themselves to be suzerains, Fulk Nerra came and laid siege to it, routing Conan's army at Conquereuil (27th of June 992) and re-establishing Nantes under his own suzerainty. Then turning his attention to the count of Blois, he proceeded to establish a fortress at Langeais, a few miles from Tours, from which, thanks to the intervention of the king Hugh Capet, Odo failed to oust him. On the death of Odo I., Fulk seized Tours (996); but King Robert the Pious turned against him and took the town again (997). In 1016 a fresh struggle arose between Fulk and Odo II., the new count of Blois. Odo II. was utterly defeated at Pontlevoy (6th of July 1016), and a few years later, while Odo was besieging Montboyau, Fulk surprised and took Saumur (1026). Finally, the victory gained by Geoffrey Martel (*q.v.*) (21st of June 1040-14th of November 1060), the son and successor of Fulk, over Theobald III., count of Blois, at Nouy (21st of August 1044), assured to the Angevins the possession of the countship of Touraine. At the same time, continuing in this quarter also the work of his father (who in 1025 took prisoner Herbert Wake-Dog and only set him free on condition of his doing him homage), Geoffrey succeeded in reducing the countship of Maine to complete dependence on himself. During his father's life-time he had been beaten by Gervais, bishop of Le Mans (1038), but now (1047 or 1048) succeeded in taking the latter prisoner, for which he was excommunicated by Pope Leo IX. at the council of Reims (October 1049). In spite, however, of the concerted attacks of William the Bastard (the Conqueror), duke of Normandy, and Henry I., king of France, he was able in 1051 to force Maine to recognize his authority, though failing to revenge himself on William.

On the death of Geoffrey Martel (14th of November 1060) there was a dispute as to the succession. Geoffrey Martel, having no children, had bequeathed the countship to his eldest nephew, Geoffrey III. the Bearded, son of Geoffrey, count of Gâtinais, and of Ermengarde, daughter of Fulk Nerra. But Fulk le Réchin (the Cross-looking), brother of Geoffrey the Bearded, who had at first been contented with an appanage consisting of Saintonge and the *châtellenie* of Vihiers, having allowed Saintonge to be taken in 1062 by the duke of Aquitaine, took advantage of the general discontent aroused in the countship by the unskilful policy of Geoffrey to make himself master of Saumur (25th of February 1067) and Angers (4th of April), and cast Geoffrey into prison at Sablé. Compelled by the papal authority to release him after a short interval and to restore the countship to him, he soon renewed the struggle, beat Geoffrey near Brissac and shut him up in the castle of Chinon (1068). In order, however, to obtain his recognition as count, Fulk IV. Réchin (1068-14th of April 1109) had to carry on a long struggle with his barons, to cede Gâtinais to King Philip I., and to do homage to the count of Blois for Touraine. On the other hand, he was successful on the whole in pursuing the policy of Geoffrey Martel in Maine: after destroying La Flèche, by the peace of Blanchelande (1081), he received the homage of Robert "Courteheuse" ("Curthose"), son of William the Conqueror, for Maine. Later, he upheld Elias, lord of La Flèche, against William Rufus, king of England, and on the recognition of Elias as count of Maine in 1100, obtained for Fulk the Young, his son by Bertrade de Montfort, the hand of Eremburge, Elias's daughter and sole heiress.

Fulk V. the Young (14th of April 1109-1129) succeeded to the countship of Maine on the death of Elias (11th of July 1110); but this increase of Angevin territory came into such direct collision with the interests of Henry I., king of England, who was also duke of Normandy, that a struggle between the two powers became inevitable. In 1112 it broke out, and Fulk, being unable to prevent Henry I. from taking Alençon and making Robert, lord of Bellême, prisoner, was forced, at the treaty of Pierre Pecoulée, near Alençon (23rd of February 1113), to do homage to Henry for Maine. In revenge for this, while Louis VI. was overrunning the Vexin in 1118, he routed Henry's army at Alençon (November), and in May 1119 Henry demanded a peace, which was sealed in June by the marriage of his eldest son,

William the Aetheling, with Matilda, Fulk's daughter. William the Aetheling having perished in the wreck of the "White Ship" (25th of November 1120), Fulk, on his return from a pilgrimage to the Holy Land (1120-1121), married his second daughter Sibyl, at the instigation of Louis VI., to William Clito, son of Robert Courteheuse, and a claimant to the duchy of Normandy, giving her Maine for a dowry (1122 or 1123). Henry I. managed to have the marriage annulled, on the plea of kinship between the parties (1123 or 1124). But in 1127 a new alliance was made, and on the 22nd of May at Rouen, Henry I. betrothed his daughter Matilda, widow of the emperor Henry V., to Geoffrey the Handsome, son of Fulk, the marriage being celebrated at Le Mans on the 2nd of June 1129. Shortly after, on the invitation of Baldwin II., king of Jerusalem, Fulk departed to the Holy Land for good, married Melisinda, Baldwin's daughter and heiress, and succeeded to the throne of Jerusalem (14th of September 1131). His eldest son, Geoffrey IV. the Handsome or "Plantagenet," succeeded him as count of Anjou (1129-7th of September 1151). From the first he tried to profit by his marriage, and after the death of Henry I. (1st of December 1135), laid the foundation of the conquest of Normandy by a series of campaigns: about the end of 1135 or the beginning of 1136 he entered that country and rejoined his wife, the countess Matilda, who had received the submission of Argentan, Domfront and Exmes. Having been abruptly recalled into Anjou by a revolt of his barons, he returned to the charge in September 1136 with a strong army, including in its ranks William, duke of Aquitaine, Geoffrey, count of Vendôme, and William Talvas, count of Ponthieu, but after a few successes was wounded in the foot at the siege of Le Sap (October 1) and had to fall back. In May 1137 began a fresh campaign in which he devastated the district of Hiémois (round Exmes) and burnt Bazoches. In June 1138, with the aid of Robert of Gloucester, Geoffrey obtained the submission of Bayeux and Caen; in October he devastated the neighbourhood of Falaise; finally, in March 1141, on hearing of his wife's success in England, he again entered Normandy, when he made a triumphal procession through the country. Town after town surrendered: in 1141, Verneuil, Nonancourt, Lisieux, Falaise; in 1142, Mortain, Saint-Hilaire, Pontorson; in 1143, Avranches, Saint-Lô, Cérences, Coutances, Cherbourg; in the beginning of 1144 he entered Rouen, and on the 19th of January received the ducal crown in its cathedral. Finally, in 1149, after crushing a last attempt at revolt, he handed over the duchy to his son Henry "Curtmantel," who received the investiture at the hands of the king of France.

All the while that Fulk the Young and Geoffrey the Handsome were carrying on the work of extending the countship of Anjou, they did not neglect to strengthen their authority at home, to which the unruliness of the barons was a menace. As regards Fulk the Young we know only a few isolated facts and dates: about 1109 Doué and L'Île Bouchard were taken; in 1112 Brissac was besieged, and about the same time Eschivard of Preuilly subdued; in 1114 there was a general war against the barons who were in revolt, and in 1118 a fresh rising, which was put down after the siege of Montbazon: in 1123 the lord of Doué revolted, and in 1124 Montreuil-Bellay was taken after a siege of nine weeks. Geoffrey the Handsome, with his indefatigable energy, was eminently fitted to suppress the coalitions of his vassals, the most formidable of which was formed in 1129. Among those who revolted were Guy of Laval, Giraud of Montreuil-Bellay, the viscount of Thouars, the lords of Mirebeau, Amboise, Partbenay and Sablé. Geoffrey succeeded in beating them one after another, razed the keep of Thouars and occupied Mirebeau. Another rising was crushed in 1134 by the destruction of Cand and the taking of L'Île Bouchard. In 1136, while the count was in Normandy, Robert of Sable put himself at the head of the movement, to which Geoffrey responded by destroying Briollay and occupying La Suze, and Robert of Sable himself was forced to beg humbly for pardon through the intercession of the bishop of Angers. In 1139 Geoffrey took Mirebeau, and in 1142 Champtoceaux, but in 1145 a new revolt broke out, this time under the leadership of Elias, the count's own brother, who, again with the assistance of Robert of Sable, laid claim to the countship of Maine. Geoffrey took Elias prisoner, forced Robert of Sable to beat a retreat, and reduced the other barons to reason. In 1147 he destroyed Doue and Blaison. Finally in 1150 he was checked by the revolt of Giraud, lord of Montreuil-Bellay: for a year he besieged the place till it had to surrender: he then took Giraud prisoner and only released him on the mediation of the king of France.

Thus, on the death of Geoffrey the Handsome (7th of September 1151), his son Henry found himself heir to a great empire, strong and consolidated, to which his marriage with Eleanor of Aquitaine (May 1152) further added Aquitaine.

At length on the death of King Stephen, Henry was recognised as king of England (19th of December 1154). But then his brother Geoffrey, who had received as appanage the three fortresses of Chinon, Loudun and Mirebeau, tried to seize upon Anjou, on the pretext that, by the will of their father, Geoffrey the Handsome, all the paternal inheritance ought to descend to him, if Henry succeeded in obtaining possession of the maternal inheritance. On

hearing of this, Henry, although he had sworn to observe this will, had himself released from his oath by the pope, and hurriedly marched against his brother, from whom in the beginning of 1156 he succeeded in taking Chinon and Mirebeau; and in July he forced Geoffrey to give up even his three fortresses in return for an annual pension. Henceforward Henry succeeded in keeping the countship of Anjou all his life; for though he granted it in 1168 to his son Henry "of the Short Mantle," when the latter became old enough to govern it, he absolutely refused to allow him to enjoy his power. After Henry II.'s death in 1189 the countship, together with the rest of his dominions, passed to his son Richard I. of England, but on the death of the latter in 1199, Arthur of Brittany (born in 1187) laid claim to the inheritance, which ought, according to him, to have fallen to his father Geoffrey, fourth son of Henry II., in accordance with the custom by which "the son of the eldest brother should succeed to his father's patrimony." He therefore set himself up in rivalry with John Lackland, youngest son of Henry II., and supported by Philip Augustus of France, and aided by William des Roches, seneschal of Anjou, he managed to enter Angers (18th of April 1199) and there have himself recognized as count of the three countships of Anjou, Maine and Touraine, for which he did homage to the king of France. King John soon regained the upper hand, for Philip Augustus having deserted Arthur by the treaty of Le Goulet (22nd of May 1200), John made his way into Anjou; and on the 18th of June 1200 was recognized as count at Angers. In 1202 he refused to do homage to Philip Augustus, who, in consequence, confiscated all his continental possessions, including Anjou, which was allotted by the king of France to Arthur. The defeat of the latter, who was taken prisoner at Mirebeau on the ist of August 1202, seemed to ensure John's success, but he was abandoned by William des Roches, who in 1203 assisted Philip Augustus in subduing the whole of Anjou. A last effort on the part of John to possess himself of it, in 1214, led to the taking of Angers (17th of June), but broke down lamentably at the battle of La Roche-aux-Moines (2nd of July), and the countship was attached to the crown of France.

Shortly afterwards it was separated from it again, when in August 1246 King Louis IX. gave it as an appanage to his son Charles, count of Provence, soon to become king of Naples and Sicily (see Naples). Charles I. of Anjou, engrossed with his other dominions, gave little thought to Anjou, nor did his son Charles II. the Lame, who succeeded him on the 7th of January 1285. On the 16th of August 1290, the latter married his daughter Margaret to Charles of Valois, son of Philip III. the Bold, giving her Anjou and Maine for dowry, in exchange for the kingdoms of Aragon and Valentia and the countship of Barcelona given up by Charles. Charles of Valois at once entered into possession of the countship of Anjou, to which Philip IV. the Fair, in September 1297, attached a peerage of France. On the 16th of December 1325, Charles died, leaving Anjou to his eldest son Philip of Valois, on whose recognition as king of France (Philip VI.) on the 1st of April 1328, the countship of Anjou was again united to the crown. On the 17th of February 1332, Philip VI. bestowed it on his son John the Good, who, when he became king in turn (22nd of August 1350), gave the countship to his second son Louis I., raising it to a duchy in the peerage of France by letters patent of the 25th of October 1360. Louis I., who became in time count of Provence and king of Naples (see Louis I., king of Naples,) died in 1384, and was succeeded by his son Louis II., who devoted most of his energies to his kingdom of Naples, and left the administration of Anjou almost entirely in the hands of his wife, Yolande of Aragon. On his death (29th of April 1417) she took upon herself the guardianship of their young son Louis III., and in her capacity of regent defended the duchy against the English. Louis III., who also succeeded his father as king of Naples, died on the 15th of November 1434, leaving no children. The duchy of Anjou then passed to his cousin René, second son of Louis II. and Yolande of Aragon, and king of Naples and Sicily (see Naples).

Unlike his predecessors, who had rarely stayed long in Anjou, René from 1443 onwards paid long visits to it, and his court at Angers became one of the most brilliant in the kingdom of France. But after the sudden death of his son John in December 1470, Rene, for reasons which are not altogether clear, decided to move his residence to Provence and leave Anjou for good. After making an inventory of all his possessions, he left the duchy in October 1471, taking with him the most valuable of his treasures. On the 22nd of July 1474 he drew up a will by which he divided the succession between his grandson René II. of Lorraine and his nephew Charles II., count of Maine. On hearing this, King Louis XI., who was the son of one of King René's sisters, seeing that his expectations were thus completely frustrated, seized the duchy of Anjou. He did not keep it very long, but became reconciled to René in 1476 and restored it to him, on condition, probably, that René should bequeath it to him. However that may be, on the death of the latter (10th of July 1480) he again added Anjou to the royal domain.

Later, King Francis I. again gave the duchy as an appanage to his mother, Louise of Savoy,

by letters patent of the 4th of February 1515. On her death, in September 1531, the duchy returned into the king's possession. In 1552 it was given as an appanage by Henry II. to his son Henry of Valois, who, on becoming king in 1574, with the title of Henry III., conceded it to his brother Francis, duke of Alençon, at the treaty of Beaulieu near Loches (6th of May 1576). Francis died on the 10th of June 1584, and the vacant appanage definitively became part of the royal domain.

At first Anjou was included in the *gouvernement* (or military command) of Orléanais, but in the 17th century was made into a separate one. Saumur, however, and the Saumurois, for which King Henry IV. had in 1589 created an independent military governor-generalship in favour of Duplessis-Mornay, continued till the Revolution to form a separate *gouvernement*, which included, besides Anjou, portions of Poitou and Mirebalais. Attached to the *généralité* (administrative circumscription) of Tours, Anjou on the eve of the Revolution comprised five *êlections* (judicial districts):—Angers, Beaugé, Saumur, Château-Gontier, Montreuil-Bellay and part of the *êlections* of La Flèche and Richelieu. Financially it formed part of the so-called *pays de grande gabelle* (see GABELLE), and comprised sixteen special tribunals, or *greniers à sel* (salt warehouses):—Angers, Beaugé, Beaufort, Bourgueil, Candé, Château-Gontier, Cholet, Craon, La Flèche, Saint-Florent-le-Vieil, Ingrandes, Le Lude, Pouancé, Saint-Remy-la-Varenne, Richelieu, Saumur. From the point of view of purely judicial administration, Anjou was subject to the parlement of Paris; Angers was the seat of a presidial court, of which the jurisdiction comprised the *sénéchaussées* of Angers, Saumur, Beaugé, Beaufort and the duchy of Richelieu; there were besides presidial courts at Château-Gontier and La Flèche. When the Constituent Assembly, on the 26th of February 1790, decreed the division of France into departments, Anjou and the Saumurois, with the exception of certain territories, formed the department of Maine-et-Loire, as at present constituted.

AUTHORITIES.—(1) *Principal Sources*: The history of Anjou may be told partly with the aid of the chroniclers of the neighbouring provinces, especially those of Normandy (William of Poitiers, William of Jumièges, Ordericus Vitalis) and of Maine (especially *Actus pontificum Cenomannis in urbe degentium*). For the 10th, 11th and 12th centuries especially, there are some important texts dealing entirely with Anjou. The most important is the chronicle called *Gesta consulum Andegavorum*, of which only a poor edition exists (*Chroniques des comtes d'Anjou*, published by Marchegay and Salmon, with an introduction by E. Mabille, Paris, 1856-1871, collection of the *Société de l'histoire de France*). See also with reference to this text Louis Halphen, *Étude sur les chroniques des comtes d'Anjou et des seigneurs d'Amboise* (Paris, 1906). The above may be supplemented by some valuable annals published by Louis Halphen, *Recueil d'annales angevines et vendómoises* (Paris, 1903), (in the series *Collection de textes pour servir à l'étude et à l'enseignement de l'histoire*). For further details see Auguste Molinier, *Les Sources de l'histoire de France* (Paris, 1902), ii. 1276-1310, and the book of Louis Halphen mentioned below.

(2) *Works*: The *Art de vérifier les dates* contains a history of Anjou which is very much out of date, but has not been treated elsewhere as a whole. The 11th century only has been treated in detail by Louis Halphen, in *Le Comté d'Anjou au XI^e siècle* (Paris, 1906), which has a preface with bibliography and an introduction dealing with the history of Anjou in the 10th century. For the 10th, 11th and 12th centuries, a good summary will be found in Kate Norgate, *England under the Angevin Kings* (2 vols., London, 1887). On René of Anjou, there is a book by A. Lecoy de la Marche, *Le Roi René* (2 vols., Paris, 1875). Lastly, the work of Célestin Port, *Dictionnaire historique, géographique et biographique de Maine-et-Loire* (3 vols., Paris and Angers, 1874-1878), and its small volume of *Préliminaires* (including a summary of the history of Anjou), contain, in addition to the biographies of the chief counts of Anjou, a mass of information concerning everything connected with Angevin history.

(L. H.*)

ANKERITE, a member of the mineral group of rhombohedral carbonates. In composition it is closely related to dolomite, but differs from this in having magnesia replaced by varying amounts of ferrous and manganous oxides, the general formula being $Ca(Mg, Fe, Mn)(CO_3)_2$. Normal ankerite is $Ca_2MgFe(CO_3)_4$. The crystallographic and physical characters resemble those of dolomite and chalybite. The angle between the perfect rhombohedral cleavages is 73° 48′, the hardness 3½ to 4, and the specific gravity 2.9 to 3.1; but these will vary slightly with the chemical composition. The colour is white, grey or reddish.

Ankerite occurs with chalybite in deposits of iron-ore. It is one of the minerals of the dolomite-chalybite series, to which the terms brown-spar, pearl-spar and bitter-spar are loosely applied. It was first recognized as a distinct species by W. von Haidinger in 1825, and named by him after M.J. Anker of Styria.

(L. J. S.)

ANKLAM, or Anclam, a town of Germany in the Prussian province of Pomerania, on the Peene, 5 m. from its mouth in the Kleines Haff, and 53 m. N.W. of Stettin, by the railway to Stralsund. Pop. (1900) 14,602. The fortifications of Anklam were dismantled in 1762 and have not since been restored, although the old walls are still standing; formerly, however, it was a town of considerable military importance, which suffered severely during the Thirty Years' and the Seven Years' Wars; and this fact, together with the repeated ravages of fire and of the plague, has made its history more eventful than is usually the case with towns of the same size. It does not possess any remarkable buildings, although it contains several, private as well as public, that are of a quaint and picturesque style of architecture. The church of St Mary (12th century) has a modern tower, 335 ft. high. The industries consist of iron-foundries and factories for sugar and soap; and there is a military school. The Peene is navigable up to the town, which has a considerable trade in its own manufactures, as well as in the produce of the surrounding country, while some shipbuilding is carried on in wharves on the river.

Anklam, formerly Tanglim, was originally a Slav fortress; it obtained civic rights in 1244 and joined the Hanseatic league. In 1648 it passed to Sweden, but in 1676 was retaken by Frederick William I. of Brandenburg, and after being plundered by the Russians in 1713 was ceded to Prussia by the peace of Stockholm in 1720.

ANKLE, or Ancle (a word common, in various forms, to Teutonic languages, probably connected in origin with the Lat. *angulus*, or Gr. ἀγκύλος, bent), the joint which connects the foot with the leg (see Joints).

ANKOBER, a town in, and at one time capital of, the kingdom of Shoa, Abyssinia, 90 m. N.E. of Adis Ababa, in 9° 34′ N., 39° 54′ E., on a mountain about 8500 ft. above the sea. Ankober was made (*c.* 1890) by Menelek II. the place of detention of political prisoners. Pop. about 2000.

ANKYLOSIS, or Anchylosis (from Gr. ἀγκύλος, bent, crooked), a stiffness of a joint, the result of injury or disease. The rigidity may be complete or partial and may be due to inflammation of the tendinous or muscular structures outside the joint or of the tissues of the joint itself. When the structures outside the joint are affected, the term "false" ankylosis has been used in contradistinction to "true" ankylosis, in which the disease is within the joint. When inflammation has caused the joint-ends of the bones to be fused together the ankylosis is termed *osseous* or complete. Excision of a completely ankylosed shoulder or elbow may restore free mobility and usefulness to the limb. "Ankylosis" is also used as an anatomical term, bones being said to ankylose (or anchylose) when, from being originally distinct, they coalesce, or become so joined together that no motion can take place between

them.

ANKYLOSTOMIASIS, or ANCHYLOSTOMIASIS (also called helminthiasis, “miners’ anaemia,” and in Germany *Wurmkrankheit*), a disease to which in recent years much attention has been paid, from its prevalence in the mining industry in England, France, Germany, Belgium, North Queensland and elsewhere. This disease (apparently known in Egypt even in very ancient times) caused a great mortality among the negroes in the West Indies towards the end of the 18th century; and through descriptions sent from Brazil and various other tropical and sub-tropical regions, it was subsequently identified, chiefly through the labours of Bilharz and Griesinger in Egypt (1854), as being due to the presence in the intestine of nematoid worms (*Ankylostoma duodenalis*) from one-third to half an inch long. The symptoms, as first observed among the negroes, were pain in the stomach, capricious appetite, pica (or dirt-eating), obstinate constipation followed by diarrhoea, palpitations, small and unsteady pulse, coldness of the skin, pallor of the skin and mucous membranes, diminution of the secretions, loss of strength and, in cases running a fatal course, dysentery, haemorrhages and dropsies. The parasites, which cling to the intestinal mucous membrane, draw their nourishment from the blood-vessels of their host, and as they are found in hundreds in the body after death, the disorders of digestion, the increasing anaemia and the consequent dropsies and other cachectic symptoms are easily explained. The disease was first known in Europe among the Italian workmen employed on the St Gotthard tunnel. In 1896, though previously unreported in Germany, 107 cases were registered there, and the number rose to 295 in 1900, and 1030 in 1901. In England an outbreak at the Dolcoath mine, Cornwall, in 1902, led to an investigation for the home office by Dr Haldane F.R.S. (see especially the Parliamentary Paper, numbered Cd. 1843), and since then discussions and inquiries have been frequent. A committee of the British Association in 1904 issued a valuable report on the subject. After the Spanish-American War American physicians had also given it their attention, with valuable results; see Stiles (*Hygienic Laboratory Bulletin*, No. 10, Washington, 1903). The American parasite described by Stiles, and called *Uncinaria americana* (whence the name Uncinariasis for this disease) differs slightly from the Ankylostoma. The parasites thrive in an environment of dirt, and the main lines of precaution are those dictated by sanitary science. Malefern, santonine, thymol and other anthelmintic remedies are prescribed.

ANNA, BALDASARRE, a painter who flourished during part of the 16th and 17th centuries. He was born at Venice, probably about 1560, and is said to have been of Flemish descent. The date of his death is uncertain, but he seems to have been alive in 1639. For a number of years he studied under Leonardo Corona, and on the death of that painter completed several works left unfinished by him. His own activity seems to have been confined to the production of pieces for several of the churches and a few private houses in Venice, and the old guide-books and descriptions of the city notice a considerable number of paintings by him. Scarcely any of these, however, have survived.

ANNA (Hindustani *ana*), an Indian penny, the sixteenth part of a rupee. The term belongs to the Mahommedan monetary system (see RUPEE). There is no coin of one anna, but there are half-annas of copper and two-anna pieces of silver. The term anna is frequently used to express a fraction. Thus an Anglo-Indian speaks of two annas of dark blood (an octoroon), a four-anna (quarter) crop, an eight-anna (half) gallop.

ANNA AMALIA (1739-1807), duchess of Saxe-Weimar, daughter of Charles I., duke of Brunswick-Wolfenbüttel, was born at Wolfenbüttel on the 24th of October 1739, and married Ernest, duke of Saxe-Weimar, 1756. Her husband died in 1758, leaving her regent for their infant son, Charles Augustus. During the protracted minority she administered the affairs of the duchy with the greatest prudence, strengthening its resources and improving its position in spite of the troubles of the Seven Years' War. She was a patroness of art and literature, and attracted to Weimar many of the most eminent men in Germany. Wieland was appointed tutor to her son; and the names of Herder, Goethe and Schiller shed an undying lustre on her court. In 1775 she retired into private life, her son having attained his majority. In 1788 she set out on a lengthened tour through Italy, accompanied by Goethe. She died on the 10th of April 1807. A memorial of the duchess is included in Goethe's works under the title *Zum Andenken der Furstin Anna-Amalia.*

See F. Bornhak, *Anna Amalia Herzogin von Saxe-Weimar-Eisenach* (Berlin. 1892).

ANNABERG, a town of Germany, in the kingdom of Saxony, in the Erzgebirge, 1894 ft. above the sea, 6 m. from the Bohemian frontier, 18½ m. S. by E. from Chemnitz by rail. Pop. (1905) 16,811. It has three Evangelical churches, among them that of St Anne, built 1499-1525, a Roman Catholic church, several public monuments, among them those of Luther, of the famous arithmetician Adam Riese, and of Barbara Uttmann. Annaberg, together with the neighbouring suburb, Buchholz, is the chief seat of the braid and lace-making industry in Germany, introduced here by Barbara Uttmann in 1561, and further developed by Belgian refugees, who, driven from their country by the duke of Alva, settled here in 1590. The mining industry, for which the town was formerly also famous and which embraced tin, silver and cobalt, has now ceased. Annaberg has technical schools for lace-making, commerce and agriculture, in addition to high grade public schools for boys and girls.

ANNABERGITE, a mineral consisting of a hydrous nickel arsenate, $Ni_3(AsO_4)_2 + 8H_2O$, crystallizing in the monoclinic system and isomorphous with vivianite and erythrite. Crystals are minute and capillary and rarely met with, the mineral occurring usually as soft earthy masses and encrustations. A fine apple-green colour is its characteristic feature. It was long known (since 1758) under the name nickel-ochre; the name annabergite was proposed by H.J. Brooke and W.H. Miller in 1852, from Annaberg in Saxony, one of the localities of the mineral. It occurs with ores of nickel, of which it is a product of alteration. A variety, from Creetown in Kirkcudbrightshire, in which a portion of the nickel is replaced by calcium, has been called dudgeonite, after P. Dudgeon, who found it.

(L. J. S.)

ANNA COMNENA, daughter of the emperor Alexius I. Comnenus, the first woman historian, was born on the 1st of December 1083. She was her father's favourite and was carefully trained in the study of poetry, science and Greek philosophy. But, though learned and studious, she was intriguing and ambitious, and ready to go to any lengths to gratify her longing for power. Having married an accomplished young nobleman, Nicephorus Bryennius, she united with the empress Irene in a vain attempt to prevail upon her father during his last illness to disinherit his son and give the crown to her husband. Still undeterred, she entered into a conspiracy to depose her brother after his accession; and when her husband refused to join in the enterprise, she exclaimed that "nature had mistaken their sexes, for he ought to have been the woman." The plot being discovered, Anna forfeited her property and fortune, though, by the clemency of her brother, she escaped with her life. Shortly afterwards, she retired into a convent and employed her leisure in writing the

Alexiad—a history, in Greek, of her father's life and reign (1081-1118), supplementing the historical work of her husband. It is rather a family panegyric than a scientific history, in which the affection of the daughter and the vanity of the author stand out prominently. Trifling acts of her father are described at length in exaggerated terms, while little notice is taken of important constitutional matters. A determined opponent of the Latin church and an enthusiastic admirer of the Byzantine empire, Anna Comnena regards the Crusades as a danger both political and religious. Her models are Thucydides, Polybius and Xenophon, and her style exhibits the striving after Atticism characteristic of the period, with the result that the language is highly artificial. Her chronology especially is defective.

Editions in Bonn *Corpus Scriptorum Hist. Byz.*, by J. Schopen and A. Reifferscheid (1839-1878), with Du Cange's valuable commentary; and Teubner series, by A. Reifferscheid (1884). See also C. Krumbacher, *Geschichte der byzantinischen Literatur* (2nd ed. 1897); C. Neumann, *Griechische Geschichtschreiber im 12 Jahrhunderte* (1888); E. Oster, *Anna Komnena* (Rastatt, 1868-1871); Gibbon, *Decline and Fall*, ch. 48; Finlay, *Hist, of Greece*, iii. pp. 53, 128 (1877); P. Adam, *Princesses byzantines* (1893); Sir Walter Scott, *Count Robert of Paris*; L. du Sommerard, *Anne Comnène ... Agnès de France* (1907); C. Diehl, *Figures byzantines* (1906).

ANNA LEOPOLDOVNA, sometimes called Anna Carlovna (1718-1746), regent of Russia for a few months during the minority of her son Ivan, was the daughter of Catherine, sister of the empress Anne, and Charles Leopold, duke of Mecklenburg-Schwerin. In 1739 she married Anton Ulrich (d. 1775), son of Ferdinand Albert, duke of Brunswick, and their son Ivan was adopted in 1740 by the empress and proclaimed heir to the Russian throne. A few days after this proclamation the empress died, leaving directions regarding the succession, and appointing her favourite Ernest Biren, duke of Courland, as regent. Biren, however, had made himself an object of detestation to the Russian people, and Anna had little difficulty in overthrowing his power. She then assumed the regency, and took the title of grand-duchess, but she knew little of the character of the people with whom she had to deal, was utterly ignorant of the approved Russian mode of government, and speedily quarrelled with her principal supporters. In December 1741, Elizabeth, daughter of Peter the Great, who, from her habits, was a favourite with the soldiers, excited the guards to revolt, overcame the slight opposition that was offered, and was proclaimed empress. Ivan was thrown into prison, where he soon afterwards perished. Anna and her husband were banished to a small island in the river Dvina, where on the 18th of March 1746 she died in childbed.

ANNALISTS (from Lat. *annus*, year; hence *annales*, sc. *libri*, annual records), the name given to a class of writers on Roman history, the period of whose literary activity lasted from the time of the Second Punic War to that of Sulla. They wrote the history of Rome from the earliest times (in most cases) down to their own days, the events of which were treated in much greater detail. For the earlier period their authorities were state and family records—above all, the *annales maximi* (or *annales pontificum*), the official chronicle of Rome, in which the notable occurrences of each year from the foundation of the city were set down by the pontifex maximus. Although these annals were no doubt destroyed at the time of the burning of Rome by the Gauls, they were restored as far as possible and continued until the pontificate of P. Mucius Scaevola, by whom they were finally published in eighty books. Two generations of these annalists have been distinguished—an older and a younger. The older, which extends to 150 B.C., set forth, in bald, unattractive language, without any pretensions to style, but with a certain amount of trustworthiness, the most important events of each successive year. Cicero (*De Oratore*, ii. 12. 53), comparing these writers with the old Ionic logographers, says that they paid no attention to ornament, and considered the only merits of a writer to be intelligibility and conciseness. Their annals were a mere compilation of facts. The younger generation, in view of the requirements and criticism of a reading public, cultivated the art of composition and rhetorical embellishment. As a general rule the annalists wrote in a spirit of uncritical patriotism, which led them to minimize or gloss over

such disasters as the conquest of Rome by Porsena and the compulsory payment of ransom to the Gauls, and to flatter the people by exaggerated accounts of Roman prowess, dressed up in fanciful language. At first they wrote in Greek, partly because a national style was not yet formed, and partly because Greek was the fashionable language amongst the educated, although Latin versions were probably published as well. The first of the annalists, the father of Roman history, as he has been called, was Q. Fabius Pictor (see Fabius Pictor); contemporary with him was L. Cincius Alimentus, who flourished during the Hannibalic war.[1] Like Fabius Pictor, he wrote in Greek. He was taken prisoner by Hannibal (Livy xxi. 38), who is said to have given him details of the crossing of the Alps. His work embraced the history of Rome from its foundation down to his own days. With M. Porcius Cato (*q.v.*) historical composition in Latin began, and a livelier interest was awakened in the history of Rome. Among the principal writers of this class who succeeded Cato, the following may be mentioned. L. Cassius Hemina (about 146), in the fourth book of his Annals, wrote on the Second Punic War. His researches went back to very early times; Pliny (*Nat. Hist*. xiii. 13 [27]) calls him *vetustissimus auctor annalium*. L. Calpufnius Piso, surnamed *Frugi* (see under Piso), wrote seven books of annals, relating the history of the city from its foundation down to his own times. Livy regards him as a less trustworthy authority than Fabius Pictor, and Niebuhr considers him the first to introduce systematic forgeries into Roman history. Q. Claudius Quadrigarius (about 80 B.C.) wrote a history, in at least twenty-three books, which began with the conquest of Rome by the Gauls and went down to the death of Sulla or perhaps later. He was freely used by Livy in part of his work (from the sixth book onwards). A long fragment is preserved in Aulus Gellius (ix. 13), giving an account of the single combat between Manlius Torquatus and the Gaul. His language was antiquated and his style dry, but his work was considered important. Valerius Antias, a younger contemporary of Quadrigarius, wrote the history of Rome from the earliest times, in a voluminous work consisting of seventy-five books. He is notorious for his wilful exaggeration, both in narrative and numerical statements. For instance, he asserts the number of the Sabine virgins to have been exactly 527; again, in a certain year when no Greek or Latin writers mention any important campaign, Antias speaks of a big battle with enormous casualties. Nevertheless, Livy at first made use of him as one of his chief authorities, until he became convinced of his untrustworthiness. C. Licinius Macer (died 66), who has been called the last of the annalists, wrote a voluminous work, which, although he paid great attention to the study of his authorities, was too rhetorical, and exaggerated the achievements of his own family. Having been convicted of extortion, he committed suicide (Cicero, *De Legibus*, i. 2, *Brutus*, 67; Plutarch, *Cicero*, 9).

The writers mentioned dealt with Roman history as a whole; some of the annalists, however, confined themselves to shorter periods. Thus, L. Caelius Antipater (about 120) limited himself to the Second Punic War. His work was overloaded with rhetorical embellishment, which he was the first to introduce into Roman history. He was regarded as the most careful writer on the war with Hannibal, and one who did not allow himself to be blinded by partiality in considering the evidence of other writers (Cicero, *De Oratore*, ii. 12). Livy made great use of him in his third decade. Sempronius Asellio (about 100 B.C.), military tribune of Scipio Africanus at the siege of Numantia, composed *Rerum Gestanim Libri* in at least fourteen books. As he himself took part in the events he describes, his work was a kind of memoirs. He was the first of his class who endeavoured to trace the causes of events, instead of contenting himself with a bare statement of facts. L. Cornelius Sisenna (119-67), legate of Pompey in the war against the pirates, lost his life in an expedition against Crete. He wrote twenty-three books on the period between the Social War and the dictatorship of Sulla. His work was commended by Sallust (*Jugurtha*, 95), who, however, blames him for not speaking out sufficiently. Cicero remarks upon his fondness for archaisms (*Brutus*, 74. 259). Sisenna also translated the tales of Aristides of Miletus, and is supposed by some to have written a ccmmentary on Plautus. The autobiography of Sulla may also be mentioned.

See C.W. Nitzsch, *Die römische Annalistik* (1873); H. Peter, *Zur Kritik der Quellen der dlteren romischen Geschichte* (1879); L.O. Brocker, *Moderne Quellenforscher und antike Geschichtschreiber* (1882); fragments in H. Peter, *Historicorum Romanorum Reliquiae* (1870, 1906), and *Historicorum Romanorum Fragmenta* (1883); also articles Rome, *History* (ancient) *ad fin.*, section “Authorities,’” and Livy, where the use made of the annalists by the historian is discussed; Pauly-Wissowa, *Realencydopädie*, art. “Annales”; the histories of Roman Literature by M. Schanz and Teuffel-Schwabe; Mommsen, *Hist. of Rome* (Eng. tr.), bk. ii. ch. 9, bk. iii. ch. 14, bk. iv. ch. 13, bk. v. ch. 12; C. Wachsmuth, *Einleitung in das Studium der alien Geschichte* (1895); H. Peter, bibliography of the subject in Bursian’s *Jahresbericht*, cxxvi. (1906).

(J. H. F.)

1 He is not to be confused with L. Cincius, the author of various political and antiquarian treatises (*de Fastis, de Comitiis, de Priscis Verbis*), who lived in the Augustan age, to which period Mommsen, considering them a later fabrication, refers the Greek annals of L. Cincius Alimentus.

ANNALS (*Annales*, from *annus*, a year), a concise historical record in which events are arranged chronologically, year by year. The chief sources of information in regard to the annals of ancient Rome are two passages in Cicero (*De Oratore*, ii. 12. 52) and in Servius (*ad Aen*. i. 373) which have been the subject of much discussion. Cicero states that from the earliest period down to the pontificate of Publius Mucius Scaevola (*c.* 131 B.C.), it was usual for the pontifex maximus to record on a white tablet (*album*), which was exhibited in an open place at his house, so that the people might read it, first, the name of the consuls and other magistrates, and then the noteworthy events that had occurred during the year (*per singulos dies*, as Servius says). These records were called in Cicero's time the *Annales Maximi*. After the pontificate of Publius, the practice of compiling annals was carried on by various unofficial writers, of whom Cicero names Cato, Pictor and Piso. The *Annales* have been generally regarded as the same with the *Commentarii Pontificum* cited by Livy, but there seems reason to believe that the two were distinct, the *Commentarii* being fuller and more circumstantial. The nature of the distinction between annals and history is a subject that has received more attention from critics than its intrinsic importance deserves. The basis of discussion is furnished chiefly by the above-quoted passage from Cicero, and by the common division of the work of Tacitus into *Annales* and *Hlstoriae*. Aulus Gellius, in the *Nodes Alticae* (v. 18), quotes the grammarian Verrius Flaccus, to the effect that history, according to its etymology (ἱστορεῖν, *inspicere*, to inquire in person), is a record of events that have come under the author's own observation, while annals are a record of the events of earlier times arranged according to years. This view of the distinction seems to be borne out by the division of the work of Tacitus into the *Historiae*, relating the events of his own time, and the *Annales*, containing the history of earlier periods. It is more than questionable, however, whether Tacitus himself divided his work under these titles. The probability is, either that he called the whole *Annales*, or that he used neither designation. (See TACITUS, CORNELIUS.)

In the middle ages, when the order of the liturgical feasts was partly determined by the date of Easter, the custom was early established in the Western Church of drawing up tables to indicate that date for a certain number of years or even centuries. These Paschal tables were thin books in which each annual date was separated from the next by a more or less considerable blank space. In these spaces certain monks briefly noted the important events of the year. It was at the end of the 7th century and among the Anglo-Saxons that the compiling of these Annals was first begun. Introduced by missionaries on the continent, they were re-copied, augmented and continued, especially in the kingdom of Austrasia. In the 9th century, during the great movement termed the Carolingian Renaissance, these Annals became the usual form of contemporary history; it suffices to mention the *Annales Einhardi*, the *Annales Laureshamenses* (or "of Lorsch"), and the *Annales S. Bertini*, officially compiled in order to preserve the memory of the more interesting acts of Charlemagne, his ancestors and his successors. Arrived at this stage of development, the Annals now began to lose their primitive character, and henceforward became more and more indistinguishable from the Chronicles.

In modern literature the title annals has been given to a large number of standard works which adhere more or less strictly to the order of years. The best known are the *Annales Ecclesiastici*, written by Cardinal Baronius as a rejoinder to and refutation of the *Historia eccesiastica* or "Centuries" of the Protestant theologians of Magdeburg (12 vols., published at Rome from 1788 to 1793; Baronius's work stops at the year 1197). In the 19th century the annalistic form was once more employed, either to preserve year by year the memory of passing events (*Annual Register*, *Annuaire de la Revue des deux mondes*, &c.) or in writing the history of obscure medieval periods (*Jahrbücher der deutschen Geschichte*, *Jahrbücher des deutschen Reiches*, Richter's *Reichsannalen*, &c.).

(C. B.*)

ANNAM, or Anam, a country of south-eastern Asia, now forming a French protectorate, part of the peninsula of Indo-China. (See Indo-China, French). It is bounded N. by Tongking, E. and S.E. by the China Sea, S.W. by Cochin-China, and W. by Cambodia and Laos. It comprises a sinuous strip of territory measuring between 750 and 800 m. in length, with an approximate area of 52,000 sq. m. The population is estimated at about 6,124,000.

The country consists chiefly of a range of plateaus and wooded mountains, running north and south and declining on the coast to a narrow band of plain varying between 12 and 50 m. in breadth. The mountains are cut transversely by short narrow valleys, through which run rivers, most of which are dry in summer and torrential in winter. The Song-Ma and the Song-Ca in the north, and the Song-Ba, Don-Nai and Se-Bang-Khan in the south, are alone of any size. The chief harbour is that afforded by the bay of Tourane at the centre of the coast-line. South of this point the coast curves outwards and is broken by peninsulas and indentations; to the north it is concave and bordered in many places by dunes and lagoons.

Climate.—In Annam the rainy season begins during September and lasts for three or four months, corresponding with the north-east monsoon and also with a period of typhoons. During the rains the temperature varies from 59 degrees or even lower to 75 degrees F. June, July and August are the hottest months, the thermometer often reaching 85 degrees or 90 degrees, though the heat of the day is to some degree compensated by the freshness of the nights. The south-west monsoon which brings rain in Cochin-China coincides with the dry season in Annam, the reason probably being that the mountains and lofty plateaus separating the two countries retain the precipitation.

Ethnography.—The Annamese, or, to use the native term, the *Giao-chi*, are the predominant people not only in Annam but in the lowland and cultivated parts of Tongking and in Cochin-China and southern Cambodia. According to their own annals and traditions they once inhabited southern China, a theory which is confirmed by many of their habits and physical characteristics; the race has, however, been modified by crossings with the Chams and other of the previous inhabitants of Indo-China.

The Annamese is the worst-built and ugliest of all the Indo-Chinese who belong to the Mongolian race. He is scarcely of middle height and is shorter and less vigorous than his neighbours. His complexion is tawny, darker than that of the Chinese, but clearer than that of the Cambodian; his hair is black, coarse and long; his skin is thick; his forehead low; his skull slightly depressed at the top, but well developed at the sides. His face is flat, with highly protruding cheek-bones, and is lozenge-shaped or eurygnathous to a degree that is nowhere exceeded. His nose is not only the flattest, but also the smallest among the Indo-Chinese; his eyes are rarely oblique; his mouth is large and his lips thick; his teeth are blackened and his gums destroyed by the constant use of the betel-nut, the areca-nut and lime. His neck is short, his shoulders slope greatly, his body is thick-set and wanting in suppleness. Another peculiarity is a separation of the big toe from the rest, greater than is found in any other people, and sufficiently general and well marked to serve as an ethnographic test. The Annamese of Cochin-China are weaker and smaller than those of Tongking, probably as a result of living amid marshy rice-fields. The Annamese of both sexes wear wide trousers, a long, usually black tunic with narrow sleeves and a dark-coloured turban, or in the case of the lower classes, a wide straw hat; they either go bare-foot or wear sandals or Chinese boots. The typical Annamese dwelling is open to the gaze of the passer-by during the day; at night a sort of partition of bamboo is let down. The roof is supported on wooden pillars and walls are provided only at the sides. The house consists principally of one large room opening on the front verandah and containing the altar of the family’s ancestors, a table in the centre and couches placed against the wall. The chief elements of the native diet are rice, fish and poultry; vegetables and pork are also eaten. The family is the base of the social system in Annam and is ruled by its head, who is also priest and judge. Polygamy is permitted but rarely practised, and the wife enjoys a position of some freedom.

Though fond of ease the Annamese are more industrious than the neighbouring peoples. Theatrical and musical entertainments are popular among them. They show much outward respect for superiors and parents, but they are insincere and incapable of deep emotion. They cherish great love of their native soil and native village and cannot remain long from home. A proneness to gambling and opium-smoking, and a tinge of vanity and deceitfulness, are their less estimable traits. On the whole they are mild and easy-going and even apathetic, but the facility with which they learn is remarkable. Like their neighbours the Cambodians and the Chinese, the Annamese have a great respect for the dead, and ancestor worship constitutes the national religion. The learned hold the doctrine of Confucius, and Buddhism, alloyed with much popular superstition, has some influence. Like the Chinese the Annamese bury their dead.

Among the savage tribes of the interior there is scarcely any idea of God and their superstitious practices can scarcely be considered as the expression of a definite religious idea. Roman Catholics number about 420,000. In the midst of the Annamese live Cambodians and immigrant Chinese, the latter associated together according to the districts from which they come and carrying on nearly all the commerce of the country. In the forests and mountains dwell tribes of savages, chiefly of Indonesian origin, classed by the Annamese under the name *Moïs* or "savages." Some of these tribes show traces of Malay ancestry. Of greater historical interest are the Chams, who are to be found for the most part in southern Annam and in Cambodia, and who, judging from the numerous remains found there, appear to have been the masters of the coast region of Cochin-China and Annam till they succumbed before the pressure of the Khmers of Cambodia and the Annamese. They are taller, more muscular, and more supple than the Annamese. Their language is derived from Malay, and while some of the Chams are Mussulmans, the dominant religion is Brahmanism, and more especially the worship of Siva. Their women have a high reputation for virtue, which, combined with the general bright and honest character of the whole people, differentiates them from the surrounding nations.

Evidently derived from the Chinese, of which it appears to be a very ancient dialect, the Annamese language is composed of monosyllables, of slightly varied articulation, expressing different ideas according to the tone in which they are pronounced. It is quite impossible to connect with our musical system the utterance of the sounds of which the Chinese and Annamese languages are composed. What is understood by a "tone" in this language is distinguished in reality, not by the number of sonorous vibrations which belong to it, but rather by a use of the vocal apparatus special to each. Thus, the sense will to a native be completely changed according as the sound is the result of an aspiration or of a simple utterance of the voice. Thence the difficulty of substituting our phonetic alphabet for the ideographic characters of the Chinese, as well as for the ideophonetic writing partly borrowed by the Annamese from the letters of the celestial empire. To the Jesuit missionaries is due the introduction of an ingenious though very complicated system, which has caused remarkable progress to be made in the employment of phonetic characters. By means of six accents, one bar and a crotchet it is possible to note with sufficient precision the indications of tone without which the Annamese words have no sense for the natives.

Agriculture and other Industries.—The cultivation of rice, which is grown mainly in the small deltas along the coast and in some districts gives two crops annually, and fishing, together with fish-salting and the preparation of nuoc-mam, a sauce made from decaying fish, constitute the chief industries of Annam.

Silk spinning and weaving are carried on on antiquated lines, and silkworms are reared in a desultory fashion. Besides rice, the products of the country include tea, tobacco, cotton, cinnamon, precious woods and rubber; coffee, pepper, sugar-canes and jute are cultivated to a minor extent. The exports (total value in 1905 £237,010) comprise tea, raw silk and small quantities of cotton, rice and sugar-cane. The imports (£284,824 in 1905) include rice, iron goods, flour, wine, opium and cotton goods. There are coal-mines at Nong-Son, near Tourane, and gold, silver, lead, iron and other metals occur in the mountains. Trade, which is in the hands of the Chinese, is for the most part carried on by sea, the chief ports being Tourane and Qui-Nhon, which are open to European commerce.

Administration.—Annam is ruled in theory by its emperor, assisted by the "*comat*" or secret council, composed of the heads of the six ministerial departments of the interior, finance, war, ritual, justice and public works, who are nominated by himself. The resident superior, stationed at Hué, is the representative of France and the virtual ruler of the country. He presides over a council (*Conseil de Protectorat*) composed of the chiefs of the French services in Annam, together with two members of the "*comat*"; this body deliberates on questions of taxation affecting the budget of Annam and on local public works. A native governor (*tong-doc* or *tuan-phu*), assisted by a native staff, administers each of the provinces into which the country is divided, and native officials of lower rank govern the areas into which these provinces are subdivided. The governors take their orders from the imperial government, but they are under the eye of French residents. Native officials are appointed by the court, but the resident superior has power to annul an appointment. The mandarinate or official class is recruited from all ranks of the people by competitive examination. In the province of Tourane, a French tribunal alone exercises jurisdiction, but it administers native law where natives are concerned. Outside this territory the native tribunals survive. The Annamese village is self-governing. It has its council of notables, forming a sort of oligarchy which, through the medium of a mayor and two subordinates, directs the interior affairs of the community—policing, recruiting, the assignment and collection of taxes, &c.—and has

judicial power in less important suits and crimes. More serious cases come within the purview of the *an-sat*, a judicial auxiliary of the governor. An assembly of notables from villages grouped together in a canton chooses a cantonal representative, who is the mouthpiece of the people and the intermediary between the government and its subjects. The direct taxes, which go to the local budget of Annam, consist primarily of a poll-tax levied on all males over eighteen and below sixty years of age, and of a land-tax levied according to the quality and the produce of the holding.

The following table summarizes the local budget of Annam for the years 1899 and 1904:—

—	*Receipts*.	*Expenditure*.
1899	£203,082 (direct taxes, £171,160)	£175,117
1904	£247,435 (direct taxes, £219,841)	£232,480

In 1904 the sum allocated to the expenses of the court, the royal family and the native administration, the members of which are paid by the crown, was £85,000, the chief remaining heads of expenditure being the government house and residencies (£39,709), the native guard (£32,609) and public works (£24,898).

Education is available to every person in the community. The primary school, in which the pupils learn only Chinese writing and the precepts of Confucius, stands at the base of this system. Next above this is the school of the district capital, where a half-yearly examination takes place, by means of which are selected those eligible for the course of higher education given at the capital of the province in a school under the direction of a *doc-hoc*, or inspector of studies. Finally a great triennial competition decides the elections. The candidate whose work is notified as *très bien* is admitted to the examinations at Hué, which qualify for the title of doctor and the holding of administrative offices. The education of a mandarin includes local history, cognizance of the administrative rites, customs, laws and prescriptions of the country, the ethics of Confucius, the rules of good breeding, the ceremonial of official and social life, and the practical acquirements necessary to the conduct of public or private business. Annamese learning goes no farther. It includes no scientific idea, no knowledge of the natural sciences, and neglects even the most rudimentary instruction conveyed in a European education. The complications of Chinese writing greatly hamper education. The Annamese mandarin must be acquainted with Chinese, since he writes in Chinese characters. But the character being ideographic, the words which express them are dissimilar in the two languages, and official text is read in Chinese by a Chinese, in Annamese by an Annamese.

The chief towns of Annam are Hué (pop. about 42,000), seat both of the French and native governments, Tourane (pop. about 4000), Phan-Thiet (pop. about 20,000) in the extreme south, Qui-Nhon, and Fai-Fo, a commercial centre to the south of Tourane. A road following the coast from Cochin-China to Tongking, and known as the “Mandarin road,” passes through or near the chief towns of the provinces and forms the chief artery of communication in the country apart from the railways (see Indo-China, French).

History.—The ancient tribe of the Giao-chi, who dwelt on the confines of S. China, and in what is now Tongking and northern Annam, are regarded by the Annamese as their ancestors, and tradition ascribes to their first rulers descent from the Chinese imperial family. These sovereigns were succeeded by another dynasty, under which, at the end of the 3rd century B.C., the Chinese invaded the country, and eventually established there a supremacy destined to last, with little intermission, till the 10th century A.D. In 968 Dinh-Bo-Lanh succeeded in ousting the Chinese and founded an independent dynasty of Dinh. Till this period the greater part of Annam had been occupied by the Chams, a nation of Hindu civilization, which has left many monuments to testify to its greatness, but the encroachment of the Annamese during the next six centuries at last left to it only a small territory in the south of the country. Three lines of sovereigns followed that of Dinh, under the last of which, about 1407, Annam again fell under the Chinese yoke. In 1428 an Annamese general Le-Loi succeeded in freeing the country once more, and founded a dynasty which lasted till the end of the 18th century. During the greater part of this period, however, the titular sovereigns were mere puppets, the reality of power being in the hands of the family of Trinh in Tongking and that of Nguyen in southern Annam, which in 1568 became a separate principality under the name of Cochin-China. Towards the end of the 18th century a rebellion overthrew the Nguyen, but one of its members, Gia-long, by the aid of a French force, in 1801 acquired sway over the whole of Annam, Tongking and Cochin-China. This force was procured for him by Pigneau de Béhaine, bishop of Adran, who saw in the political

condition of Annam a means of establishing French influence in Indo-China and counterbalancing the English power in India. Before this, in 1787, Gia-long had concluded a treaty with Louis XVI., whereby in return for a promise of aid he ceded Tourane and Pulo-Condore to the French. That treaty marks the beginning of French influence in Indo-China.

See also Legrand de la Liraye, *Notes historiques sur la nation annamite* (Paris, 1866?); C. Gosselin, *L'Empire d'Annam* (Paris, 1904); E. Sombsthay, *Cours de législation et d'administration annamites* (Paris, 1898).

ANNAN, a royal, municipal and police burgh of Dumfriesshire, Scotland, on the Annan, nearly 2 m. from its mouth, 15 m. from Dumfries by the Glasgow & South-Western railway. It has a station also on the Caledonian railway company's branch line from Kirtlebridge to Brayton (Cumberland), which crosses the Solway Firth at Seafield by a viaduct, 1⅓ m. long, constructed of iron pillars girded together by poles, driven through the sand and gravel into the underlying bed of sandstone. Annan is a well-built town, red sandstone being the material mainly used. Among its public buildings is the excellent academy of which Thomas Carlyle was a pupil. The river Annan is crossed by a stone bridge of three arches dating from 1824, and by a railway bridge. The Harbour Trust, constituted in 1897, improved the shipping accommodation, and vessels of 300 tons approach close to the town. The principal industries include cotton and rope manufactures, bacon-curing, distilling, tanning, shipbuilding, sandstone quarrying, nursery-gardening and salmon-fishing. Large marine engineering works are in the vicinity. Annan is a burgh of considerable antiquity. Roman remains exist in the neighbourhood, and the Bruces, lords of Annandale, the Baliols, and the Douglases were more or less closely associated with it. During the period of the Border lawlessness the inhabitants suffered repeatedly at the hands of moss-troopers and through the feuds of rival families, in addition to the losses caused by the English and Scots wars. Edward Irving was a native of the town. With Dumfries, Kirkcudbright, Lochmaben and Sanquhar, Annan unites in sending one meniber to parliament. Annan Hill commands a beautiful prospect. Population (1901) 5805.

ANNA PERENNA, an old Roman deity of the circle or "ring" of the year, as the name (*per annum*) clearly indicates. Her festival fell on the full moon of the first month (March 15), and was held at the grove of the goddess at the first milestone on the Via Flaminia. It was much frequented by the city *plebs*, and Ovid describes vividly the revelry and licentiousness of the occasion (*Fasti*. iii. 523 foll.). From Macrobius we learn (*Sat*. i. 12. 6) that sacrifice was made to her "ut annare perannareque commode liccat," *i.e.* that the circle of the year may be completed happily. This is all we know for certain about the goddess and her cult; but the name naturally suggested myth-making, and Anna became a figure in stories which may be read in Ovid (*l.c.*) and in Silius Italicus (8.50 foll.). The coarse myth told by Ovid, in which Anna plays a trick on Mars when in love with Minerva, is probably an old Italian folk-tale, poetically applied to the persons of these deities when they became partially anthropomorphized under Greek influence.

(W. W. F.*)

ANNAPOLIS, a city and seaport of Maryland, U.S.A., the capital of the state, the county seat of Anne Arundel county, and the seat of the United States Naval Academy; situated on the Severn river about 2 m. from its entrance into Chesapeake Bay, 26 m. S. by E. from Baltimore and about the same distance E. by N. from Washington. Pop. (1890) 7604; (1900) 8525, of whom 3002 were negroes; (1910 census) 8609. Annapolis is served by the Washington, Baltimore & Annapolis (electric) and the Maryland Electric railways, and by the

Baltimore & Annapolis steamship line. On an elevation near the centre of the city stands the state house (the corner stone of which was laid in 1772), with its lofty white dome (200 ft.) and pillared portico. Close by are the state treasury building, erected late in the 17th century for the House of Delegates; Saint Anne's Protestant Episcopal church, in later colonial days a state church, a statue of Roger B. Taney (by W.H. Rinehart), and a statue of Baron Johann de Kalb. There are a number of residences of 18th century architecture, and the names of several of the streets—such as King George's, Prince George's, Hanover, and Duke of Gloucester—recall the colonial days. The United States Naval Academy was founded here in 1845. Annapolis is the seat of Saint John's College, a non-sectarian institution supported in part by the state; it was opened in 1789 as the successor of King William's School, which was founded by an act of the Maryland legislature in 1696 and was opened in 1701. Its principal building, McDowell Hall, was originally intended for a governor's mansion; although £4000 current money was appropriated for its erection in 1742, it was not completed until after the War of Independence. In 1907 the college became the school of arts and sciences of the university of Maryland.

Annapolis, at first called Providence, was settled in 1649 by Puritan exiles from Virginia. Later it bore in succession the names of Town at Proctor's, Town at the Severn, Anne Arundel Town, and finally in 1694, Annapolis, in honour of Princess Anne, who at the time was heir to the throne of Great Britain. In 1694 also, soon after the overthrow of the Catholic government of the lord proprietor, it was made the seat of the new government as well as a port of entry, and it has since remained the capital of Maryland; but it was not until 1708 that it was incorporated as a city. From the middle of the 18th century until the War of Independence, Annapolis was noted for its wealthy and cultivated society. The *Maryland Gazette*, which became an important weekly journal, was founded by Jonas Green in 1745; in 1769 a theatre was opened; during this period also the commerce was considerable, but declined rapidly after Baltimore, in 1780, was made a port of entry, and now oyster-packing is the city's only important industry. Congress was in session in the state house here from the 26th of November 1783 to the 3rd of June 1784, and it was here on the 23rd of December 1783 that General Washington resigned his commission as commander-in-chief of the Continental Army. In 1786 a convention, to which delegates from all the states of the Union were invited, was called to meet in Annapolis to consider measures for the better regulation of commerce (see ALEXANDRIA, Va.); but delegates came from only five states (New York, Pennsylvania, Virginia, New Jersey, and Delaware), and the convention—known afterward as the "Annapolis Convention,"—without proceeding to the business for which it had met, passed a resolution calling for another convention to meet at Philadelphia in the following year to amend the articles of confederation; by this Philadelphia convention the present Constitution of the United States was framed.

See D. Ridgely, *Annals of Annapolis from 1649 until the War of 1812* (Baltimore, 1841); S.A. Shafer, "Annapolis, Ye Ancient City," in L.P. Powell's *Historic Towns of the Southern States* (New York, 1900); and W. Eddis, *Letters from America* (London, 1792).

ANNAPOLIS, a town of Nova Scotia, capital of Annapolis county and up to 1750 of the entire peninsula of Nova Scotia; situated on an arm of the Bay of Fundy, at the mouth of the Annapolis river, 95 m. W. of Halifax; and the terminus of the Windsor & Annapolis railway. Pop. (1901) 1019. It is one of the oldest settlements in North America, having been founded in 1604 by the French, who called it Port Royal. It was captured by the British in 1710, and ceded to them by the treaty of Utrecht in 1713, when the name was changed in honour of Queen Anne. It possesses a good harbour, and the beauty of the surrounding country makes it a favourite summer resort. The town is surrounded by apple orchards and in May miles of blossoming trees make a beautiful sight. The fruit, which is excellent in quality, is the principal export of the region.

ANN ARBOR, a city and the county-seat of Washtenaw county, Michigan, U.S.A., on the

Huron river, about 38 m. W. of Detroit. Pop. (1890) 9431; (1900) 14,509, of whom 2329 were foreign-born; (1910) 14,817. It is served by the Michigan Central and the Ann Arbor railways, and by an electric line running from Detroit to Jackson and connecting with various other lines. Ann Arbor is best known as the seat of the university of Michigan, opened in 1837. The city has many attractive residences, and the residential districts, especially in the east and south-east parts of the city, command picturesque views of the Huron valley. Ann Arbor is situated in a productive agricultural and fruit-growing region. The river provides good water-power, and among the manufactures are agricultural implements, carriages, furniture (including sectional book-cases), pianos and organs, pottery and flour. In 1824 Ann Arbor was settled, laid out as a town, chosen for the county-seat, and named in honour of Mrs Ann Allen and Mrs Ann Rumsey, the wives of two of the founders. It was incorporated as a village in 1833, and was first chartered as a city in 1851.

ANNATES (Lat. *annatae*, from *annus*, “year”), also known as “first-fruits” (Lat. *primitiae*). in the strictest sense of the word, the whole of the first year’s profits of a spiritual benefice which, in all countries of the Roman obedience, were formerly paid into the papal treasury. This custom was only of gradual growth. The *jus deportuum, annalia* or *annatae*, was originally the right of the bishop to claim the first year’s profits of the living from a newly inducted incumbent, of which the first mention is found under Pope Honorius (d. 1227), but which had its origin in a custom, dating from the 6th century, by which those ordained to ecclesiastical offices paid a fee or tax to the ordaining bishop. The earliest records show the *annata* to have been, sometimes a privilege conceded to the bishop for a term of years, sometimes a right based on immemorial precedent. In course of time the popes, under stress of financial crises, claimed the privilege for themselves, though at first only temporarily. Thus, in 1305, Clement V. claimed the first-fruits of all vacant benefices in England, and in 1319 John XXII. those of all Christendom vacated within the next two years. In those cases the rights of the bishops were frankly usurped by the Holy See, now regarded as the ultimate source of the episcopal jurisdiction; the more usual custom was for the pope to claim the first-fruits only of those benefices of which he had reserved the patronage to himself. It was from these claims that the papal annates, in the strict sense, in course of time developed.

These annates may be divided broadly into three classes, though the chief features are common to all: (1) the *servitia communia* or *servitia Camerae Papae*, *i.e.* the payment into the papal treasury by every abbot and bishop, on his induction, of one year’s revenue of his new benefice. The *servitia communia* are traceable to the *oblatio* paid to the pope when consecrating bishops as metropolitan or patriarch. When, in the middle of the 13th century, the consecration of bishops became established as the sole right of the pope, the oblations of all bishops of the West were received by him and, by the close of the 14th century, these became fixed at one year’s revenue.[1] A small additional payment, as a kind of notarial fee was added (*servitia minuta*). (2) The *jus deportuum, fructus medii temporis*, or *annalia*, *i.e.* the annates due to the bishop, but in the case of “reserved” benefices paid by him to the Holy See. (3) The *quindennia, i.e.* annates payable, under a bull of Paul II. (1469), by benefices attached to a corporation, every fifteen years and not at every presentation.

The system of annates was at no time worked with absolute uniformity and completeness throughout the various parts of the church owning obedience to the Holy See, and it was never willingly submitted to by the clergy. Disagreements and disputes were continual, and the easy expedient of rewarding the officials of the Curia and increasing the papal revenue by “reserving” more and more benefices was met by repeated protests, such as that of the bishops and barons of England (the chief sufferers), headed by Robert Grosseteste of Lincoln, at the council of Lyons in 1245.[2] The subject, indeed, frequently became one of national interest, on account of the alarming amount of specie which was thus drained away, and hence numerous enactments exist in regard to it by the various national governments. In England the collection and payment of annates to the pope was prohibited in 1531 by statute. At that time the sum amounted to about 3000 pounds a year. In 1534 the annates were, along with the supremacy over the church in England, bestowed on the crown; but in February 1704 they were appropriated by Queen Anne to the assistance of the poorer clergy, and thus form what has since been known as “Queen Anne’s Bounty” (*q.v.*). The amount to be paid was originally regulated by a valuation made under the direction of Pope

Innocent IV. by Walter, bishop of Norwich, in 1254, later by one instituted under commission from Nicholas III. in 1292, which in turn was superseded in 1535 by the valuation, made by commissioners appointed by Henry VIII., known as the *King's Books*, which was confirmed on the accession of Elizabeth and is still that by which the clergy are rated. In France, in spite of royal edicts—like those of Charles VI., Charles VII., Louis XI, and Henry II.—and even denunciations of the Sorbonne, at least the custom of paying the *servitia communia* held its ground till the famous decree of the 4th of August during the Revolution of 1789. In Germany it was decided by the concordat of Constance, in 1418, that bishoprics and abbacies should pay the *servitia* according to the valuation of the Roman chancery in two half-yearly instalments. Those reserved benefices only were to pay the *annalia* which were rated above twenty-four gold florins; and as none were so rated, whatever their annual value may have been, the annalia fell into disuse. A similar convenient fiction also led to their practical abrogation in France, Spain and Belgium. The council of Basel (1431-1443) wished to abolish the *servitia*, but the concordat of Vienna (1448) confirmed the Constance decision, which, in spite of the efforts of the congress of Ems (1786) to alter it, still remains nominally in force. As a matter of fact, however, the revolution caused by the secularization of the ecclesiastical states in 1803 practically put an end to the system, and the *servitia* have either been commuted *via gratiae* to a moderate fixed sum under particular concordats, or are the subject of separate negotiation with each bishop on his appointment. In Prussia, where the bishops receive salaries as state officials, the payment is made by the government.

In Scotland *annat* or *ann* is half a year's stipend allowed by the Act 1672, *c*. 13, to the executors of a minister of the Church of Scotland above what was due to him at the time of his death. This is neither assignable by the clergyman during his life, nor can it be seized by his creditors.

1 For cases see du Cange, *Glossarium*, s. *Servitium Camerae Papae*; J.C.L. Gieseler, *Eccles. Hist.*, vol. iii. div. iii., notes to p. 181, &c. (Eng. trans., Edinburgh, 1853).

2 Durandus (Guillaume Durand), in his *de modo generalis concilii celebrandi*, represents contemporary clerical hostile opinion and attacks the corruptions of the officials of the Curia.

ANNE (1665-1714), queen of Great Britain and Ireland, second daughter of James, duke of York, afterwards James II., and of Anne Hyde, daughter of the ist earl of Clarendon, was born on the 6th of February 1665. She suffered as a child from an affection of the eyes, and was sent to France for medical treatment, residing with her grandmother, Henrietta Maria, and on the latter's death with her aunt, the duchess of Orleans, and returning to England in 1670. She was brought up, together with her sister Mary, by the direction of Charles II., as a strict Protestant, and as a child she made the friendship of Sarah Jennings (afterwards duchess of Marlborough), thus beginning life under the two influences which were to prove the most powerful in her future career. In 1678 she accompanied Mary of Modena to Holland, and in 1679 joined her parents abroad and afterwards in Scotland. On the 28th of July 1683 she married Prince George of Denmark, brother of King Christian V., an unpopular union because of the French proclivities of the bridegroom's country, but one of great domestic happiness, the prince and princess being conformable in temper and both preferring retirement and quiet to life in the great world. Sarah Churchill became Anne's lady of the bedchamber, and, by the latter's desire to mark their mutual intimacy and affection, all deference due to her rank was abandoned and the two ladies called each other Mrs Morley and Mrs Freeman.

On the 6th of February 1685 James became king of England. In 1687 a project of settling the crown on the princess, to the exclusion of Mary, on the condition of Anne's embracing Roman Catholicism, was rendered futile by her pronounced attachment to the Church of England, and beyond sending her books and papers James appears to have made no attempt to coerce his daughter into a change of faith,[1] and to have treated her with kindness, while the birth of his son on the 20th of June 1688 made the religion of his daughters a matter of less political importance. Anne was not present on the occasion, having gone to Bath, and this gave rise to a belief that the child was spurious; but it is most probable that James's desire to exclude all Protestants from affairs of state was the real cause. "I shall never now be satisfied," Anne wrote to Mary, "whether the child be true or false. It may be it is our

brother, but God only knows ... one cannot help having a thousand fears and melancholy thoughts, but whatever changes may happen you shall ever find me firm to my religion and faithfully yours."[2] In later years, however, she had no doubt that the Old Pretender was her brother. During the events immediately preceding the Revolution Anne kept in seclusion. Her ultimate conduct was probably influenced by the Churchills; and though forbidden by James, to pay Mary a projected visit in the spring of 1688, she corresponded with her, and was no doubt aware of William's plans. Her position was now a very critical and painful one. She refused to show any sympathy with the king after William had landed in November, and wrote, with the advice of the Churchills, to the prince, declaring her approval of his action.[3] Churchill abandoned the king on the 24th, Prince George on the 25th, and when James returned to London on the 26th he found that Anne and her lady-in-waiting had during the previous night followed their husbands' examples. Escaping from Whitehall by a back staircase they put themselves under the care of the bishop of London, spent one night in his house, and subsequently arrived on the 1st of December at Nottingham, where the princess first made herself known and appointed a council. Thence she passed through Leicester, Coventry and Warwick, finally entering Oxford, where she met Prince George, in triumph, escorted by a large company. Like Mary, she was reproached for showing no concern at the news of the king's flight, but her justification was that "she never loved to do anything that looked like an affected constraint." She returned to London on the 19th of December, when she was at once visited by William. Subsequently the Declaration of Rights settled the succession of the crown upon her after William and Mary and their children.

Meanwhile Anne had suffered a series of maternal disappointments. Between 1684 and 1688 she had miscarried four times and given birth to two children who died infants. On the 24th of July 1689, however, the birth, of a son, William, created duke of Gloucester, who survived his infancy, gave hopes that heirs to the throne under the Bill of Rights might be forthcoming. But Anne's happiness was soon troubled by quarrels with the king and queen. According to the duchess of Marlborough the two sisters, who had lived hitherto while apart on extremely affectionate terms, found no enjoyment in each other's society. Mary talked too much for Anne's comfort, and Anne too little for Mary's satisfaction. But money appears to have been the first and real cause of ill-feeling. The granting away by William of the private estate of James, amounting to 22,000 pounds a year, to which Anne had some claim, was made a grievance, and a factious motion brought forward in the House to increase her civil list pension of 30,000 pounds, which she enjoyed in addition to 20,000 pounds under her marriage settlement, greatly displeased William and Mary, who regarded it as a plot to make Anne independent and the chief of a separate interest in the state, while their resentment was increased by the refusal of Anne to restrain the action of her friends, and by its success. The Marlboroughs had been active in the affair and had benefited by it, the countess (as she then was) receiving a pension of 1000 pounds, and their conduct was noticed at court. The promised Garter was withheld from Marlborough, and the incensed "Mrs Morley" in her letters to "Mrs Freeman" styled the king "Caliban" or the "Dutch Monster." At the close of 1691 Anne had declared her approval of the naval expedition in favour of her father, and expressed grief at its failure.[4] According to the doubtful *Life of James*, she wrote to him on the 1st of December a "most penitential and dutiful" letter, and henceforward kept up with him a "fair correspondence."[5] The same year the breach between the royal sisters was made final by the dismissal of Marlborough, justly suspected of Jacobite intrigues, from all his appointments. Anne took the part of her favourites with great zeal against the court, though in all probability unaware of Marlborough's treason; and on the dismissal of the countess from her household by the king and queen she refused to part with her, and retired with Lady Marlborough to the duke of Somerset's residence at Sion House. Anne was now in disgrace. She was deprived of her guard of honour, and Prince George, on entering Kensington Palace, received no salute, though the drums beat loudly on his departure.[6] Instructions were given that the court expected no one to pay his respects, and no attention in the provinces was to be shown to their rank. In May, Marlborough was arrested on a charge of high treason which subsequently broke down, and Anne persisted in regarding his disgrace as a personal injury to herself. In August 1693, however, the two sisters were temporarily reconciled, and on the occasion of Mary's last illness and death Anne showed an affectionate consideration.

The death of Mary weakened William's position and made it necessary to cultivate good relations with the princess. She was now treated with every honour and civility, and finally established with her own court at St James's Palace. At the same time William kept her in the background and refrained from appointing her regent during his absence. In March 1695 Marlborough was allowed to kiss the king's hands, and subsequently was made the duke of Gloucester's governor and restored to his employments. In return Anne gave her

support to William's government, though about this time, in 1696—according to James, in consequence of the near prospect of the throne— she wrote to her father asking for his leave to wear the crown at William's death, and promising its restoration at a convenient opportunity.[7] The unfounded rumour that William contemplated settling the succession after his death on James's son, provided he were educated a Protestant in England, may possibly have alarmed her.[8] Meanwhile, since the birth of the duke of Gloucester, the princess had experienced six more miscarriages, and had given birth to two children who only survived a few hours, and the last maternal hope flickered out on the death of the young prince on the 29th of July 1700. Henceforth Anne signs herself in her letters to Lady Marlborough as "your poor unfortunate" as well as "faithful Morley." In default of her own issue, Anne's personal choice would probably have inclined at this time to her own family at St Germains, but the necessity of maintaining the Protestant succession caused the enactment of the Act of Settlement in 1701, and the substitution of the Hanoverian branch. She wore mourning for her father in 1701, and before his death James is said to have written to his daughter asking for her protection for his family; but the recognition of his son by Louis XIV. as king of England effectually prevented any good offices to which her feelings might have inclined her.

On the 8th of March 1702 Anne became, by King William's death, queen of Great Britain, being crowned on the 23rd of April. Her reign was destined to be one of the most brilliant in the annals of England. Splendid military triumphs crushed the hereditary national foe. The Act of Union with Scotland constituted one of the strongest foundations of the future empire. Art and literature found a fresh renascence.

In her first speech to parliament, like George III. afterwards, Anne declared her "heart to be entirely English," words which were resented by some as a reflection on the late king. A ministry, mostly Tory, with Godolphin at its head, was established. She obtained a grant of 700,000 pounds a year, and hastened to bestow a pension of 100,000 pounds on her husband, whom she created generalissimo of her forces and lord high admiral, while Marlborough obtained the Garter, with the captain-generalship and other prizes, including a dukedom, and the duchess was made mistress of the robes with the control of the privy purse. The queen showed from the first a strong interest in church matters, and declared her intention to keep church appointments in her own hands. She detested equally Roman Catholics and dissenters, showed a strong leaning towards the high-church party, and gave zealous support to the bill forbidding occasional conformity. In 1704 she announced to the Commons her intention of granting to the church the crown revenues, amounting to about 16,000 pounds or 17,000 pounds a year, from tenths and first-fruits (paid originally by the clergy to the pope, but appropriated by the crown in 1534), for the increase of poor livings; her gift, under the name of "Queen Anne's Bounty," still remaining as a testimony of her piety. This devotion to the church, the strongest of all motives in Anne's conduct, dictated her hesitating attitude towards the two great parties in the state. The Tories had for this reason her personal preference, while the Whigs, who included her powerful favourites the Marlboroughs, identified their interests with the war and its glorious successes, the queen slowly and unwillingly, but inevitably, gravitating towards the latter.

In December, the archduke Charles visited Anne at Windsor and was welcomed as the king of Spain. In 1704 Anne acquiesced in the resignation of Lord Nottingham, the leader of the high Tory party. In the same year the great victory of Blenheim further consolidated the power of the Whigs and increased the influence of Marlborough, upon whom Anne now conferred the manor of Woodstock. Nevertheless, she declared in November to the duchess that whenever things leaned towards the Whigs, "I shall think the church is beginning to be in danger." Next year she supported the election of the Whig speaker, John Smith, but long resisted the influence and claims of the *Junto*, as the Whig leaders, Somers, Halifax, Orford, Wharton and Sunderland, were named. In October she was obliged to appoint Cowper, a Whig, lord chancellor, with all the ecclesiastical patronage belonging to the office. Marlborough's successive victories, and especially the factious conduct of the Tories, who in November 1705 moved in parliament that the electress Sophia should be invited to England, drove Anne farther to the side of the Whigs. But she opposed for some time the inclusion in the government of Sunderland, whom she especially disliked, only consenting at Marlborough's intercession in December 1706, when various other offices and rewards were bestowed upon Whigs, and Nottingham with other Tories was removed from the council. She yielded, after a struggle, also to the appointment of Whigs to bishoprics, the most mortifying submission of all. In 1708 she was forced to dismiss Harley, who, with the aid of Mrs Masham, had been intriguing against the government and projecting the creation of a third party. Abigail Hill, Mrs Masham, a cousin of the duchess of Marlborough, had been introduced by the latter as a poor relation into Anne's service, while still princess of

Denmark. The queen found relief in the quiet and respectful demeanour of her attendant, and gradually came to prefer her society to that of the termagant and tempestuous duchess. Abigail, however, soon ventured to talk “business,” and in the summer of 1707 the duchess discovered to her indignation that her protégée had already undermined her influence with the queen and had become the medium of Harley’s intrigue. The strength of the Whigs at this time and the necessities of the war caused the retirement of Harley, but he remained Anne’s secret adviser and supporter against the faction, urging upon her “the dangers to the crown as well as to the church and monarchy itself from their counsels and actions,”[9] while the duchess never regained her former influence. The inclusion in the cabinet of Somers, whom she especially disliked as the hostile critic of Prince George’s admiralty administration, was the subject of another prolonged struggle, ending again in the queen’s submission after a futile appeal to Marlborough in October 1708, to which she brought herself only to avoid a motion from the Whigs for the removal of the prince, then actually on his deathbed. His death on the 28th of October was felt deeply by the queen, and opened the way for the inclusion of more Whigs. But no reconciliation with the duchess took place, and in 1709 a further dispute led to an angry correspondence, the queen finally informing the duchess of the termination of their friendship, and the latter drawing up a long narrative of her services, which she forwarded to Anne together with suitable passages on the subject of friendship and charity transcribed from the Prayer Book, the *Whole Duty of Man* and from Jeremy Taylor.[10] Next year Anne’s desire to give a regiment to Hill, Mrs Masham’s brother, led to another ineffectual attempt in retaliation to displace the new favourite, and the queen showed her antagonism to the Whig administration on the occasion of the prosecution of Sacheverell. She was present at his trial and was publicly acclaimed by the mob as his supporter, while the Tory divine was consoled immediately on the expiration of his sentence with the living of St Andrew’s, Holborn. Subsequently the duchess, in a final interview which she had forced upon the queen, found her tears and reproaches unavailing. In her anger she had told the queen she wished for no answer, and she was now met by a stony and exasperating silence, broken only by the words constantly repeated, “You desired no answer and you shall have none.”

The fall of the Whigs, now no longer necessary on account of the successful issue of the war, to accomplish which Harley had long been preparing and intriguing, followed; and their attempt to prolong hostilities from party motives failed. A friend of Harley, the duke of Shrewsbury, was first appointed to office, and subsequently the great body of the Whigs were displaced by Tories, Harley being made chancellor of the exchequer and Henry St John secretary of state. The queen was rejoiced at being freed from what she called a long captivity, and the new parliament was returned with a Tory majority. On the 17th of January 1711, in spite of Marlborough’s efforts to ward off the blow, the duchess was compelled to give up her key of office. The queen was now able once more to indulge in her favourite patronage of the church, and by her influence an act was passed in 1712 for building fifty new churches in London. Later, in 1714, she approved of the Schism Bill. She gave strong support to Harley, now earl of Oxford and lord treasurer, in the intrigues and negotiations for peace. Owing to the alliance between the Tory Lord Nottingham and the Whigs, on the condition of the support by the latter of the bill against occasional conformity passed in December 1711, the defeated Whigs maintained a majority in the Lords, who declared against any peace which left Spain to the Bourbons. To break down this opposition Marlborough was dismissed on the 31st from all his employments, while the House of Lords was “swamped” by Anne’s creation of twelve peers,[11] including Mrs Masham’s husband. The queen’s conduct was generally approved, for the nation was now violently adverse to the Whigs and war party; and the peace of Utrecht was finally signed on the 31st of March 1713, and proclaimed on the 5th of May in London.

As the queen’s reign drew to its close, rumours were rife on the great subject of the succession to the throne. Various Jacobite appointments excited suspicion. Both Oxford and Bolingbroke were in communication with the Pretender’s party, and on the 27th of July Oxford, who had gradually lost influence and quarrelled with Bolingbroke, resigned, leaving the supreme power in the hands of the latter. Anne herself had a natural feeling for her brother, and had shown great solicitude concerning his treatment when a price had been set on his head at the time of the Scottish expedition in 1708. On the 3rd of March 1714 James wrote to Anne, Oxford and Bolingbroke, urging the necessity of taking steps to secure his succession, and promising, on the condition of his recognition, to make no further attempts against the queen’s government; and in April a report was circulated in Holland that Anne had secretly determined to associate James with her in the government. The wish expressed by the Whigs, that a member of the electoral family should be invited to England, had already aroused the queen’s indignation in 1708; and now, in 1714, a writ of summons for

the electoral prince as duke of Cambridge having been obtained, Anne forbade the Hanoverian envoy, Baron Schütz, her presence, and declared all who supported the project her enemies; while to a memorial on the same subject from the electress Sophia and her grandson in May, Anne replied in an angry letter, which is said to have caused the death of the electress on the 5th of June, requesting them not to trouble the peace of her realm or diminish her authority.

These demonstrations, however, were the outcome not of any returning partiality for her own family, but of her intense dislike, in which she resembled Queen Elizabeth, of any "successor," "it being a thing I cannot bear to have any successor here though but for a week"; and in spite of some appearances to the contrary, it is certain that religion and political wisdom kept Anne firm to the Protestant succession.[12] She had maintained a friendly correspondence with the court of Hanover since 1705, and in 1706 had bestowed the Garter on the electoral prince and created him duke of Cambridge; while the Regency Act provided for the declaration of the legal heir to the crown by the council immediately on the queen's death, and a further enactment naturalized the electress and her issue. In 1708, on the occasion of the Scottish expedition, notwithstanding her solicitude for his safety, she had styled James in her speech closing the session of parliament as "a popish pretender bred up in the principles of the most arbitrary government." The duchess of Marlborough stated in 1713 that all the time she had known "that thing" (as she now called the queen), "she had never heard her speak a favourable word of him."[13] No answer appears to have been sent to James's letter in 1714; on the contrary, a proclamation was issued (June 23) for his apprehension in case of his arrival in England. On the 27th of April Anne gave a solemn assurance of her fidelity to the Hanoverian succession to Sir William Dawes, archbishop of York; in June she sent Lord Clarendon to Hanover to satisfy the elector.

The sudden illness and death of the queen now frustrated any schemes which Bolingbroke, or others might have been contemplating. On the 27th, the day of Oxford's resignation, the discussions concerning his successor detained the council sitting in the queen's presence till two o'clock in the morning, and on retiring Anne was instantly seized with fatal illness. Her adherence to William in 1688 had been a principal cause of the success of the Revolution, and now the final act of her life was to secure the Revolution settlement and the Protestant succession. During a last moment of returning consciousness, and by the advice of the whole council, who had been joined on their own initiative by the Whig dukes Argyll and Somerset, she placed the lord treasurer's staff in the hands of the Whig duke of Shrewsbury, and measures were immediately taken for assuring the succession of the elector. Her death took place on the 1st of August, and the security felt by the public, and perhaps the sense of perils escaped by the termination of the queen's life, were shown by a considerable rise in the national stocks. She was buried on the south side of Henry VII.'s chapel in Westminster Abbey, in the same tomb as her husband and children. The elector of Hanover, George Louis, son of the electress Sophia (daughter of Elizabeth, daughter of James I.), peacefully succeeded to the throne as George I. (*q.v.*).

According to her physician Arbuthnot, Anne's life was shortened by the "scene of contention among her servants. I believe sleep was never more welcome to a weary traveller than death was to her." By character and temperament unfitted to stand alone, her life had been unhappy and tragical from its isolation. Separated in early years from her parents and sister, her one great friendship had proved only baneful and ensnaring. Marriage had only brought a mournful series of infant funerals. Constant ill-health and suffering had darkened her career. The claims of family attachment, of religion, of duty, of patriotism and of interest, had dragged her in opposite directions, and her whole life had been a prey to jealousies and factions which closed around her at her accession to the throne, and surged to their height when she lay on her deathbed. The modern theory of the relations between the sovereign and the parties, by which the former identifies himself with the faction for the time in power while maintaining his detachment from all, had not then been invented; and Anne, like her Hanoverian successors, maintained the struggle, though without success, to rule independently finding support in Harley. During the first year of her reign she made known that she was "resolved not to follow the example of her predecessor in making use of a few of her subjects to oppress the rest. She will be queen of all her subjects, and would have all the parties and distinctions of former reigns ended and buried in hers."[14] Her motive for getting rid of the Whigs was not any real dislike of their administration, but the wish to escape from the domination of the party,[15] and on the advent to power of the Tories she carefully left some Whigs in their employments, with the aim of breaking up the party system and acting upon what was called "a moderate scheme." She attended debates in the Lords and endeavoured to influence votes. Her struggles to free herself from the influence of factions only involved her deeper; she was always under the domination of some person

or some party, and she could not rise above them and show herself the leader of the nation like Elizabeth.

Anne was a women of small ability, of dull mind, and of that kind of obstinacy which accompanies weakness of character. According to the duchess she had "a certain knack of sticking to what had been dictated to her to a degree often very disagreeable, and without the least sign of understanding or judgment."[16] "I desire you would not have so ill an opinion of me," Anne writes to Oxford, "as to think when I have determined anything in my mind I will alter it."[17] Burnet considered that "she laid down the splendour of a court too much," which was "as it were abandoned." She dined alone after her husband's death, but it was reported by no means abstemiously, the royal family being characterized in the lines:—

"King William thinks all.
Queen Mary talks all,
Prince George drinks all,
And Princess Anne eats all."[18]

She took no interest in the art, the drama or the literature of her day. But she possessed the homely virtues; she was deeply religious, attached to the Church of England and concerned for the efficiency of the ministry. One of the first acts of her reign was a proclamation against vice, and Lord Chesterfield regretted the strict morality of her court. Instances abound of her kindness and consideration for others. Her moderation towards the Jacobites in Scotland, after the Pretender's expedition in 1708, was much praised by Saint Simon. She showed great forbearance and generosity towards the duchess of Marlborough in the face of unexampled provocation, and her character was unduly disparaged by the latter, who with her violent and coarse nature could not understand the queen's self-restraint in sorrow, and describes her as "very hard" and as "not apt to cry." According to her small ability she served the state well, and was zealous and conscientious in the fulfilment of public duties, in which may be included touching for the king's evil, which she revived. Marlborough testifies to her energy in finding money for the war. She surrendered 10,000 pounds a year for public purposes, and in 1706 she presented 30,000 pounds to the officers and soldiers who had lost their horses. Her contemporaries almost unanimously record her excellence and womanly virtues; and by Dean Swift, no mild critic, she is invariably spoken of with respect, and named in his will as of "ever glorious, immortal and truly pious memory, the real nursing-mother of her kingdoms." She deserves her appellation of "Good Queen Anne," and notwithstanding her failings must be included among the chief authors and upholders of the great Revolution settlement. Her person was described by Spanheim, the Prussian ambassador, as handsome though inclining to stoutness, with black hair, blue eyes and good features, and of grave aspect.

Anne's husband, Prince George (1653-1708), was the second son of Frederick III., king of Denmark. Before marrying Anne he had been a candidate for the throne of Poland. He was created earl of Kendal and duke of Cumberland in 1689. Some censure, which was directed against the prince in his capacity as lord high admiral, was terminated by his death. In religion George remained a Lutheran, and in general his qualities tended to make him a good husband rather than a soldier or a statesman.

BIBLIOGRAPHY.—*Dict. of Nat. Biography* (Dr A.W. Ward); A. Strickland, *Lives of the Queens of England* (1852), somewhat uncritical; an excellent account written by Spanheim for the king of Prussia, printed in the *Eng. Hist. Rev.* ii. 757; histories of Stanhope, Lecky, Ranke, Macaulay, Boyes, Burnet, Wyon, and Somerville; F.E. Morris, *The Age of Anne* (London, 1877); *Correspondence and Diary of Lord Clarendon* (1828); *Hatton Correspondence* (Camden Soc., 1878); Evelyn's *Diary*; Sir J. Dalrymple's *Memoirs* (1790); N. Luttrell's *Brief Hist. Relation* (1857); *Wentworth Papers* (1883); W. Coxe, *Mem. of the Duke of Marlborough* (1847); Conduct of the Dowager Duchess of Marlborough (1742); Ralph, *The other Side of the Question* (1742); *Private Correspondence of Sarah Duchess of Marlborough* (1838); A. T, Thomson, *Mem. of the Duchess and the Court of Queen Anne* (1839); J.S. Clarke's *Life of James II.* (1816); J. Macpherson's *Original Papers* (1775); Swift's *Some Considerations upon the Consequences from the Death of the Queen, An Inquiry into the Behaviour of the Queen's last Ministry, Hist. of the Four Last Years of Queen Anne*, and *Journals and Letters; The Lockhart Papers* (1817), i.; F. Salomon, *Geschichte des letzten Ministeriums Konigin Annas* (1894); *Marchmont Papers*, iii. (1831); W. Sichel *Life of Bolingbroke* (1901-1902); *Mem. of Thomas Earl of Ailesbury* (Roxburghe Club, 1890); *Eng. Hist. Rev.* i. 470, 756, viii. 740; *Royal Hut. Soc. Trans.* N.S. xiv. 69; *Col. of State Papers; Treasury; Hist. MSS. Comm. Series, MSS. of Duke of Portland*, including *the Harley Papers, Duke of Buccleugh at Montagu House, Lord Kenyan, Marq. of Bath at Longleat; Various Collections*, ii. 146, *Duke*

Of Rutland at Belvoir, 7th Rep. app., and *H.M. the King* (*Stuart Papers*, i.); *Stowe MSS.* in Brit. Museum; Sir J. Mackintosh's Transcripts, *Add. MSS.* in Brit. Museum, 34, 487-526; *Edinburgh Rev.*, October 1835, p. 1; *Notes and Queries*, vii. ser. iii. 178, viii. ser. i. 72, xii. 368, ix, ser. iv. 282, xi, 254; C. Hodgson, *An Account of the Augmentation of Small Livings by the Bounty of Queen Anne* (1845); *Observations of the Governors of Queen Anne's Bounty* (1867); *Somers Tracts*, xii. xiii. (1814-1815); H. Paul, *Queen Anne* (London, 1907).

(P. C. Y.)

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1 See also *Hist. MSS. Comm., MSS. of Duke of Rutland at Belvoir*, ii. 109.

2 Dalrymple's *Memoirs*, ii. 175.

3 Dalrymple's *Memoirs*, ii. 249.

4 Lord Ailesbury's *Memoirs*, 293.

5 Macpherson i. 241; Clarke's *Life of James II.*, ii. 476. The letter, which is only printed in fragments, is not in Anne's style, and if genuine was probably dictated by the Churchills.

6 Luttrell ii. 366, 376.

7 Macpherson i. 257; Clarke's *James II.*, ii. 559. See also Shrewsbury's anonymous correbpondent in *Hist. MSS. Comm. Ser.; MSS. Duke of Buccleugh at Montagu House*, ii. 169.

8 Macaulay iv. 799 *note*

9 Swift's *Mem. on the Change of the Ministry.*

10 *Conduct of the Duchess of Marlborough*, p. 225.

11 For their names see Hume and Smollett's *Hist.* (Hughes, 1854) viil. 110.

12 See also *Hist. MSS. Comm. Ser.* Rep. vii. App. 246b.

13 *Ibid. Portland MSS.* v. 338.

14 Sir J. Leveson-Gower to Lord Rutland, *Hist. MSS. Comm., Duke of Rutland's MSS.* ii. 173.

15 See Bolingbroke's *Letter to Sir W. Wyndham.*

16 *Private Correspondence*, ii. 120.

17 *Hist. MSS. Comm., MSS. of Marq. of Bath at Longleat*, i. 237.

18 *Notes and Queries*, xi. 254.

ANNE (1693-1740), empress of Russia, second daughter of Tsar Ivan V., Peter the Great's imbecile brother, and Praskovia Saltuikova. Her girlhood was passed at Ismailovo near Moscow, with her mother, an ignorant, bigoted tsaritsa of the old school, who neglected and even hated her daughters. Peter acted as a second father to the Ivanovs, as Praskovia and her family were called. In 1710 he married Anne to Frederick William, duke of Courland, who died of surfeit on his journey home from St Petersburg. The reluctant young widow was ordered to proceed on her way to Mittau to take over the government of Courland, with the Russian resident, Count Peter Bestuzhev, as her adviser. He was subsequently her lover, till supplanted by Biren (*q.v.*). Anne's residence at Mittau was embittered by the utter inadequacy of her revenue, which she keenly felt. It was therefore with joy that she at once accepted the Russian crown, as the next heir, after the death of Peter II. (January 30, 1730), when it was offered to her by the members of the supreme privy council, even going so far as to subscribe previously nine articles which would have reduced her from an absolute to a very limited monarch. On the 26th of February she made her public entry into Moscow under strict surveillance. On the 8th of March a *coup d'état*, engineered by a party of her personal friends, overthrew the supreme privy council and she was hailed as autocrat. Her government, on the whole, was prudent, beneficial and even glorious; but it was undoubtedly severe and became at last universally unpopular. This was due in the main to the outrageous insolence of her all-powerful favourite Biren, who hated the Russian nobility and trampled upon them mercilessly. Fortunately, Biren was sufficiently prudent not to meddle with foreign affairs or with the army, and these departments in the able hands of two other foreigners, who thoroughly identified themselves with Russia, Andrei Osterman (*q.v.*) and Burkhardt Münnich (*q.v.*) did great things in the reign of Anne. The chief political events of the period were the War of the Polish Succession and the second[1] Crimean War.

The former was caused by the reappearance of Stanislaus Leszczynski as a candidate for the Polish throne after the death of Augustus II. (February 1, 1733). The interests of Russia would not permit her to recognize a candidate dependent directly on France and indirectly upon Sweden and Turkey, all three powers being at that time opposed to Russia's "system." She accordingly united with Austria to support the candidature of the late king's son, Augustus of Saxony. So far as Russia was concerned, the War of the Polish Succession was quickly over. Much more important was the Crimean War of 1736-39. This war marks the beginning of that systematic struggle on the part of Russia to recover her natural and legitimate southern boundaries. It lasted four years and a half, and cost her a hundred thousand men and millions of roubles; and though invariably successful, she had to be content with the acquisition of a single city (Azov) with a small district at the mouth of the Don. Yet more had been gained than was immediately apparent. In the first place, this was the only war hitherto waged by Russia against Turkey which had not ended in crushing disaster. Münnich had at least dissipated the illusion of Ottoman invincibility, and taught the Russian soldier that 100,000 janissaries and spahis were no match, in a fair field, for half that number of grenadiers and hussars. In the second place the Tatar hordes had been well nigh exterminated. In the third place Russia's signal and unexpected successes in the Steppe had immensely increased her prestige on the continent. "This court begins to have a great deal to say in the affairs of Europe," remarked the English minister, Sir Claudius Rondeau, a year later.

The last days of Anne were absorbed by the endeavour to strengthen the position of the heir to the throne, the baby cesarevich Ivan, afterwards Ivan VI., the son of the empress's niece, Anna Leopoldovna, against the superior claims of her cousin the cesarevna Elizabeth. The empress herself died three months later (28th of October 1740). Her last act was to appoint Biren regent during the infancy of her great-nephew.

Anne was a grim, sullen woman, frankly sensual, but as well-meaning as ignorance and vindictiveness would allow her to be. But she had much natural good sense, was a true friend and, in her more cheerful moments, an amiable companion. Lady Rondeau's portrait of the empress shows her to the best advantage. She is described as a large woman, towering above all the cavaliers of her court, but very well shaped for her size, easy and graceful in her person, of a majestic bearing, but with an awfulness in her countenance which revolted those who disliked her.

See R. Nisbet Bain, *The Pupils of Peter the Great* (London, 1897); *Letters from a lady who resided some years in Russia* (*i.e.* Lady Rondeau) (London, 1775); Christoph Hermann Manstein, *Mémoires sur la Russie* (Amsterdam, 1771; English edition, London, 1856); Gerhard Anton von Haiem, *Lebensschreibung des Feldm. B.C. Grafen von Münnich* (Oldenburg, 1803); Claudius Rondeau, *Diplomatic Despatches from Russia, 1728-1739* (St Petersburg, 1889-1892).

(R. N. B.)

1 Vasily Golitsuin's expedition under the regency of Sophia was the first Crimean War (1687-89).

ANNE OF BRITTANY (1477-1514), daughter of Francis II., duke of Brittany, and Marguerite de Foix. She was scarcely twelve years old when she succeeded her father as duchess on the 9th of September 1488. Charles VIII. aimed at establishing his authority over her; Alain d'Albret wished to marry her; Jean de Rohan claimed the duchy; and her guardian, the marshal de Rieux, was soon in open revolt against his sovereign. In 1489 the French army invaded Brittany. In order to protect her independence, Anne concluded an alliance with Maximilian of Austria, and soon married him by proxy (December 1489). But Maximilian was incapable of defending her, and in 1491 the young duchess found herself compelled to treat with Charles VIII. and to marry him. The two sovereigns made a reciprocal arrangement as to their rights and pretensions to the crown of Brittany, but in the event of Charles predeceasing her, Anne undertook to marry the heir to the throne. Nevertheless, in 1492, after the conspiracy of Jean de Rohan, who had endeavoured to hand over the duchy to the king of England, Charles VIII. confirmed the privileges of Brittany, and in particular guaranteed to the Bretons the right of paying only those taxes to which the assembly of estates consented, After the death of Charles VIII. in 1498, without any children, Anne exercised the sovereignty in Brittany, and in January 1499 she married Louis

XII., who had just repudiated Joan of France. The marriage contract was ostensibly directed in favour of the independence of Brittany, for it declared that Brittany should revert to the second son or to the eldest daughter of the two sovereigns, and, failing issue, to the natural heirs of the duchess. Until her death Anne occupied herself personally with the administration of the duchy. In 1504 she caused the treaty of Blois to be concluded, which assured the hand of her daughter, Claude of France, to Charles of Austria (the future emperor, Charles V.), and promised him the possession of Brittany, Burgundy and the county of Blois. But this unpopular treaty was broken, and the queen had to consent to the betrothal of Claude to Francis of Angoulême, who in 1515 became king of France as Francis I. Thus the definitive reunion of Brittany and France was prepared.

See A. de la Borderie, *Choix de documents inédits sur le règne de la duchesse Anne en Bretagne* (Rennes, 1866 and 1902)—extracts from the *Mémoires de la Société Archéologique du département d'Ille-et-Vilaine*, vols. iv. and vi. (1866 and 1868); Leroux de Lincy, *Vie de la reine Anne de Bretagne* (1860-1861); A. Dupuy, *La Reunion de la Bretagne à la France* (1880); A. de la Borderie, *La Bretagne aux derniers siècles du may en âge* (1893), and *La Bretagne aux temps modernes* (1894).

(H. Se.)

ANNE OF CLEVES (1515-1557), fourth wife of Henry VIII., king of England, daughter of John, duke of Cleves, and Mary, only daughter of William, duke of Juliers, was born on the 22nd of September 1515. Her father was the leader of the German Protestants, and the princess, after the death of Jane Seymour, was regarded by Cromwell as a suitable wife for Henry VIII. She had been brought up in a narrow retirement, could speak no language but her own, had no looks, no accomplishments and no dowry, her only recommendations being her proficiency in needlework, and her meek and gentle temper. Nevertheless her picture, painted by Holbein by the king's command (now in the Louvre, a modern copy at Windsor), pleased Henry and the marriage was arranged, the treaty being signed on the 24th of September 1539. The princess landed at Deal on the 27th of December; Henry met her at Rochester on the 1st of January 1540, and was so much abashed at her appearance as to forget to present the gift he had brought for her, but nevertheless controlled himself sufficiently to treat her with courtesy. The next day he expressed openly his dissatisfaction at her looks; "she was no better than a Flanders mare." The attempt to prove a pre-contract with the son of the duke of Lorraine broke down, and Henry was forced to resign himself to the sacrifice. On the wedding morning, however, the 6th of January 1540, he declared that no earthly thing would have induced him to marry her but the fear of driving the duke of Cleves into the arms of the emperor. Shortly afterwards Henry had reason to regret the policy which had identified him so closely with the German Protestantism, and denied reconciliation with the emperor. Cromwell's fall was the result, and the chief obstacle to the repudiation of his wife being thus removed, Henry declared the marriage had not been and could not be consummated; and did not scruple to cast doubts on his wife's honour. On the 9th of July the marriage was declared null and void by convocation, and an act of parliament to the same effect was passed immediately. Henry soon afterwards married Catherine Howard. On first hearing of the king's intentions, Anne swooned away, but on recovering, while declaring her case a very hard and sorrowful one from the great love which she bore to the king, acquiesced quietly in the arrangements made for her by Henry, by which she received lands to the value of £4000 a year, renounced the title of queen for that of the king's sister, and undertook not to leave the kingdom. In a letter to her brother, drawn up by Gardiner by the king's direction, she acknowledged the unreality of the marriage and the king's kindness and generosity. Anne spent the rest of her life happily in England at Richmond or Bletchingley, occasionally visiting the court, and being described as joyous as ever, and wearing new dresses every day! An attempt to procure her reinstalment on the disgrace of Catherine Howard failed, and there was no foundation for the report that she had given birth to a child of which Henry was the reputed father. She was present at the marriage of Henry with Catherine Parr and at the coronation of Mary. She died on the 28th of July 1557 at Chelsea, and was buried in Westminster Abbey.

See *Lives of the Queens of England*, by A. Strickland, iii. (1851); *The Wives of Henry VIII.*, by M. Hume (1905); *Henry VIII.*, by A.F. Pollard (1905); *Four Original Documents relating to the Marriage of Henry VIII. to Anne of Cleves*, ed. by E. and G. Goldsmid (1886); for the pseudo Anne of Cleves see *Allgemeine deutsche Biographie*, i. 467.

ANNE OF DENMARK (1574-1619), queen of James I. of England and VI. of Scotland, daughter of King Frederick II. of Denmark and Norway and of Sophia, daughter of Ulric III., duke of Mecklenburg, was born on the 12th of December 1574. On the 20th of August 1589, in spite of Queen Elizabeth's opposition, she was married by proxy to King James, without dower, the alliance, however, settling definitely the Scottish claims to the Orkney and Shetland Islands. Her voyage to Scotland was interrupted by a violent storm—for the raising of which several Danish and Scottish witches were burned or executed—which drove her on the coast of Norway, whither the impatient James came to meet her, the marriage taking place at Opslo (now Christiania) on the 23rd of November. The royal couple, after visiting Denmark, arrived in Scotland in May 1590. The position of queen consort to a Scottish king was a difficult and perilous one, and Anne was attacked in connexion with various scandals and deeds of violence, her share in which, however, is supported by no evidence. The birth of an heir to the throne (Prince Henry) in 1504 strengthened her position and influence; but the young prince, much to her indignation, was immediately withdrawn from her care and entrusted to the keeping of the earl and countess of Mar at Stirling Castle; in 1595 James gave a written command, forbidding them in case of his death to give up the prince to the queen till he reached the age of eighteen. The king's intention was, no doubt, to secure himself and the prince against the unruly nobles, though the queen's Roman Catholic tendencies were probably another reason for his decision. Brought up a Lutheran, and fond of pleasure, she had shown no liking for Scottish Calvinism, and soon incurred rebukes on account of her religion, "vanity," absence from church, "night waking and balling." She had become secretly inclined to Roman Catholicism, and attended mass with the king's connivance. On the death of Queen Elizabeth, on the 24th of March 1603, James preceded her to London. Anne took advantage of his absence to demand possession of the prince, and, on the "flat refusal" of the countess of Mar, fell into a passion, the violence of which occasioned a miscarriage and endangered her life. In June she followed the king to England (after distributing all her effects in Edinburgh among her ladies) with the prince and the coffin containing the body of her dead infant, and reached Windsor on the 2nd of July, where amidst other forms of good fortune she entered into the possession of Queen Elizabeth's 6000 dresses.

On the 24th of July Anne was crowned with the king, when her refusal to take the sacrament according to the Anglican use created some sensation. She communicated on one occasion subsequently and attended Anglican service occasionally; but she received consecrated objects from Pope Clement VIII., continued to hear mass, and, according to Galluzzi, supported the schemes for the conversion of the prince of Wales and of England, and for the prince's marriage with a Roman Catholic princess, which collapsed on his death in 1612. She was claimed as a convert by the Jesuits.[1] Nevertheless on her deathbed, when she was attended by the archbishop of Canterbury and the bishop of London, she used expressions which were construed as a declaration of Protestantism. Notwithstanding religious differences she lived in great harmony and affection with the king, latterly, however, residing mostly apart. She helped to raise Buckingham to power in the place of Somerset, maintained friendly relations with him, and approved of his guidance and control of the king. In spite of her birth and family she was at first favourably inclined to Spain, disapproved of her daughter Elizabeth's marriage with the elector palatine, and supported the Spanish marriages for her sons, but subsequently veered round towards France. She used all her influence in favour of the unfortunate Raleigh, answering his petition to her for protection with a personal letter of appeal to Buckingham to save his life. "She carrieth no sway in state matters," however, it was said of her in 1605, "and, *praeter rem uxoriam*, hath no great reach in other affairs." "She does not mix herself up in affairs, though the king tells her anything she chooses to ask, and loves and esteems her."[2] Her interest in state matters was only occasional, and secondary to the pre-occupations of court festivities, masks, progresses, dresses, jewels, which she much enjoyed; the court being, says Wilson—whose severity cannot entirely suppress his admiration—"a continued maskarado, where she and her ladies, like so many nymphs or Nereides, appeared ... to the ravishment of the beholders," and "made the night more glorious than the day." Occasionally she even joined in the king's sports, though here her only recorded exploit was her accidental shooting of James's "most principal and special hound," Jewel. Her extravagant expenditure, returned

by Salisbury in 1605 at more than £50,000 and by Chamberlain at her death at more than £84,000, was unfavourably contrasted with the economy of Queen Elizabeth; in spite of large allowances and grants of estates which included Oatlands, Greenwich House and Nonsuch, it greatly exceeded her income, her debts in 1616 being reckoned at nearly £10,000, while her jewelry and her plate were valued at her death at nearly half a million. Anne died after a long illness on the 2nd of March 1619, and was buried in Westminster Abbey. She was generally regretted. The severe Wilson, while rebuking her gaieties, allows that she was "a good woman," and that her character would stand the most prying investigation. She was intelligent and tactful, a faithful wife, a devoted mother and a staunch friend. Besides several children who died in infancy she had Henry, prince of Wales, who died in 1612, Charles, afterwards King Charles I., and Elizabeth, electress palatine and queen of Bohemia.

BIBLIOGRAPHY.—See Dr A.W. Ward's article in the *Dict, of Nat. Biography*, with authorities; *Lives of the Queens of England*, by A. Strickland (1844), vii.; "Life and Reign of King James I.," by A. Wilson, in *History of England* (1706); *Istoria del Granducato di Toscana*, by R. Galluzzi (1781), lib. vi. cap. ii.; *Cal. of State Papers—Domestic and Venetian*; *Hist. MSS. Comm. Series, MSS, of Marq. of Salisbury*, iii. 420, 438, 454, ix. 54; *Harleian MSS*. 5176, art. 22, 293, art. 106. Also see bibliography to the article on JAMES I.

(P. C. Y.)

1 *Fasti S. J.*, by P. Joannis Drews (pub. 1723), p. 160.

2 *Cal. of St. Pap.—Venetian*, x. 513.

ANNE OF FRANCE (1460-1522), dame de Beaujeu, was the eldest daughter of Louis XI. and Charlotte of Savoy. Louis XI. betrothed her at first to Nicholas of Anjou, and afterwards offered her hand successively to Charles the Bold, to the duke of Brittany, and even to his own brother, Charles of France. Finally she married Pierre de Beaujeu, a younger brother of the duke of Bourbon. Before his death Louis XI. entrusted to Pierre de Beaujeu and Anne the entire charge of his son, Charles VIII., a lad of thirteen; and from 1483 to 1492 the Beaujeus exercised a virtual regency. Anne was a true daughter of Louis XI. Energetic, obstinate, cunning and unscrupulous, she inherited, too, her father's avarice and rapacity. Although they made some concessions, the Beaujeus succeeded in maintaining the results of the previous reign, and in triumphing over the feudal intrigues and coalitions, as was seen from the meeting of the estates general in 1484, and the results of the "Mad War" (1485) and the war with Brittany (1488); and in spite of the efforts of Maximilian of Austria they concluded the marriage of Charles VIII. and Anne, duchess of Brittany (1491). But a short time afterwards the king disengaged himself completely from their tutelage, to the great detriment of the kingdom. In 1488 Pierre de Beaujeu had succeeded to the Bourbonnais, the last great fief of France. He died in 1503, but Anne survived him twenty years. From her establishments at Moulins and Chantelle in the Bourbonnais she continued henceforth vigorously to defend the Bourbon cause against the royal family. Anne's only daughter, Suzanne, had married in 1505 her cousin, Charles of Bourbon, count of Montpensier, the future constable; and the question of the succession of Suzanne, who died in 1521, was the determining factor of the treason of the constable de Bourbon (1523). Anne had died some months before, on the 14th of November 1522.

See P. Pelicier, *Essai sur le gouvernement de la Dame de Beaujeu* (Chartres, 1882).

(J. I.)

ANNEALING, HARDENING AND TEMPERING. Annealing (from the prefix *an*, and the old English *aélan*, to burn or bake; the meaning has probably also been modified from the French *nieler*, to enamel black on gold or silver, from the med. Lat. *nigellare*, to make black; cf. *niello*) is a process of treating a metal or alloy by heat with the object of imparting to it a certain condition of ductility, extensibility, or a certain grade of softness or hardness, with

all that is involved in and follows from those conditions. The effect may be mechanical only, or a chemical change may take place also. Sometimes the causes are obvious, in other cases they are more or less obscure. But of the actual facts, and the immense importance of this operation as well as of the related ones of tempering and hardening in shop processes, there is no question.

When the treatment is of a mechanical character only, there can be no reasonable doubt that the common belief is correct, namely, that the metallic crystals or fibres undergo a molecular rearrangement of some kind. When it is of a chemical character, the process is one of cementation, due to the occlusion of gases in the molecules of the metals.

Numerous examples of annealing due to molecular rearrangement might be selected from the extensive range of workshop operations. The following are a few only:—when a boiler-maker bends the edges of a plate of steel or iron by hammer blows (flanging), he does so in successive stages (heats), at each of which the plate has to be reheated, with inevitable cooling down during the time work is being done upon it. The result is that the plate becomes brittle over the parts which have been subjected to this treatment; and this brittleness is not uniformly distributed, but is localized, and is a source of weakness, inducing a liability to crack. If, however, the plate when finished is raised to a full red heat, and allowed to cool down away from access of cool air, as in a furnace, or underneath wood ashes, it resumes its old ductility. The plate has been annealed, and is as safe as it was before it was flanged. Again, when a sheet of thin metal is forced to assume a shape very widely different from its original plane aspect, as by hammering, or by drawing out in a press—a cartridge case being a familiar example—it is necessary to anneal it several times during the progress of the operation. Without such annealing it would never arrive at the final stage desired, but would become torn asunder by the extension of its metallic fibres. Cutting tools are made of steel having sufficient carbon to afford capacity for hardening. Before the process is performed, the condition in which the carbon is present renders the steel so hard and tough as to render the preliminary turning or shaping necessary in many cases (*e.g.* in milling cutters) a tedious operation. To lessen this labour, the steel is first annealed. In this case it is brought to a low red heat, and allowed to cool away from the air. It can then be machined with comparative ease and be subsequently hardened or tempered. When a metallic structure has endured long service a state of fatigue results. Annealing is, where practicable, resorted to in order to restore the original strength. A familiar illustration is that of chains which are specially liable to succumb to constant overstrain if continued for only a year or two. This is so well known that the practice is regularly adopted of annealing the chains at regular intervals. They are put into a clear hot furnace and raised to a low red heat, continued for a few hours, and then allowed to cool down in the furnace after the withdrawal of the source of heat. Before the annealing the fracture of a link would be more crystalline than afterwards.

In these examples, and others of which these are typical, two conditions are essential, one being the grade of temperature, the other the cooling. The temperature must never be so high as to cause the metal to become overheated, with risk of burning, nor so low as to prevent the penetration of the substance with a good volume of heat. It must also be continued for sufficient time. More than this cannot be said. Each particular piece of work requires its own treatment and period, and nothing but experience of similar work will help the craftsman. The cooling must always be gradual, such as that which results from removing the source of heat, as by drawing a furnace fire, or covering with non-conducting substances.

The chemical kind of annealing is specifically that employed in the manufacture of malleable cast iron. In this process, castings are made of white iron,—a brittle quality which has its carbon wholly in the combined state. These castings, when subjected to heat for a period of ten days or a fortnight, in closed boxes, in the presence of substances containing oxygen, become highly ductile. This change is due to the absorption of the carbon by the oxygen in the cementing material, a comparatively pure soft iron being left behind. The result is that the originally hard, brittle castings after this treatment may be cut with a knife, and be bent double and twisted into spirals without fracturing.

The distinction between *hardening* and *tempering* is one of degree only, and both are of an opposite character to annealing. Hardening, in the shop sense, signifies the making of a piece of steel about as hard as it can be made—“glass hard”—while tempering indicates some stage in an infinite range between the fully hardened and the annealed or softened condition. As a matter of convenience only, hardening is usually a stage in the work of tempering. It is easier to harden first, and “let down” to the temper required, than to secure the exact heat for tempering by raising the material to it. This is partly due to the long

established practice of estimating temperature by colour tints; but this is being rapidly invaded by new methods in which the temper heat is obtained in furnaces provided with pyrometers, by means of which exact heat regulation is readily secured, and in which the heating up is done gradually. Such furnaces are used for hardening balls for bearings, cams, small toothed wheels and similar work, as well as for tempering springs, milling cutters and other kinds of cutting tools. But for the cutting tools having single edges, as used in engineers' shops, the colour test is still generally retained.

In the practice of hardening and tempering tools by colour, experience is the only safe guide. Colour tints vary with degrees of light; steels of different brands require different treatment in regard to temperature and quenching; and steels even of identical chemical composition do not always behave alike when tempered. Every fresh brand of steel has, therefore, to be treated at first in a tentative and experimental fashion in order to secure the best possible results. The larger the masses of steel, and the greater the disparity in dimensions of adjacent parts, the greater is the risk of cracking and distortion. Excessive length and the presence of keen angles increase the difficulties of hardening. The following points have to be observed in the work of hardening and tempering.

A grade of steel must be selected of suitable quality for the purpose for which it has to be used. There are a number of such grades, ranging from about 1½ to ½% content of carbon, and each having its special utility. Overheating must be avoided, as that burns the steel and injures or ruins it. A safe rule is never to heat any grade of steel to a temperature higher than that at which experience proves it will take the temper required. Heating must be regular and thorough throughout, and must therefore be slowly done when dealing with thick masses. Contact with sulphurous fuel must be avoided. Baths of molten alloys of lead and tin are used when very exact temperatures are required, and when articles have thick and thin parts adjacent. But the gas furnaces have the same advantages in a more handy form. Quenching is done in water, oil, or in various hardening mixtures, and sometimes in solids. Rain water is the principal hardening agent, but various saline compounds are often added to intensify its action. Water that has been long in use is preferred to fresh. Water is generally used cold, but in many cases it is warmed to about 80° F., as for milling cutters and taps, warmed water being less liable to crack the cutters than cold. Oil is preferred to water for small springs, for guns and for many cutters. Mercury hardens most intensely, because it does not evaporate, and so does lead or wax for the same reason; water evaporates, and in the spheroidal state, as steam, leaves contact with the steel. This is the reason why long and large objects are moved vertically about in the water during quenching, to bring them into contact with fresh cold water.

There is a good deal of mystery affected by many of the hardeners, who are very particular about the composition of their baths, various oils and salts being used in an infinity of combinations. Many of these are the result of long and successful experience, some are of the nature of "fads." A change of bath may involve injury to the steel. The most difficult articles to harden are springs, milling cutters, taps, reamers. It would be easy to give scores of hardening compositions.

Hardening is performed the more efficiently the more rapidly the quenching is done. In the case of thick objects, however, especially milling cutters, there is risk of cracking, due to the difference of temperature on the outside and in the central body of metal. Rapid hardening is impracticable in such objects. This is the cause of the distortion of long taps and reamers, and of their cracking, and explains why their teeth are often protected with soft soap and other substances.

The presence of the body of heat in a tool is taken advantage of in the work of tempering. The tool, say a chisel, is dipped, a length of 2 in. or more being thus hardened and blackened. It is then removed, and a small area rubbed rapidly with a bit of grindstone, observations being made of the changing tints which gradually appear as the heat is communicated from the hot shank to the cooled end. The heat becomes equalized, and at the same time the approximate temperature for quenching for temper is estimated by the appearance of a certain tint; at that instant the article is plunged and allowed to remain until quite cold. For every different class of tool a different tint is required.

"Blazing off" is a particular method of hardening applied to small springs. The springs are heated and plunged in oils, fats, or tallow, which is burned off previous to cooling in air, or in the ashes of the forge, or in oil, or water usually. They are hardened, reheated and tempered, and the tempering by blazing off is repeated for heavy springs. The practice varies almost infinitely with dimensions, quality of steel, and purpose to which the springs have to be applied.

The range of temper for most cutting tools lies between a pale straw or yellow, and a light purple or plum colour. The corresponding range of temperatures is about 430° F. to 530° F., respectively. “Spring temper” is higher, from dark purple to blue, or 550° F. to 630° F. In many fine tools the range of temperature possible between good and poor results lies within from 5° to 10° F.

There is another kind of hardening which is of a superficial character only—“case hardening.” It is employed in cases where toughness has to be combined with durability of surface. It is a cementation process, practised on wrought iron and mild steel, and applied to the link motions of engines, to many pins and studs, eyes of levers, &c. The articles are hermetically luted in an iron box, packed with nitrogenous and saline substances such as potash, bone dust, leather cuttings, and salt. The box is placed in a furnace, and allowed to remain for periods of from twelve to thirty-six hours, during which period the surface of the metal, to a depth of $\frac{1}{32}$ to $\frac{1}{16}$ in., is penetrated by the cementing materials, and converted into steel. The work is then thrown into water and quenched.

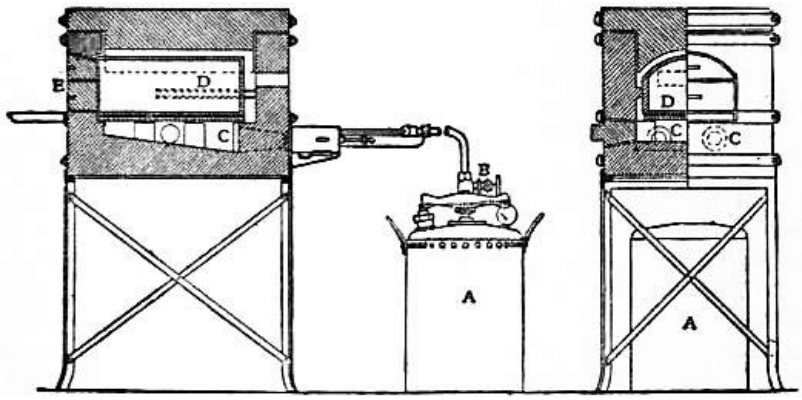


Fig. 1.—Automatic Oil Muffle Furnace.

A muffle furnace, employed for annealing, hardening and tempering is shown in fig. 1; the heat being obtained by means of petroleum, which is contained in the tank A, and is kept under pressure by pumping at intervals with the wooden handle, so that when the valve B is opened the oil is vaporized by passing through a heating coil at the furnace entrance, and when ignited burns fiercely as a gas flame. This passes into the furnace through the two holes, C, C, and plays under and up around the muffle D, standing on a fireclay slab. The doorway is closed by two fireclay blocks at E. A temperature of over 2000° F. can be obtained in furnaces of this class, and the heat is of course under perfect control.

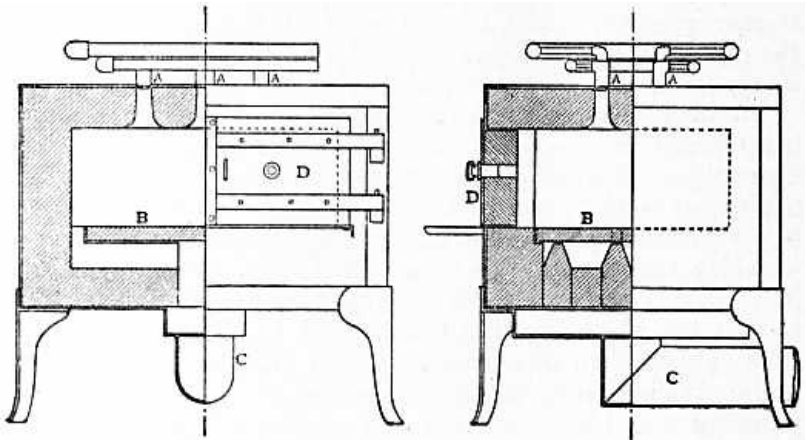


Fig. 2.—Reverbatory Furnace.

A reverberatory type of gas furnace, shown in fig. 2, differs from the oil furnace in having the flames brought down through the roof, by pipes A, A, A, playing on work laid on the fireclay slab B, thence passing under this and out through the elbow-pipe C. The hinged doors, D, give a full opening to the interior of the furnace. It will be noticed in both these furnaces (by Messrs Fletcher, Russell & Co., Ltd.) that the iron casing is a mere shell, enclosing very thick firebrick linings, to retain the heat effectively.

(J. G. H.)

ANNECY, the chief town of the department of Haute Savoie in France. Pop. (1906) 10,763. It is situated at a height of 1470 ft., at the northern end of the lake of Annecy, and is 25 m. by rail N.E. of Aix les Bains. The surrounding country presents many scenes of beauty. The town itself is a pleasant residence, and contains a 16th century cathedral church, an 18th century bishop's palace, a 14th-16th century castle (formerly the residence of the counts of the Genevois), and the reconstructed convent of the Visitation, wherein now reposes the body of St François de Sales (born at the castle of Sales, close by, in 1567; died at Lyons in 1622), who held the see from 1602 to 1622. There is also a public library, with 20,000 volumes, and various scientific collections, and a public garden, with a statue of the chemist Berthollet (1748-1822), who was born not far off. The bishop's see of Geneva was transferred hither in 1535, after the Reformation, but suppressed in 1801, though revived in 1822. There are factories of linen and cotton goods, and of felt hats, paper mills, and a celebrated bell foundry at Annecy le Vieux. This last-named place existed in Roman times. Annecy itself was in the 10th century the capital of the counts of the Genevois, from whom it passed in 1401 to the counts of Savoy, and became French in 1860 on the annexation of Savoy.

The Lake of Annecy is about 9 m. in length by 2 m. in breadth, its surface being 1465 ft. above the level of the sea. It discharges its waters, by means of the Thioux canal, into the Fier, a tributary of the Rhone.

(W. A. B. C.)

ANNELIDA, a name derived from J.B.P. Lamarck's term *Annélides*, now used to denote a major phylum or division of coelomate invertebrate animals. Annelids are segmented worms, and differ from the Arthropoda (*q.v.*), which they closely resemble in many respects, by the possession of a portion of the coelom traversed by the alimentary canal. In the latter respect, and in the fact that they frequently develop by a metamorphosis, they approach the Mollusca (*q.v.*), but they differ from that group notably in the occurrence of metameric segmentation affecting many of the systems of organs. The body-wall is highly muscular and, except in a few probably specialized cases, possesses chitinous spines, the setae, which are secreted by the ectoderm and are embedded in pits of the skin. They possess a modified anterior end, frequently with special sense organs, forming a head, a segmented nervous system, consisting of a pair of anterior, dorsally-placed ganglia, a ring surrounding the alimentary canal, and a double ventral ganglionated chain, a definite vascular system, an excretory system consisting of nephridia, and paired generative organs formed from the coelomic epithelium. They are divided as follows: (1) Haplodrili (*q.v.*) or Archiannelida; (2) Chaetopoda (*q.v.*); (3) Myzostomida (*q.v.*), probably degenerate Polychaeta; (4) Hirudinea (see Chaetopoda and Leech); (5) Echiuroidea (*q.v.*).

(P. C. M.)

ANNET, PETER (1693-1769), English deist, is said to have been born at Liverpool. A schoolmaster by profession, he became prominent owing to his attacks on orthodox theologians, and his membership of a semi-theological debating society, the Robin Hood Society, which met at the "Robin Hood and Little John" in Butcher Row. To him has been attributed a work called *A History of the Man after God's own Heart* (1761), intended to show that George II. was insulted by a current comparison with David. The book is said to have inspired Voltaire's *Saul*. It is also attributed to one John Noorthouck (Noorthook). In 1763 he was condemned for blasphemous libel in his paper called the *Free Enquirer* (nine numbers only). After his release he kept a small school in Lambeth, one of his pupils being James Stephen (1758-1832), who became master in Chancery. Annet died on the 18th of January 1769. He stands between the earlier philosophic deists and the later propagandists of Paine's school, and "seems to have been the first freethought lecturer" (J.M. Robertson); his essays (*A Collection of the Tracts of a certain Free Enquirer*, 1739-1745) are forcible but lack refinement. He invented a system of shorthand (2nd ed., with a copy of verses by Joseph Priestley).

ANNEXATION (Lat. *ad*, to, and *nexus*, joining), in international law, the act by which a state adds territory to its dominions; the term is also used generally as a synonym for acquisition. The assumption of a protectorate over another state, or of a sphere of influence, is not strictly annexation, the latter implying the complete displacement in the annexed territory of the government or state by which it was previously ruled. Annexation may be the consequence of a voluntary cession from one state to another, or of conversion from a protectorate or sphere of influence, or of mere occupation in uncivilized regions, or of conquest. The cession of Alsace-Lorraine to Germany by France, although brought about by the war of 1870, was for the purposes of international law a voluntary cession. Under the treaty of the 17th of December 1885, between the French republic and the queen of Madagascar, a French protectorate was established over this island. In 1896 this protectorate was converted by France into an annexation, and Madagascar then became "French territory." The formal annexation of Bosnia-Herzegovina by Austria (Oct. 5, 1908) was an unauthorized conversion of an "occupation" authorized by the Treaty of Berlin (1878), which had, however, for years operated as a *de facto* annexation. A recent case of conquest was that effected by the South African War of 1899-1902, in which the Transvaal republic and the Orange Free State were extinguished, first *de facto* by occupation of the whole of their territory, and then *de jure* by terms of surrender entered into by the Boer generals acting as a government.

By annexation, as between civilized peoples, the annexing state takes over the whole succession with the rights and obligations attaching to the ceded territory, subject only to any modifying conditions contained in the treaty of cession. These, however, are binding only as between the parties to them. In the case of the annexation of the territories of the Transvaal republic and Orange Free State, a rather complicated situation arose out of the facts, on the one hand, that the ceding states closed their own existence and left no recourse to third parties against the previous ruling authority, and, on the other, that, having no means owing to the *de facto* British occupation, of raising money by taxation, the dispossessed governments raised money by selling certain securities, more especially a large holding of shares in the South African Railway Company, to neutral purchasers. The British government repudiated these sales as having been made by a government which the British government had already displaced. The question of at what point, in a war of conquest, the state succession becomes operative is one of great delicacy. As early as the 6th of January 1900, the high commissioner at Cape Town issued a proclamation giving notice that H.M. government would "not recognize as valid or effectual" any conveyance, transfer or transmission of any property made by the government of the Transvaal republic or Orange Free State subsequently to the 10th of October 1899, the date of the commencement of the war. A proclamation forbidding transactions with a state which might still be capable of maintaining its independence could obviously bind only those subject to the authority of the state issuing it. Like paper blockades (see BLOCKADE) and fictitious occupations of territory, such premature proclamations are viewed by international jurists as not being *jure gentium*. The proclamation was succeeded, on the 9th of March 1900, by another of the high commissioner at Cape Town, reiterating the notice, but confining it to "lands, railways, mines or mining rights." And on the 1st of September 1900 Lord Roberts proclaimed at Pretoria the annexation of the territories of the Transvaal republic to the British dominions. That the war continued for nearly two years after this proclamation shows how fictitious the claim of annexation was. The difficulty which arose out of the transfer of the South African Railway shares held by the Transvaal government was satisfactorily terminated by the purchase by the British government of the total capital of the company from the different groups of shareholders (see on this case, Sir Thomas Barclay, *Law Quarterly Review*, July 1905; and Professor Westlake, in the same *Review*, October 1905).

In a judgment of the judicial committee of the privy council in 1899 (*Coote* v. *Sprigg*, A.C. 572), Lord Chancellor Halsbury made an important distinction as regards the obligations of state succession. The case in question was a claim of title against the crown, represented by the government of Cape Colony. It was made by persons holding a concession of certain rights in eastern Pondoland from a native chief. Before the grantees had taken up their grant by acts of possession, Pondoland was annexed to Cape Colony. The colonial government refused to recognize the grant on different grounds, the chief of them being that the concession conferred no legal rights before the annexation and therefore could

confer none afterwards, a sufficiently good ground in itself. The judicial committee, however, rested its decision chiefly on the allegation that the acquisition of the territory was an act of state and that “no municipal court had authority to enforce such an obligation” as the duty of the new government to respect existing titles. “It is no answer,” said Lord Halsbury, “to say that by the ordinary principles of international law private property is respected by the sovereign which accepts the cession and assumes the duties and legal obligations of the former sovereign with respect to such private property within the ceded territory. All that can be meant by such a proposition is that according to the well-understood rules of international law a change of sovereignty by cession ought not to affect private property, but no municipal tribunal has authority to enforce such an obligation. And if there is either an express or a well-understood bargain between the ceding potentate and the government to which the cession is made that private property shall be respected, that is only a bargain which can be enforced by sovereign against sovereign in the ordinary course of diplomatic pressure.” In an editorial note on this case the *Law Quarterly Review* of Jan. 1900 (p. 1), dissenting from the view of the judicial committee that “no municipal tribunal has authority to enforce such an obligation,” the writer observes that “we can read this only as meant to lay down that, on the annexation of territory even by peaceable cession, there is a total abeyance of justice until the will of the annexing power is expressly made known; and that, although the will of that power is commonly to respect existing private rights, there is no rule or presumption to that effect of which any court must or indeed can take notice.” So construed the doctrine is not only contrary to international law, but according to so authoritative an exponent of the common law as Sir F. Pollock, there is no warrant for it in English common law.

An interesting point of American constitutional law has arisen out of the cession of the Philippines to the United States, through the fact that the federal constitution does not lend itself to the exercise by the federal congress of unlimited powers, such as are vested in the British parliament. The sole authority for the powers of the federal congress is a written constitution with defined powers. Anything done in excess of those powers is null and void. The Supreme Court of the United States, on the other hand, has declared that, by the constitution, a government is ordained and established “for the United States of America” and not for countries outside their limits (*Ross’s Case*, 140 U.S. 453, 464), and that no such power to legislate for annexed territories as that vested in the British crown in council is enjoyed by the president of the United States (*Field* v. *Clark*, 143 U.S. 649, 692). Every detail connected with the administration of the territories acquired from Spain under the treaty of Paris (December 10, 1898) has given rise to minute discussion.

See Carman F. Randolph, *Law and Policy of Annexation* (New York and London, 1901); Charles Henry Butler, *Treaty-making Power of the United States* (New York, 1902), vol. i. p. 79 et seq.

(T. Ba.)

ANNICERIS, a Greek philosopher of the Cyrenaic school. There is no certain information as to his date, but from the statement that he was a disciple of Paraebates it seems likely that he was a contemporary of Alexander the Great. A follower of Aristippus, he denied that pleasure is the general end of human life. To each separate action there is a particular end, namely the pleasure which actually results from it. Secondly, pleasure is not merely the negation of pain, inasmuch as death ends all pain and yet cannot be regarded as pleasure. There is, however, an absolute pleasure in certain virtues such as belong to the love of country, parents and friends. In these relations a man will have pleasure, even though it may result in painful and even fatal consequences. Friendship is not merely for the satisfaction of our needs, but is in itself a source of pleasure. He maintains further, in opposition to most of the Cyrenaic school, that wisdom or prudence alone is an insufficient guarantee against error. The wise man is he who has acquired a habit of wise action; human wisdom is liable to lapses at any moment. Diogenes Laertius says that Anniceris ransomed Plato from Dionysius, tyrant of Syracuse, for twenty minas. If we are right in placing Anniceris in the latter half of the 4th century, it is clear that the reference here is to an earlier Anniceris, who, according to Aelian, was a celebrated charioteer.

ANNING, MARY (1799-1847), English fossil-collector, the daughter of Richard Anning, a cabinet-maker, was born at Lyme Regis in May 1799. Her father was one of the earliest collectors and dealers in fossils, obtained chiefly from the Lower Lias in that famous locality. When but a child in 1811 she discovered the first specimen of *Ichthyosaurus* which was brought into scientific notice; in 1821 she found remains of a new saurian, the *Plesiosaurus* and in 1828 she procured, for the first time in England, remains of a pterodactyl (*Dimorphodon*). She died on the 9th of March 1847.

ANNISTON, a city and the county seat of Calhoun county, Alabama, U.S.A., in the north-eastern part of the state, about 63 m. E. by N. of Birmingham. Pop. (1890) 9998; (1900), 9695, of whom 3669 were of negro descent; (1910 census) 12,794. Anniston is served by the Southern, the Seaboard Air Line, and the Louisville & Nashville railways. The city is situated on the slope of Blue Mountain, a chain of the Blue Ridge, and is a health resort. It is the seat of the Noble Institute (for girls), established in 1886 by Samuel Noble (1834-1888), a wealthy iron-founder, and of the Alabama Presbyterian College for Men (1905). There are vast quantities of iron ore in the vicinity of the city, the Coosa coal-fields being only 25 m. distant. Anniston is an important manufacturing city, the principal industries being the manufacture of iron, steel and cotton. In 1905 the city's factory products were valued at $2,525,455. An iron furnace was established on the site of Anniston during the Civil War, but it was destroyed by the federal troops in 1865; and in 1872 it was rebuilt on a much larger scale. The city was founded in 1872 as a private enterprise, by the Woodstock Iron Company, organized by Samuel Noble and Gen. Daniel Tyler (1799-1882); but it was not opened for general settlement until twelve years later. It was chartered as a city in 1879.

ANNO, or HANNO, **SAINT** (*c.* 1010-1075), archbishop of Cologne, belonged to a Swabian family, and was educated at Bamberg. He became confessor to the emperor Henry III., who appointed him archbishop of Cologne in 1056. He took a prominent part in the government of Germany during the minority of King Henry IV., and was the leader of the party which in 1062 seized the person of Henry, and deprived his mother, the empress Agnes, of power. For a short time Anno exercised the chief authority in the kingdom, but he was soon obliged to share this with Adalbert, archbishop of Bremen, retaining for himself the supervision of Henry's education and the title of *magister*. The office of chancellor of the kingdom of Italy was at this period regarded as an appanage of the archbishopric of Cologne, and this was probably the reason why Anno had a considerable share in settling the papal dispute in 1064. He declared Alexander II. to be the rightful pope at a synod held at Mantua in May 1064, and took other steps to secure his recognition. Returning to Germany, he found the chief power in the hands of Adalbert, and as he was disliked by the young king, he left the court but returned and regained some of his former influence when Adalbert fell from power in 1066. He succeeded in putting down a rising against his authority in Cologne in 1074, and it was reported he had allied himself with William the Conqueror, king of England, against the emperor. Having cleared himself of this charge, Anno took no further part in public business, and died at Cologne on the 4th of December 1075. He was buried in the monastery of Siegburg and was canonized in 1183 by Pope Lucius III. He was a founder of monasteries and a builder of churches, advocated clerical celibacy and was a strict disciplinarian. He was a man of great energy and ability, whose action in recognizing Alexander II. was of the utmost consequence for Henry IV. and for Germany.

There is a *Vita Annonis*, written about 1100, by a monk of Siegburg, but this is of slight value. It appears in the *Monumenta Germaniae historica: Scriptores*, Bd. xi. (Hanover and Berlin, 1826-1892). There is an "Epistola ad monachos Malmundarienses" by Anno in the *Neues Archiv der Gesellschaft für altere deutsche Geschichtskunde*, Bd. xiv. (Hanover, 1876 seq.). See also the *Annolied*, or *Incerti poetae Teutonici rhythmus de S. Annone*, written about 1180, and edited by J. Kehrein (Frankfort, 1865); Th. Lindner, *Anno II. der Heilige, Erzbischof von Koln* (Leipzig, 1869).

ANNOBON, or Anno Bom, an island in the Gulf of Guinea, in 1° 24′ S. and 5° 35′ E., belonging to Spain. It is 110 m. S.W. of St Thomas. Its length is about 4 m., its breadth 2, and its area 6¾ sq. m. Rising in some parts nearly 3000 ft. above the sea, it presents a succession of beautiful valleys and steep mountains, covered with rich woods and luxuriant vegetation. The inhabitants, some 3000 in number, are negroes and profess belief in the Roman Catholic faith. The chief town and residence of the governor is called St Antony (San Antonio de Praia). The roadstead is tolerably safe, and passing vessels take advantage of it in order to obtain water and fresh provisions, of which Annobon contains an abundant supply. The island was discovered by the Portuguese on the 1st of January 1473, from which circumstance it received its name (= New Year). Annobon, together with Fernando Po, was ceded to Spain by the Portuguese in 1778. The islanders revolted against their new masters and a state of anarchy ensued, leading, it is averred, to an arrangement by which the island was administered by a body of five natives, each of whom held the office of governor during the period that elapsed till ten ships touched at the island. In the latter part of the 19th century the authority of Spain was re-established.

ANNONA (from Lat. *annus*, year), in Roman mythology, the personification of the produce of the year. She is represented in works of art, often together with Ceres, with a *cornucopia* (horn of plenty) in her arm, and a ship's prow in the background, indicating the transport of grain over the sea. She frequently occurs on coins of the empire, standing between a *modius* (corn-measure) and the prow of a galley, with ears of corn in one hand and a *cornucopia* in the other; sometimes she holds a rudder or an anchor. The Latin word itself has various meanings: (1) the produce of the year's harvest; (2) all means of subsistence, especially grain stored in the public granaries for provisioning the city; (3) the market-price of commodities, especially corn; (4) a direct tax in kind, levied in republican times in several provinces, chiefly employed in imperial times for distribution amongst officials and the support of the soldiery.

In order to ensure a supply of corn sufficient to enable it to be sold at a very low price, it was procured in large quantities from Umbria, Etruria and Sicily. Almost down to the times of the empire, the care of the corn-supply formed part of the aedile's duties, although in 440 B.C. (if the statement in Livy iv. 12, 13 is correct, which is doubtful) the senate appointed a special officer, called *praefectus annonae*, with greatly extended powers. As a consequence of the second Punic War, Roman agriculture was at a standstill; accordingly, recourse was had to Sicily and Sardinia (the first two Roman provinces) in order to keep up the supply of corn; a tax of one-tenth was imposed on it, and its export to any country except Italy forbidden. The price at which the corn was sold was always moderate; the corn law of Gracchus (123 B.C.) made it absurdly low, and Clodius (58 B.C.) bestowed it gratuitously. The number of the recipients of this free gift grew so enormously, that both Caesar and Augustus were obliged to reduce it. From the time of Augustus to the end of the empire the number of those who were entitled to receive a monthly allowance of corn on presenting a ticket was 200,000. In the 3rd century, bread formed the dole. A *praefectus annonae* was appointed by Augustus to superintend the corn-supply; he was assisted by a large staff in Rome and the provinces, and had jurisdiction in all matters connected with the corn-market. The office lasted till the latest times of the empire.

ANNONAY, a town of south-eastern France, in the north of the department of Ardèche, 50 m. S. of Lyons by the Paris-Lyons railway. Pop. (1906) 15,403. Annonay is built on the hill overlooking the meeting of the deep gorges of the Déôme and the Cance, the waters of which supply power to the factories of the town. By means of a dam across the Ternay, an

affluent of the Déôme, to the north-west of the town, a reservoir is provided, in which an additional supply of water, for both industrial and domestic purposes, is stored. At Annonay there is an obelisk in honour of the brothers Montgolfier, inventors of the balloon, who were natives of the place. A tribunal of commerce, a board of trade-arbitrators, a branch of the Bank of France, and chambers of commerce and of arts and manufactures are among the public institutions. Annonay is the principal industrial centre of its department, the chief manufactures being those of leather, especially for gloves, paper, silk and silk goods, and flour. Chemical manures, glue, gelatine, brushes, chocolate and candles are also produced.

ANNOY (like the French *ennui*, a word traced by etymologists to a Lat. phrase, *in odio esse*, to be “in hatred” or hateful of someone), to vex or affect with irritation. In the sense of “nuisance,” the noun “annoyance,” apart from its obvious meaning, is found in the English “Jury of Annoyance” appointed by an act of 1754 to report upon obstructions in the highways.

ANNUITY (from Lat. *annus*, a year), a periodical payment, made annually, or at more frequent intervals, either for a fixed term of years, or during the continuance of a given life, or a combination of lives. In technical language an annuity is said to be payable for an assigned *status*, this being a general word chosen in preference to such words as “time,” “term” or “period,” because it may include more readily either a term of years certain, or a life or combination of lives. The magnitude of the annuity is the sum to be paid (and received) in the course of each year. Thus, if £100 is to be received each year by a person, he is said to have “an annuity of £100.” If the payments are made half-yearly, it is sometimes said that he has “a half-yearly annuity of £100”; but to avoid ambiguity, it is more commonly said he has an annuity of £100, payable by half-yearly instalments. The former expression, if clearly understood, is preferable on account of its brevity. So we may have quarterly, monthly, weekly, daily annuities, when the annuity is payable by quarterly, monthly, weekly or daily instalments. An annuity is considered as accruing during each instant of the status for which it is enjoyed, although it is only payable at fixed intervals. If the enjoyment of an annuity is postponed until after the lapse of a certain number of years, the annuity is said to be deferred. If an annuity, instead of being payable at the end of each year, half-year, &c., is payable in advance, it is called an annuity-due.

If an annuity is payable for a term of years independent of any contingency, it is called an *annuity certain*; if it is to continue for ever, it is called a *perpetuity*; and if in the latter case it is not to commence until after a term of years, it is called a *deferred perpetuity*. An annuity depending on the continuance of an assigned life or lives, is sometimes called a life annuity; but more commonly the simple term “annuity” is understood to mean a life annuity, unless the contrary is stated. A life annuity, to cease in any event after a certain term of years, is called a *temporary annuity*. The holder of an annuity is called an annuitant, and the person on whose life the annuity depends is called the nominee.

If not otherwise stated, it is always understood that an annuity is payable yearly, and that the annual payment (or rent, as it is sometimes called) is £1. It is, however, customary to consider the annual payment to be, not £1, but simply 1, the reader supplying whatever monetary unit he pleases, whether pound, dollar, franc, Thaler, &c.

The annuity is the totality of the payments to be made (and received), and is so understood by all writers on the subject; but some have also used the word to denote an individual payment (or rent), speaking, for instance, of the first or second year’s annuity,—a practice which is calculated to introduce confusion and should therefore be carefully avoided.

Instances of perpetuities are the dividends upon the public stocks in England, France and some other countries. Thus, although it is usual to speak of £100 consols, the reality is the yearly dividend which the government pays by quarterly instalments. The practice of the French in this, as in many other matters, is more logical. In speaking of their public funds

(*rentes*) they do not mention the ideal capital sum, but speak of the annuity or annual payment that is received by the public creditor. Other instances of perpetuities are the incomes derived from the debenture stocks of railway companies, also the feu-duties commonly payable on house property in Scotland. The number of years' purchase which the perpetual annuities granted by a government or a railway company realize in the open market, forms a very simple test of the credit of the various governments or railways.

Terminable Annuities are employed in the system of British public finance as a means of reducing the National Debt (*q.v.*). This result is attained by substituting for a perpetual annual charge (or one lasting until the capital which it represents can be paid off *en bloc*), an annual charge of a larger amount, but lasting for a short term. The latter is so calculated as to pay off, during its existence, the capital which it replaces, with interest at an assumed or agreed rate, and under specified conditions. The practical effect of the substitution of a terminable annuity for an obligation of longer currency is to bind the present generation of citizens to increase its own obligations in the present and near future in order to diminish those of its successors. This end might be attained in other ways; for instance, by setting aside out of revenue a fixed annual sum for the purchase and cancellation of debt (Pitt's method, in intention), or by fixing the annual debt charge at a figure sufficient to provide a margin for reduction of the principal of the debt beyond the amount required for interest (Sir Stafford Northcote's method), or by providing an annual surplus of revenue over expenditure (the "Old Sinking Fund"), available for the same purpose. All these methods have been tried in the course of British financial history, and the second and third of them are still employed; but on the whole the method of terminable annuities has been the one preferred by chancellors of the exchequer and by parliament.

Terminable annuities, as employed by the British government, fall under two heads:—(*a*) Those issued to, or held by private persons; (*b*) those held by government departments or by funds under government control. The important difference between these two classes is that an annuity under (*a*), once created, cannot be modified except with the holder's consent, *i.e.* is practically unalterable without a breach of public faith; whereas an annuity under (*b*) can, if necessary, be altered by interdepartmental arrangement under the authority of parliament. Thus annuities of class (*a*) fulfil most perfectly the object of the system as explained above; while those of class (*b*) have the advantage that in times of emergency their operation can be suspended without any inconvenience or breach of faith, with the result that the resources of government can on such occasions be materially increased, apart from any additional taxation. For this purpose it is only necessary to retain as a charge on the income of the year a sum equal to the (smaller) perpetual charge which was originally replaced by the (larger) terminable charge, whereupon the difference between the two amounts is temporarily released, while ultimately the increased charge is extended for a period equal to that for which it is suspended. Annuities of class (*a*) were first instituted in 1808, but are at present mainly regulated by an act of 1829. They may be granted either for a specified life, or two lives, or for an arbitrary term of years; and the consideration for them may take the form either of cash or of government stock, the latter being cancelled when the annuity is set up. Annuities (*b*) held by government departments date from 1863. They have been created in exchange for permanent debt surrendered for cancellation, the principal operations having been effected in 1863, 1867, 1870, 1874, 1883 and 1899. Annuities of this class do not affect the public at all, except of course in their effect on the market for government securities. They are merely financial operations between the government, in its capacity as the banker of savings banks and other funds, and itself, in the capacity of custodian of the national finances. Savings bank depositors are not concerned with the manner in which government invests their money, their rights being confined to the receipt of interest and the repayment of deposits upon specified conditions. The case is, however, different as regards forty millions of consols (included in the above figures), belonging to suitors in chancery, which were cancelled and replaced by a terminable annuity in 1883. As the liability to the suitors in that case was for a specified amount of stock, special arrangements were made to ensure the ultimate replacement of the precise amount of stock cancelled.

Annuity Calculations.—The mathematical theory of life annuities is based upon a knowledge of the rate of mortality among mankind in general, or among the particular class of persons on whose lives the annuities depend. It involves a mathematical treatment too complicated to be dealt with fully in this place, and in practice it has been reduced to the form of tables, which vary in different places, but which are easily accessible. The history of the subject may, however, be sketched. Abraham Demoivre, in his *Annuities on Lives*, propounded a very simple law of mortality which is to the effect that, out of 86 children born alive, 1 will die every year until the last dies between the ages of 85 and 86. This law agreed

sufficiently well at the middle ages of life with the mortality deduced from the best observations of his time; but, as observations became more exact, the approximation was found to be not sufficiently close. This was particularly the case when it was desired to obtain the value of joint life, contingent or other complicated benefits. Therefore Demoivre's law is entirely devoid of practical utility. No simple formula has yet been discovered that will represent the rate of mortality with sufficient accuracy.

The rate of mortality at each age is, therefore, in practice usually determined by a series of figures deduced from observation; and the value of an annuity at any age is found from these numbers by means of a series of arithmetical calculations. The mortality table here given is an example of modern use.

The first writer who is known to have attempted to obtain, on correct mathematical principles, the value of a life annuity, was Jan De Witt, grand pensionary of Holland and West Friesland. Our knowledge of his writings on the subject is derived from two papers contributed by Frederick Hendriks to the *Assurance Magazine*, vol. ii. p. 222, and vol. in. p. 93. The former of these contains a translation of De Witt's report upon the value of life annuities, which was prepared in consequence of the resolution passed by the states-general, on the 25th of April 1671, to negotiate funds by life annuities, and which was distributed to the members on the 30th of July 1671. The latter contains the translation of a number of letters addressed by De Witt to Burgomaster Johan Hudde, bearing dates from September 1670 to October 1671. The existence of De Witt's report was well known among his contemporaries, and Hendriks collected a number of extracts from various authors referring to it; but the report is not contained in any collection of his works extant, and had been entirely lost for 180 years, until Hendriks discovered it among the state archives of Holland in company with the letters to Hudde. It is a document of extreme interest, and (notwithstanding some inaccuracies in the reasoning) of very great merit, more especially considering that it was the very first document on the subject that was ever written.

TABLE OF MORTALITY—HM, HEALTHY LIVES—MALE.

Number Living and Dying at each Age, out of 10,000 entering at Age 10.

Age.	Living.	Dying.	Age.	Living.	Dying.
10	10,000	79	54	6791	129
11	9,921	0	55	6662	153
12	9,921	40	56	6509	150
13	9,881	35	57	6359	152
14	9,846	40	58	6207	156
15	9,806	22	59	6051	153
16	9,784	0	60	5898	184
17	9,784	41	61	5714	186
18	9,743	59	62	5528	191
19	9,684	68	63	5337	200
20	9,616	56	64	5137	206
21	9,560	67	65	4931	215
22	9,493	59	66	4716	220
23	9,434	73	67	4496	220
24	9,361	64	68	4276	237
25	9,297	48	69	4039	246
26	9,249	64	70	3793	213
27	9,185	60	71	3580	222
28	9,125	71	72	3358	268
29	9,054	67	73	3090	243
30	8,987	74	74	2847	300
31	8,913	65	75	2547	241
32	8,848	74	76	2306	245
33	8,774	73	77	2061	224
34	8,701	76	78	1837	226
35	8,625	71	79	1611	219
36	8,554	75	80	1392	196
37	8,479	81	81	1196	191
38	8,398	87	82	1005	173
39	8,311	88	83	832	172
40	8,223	81	84	660	119
41	8,142	85	85	541	117

42	8,057	87	86	424	92
43	7,970	84	87	332	72
44	7,886	93	88	260	74
45	7,793	97	89	186	36
46	7,696	96	90	150	34
47	7,600	107	91	116	36
48	7,493	106	92	80	36
49	7,387	113	93	44	29
50	7,274	120	94	15	0
51	7,154	124	95	15	5
52	7,030	120	96	10	10
53	6,910	119			

It appears that it had long been the practice in Holland for life annuities to be granted to nominees of any age, in the constant proportion of double the rate of interest allowed on stock; that is to say, if the towns were borrowing money at 6%, they would be willing to grant a life annuity at 12%, and so on. De Witt states that “annuities have been sold, even in the present century, first at six years’ purchase, then at seven and eight; and that the majority of all life annuities now current at the country’s expense were obtained at nine years’ purchase”; but that the price had been increased in the course of a few years from eleven years’ purchase to twelve, and from twelve to fourteen. He also states that the rate of interest had been successively reduced from 6¼ to 5%, and then to 4%. The principal object of his report is to prove that, taking interest at 4%, a life annuity was worth at least sixteen years’ purchase; and, in fact, that an annuitant purchasing an annuity for the life of a young and healthy nominee at sixteen years’ purchase, made an excellent bargain. It may be mentioned that he argues that it is more to the advantage, both of the country and of the private investor, that the public loans should be raised by way of grant of life annuities rather than perpetual annuities. It appears conclusively from De Witt’s correspondence with Hudde, that the rate of mortality assumed as the basis of his calculations was deduced from careful examination of the mortality that had actually prevailed among the nominees on whose lives annuities had been granted in former years. De Witt appears to have come to the conclusion that the probability of death is the same in any half-year from the age of 3 to 53 inclusive; that in the next ten years, from 53 to 63, the probability is greater in the ratio of 3 to 2; that in the next ten years, from 63 to 73, it is greater in the ratio of 2 to 1; and in the next seven years, from 73 to 80, it is greater in the ratio of 3 to 1; and he places the limit of human life at 80. If a mortality table of the usual form is deduced from these suppositions, out of 212 persons alive at the age of 3, 2 will die every year up to 53, 3 in each of the ten years from 53 to 63, 4 in each of the next ten years from 63 to 73, and 6 in each of the next seven years from 73 to 80, when all will be dead.

De Witt calculates the value of an annuity in the following way. Assume that annuities on 10,000 lives each ten years of age, which satisfy the Hm mortality table, have been purchased. Of these nominees 79 will die before attaining the age of 11, and no annuity payment will be made in respect of them; none will die between the ages of 11 and 12, so that annuities will be paid for one year on 9921 lives; 40 attain the age of 12 and die before 13, so that two payments will be made with respect to these lives. Reasoning in this way we see that the annuities on 35 of the nominees will be payable for three years; on 40 for four years, and so on. Proceeding thus to the end of the table, 15 nominees attain the age of 95, 5 of whom die before the age of 96, so that 85 payments will be paid in respect of these 5 lives. Of the survivors all die before attaining the age of 97, so that the annuities on these lives will be payable for 86 years. Having previously calculated a table of the values of annuities certain for every number of years up to 86, the value of all the annuities on the 10,000 nominees will be found by taking 40 times the value of an annuity for 2 years, 35 times the value of an annuity for 3 years, and so on—the last term being the value of 10 annuities for 86 years—and adding them together; and the value of an annuity on one of the nominees will then be found by dividing by 10,000. Before leaving the subject of De Witt, we may mention that we find in the correspondence a distinct suggestion of the law of mortality that bears the name of Demoivre. In De Witt’s letter, dated the 27th of October 1671 (*Ass. Mag*. vol. iii. p. 107), he speaks of a “provisional hypothesis” suggested by Hudde, that out of 80 young lives (who, from the context, may be taken as of the age 6) about 1 dies annually. In strictness, therefore, the law in question might be more correctly termed Hudde’s than Demoivre’s.

De Witt’s report being thus of the nature of an unpublished state paper, although it contributed to its author’s reputation, did not contribute to advance the exact knowledge of

the subject; and the author to whom the credit must be given of first showing how to calculate the value of an annuity on correct principles is Edmund Halley. He gave the first approximately correct mortality table (deduced from the records of the numbers of deaths and baptisms in the city of Breslau), and showed how it might be employed to calculate the value of an annuity on the life of a nominee of any age (see *Phil. Trans*. 1693; *Ass. Mag*. vol. xviii.).

Previously to Halley's time, and apparently for many years subsequently, all dealings with life annuities were based upon mere conjectural estimates. The earliest known reference to any estimate of the value of life annuities rose out of the requirements of the Falcidian law, which (40 B.C.) was adopted in the Roman empire, and which declared that a testator should not give more than three-fourths of his property in legacies, so that at least one-fourth must go to his legal representatives. It is easy to see how it would occasionally become necessary, while this law was in force, to value life annuities charged upon a testator's estate. Aemilius Macer (A.D. 230) states that the method which had been in common use at that time was as follows:—From the earliest age until 30 take 30 years' purchase, and for each age after 30 deduct 1 year. It is obvious that no consideration of compound interest can have entered into this estimate; and it is easy to see that it is equivalent to assuming that all persons who attain the age of 30 will certainly live to the age of 60, and then certainly die. Compared with this estimate, that which was propounded by the praetorian prefect Ulpian was a great improvement. His table is as follows:—

Age.	Years' Purchase.	Age.	Years' Purchase.
Birth to 20	30	45 to 46	14
20 " 25	28	46 " 47	13
25 " 30	25	47 " 48	12
30 " 35	22	48 " 49	11
35 " 40	20	49 " 50	10
40 " 41	19	50 " 55	9
41 " 42	18	55 " 60	7
42 " 43	17	60 and upwards	5
43 " 44	16		
44 " 45	15		

Here also we have no reason to suppose that the element of interest was taken into consideration; and the assumption, that between the ages of 40 and 50 each addition of a year to the nominee's age diminishes the value of the annuity by one year's purchase, is equivalent to assuming that there is no probability of the nominee dying between the ages of 40 and 50. Considered, however, simply as a table of the average duration of life, the values are fairly accurate. At all events, no more correct estimate appears to have been arrived at until the close of the 17th century.

> The mathematics of annuities has been very fully treated in Demoivre's *Treatise on Annuities* (1725); Simpson's *Doctrine of Annuities and Reversions* (1742); P. Gray, *Tables and Formulae*; Baily's *Doctrine of Life Annuities*; there are also innumerable compilations of *Valuation Tables* and *Interest Tables*, by means of which the value of an annuity at any age and any rate of interest may be found. See also the article INTEREST, and especially that on INSURANCE.

Commutation tables, aptly so named in 1840 by Augustus De Morgan (see his paper "On the Calculation of Single Life Contingencies," *Assurance Magazine*, xii. 328), show the proportion in which a benefit due at one age ought to be changed, so as to retain the same value and be due at another age. The earliest known specimen of a commutation table is contained in William Dale's *Introduction to the Study of the Doctrine of Annuities*, published in 1772. A full account of this work is given by F. Hendriks in the second number of the *Assurance Magazine*, pp. 15-17. William Morgan's *Treatise on Assurances*, 1779, also contains a commutation table. Morgan gives the table as furnishing a convenient means of checking the correctness of the values of annuities found by the ordinary process. It may be assumed that he was aware that the table might be used for the direct calculation of annuities; but he appears to have been ignorant of its other uses.

The first author who fully developed the powers of the table was John Nicholas Tetens, a native of Schleswig, who in 1785, while professor of philosophy and mathematics at Kiel, published in the German language an *Introduction to the Calculation of Life Annuities and Assurances*. This work appears to have been quite unknown in England until F. Hendriks

gave, in the first number of the *Assurance Magazine*, pp. 1-20 (Sept. 1850), an account of it, with a translation of the passages describing the construction and use of the commutation table, and a sketch of the author's life and writings, to which we refer the reader who desires fuller information. It may be mentioned here that Tetens also gave only a specimen table, apparently not imagining that persons using his work would find it extremely useful to have a series of commutation tables, calculated and printed ready for use.

The use of the commutation table was independently developed in England-apparently between the years 1788 and 1811— by George Barrett, of Petworth, Sussex, who was the son of a yeoman farmer, and was himself a village schoolmaster, and afterwards farm steward or bailiff. It has been usual to consider Barrett as the originator in England of the method of calculating the values of annuities by means of a commutation table, and this method is accordingly sometimes called Barrett's method. (It is also called the commutation method and the columnar method.) Barrett's method of calculating annuities was explained by him to Francis Baily in the year 1811, and was first made known to the world in a paper written by the latter and read before the Royal Society in 1812.

By what has been universally considered an unfortunate error of judgment, this paper was not recommended by the council of the Royal Society to be printed, but it was given by Baily as an appendix to the second issue (in 1813) of his work on life annuities and assurances. Barrett had calculated extensive tables, and with Baily's aid attempted to get them published by subscription, but without success; and the only printed tables calculated according to his manner, besides the specimen tables given by Baily, are the tables contained in Babbage's *Comparative View of the various Institutions for the Assurance of Lives*, 1826.

In the year 1825 Griffith Davies published his *Tables of Life Contingencies*, a work which contains, among others, two tables, which are confessedly derived from Baily's explanation of Barrett's tables.

Those who desire to pursue the subject further can refer to the appendix to Baily's *Life Annuities and Assurances*, De Morgan's paper "On the Calculation of Single Life Contingencies," *Assurance Magazine*, xii. 348-349; Gray's *Tables and Formulae* chap. viii.; the preface to Davies's *Treatise on Annuities*; also Hendriks's papers in the *Assurance Magazine*, No. 1, p. 1, and No. 2, p. 12; and in particular De Morgan's "Account of a Correspondence between Mr George Barrett and Mr Francis Baily," in the *Assurance Magazine*, vol. iv. p. 185.

The principal commutation tables published in England are contained in the following works:—David Jones, *Value of Annuities and Reversionary Payments*, issued in parts by the Useful Knowledge Society, completed in 1843; Jenkin Jones, *New Rate of Mortality*, 1843; G. Davies, *Treatise on Annuities*, 1825 (issued 1855); David Chisholm, *Commutation Tables*, 1858; Nelson's *Contributions to Vital Statistics*, 1857; Jardine Henry, *Government Life Annuity Commutation Tables*, 1866 and 1873; *Institute of Actuaries Life Tables*, 1872; R.P. Hardy, *Valuation Tables*, 1873; and Dr William Farr's contributions to the sixth (1844), twelfth (1849), and twentieth (1857) *Reports* of the Registrar General in England (English Tables, I. 2), and to the *English Life Table*, 1864.

The theory of annuities may be further studied in the discussions in the English *Journal of the Institute of Actuaries*. The institute was founded in the year 1848, the first sessional meeting being held in January 1849. Its establishment has contributed in various ways to promote the study of the theory of life contingencies. Among these may be specified the following:—Before it was formed, students of the subject worked for the most part alone, and without any concert; and when any person had made an improvement in the theory, it had little chance of becoming publicly known unless he wrote a formal treatise on the whole subject. But the formation of the institute led to much greater interchange of opinion among actuaries, and afforded them a ready means of making known to their professional associates any improvements, real or supposed, that they thought they had made. Again, the discussions which follow the reading of papers before the institute have often served, first, to bring out into bold relief differences of opinion that were previously unsuspected, and afterwards to soften down those differences,—to correct extreme opinions in every direction, and to bring about a greater agreement of opinion on many important subjects. In no way, probably, have the objects of the institute been so effectually advanced as by the publication of its *Journal*. The first number of this work, which was originally called the *Assurance Magazine*, appeared in September 1850, and it has been continued quarterly down to the present time. It was originated by the public spirit of two well-known actuaries (Mr Charles Jellicoe and Mr Samuel Brown), and was adopted as the organ of the Institute of Actuaries in the year 1852, and called the *Assurance Magazine and Journal of the Institute of Actuaries*, Mr Jellicoe continuing to be the editor,—a post he held until the year 1867, when he was

succeeded by Mr T.B. Sprague (who contributed to the 9th edition of this Encyclopaedia an elaborate article on “Annuities,” on which the above account is based). The name was again changed in 1866, the words “Assurance Magazine” being dropped; but in the following year it was considered desirable to resume these, for the purpose of showing the continuity of the publication, and it is now called the *Journal of the Institute of Actuaries and Assurance Magazine*. This work contains not only the papers read before the institute (to which have been appended of late years short abstracts of the discussions on them), and many original papers which were unsuitable for reading, together with correspondence, but also reprints of many papers published elsewhere, which from various causes had become difficult of access to the ordinary reader, among which may be specified various papers which originally appeared in the *Philosophical Transactions*, the *Philosophical Magazine*, the *Mechanics’ Magazine*, and the *Companion to the Almanac*; also translations of various papers from the French, German, and Danish. Among the useful objects which the continuous publication of the *Journal* of the institute has served, we may specify in particular two:—that any supposed improvement in the theory was effectually submitted to the criticisms of the whole actuarial profession, and its real value speedily discovered; and that any real improvement, whether great or small, being placed on record, successive writers have been able, one after the other, to take it up and develop it, each commencing where the previous one had left off.

ANNULAR, ANNULATE, &c. (Lat. *annulus*, a ring), ringed. “Annulate” is used in botany and zoology in connexion with certain plants, worms, &c. (see Annelida), either marked with rings or composed of ring-like segments. The word “annulated” is also used in, heraldry and architecture. An annulated cross is one with the points ending in an “annulet” (an heraldic ring, supposed to be taken from a coat of mail), while the annulet in architecture is a small fillet round a column, which encircles the lower part of the Doric capital immediately above the neck or trachelium. The word “annulus” (for “ring”) is itself used technically in geometry, astronomy, &c., and the adjective “annular” corresponds. An *annular space* is that between an inner and outer ring. The *annular finger* is the ring finger. An *annular eclipse* is an eclipse of the sun in which the visible part of the latter completely encircles the dark body of the moon; for this to happen, the centres of the sun and moon, and the point on the earth where the observer is situated, must be collinear. Certain nebulae having the form of a ring are also called “annular.”

ANNUNCIATION, the announcement made by the angel Gabriel to the Virgin Mary of the incarnation of Christ (Luke i, 26-38). The Feast of the Annunciation in the Christian Church is celebrated on the 25th of March. The first authentic allusions to it are in a canon, of the council of Toledo (656), and another of the council of Constantinople “in Trullo” (692), forbidding the celebration of all festivals in Lent, excepting the Lord’s day and the Feast of the Annunciation. An earlier origin has been claimed for it on the ground that it is mentioned in sermons of Athanasius and of Gregory Thaumaturgus, but both of these documents are now admitted to be spurious. A synod held at Worcester, England (1240), forbade all servile work on this feast day. See further Lady Day.

ANNUNZIO, GABRIELE D’ (1863-), Italian novelist and poet, of Dalmatian extraction, was born at Pescara (Abruzzi) in 1863. The first years of his youth were spent in the freedom of the open fields; at sixteen he was sent to school in Tuscany. While still at school he published a small volume of verses called *Primo Vere* (1879), in which, side by side with some almost brutal imitations of Lorenzo Stecchetti, the then fashionable poet of *Postuma*, were some translations from the Latin, distinguished by such agile grace that Giuseppe Chiarini on reading them brought the unknown youth before the public in an

enthusiastic article. The young poet then went to Rome, where he was received as one of their own by the *Cronaca Bizantina* group (see CARDUCCI). Here he published *Canto Nuovo* (1882), *Terra Vergine* (1882), *L' Intermezzo di Rime* (1883), *Il Libro delle Vergini* (1884), and the greater part of the short stories that were afterwards collected under the general title of *San Pantaleone* (1886). In *Canto Nuovo* we have admirable poems full of pulsating youth and the promise of power, some descriptive of the sea and some of the Abruzzi landscape, commented on and completed in prose by *Terra Vergine*, the latter a collection of short stories dealing in radiant language with the peasant life of the author's native province. With the *Intermezzo di Rime* we have the beginning of d'Annunzio's second and characteristic manner. His conception of style was new, and he chose to express all the most subtle vibrations of voluptuous life. Both style and contents began to startle his critics; some who had greeted him as an *enfant prodige*—Chiarini amongst others—rejected him as a perverter of public morals, whilst others hailed him as one bringing a current of fresh air and the impulse of a new vitality into the somewhat prim, lifeless work hitherto produced.

Meanwhile the Review of Angelo Sommaruga perished in the midst of scandal, and his group of young authors found itself dispersed. Some entered the teaching career and were lost to literature, others threw themselves into journalism. Gabriele d'Annunzio took this latter course, and joined the staff of the *Tribuna*. For this paper, under the pseudonym of "Duca Minimo," he did some of his most brilliant work, and the articles he wrote during that period of originality and exuberance would well repay being collected. To this period of greater maturity and deeper culture belongs *Il Libro d' Isotta* (1886), a love poem, in which for the first time he drew inspiration adapted to modern sentiments and passions from the rich colours of the Renaissance. *Il Libro d' Isotta* is interesting also, because in it we find most of the germs of his future work, just as in *Intermezzo melico* and in certain ballads and sonnets we find descriptions and emotions which later went to form the aesthetic contents of *Il Piacere*, *Il Trionfo della Morte*, and *Elegie Romane* (1892).

D' Annunzio's first novel *Il Piacere* (1889)—translated into English as *The Child of Pleasure*—was followed in 1891 by *L' Innocente* (*The Intruder*), and in 1892 by *Giovanni Episcopo*. These three novels created a profound impression. *L' Innocente*, admirably translated into French by Georges Herelle, brought its author the notice and applause of foreign critics. His next work, *Il Trionfo della Morte* (*The Triumph of Death*) (1894), was followed at a short distance by *La Vergini della Roccio* (1896) and *Il Fuoco* (1900), which in its descriptions of Venice is perhaps the most ardent glorification of a city existing in any language.

D' Annunzio's poetic work of this period, in most respects his finest, is represented by *Il Poema Paradisiaco* (1893), the *Odi Navali* (1893), a superb attempt at civic poetry, and *Laudi* (1900).

A later phase of d' Annunzio's work is his dramatic production, represented by *Il Sogno di un mattino di primavera* (1897), a lyrical fantasia in one act; his *Cilia Morta* (1898), written for Sarah Bernhardt, which is certainly among the most daring and original of modern tragedies, and the only one which by its unity, persistent purpose, and sense of fate seems to continue in a measure the traditions of the Greek theatre. In 1898 he wrote his *Sogno di un Pomeriggio d' Autunno* and *La Gioconda*; in the succeeding year *La Gloria*, an attempt at contemporary political tragedy which met with no success, probably through the audacity of the personal and political allusions in some of its scenes; and then *Francesca da Rimini* (1901), a perfect reconstruction of medieval atmosphere and emotion, magnificent in style, and declared by one of the most authoritative Italian critics—Edoardo Boutet—to be the first real although not perfect tragedy which has ever been given to the Italian theatre.

The work of d' Annunzio, although by many of the younger generation injudiciously and extravagantly admired, is almost the most important literary work given to Italy since the days when the great classics welded her varying dialects into a fixed language. The psychological inspiration of his novels has come to him from many sources—French, Russian, Scandinavian, German—and in much of his earlier work there is little fundamental originality. His creative power is intense and searching, but narrow and personal; his heroes and heroines are little more than one same type monotonously facing a different problem at a different phase of life. But the faultlessness of his style and the wealth of his language have been approached by none of his contemporaries, whom his genius has somewhat paralysed. In his later work, when he begins drawing his inspiration from the traditions of bygone Italy in her glorious centuries, a current of real life seems to run through the veins of his personages. And the lasting merit of d'Annunzio, his real value to the literature of his country, consists precisely in that he opened up the closed mine of its former life as a source of inspiration for the present and of hope for the future, and created a language, neither

pompous nor vulgar, drawn from every source and district suited to the requirements of modern thought, yet absolutely classical, borrowed from none, and, independently of the thought it may be used to express, a thing of intrinsic beauty. As his sight became clearer and his purpose strengthened, as exaggerations, affectations, and moods dropped away from his conceptions, his work became more and more typical Latin work, upheld by the ideal of an Italian Renaissance.

ANOA, the native name of the small wild buffalo of Celebes, *Bos* (*Bubalus*) *depressicornis*, which stands but little over a yard at the shoulder, and is the most diminutive of all wild cattle. It is nearly allied to the larger Asiatic buffaloes, showing the same reversal of the direction of the hair on the back. The horns are peculiar for their upright direction and comparative straightness, although they have the same triangular section as in other buffaloes. White spots are sometimes present below the eyes, and there may be white markings on the legs and back; and the absence or presence of these white markings may be indicative of distinct races. The horns of the cows are very small. The nearest allies of the anoa appear to be certain extinct buffaloes, of which the remains are found in the Siwalik Hills of northern India. In habits the animal appears to resemble the Indian buffalo.

ANODYNE (from Gr. ἀν-, privative, and ὀδύνη, pain), a cause which relieves pain. The term is commonly applied to medicines which lessen the sensibility of the brain or nervous system, such as morphia, &c.

ANOINTING, or greasing with oil, fat, or melted butter, a process employed ritually in all religions and among all races, civilized or savage, partly as a mode of ridding persons and things of dangerous influences and diseases, especially of the demons (Persian *drug*, Greek κῆρες, Armenian *dev*) which are or cause those diseases; and partly as a means of introducing into things and persons a sacramental or divine influence, a holy emanation, spirit or power. The riddance of an evil influence is often synonymous with the introduction of the good principle, and therefore it is best to consider first the use of anointing in consecrations.

The Australian natives believed that the virtues of one killed could be transferred to survivors if the latter rubbed themselves with his caul-fat. So the Arabs of East Africa anoint themselves with lion’s fat in order to gain courage and inspire the animals with awe of themselves. Such rites are often associated with the actual eating of the victim whose virtues are coveted. Human fat is a powerful charm all over the world; for, as R. Smith points out, after the blood the fat was peculiarly the vehicle and seat of life. This is why fat of a victim was smeared on a sacred stone, not only in acts of homage paid to it, but in the actual consecration thereof. In such cases the influence of the god, communicated to the victim, passed with the unguent into the stone. But the divinity could by anointing be transferred into men no less than into stones; and from immemorial antiquity, among the Jews as among other races, kings were anointed or greased, doubtless with the fat of the victims which, like the blood, was too holy to be eaten by the common votaries.

Butter made from the milk of the cow, the most sacred of animals, is used for anointing in the Hindu religion. A newly-built house is smeared with it, so are demoniacs, care being taken to smear the latter downwards from head to foot.

In the Christian religion, especially where animal sacrifices, together with the cult of totem or holy animals, have been given up, it is usual to hallow the oil used in ritual

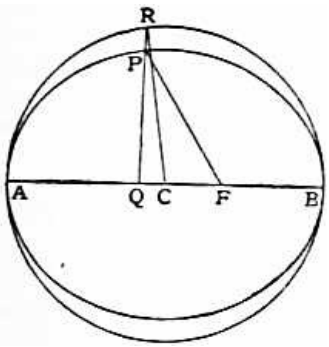
anointings with special prayers and exorcisms; oil from the lamps lit before the altar has a peculiar virtue of its own, perhaps because it can be burned to give light, and disappears to heaven in doing so. In any case oil has ever been regarded as the aptest symbol and vehicle of the holy and illuminating spirit. For this reason the catechumens are anointed with holy oil both before and after baptism; the one act (of eastern origin) assists the expulsion of the evil spirits, the other (of western origin), taken in conjunction with imposition of hands, conveys the spirit and retains it in the person of the baptized. In the postbaptismal anointing the oil was applied to the organs of sense, to the head, heart, and midriff. Such ritual use of oil as a σφραγίς or seal may have been suggested in old religions by the practice of keeping wine fresh in jars and amphorae by pouring on a top layer of oil; for the spoiling of wine was attributed to the action of demons of corruption, against whom many ancient formulae of aversion or exorcism still exist.

The holy oil, chrism, or μύρον, as the Easterns call it, was prepared and consecrated on Maundy Thursday, and in the Gelasian sacramentary the formula used runs thus: “Send forth, O Lord, we beseech thee, thy Holy Spirit the Paraclete from heaven into this fatness of oil, which thou hast deigned to bring forth out of the green wood for the refreshing of mind and body; and through thy holy benediction may it be for all who anoint with it, taste it, touch it, a safeguard of mind and body, of soul and spirit, for the expulsion of all pains, of every infirmity, of every sickness of mind and body. For with the same thou hast anointed priests, kings, and prophets and martyrs with this thy chrism, perfected by thee, O Lord, blessed, abiding within our bowels in the name of our Lord Jesus Christ.”

In various churches the dead are anointed with holy oil, to guard them against the vampires or ghouls which ever threaten to take possession of dead bodies and live in them. In the Armenian church, as formerly in many Greek churches, a cross is not holy until the Spirit has been formally led into it by means of prayer and anointing with holy oil. A new church is anointed at its four corners, and also the altar round which it is built; similarly tombs, church gongs, and all other instruments and utensils dedicated to cultual uses. In churches of the Greek rite a little of the old year’s chrism is left in the jar to communicate its sanctity to that of the new.

(F. C. C.)

ANOMALY (from Gr. ἀνωμαλία, unevenness, derived from ἀν-, privative, and ὁμαλός, even), a deviation from the common rule. In astronomy the word denotes the angular distance of a body from the pericentre of the orbit in which it is moving. Let AB be the major axis of the orbit, B the pericentre, F the focus or centre of motion, P the position of the body. The anomaly is then the angle BFP which the radius vector makes with the major axis. This is the actual or *true anomaly*. *Mean anomaly* is the anomaly which the body would have if it moved from the pericentre around F with a uniform angular motion such that its revolution would be completed in its actual time (see Orbit). *Eccentric anomaly* is defined thus:— Draw the circumscribing circle of the elliptic orbit around the centre C of the orbit. Drop the perpendicular RPQ through P, the position of the planet, upon the major axis. Join CR; the angle CRQ is then the eccentric anomaly.



In the ancient astronomy the anomaly was taken as the angular distance of the planet from the point of the farthest recession from the earth.

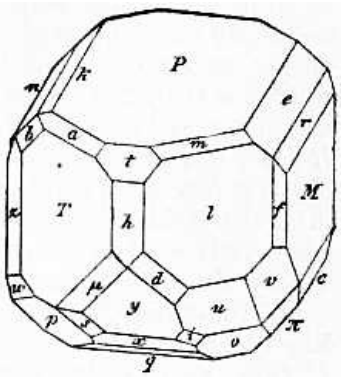
Kepler’s Problem, namely, that of finding the co-ordinates of a planet at a given time, which is equivalent—given the mean anomaly—to that of determining the true anomaly, was solved approximately by Kepler, and more completely by Wallis, Newton and others.

The anomalistic revolution of a planet or other heavenly body is the revolution between two consecutive passages through the pericentre. Starting from the pericentre, it is completed on the return to the pericentre. If the pericentre is fixed, this is an actual revolution; but if it moves the anomalistic revolution is greater or less than a complete circumference.

An *Anomalistic year* is the time (365 days, 6 hours, 13 minutes, 48 seconds) in which the earth (and similarly for any other planet) passes from perihelion to perihelion, or from any given value of the anomaly to the same again. Owing to the precession of the equinoxes it is longer than a tropical or sidereal year by 25 minutes and 2.3 seconds. An *Anomalistic month* is the time in which the moon passes from perigee to perigee, &c.

For the mathematics of Kepler's problem see E.W. Brown, *Lunar Theory* (Cambridge 1896), or the work of Watson or of Bauschinger on Theoretical Astronomy.

ANORTHITE, an important mineral of the felspar group, being one of the end members of the plagioclase (*q.v.*) series. It is a calcium and aluminium silicate, $CaAl_2Si_2O_3$, and crystallizes in the anorthic system. Like all the felspars, it possesses two cleavages, one perfect and the other less so, here inclined to one another at an angle of 85° 50′. The colour is white, greyish or reddish, and the crystals are transparent to translucent. The hardness is 6-6½, and the specific gravity 2·75.



Anorthite is an essential constituent of many basic igneous rocks, such as gabbro and basalt, also of some meteoric stones. The best developed crystals are those which accompany mica, augite, sanidine, &c., in the ejected blocks of metamorphosed limestone from Monte Somma, the ancient portion of Mount Vesuvius; these are perfectly colourless and transparent, and are bounded by numerous brilliant faces. Distinctly developed crystals are also met with in the basalts of Japan, but are usually rare at other localities.

The name anorthite was given to the Vesuvian mineral by G. Rose in 1823, on account of its anorthic crystallization. The species had, however, been earlier described by the comte de Bournon under the name indianite, this name being applied to a greyish or reddish granular mineral forming the matrix of corundum from the Carnatic in India. Several unimportant varieties have been distinguished.

(L. J. S.)

ANQUETIL, LOUIS PIERRE (1723-1808), French historian, was born in Paris, on the 21st of February 1723. He entered the congregation of Sainte-Geneviève, where he took holy orders and became professor of theology and literature. Later, he became director of the seminary at Reims, where he wrote his *Histoire civile et politique de Reims* (3 vols., 1756-1757), perhaps his best work. He was then director of the college of Senlis, where he composed his *Esprit de la Ligue ou histoire politique des troubles de la Fronde pendant le XVI^{e} et le XVII^{e} siècles* (1767). During the Reign of Terror he was imprisoned at St Lazare; there he began his *Précis de l'histoire universelle*, afterwards published in nine volumes. On the establishment of the national institute he was elected a member of the second group (moral and political sciences), and was soon afterwards employed in the office of the ministry of foreign affairs, profiting by his experience to write his *Motifs des guerres et des traités de paix sous Louis XIV., Louis XV, et Louis XVI.* He is said to have been asked by Napoleon to write his *Histoire de France* (14 vols., 1805), a mediocre compilation at second or third hand, with the assistance of de Mézeray and of Paul François Velly (1709-1759). This work, nevertheless, passed through numerous editions, and by it his name is remembered. He died on the 6th of September 1808.

ANQUETIL, DUPERRON, ABRAHAM HYACINTHE (1731-1805), French orientalist, brother of Louis Pierre Anquetil, the historian, was born in Paris on the 7th of December 1731. He was educated for the priesthood in Paris and Utrecht, but his taste for Hebrew, Arabic, Persian, and other languages of the East developed into a passion, and he discontinued his theological course to devote himself entirely to them. His diligent attendance at the Royal Library attracted the attention of the keeper of the manuscripts, the Abbé Sallier, whose influence procured for him a small salary as student of the oriental languages. He had lighted on some fragments of the *Vendidad Sade*, and formed the project of a voyage to India to discover the works of Zoroaster. With this end in view he enlisted as a private soldier, on the 2nd of November 1754, in the Indian expedition which was about to start from the port of L'Orient. His friends procured his discharge, and he was granted a free passage, a seat at the captain's table, and a salary, the amount of which was to be fixed by the governor of the French settlement in India. After a passage of six months, Anquetil landed, on the 10th of August 1755, at Pondicherry. Here he remained a short time to master modern Persian, and then hastened to Chandernagore to acquire Sanskrit. Just then war was declared between France and England; Chandernagore was taken, and Anquetil returned to Pondicherry by land. He found one of his brothers at Pondicherry, and embarked with him for Surat; but, with a view of exploring the country, he landed at Mahé and proceeded on foot. At Surat he succeeded, by perseverance and address in his intercourse with the native priests, in acquiring a sufficient knowledge of the Zend and Pahlavi languages to translate the liturgy called the *Vendidad Sade* and some other works. Thence he proposed going to Benares, to study the language, antiquities, and sacred laws of the Hindus; but the capture of Pondicherry obliged him to quit India. Returning to Europe in an English vessel, he spent some time in London and Oxford, and then set out for France. He arrived in Paris on the 14th of March 1762 in possession of one hundred and eighty oriental manuscripts, besides other curiosities. The Abbé Barthélemy procured for him a pension, with the appointment of interpreter of oriental languages at the Royal Library. In 1763 he was elected an associate of the Academy of Inscriptions, and began to arrange for the publication of the materials he had collected during his eastern travels. In 1771 he published his *Zend-Avesta* (3 vols.), containing collections from the sacred writings of the fire-worshippers, a life of Zoroaster, and fragments of works ascribed to him. In 1778 he published at Amsterdam his *Législation orientate*, in which he endeavoured to prove that the nature of oriental despotism had been greatly misrepresented. His *Recherches historiques et géographiques sur l'Inde* appeared in 1786, and formed part of Thieffenthaler's *Geography of India*. The Revolution seems to have greatly affected him. During that period he abandoned society, and lived in voluntary poverty on a few pence a day. In 1798 he published *L'Inde en rapport avec l'Europe* (Hamburg, 2 vols.), which contained much invective against the English, and numerous misrepresentations. In 1802-1804 he published a Latin translation (2 vols.) from the Persian of the *Oupnek'hat* or *Upanishada*. It is a curious mixture of Latin, Greek, Persian, Arabic, and Sanskrit. He died in Paris on the 17th of January 1805.

See *Biographie universelle*; Sir William Jones, *Works* (vol. x., 1807); and the *Miscellanies* of the Philobiblon Society (vol. iii., 1856-1857). For a list of his scattered writings see Quérard, *La France littéraire*.

ANSA (from Lat. *ansa*, a handle), in astronomy, one of the apparent ends of the rings of Saturn as seen in perspective from the earth: so-called because, in the earlier telescopes, they looked like handles projecting from the planet. In anatomy the word is applied to nervous structures which resemble loops. In archaeology it is used for the engraved and ornamented handle of a vase, which has often survived when the vase itself, being less durable, has disappeared.

ANSBACH, or ANSPACH, originally *Onolzbach*, a town of Germany, in the kingdom of Bavaria, on the Rezat, 27 m. by rail S.W. of Nuremberg, and 90 m. N. of Munich. Pop. (1900)

17,555. It contains a palace, once the residence of the margraves of Anspach, with fine gardens, several churches, the finest of which are those dedicated to St John, containing the vault of the former margraves, and St Gumbert; a gymnasium; a picture gallery; a municipal museum and a special technical school. Ansbach possesses monuments to the poets August, Count von Platen-Hallermund, and Johann Peter Uz, who were born here, and to Kaspar Hauser, who died here. The chief manufactures are machinery, toys, woollen, cotton, and half-silk stuffs, embroideries, earthenware, tobacco, cutlery and playing cards. There is considerable trade in grain, wool and flax. In 1791 the last margrave of Anspach sold his principality to Frederick William II., king of Prussia; it was transferred by Napoleon to Bavaria in 1806, an act which was confirmed by the congress of Vienna in 1815.

ANSDELL, RICHARD (1815-1885), English painter, was born in Liverpool, and first exhibited at the Royal Academy in 1840. He was a painter of genre, chiefly animal and sporting pictures, and he became very popular, being elected A.R.A. in 1861 and R.A. in 1870. His “Stag at Bay” (1846), “The Combat” (1847), and “Battle of the Standard” (1848), represent his best work, in which he showed himself a notable follower of Landseer.

ANSELM (*c*. 1033-1109), archbishop of Canterbury, was born at Aosta in Piedmont. His family was accounted noble, and was possessed of considerable property. Gundulph, his father, was by birth a Lombard, and seems to have been a man of harsh and violent temper; his mother, Ermenberga, was a prudent and virtuous woman, from whose careful religious training the young Anselm derived much benefit. At the age of fifteen he desired to enter a convent, but he could not obtain his father’s consent. Disappointment brought on an illness, on his recovery from which he seems for a time to have given up his studies, and to have plunged into the gay life of the world. During this time his mother died, and his father’s harshness became unbearable. He left home, and with only one attendant crossed the Alps, and wandered through Burgundy and France. Attracted by the fame of his countryman, Lanfranc, then prior of Bec, he entered Normandy, and, after spending some time at Avranches, settled at the monastery of Bec. There, at the age of twenty-seven, he became a monk; three years later, when Lanfranc was promoted to the abbacy of Caen, he was elected prior. This office he held for fifteen years, and then, in 1078, on the death of Herlwin, the warrior monk who had founded the monastery, he was made abbot. Under his rule Bec became the first seat of learning in Europe, a result due not more to his intellectual powers than to the great moral influence of his noble character and kindly discipline. It was during these quiet years at Bec that Anselm wrote his first philosophical and religious works, the dialogues on Truth and Freewill, and the two celebrated treatises, the *Monologion* and *Proslogion*.

Meanwhile the convent had been growing in wealth, as well as in reputation, and had acquired considerable property in England, which it became the duty of Anselm occasionally to visit. By his mildness of temper and unswerving rectitude, he so endeared himself to the English that he was looked upon and desired as the natural successor to Lanfranc, then archbishop of Canterbury. But on the death of that great man, the ruling sovereign, William Rufus, seized the possessions and revenues of the see, and made no new appointment. About four years after, in 1092, on the invitation of Hugh, earl of Chester, Anselm with some reluctance, for he feared to be made archbishop, crossed to England. He was detained by business for nearly four months, and when about to return, was refused permission by the king. In the following year William fell ill, and thought his death was at hand. Eager to make atonement for his sin with regard to the archbishopric, he nominated Anselm to the vacant see, and after a great struggle compelled him to accept the pastoral staff of office. After obtaining dispensation from his duties in Normandy, Anselm was consecrated in 1093. He demanded of the king, as the conditions of his retaining office, that he should give up all the possessions of the see, accept his spiritual counsel, and acknowledge Urban as pope in opposition to the anti-pope, Clement. He only obtained a partial consent to the first of these, and the last involved him in a serious difficulty with the king. It was a rule of the church that

the consecration of metropolitans could not be completed without their receiving the *pallium* from the hands of the pope. Anselm, accordingly, insisted that he must proceed to Rome to receive the pall. But William would not permit this; he had not acknowledged Urban, and he maintained his right to prevent any pope being acknowledged by an English subject without his permission. A great council of churchmen and nobles, held to settle the matter, advised Anselm to submit to the king, but failed to overcome his mild and patient firmness. The matter was postponed, and William meanwhile privately sent messengers to Rome, who acknowledged Urban and prevailed on him to send a legate to the king bearing the archiepiscopal pall. A partial reconciliation was then effected, and the matter of the pall was compromised. It was not given by the king, but was laid on the altar at Canterbury, whence Anselm took it.

Little more than a year after, fresh trouble arose with the king, and Anselm resolved to proceed to Rome and seek the counsel of his spiritual father. With great difficulty he obtained a reluctant permission to leave, and in October 1097 he set out for Rome. William immediately seized on the revenues of the see, and retained them to his death. Anselm was received with high honour by Urban, and at a great council held at Bari, he was put forward to defend the doctrine of the procession of the Holy Ghost against the representatives of the Greek Church. But Urban was too politic to embroil himself with the king of England, and Anselm found that he could obtain no substantial result. He withdrew from Rome, and spent some time at the little village of Schiavi, where he finished his treatise on the atonement, *Cur Deus homo*, and then retired to Lyons.

In 1100 William was killed, and Henry, his successor, at once recalled Anselm. But Henry demanded that he should again receive from him in person investiture in his office of archbishop, thus making the dignity entirely dependent on the royal authority. Now, the papal rule in the matter was plain; all homage and lay investiture were strictly prohibited. Anselm represented this to the king; but Henry would not relinquish a privilege possessed by his predecessors, and proposed that the matter should be laid before the Holy See. The answer of the pope reaffirmed the law as to investiture. A second embassy was sent, with a similar result. Henry, however, remained firm, and at last, in 1103, Anselm and an envoy from the king set out for Rome. The pope, Paschal, reaffirmed strongly the rule of investiture, and passed sentence of excommunication against all who had infringed the law, except Henry. Practically this left matters as they were, and Anselm, who had received a message forbidding him to return to England unless on the king’s terms, withdrew to Lyons, where he waited to see if Paschal would not take stronger measures. At last, in 1105, he resolved himself to excommunicate Henry. His intention was made known to the king through his sister, and it seriously alarmed him, for it was a critical period in his affairs. A meeting was arranged, and a reconciliation between them effected. In 1106 Anselm crossed to England, with power from the pope to remove the sentence of excommunication from the illegally invested churchmen. In 1107 the long dispute as to investiture was finally ended by the king resigning his formal rights. The remaining two years of Anselm’s life were spent in the duties of his archbishopric. He died on the 21st of April 1109. He was canonized in 1494 by Alexander VI.

Anselm may, with some justice, be considered the first scholastic philosopher and theologian. His only great predecessor, Scotus Erigena, had more of the speculative and mystical element than is consistent with a schoolman; but in Anselm are found that recognition of the relation of reason to revealed truth, and that attempt to elaborate a rational system of faith, which form the special characteristics of scholastic thought. His constant endeavour is to render the contents of the Christian consciousness clear to reason, and to develop the intelligible truths interwoven with the Christian belief. The necessary preliminary for this is the possession of the Christian consciousness. “He who does not believe will not experience; and he who has not experienced will not understand.” That faith must precede knowledge is reiterated by him. *”Negue enim quaero intelligere ut credam, sed credo ut intelligam. Nam et hoc credo, quia, nisi credidero, non intelligam.”* (“Nor do I seek to understand that I may believe, but I believe that I may understand. For this too I believe, that unless I first believe, I shall not understand.”) But after the faith is held fast, the attempt must be made to demonstrate by reason the truth of what we believe. It is wrong not to do so. *”Negligentiae mihi esse videtur, si, postquam confirmati sumus in fide, non studemus quod credimus, intelligere.”* (“I hold it to be a failure in duty if after we have become steadfast in the faith we do not strive to understand what we believe.”) To such an extent does he carry this demand for rational explanation that, at times, it seems as if he claimed for unassisted intelligence the power of penetrating even to the mysteries of the Christian faith. On the whole, however, the qualified statement is his real view; merely rational proofs are always, he affirms, to be tested by Scripture. (*Cur Deus homo*, i. 2 and

38; *De Fide Trin*. 2.)

The groundwork of his theory of knowledge is contained in the tract *De Veritate*, in which, from the consideration of truth as in knowledge, in willing, and in things, he rises to the affirmation of an absolute truth, in which all other truth participates. This absolute truth is God himself, who is therefore the ultimate ground or principle both of things and of thought. The notion of God comes thus into the foreground of the system; before all things it is necessary that it should be made clear to reason, that it should be demonstrated to have real existence. This demonstration is the substance of the *Monologion* and *Proslogion*. In the first of these the proof rests on the ordinary grounds of realism, and coincides to some extent with the earlier theory of Augustine, though it is carried out with singular boldness and fulness. Things, he says, are called good in a variety of ways and degrees; this would be impossible if there were not some absolute standard, some good in itself, in which all relative goods participate. Similarly with such predicates as great, just; they involve a certain greatness and justice. The very existence of things is impossible without some one Being, by whom they are. This absolute Being, this goodness, justice, greatness, is God. Anselm was not thoroughly satisfied with this reasoning; it started from *a posteriori grounds*, and contained several converging lines of proof. He desired to have some one short demonstration. Such a demonstration he presented in the *Proslogion*; it is his celebrated ontological proof. God is that being than whom none greater can be conceived. Now, if that than which nothing greater can be conceived existed only in the intellect, it would not be the absolutely greatest, for we could add to it existence in reality. It follows, then, that the being than whom nothing greater can be conceived, *i.e.* God, necessarily has real existence. This reasoning, in which Anselm partially anticipated the Cartesian philosophers, has rarely seemed satisfactory. It was opposed at the time by the monk Gaunilo, in his *Liber pro Insipiente*, on the ground that we cannot pass from idea to reality. The same criticism is made by several of the later schoolmen, among others by Aquinas, and is in substance what Kant advances against all ontological proof. Anselm replied to the objections of Gaunilo in his *Liber Apologeticus*. The existence of God being thus held proved, he proceeds to state the rational grounds of the Christian doctrines of creation and of the Trinity. With reference to this last, he says we cannot know God from himself, but only after the analogy of his creatures; and the special analogy used is the self-consciousness of man, its peculiar double nature, with the necessary elements, memory and intelligence, representing the relation of the Father to the Son. The mutual love of these two, proceeding from the relation they hold to one another, symbolizes the Holy Spirit. The further theological doctrines of man, original sin, free will, are developed, partly in the *Monologion*, partly in other mixed treatises. Finally, in his greatest work, *Cur Deus homo*, he undertakes to make plain, even to infidels, the rational necessity of the Christian mystery of the atonement. The theory rests on three positions: that satisfaction is necessary on account of God’s honour and justice; that such satisfaction can be given only by the peculiar personality of the God-man; that such satisfaction is really given by the voluntary death of this infinitely valuable person. The demonstration is, in brief, this. All the actions of men are due to the furtherance of God’s glory; if, then, there be sin, *i.e.* if God’s honour be wounded, man of himself can give no satisfaction. But the justice of God demands satisfaction; and as an insult to infinite honour is in itself infinite, the satisfaction must be infinite, *i.e.* it must outweigh all that is not God. Such a penalty can only be paid by God himself, and, as a penalty for man, must be paid under the form of man. Satisfaction is only possible through the God-man. Now this God-man, as sinless, is exempt from the punishment of sin; His passion is therefore voluntary, not given as due. The merit of it is therefore infinite; God’s justice is thus appeased, and His mercy may extend to man. This theory has exercised immense influence on the form of church doctrine. It is certainly an advance on the older patristic theory, in so far as it substitutes for a contest between God and Satan, a contest between the goodness and justice of God; but it puts the whole relation on a merely legal footing, gives it no ethical bearing, and neglects altogether the consciousness of the individual to be redeemed. In this respect it contrasts unfavourably with the later theory of Abelard.

Anselm’s speculations did not receive, in the middle ages, the respect and attention justly their due. This was probably due to their unsystematic character, for they are generally tracts or dialogues on detached questions, not elaborate treatises like the great works of Albert, Aquinas, and Erigena. They have, however, a freshness and philosophical vigour, which more than makes up for their want of system, and which raises them far above the level of most scholastic writings.

Bibliography.—The main sources for the history of St Anselm and his times are Eadmer’s *Vita Anselmi* and his *Historia Novorum*, edited by M. Rule in *Rolls Series* (London, 1884); the best modern work is by Père Ragey, *Histoire de Saint Anselme* (Paris, 1890), and *Saint*

Anselme professeur (Paris, 1890). Other appreciations are by A. Mohler, *Anselm Erzbischof von Canterbury* (Regensburg, 1839; Eng. trans. by H. Rymer, London, 1842); F.R. Hasse, *Anselm von Canterbury* (2 vols., Leipzig, 1842-1853); C. de Rémusat, *S. Anseime de Cantorbéry* (Paris, 1853, new ed. 1868); R.W. Church, *St Anselm*, first published in *Sunday Library* (London, 1870; often reprinted); Martin Rule, *Life and Times of St Anselm* (London, 1883).

Works: The best edition of St Anselm's complete works is that of Dom Gerberon (Paris, 1675); reprinted with many notes in 1712; incorporated by J. Migne in his *Patrologia Latina*, tomi clviii.-clix. (Paris. 1853-1854). Migne's reprint contains many errors. The *Cur Deus homo* may be best studied in the editions published by D. Nutt (London, 1885) and by Griffith (1898). The *Mariale*, or poems in honour of the Blessed Virgin, has been carefully edited by P. Ragey (Tournai, 1885); the *Monologion* and *Proslogion*, by C.E. Ubaghs (Louvain, 1854; Eng. trans. by S.N. Deane, Chicago, 1903); the *Meditationes*, many of which are wrongly attributed to Anselm, have been frequently reprinted, and were included in Methuen's *Library of Devotion* (London, 1903).

The best criticism of Anselm's philosophical works is by J.M. Rigg (London, 1896), and Domet de Verges (*Grands Philosophes* series, Paris, 1901). For a complete bibliography, see A. Vacant's *Dictionnaire de théologie*.

ANSELM, of Laon (d. 1117), French theologian, was born of very humble parents at Laon before the middle of the 11th century. He is said to have studied under St Anselm at Bec. About 1076 he taught with great success at Paris, where, as the associate of William of Champeaux, he upheld the realistic side of the scholastic controversy. Later he removed to his native place, where his school for theology and exegetics rapidly became the most famous in Europe. He died in 1117. His greatest work, an interlinear gloss on the Scriptures, was one of the great authorities of the middle ages. It has been frequently reprinted. Other commentaries apparently by him have been ascribed to various writers, principally to the great Anselm. A list of them, with notice of Anselm's life, is contained in the *Histoire littéraire de la France*, x. 170-189.

The works are collected in Migne's *Patrologia Latina*, tome 162; some unpublished *Sententiae* were edited by G. Lefèvre (Milan, 1894), on which see Hauréau in the *Journal des savants* for 1895.

ANSELME (Father Anselme of the Virgin Mary) (1625-1694), French genealogist, was born in Paris in 1625. As a layman his name was Pierre Guibours. He entered the order of the barefooted Augustinians on the 31st of March 1644, and it was in their monastery (called the Couvent des Petits Pères, near the church of Notre-Dame des Victoires) that he died, on the 17th of January 1694. He devoted his entire life to genealogical studies. In 1663 he published *Le Palais de l'honneur*, which besides giving the genealogy of the houses of Lorraine and Savoy, is a complete treatise on heraldry, and in 1664 *Le Palais de la gloire*, dealing with the genealogy of various illustrious French and European families. These books made friends for him, the most intimate among whom, Honoré Caille, seigneur du Fourny (1630-1713), persuaded him to publish his *Histoire généalogique de la maison royale de France, et des grands officiers de la couronne* (1674, 2 vols. 4); after Father Anselme's death, Honoré Caille collected his papers, and brought out a new edition of this highly important work in 1712. The task was taken up and continued by two other friars of the Couvent des Petits Pères, Father Ange de Sainte-Rosalie (François Raffard, 1655-1726), and Father Simplicien (Paul Lucas, 1683-1759), who published the first and second volumes of the third edition in 1726. This edition consists of nine volumes folio; it is a genealogical and chronological history of the royal house of France, of the peers, of the great officers of the crown and of the king's household, and of the ancient barons of the kingdom. The notes were generally compiled from original documents, references to which are usually given, so that they remain useful to the present day. The work of Father Anselme, his collaborators and successors, is even more important for the history of France than is Dugdale's *Baronage*

of England for the history of England.

(C. B.*)

ANSON, GEORGE ANSON, Baron (1697-1762), British admiral, was born on the 23rd of April 1697. He was the son of William Anson of Shugborough in Staffordshire, and his wife Isabella Carrier, who was the sister-in-law of Lord Chancellor Macclesfield, a relationship which proved very useful to the future admiral. George Anson entered the navy in February 1712, and by rapid steps became lieutenant in 1716, commander in 1722, and post-captain in 1724. In this rank he served twice on the North American station as captain of the "Scarborough" and the "Squirrel" from 1724 to 1730 and from 1733 to 1735. In 1737 he was appointed to the "Centurion," 60, on the eve of war with Spain, and when hostilities had begun he was chosen to command as commodore the squadron which was sent to attack her possessions in South America in 1740. The original scheme was ambitious, and was not carried out. Anson's squadron, which sailed later than had been intended, and was very ill-fitted, consisted of six ships, which were reduced by successive disasters to his flagship the "Centurion." The lateness of the season forced him to round Cape Horn in very stormy weather, and the navigating instruments of the time did not allow of exact observation. Two of his vessels failed to round the Horn, another, the "Wager," was wrecked in the Golfo de Pañas on the coast of Chile. By the time Anson reached the island of Juan Fernandez in June 1741, his six ships had been reduced to three, while the strength of his crews had fallen from 961 to 335. In the absence of any effective Spanish force on the coast he was able to harass the enemy, and to capture the town of Paita on the 13th-15th of November 1741. The steady diminution of his crew by sickness, and the worn-out state of his remaining consorts, compelled him at last to collect all the survivors in the "Centurion." He rested at the island of Tinian, and then made his way to Macao in November 1742. After considerable difficulties with the Chinese, he sailed again with his one remaining vessel to cruise for one of the richly laden galleons which conducted the trade between Mexico and the Philippines. The indomitable perseverance he had shown during one of the most arduous voyages in the history of sea adventure was rewarded by the capture of an immensely rich prize, the "Nuestra Señora de Covadonga," which was met off Cape Espiritu Santo on the 20th of June 1743. Anson took his prize back to Macao, sold her cargo to the Chinese, keeping the specie, and sailed for England, which he reached by the Cape of Good Hope on the 15th of June 1744. The prize-money earned by the capture of the galleon had made him a rich man for life, and under the influence of irritation caused by the refusal of the admiralty to confirm a captain's commission he had given to one of his officers, Anson refused the rank of rear-admiral, and was prepared to leave the service. His fame would stand nearly as high as it does if he had done so, but he would be a far less important figure in the history of the navy. By the world at large he is known as the commander of the voyage of circumnavigation, in which success was won by indomitable perseverance, unshaken firmness, and infinite resource. But he was also the severe and capable administrator who during years of hard work at the admiralty did more than any other to raise the navy from the state of corruption and indiscipline into which it had fallen during the first half of the eighteenth century. Great anger had been caused in the country by the condition of the fleet as revealed in the first part of the war with France and Spain, between 1739 and 1747. The need for reform was strongly felt, and the politicians of the day were conscious that it would not be safe to neglect the popular demand for it. In 1745 the duke of Bedford, the new first lord, invited Anson to join the admiralty with the rank of rear-admiral of the white. As subordinate under the duke, or Lord Sandwich, and as first lord himself, Anson was at the admiralty with one short break from 1745 till his death in 1762. His chiefs in the earlier years left him to take the initiative in all measures of reform, and supported him in their own interest. After 1751 he was himself first lord, except for a short time in 1756 and 1757. At his suggestion, or with his advice, the naval administration was thoroughly overhauled. The dockyards were brought into far better order, and though corruption was not banished, it was much reduced. The navy board was compelled to render accounts, a duty it had long neglected. A system of regulating promotion to flag rank, which has been in the main followed ever since, was introduced. The Navy Discipline Act was revised in 1749, and remained unaltered till 1865. Courts martial were put on a sound footing. Inspections of the fleet and the dockyards were established, and the corps of Marines was created in 1755. The progressive improvement which raised the navy to the high state of efficiency it attained in later years dates from Anson's presence at the admiralty. In 1747 he, without ceasing to be a member

of the board, commanded the Channel fleet which on the 3rd of May scattered a large French convoy bound to the East, and West Indies, in an action off Cape Finisterre. Several men-of-war and armed French Indiamen were taken, but the overwhelming superiority of Anson's fleet (fourteen men-of-war, to six men-of-war and four Indiamen) in the number and weight of ships deprives the action of any strong claim to be considered remarkable. In society Anson seems to have been cold and taciturn. The sneers of Horace Walpole, and the savage attack of Smollett in *The Adventures of an Atom*, are animated by personal or political spite. Yet they would not have accused him of defects from which he was notoriously free. In political life he may sometimes have given too ready assent to the wishes of powerful politicians. He married the daughter of Lord Chancellor Hardwicke on the 27th of April 1748. There were no children of the marriage. His title of Baron Anson of Soberton was given him in 1747, but became extinct on his death. The title of Viscount Anson was, however, created in 1806 in favour of his great-nephew, the grandson of his sister Janetta and Mr Sambrook Adams, whose father had assumed the name and arms of Anson. The earldom of Lichfield was conferred on the family in the next generation. A fine portrait of the admiral by Reynolds is in the possession of the earl of Lichfield, and there are copies in the National Portrait Gallery and at Greenwich. Anson's promotions in flag rank were: rear-admiral in 1745, vice-admiral in 1746, and admiral in 1748. In 1749 he became vice-admiral of Great Britain, and in 1761 admiral of the fleet. He died on the 6th of June 1762.

A life of Lord Anson, inaccurate in some details but valuable and interesting, was published by Sir John Barrow in 1839. The standard account of his voyage round the world is that by his chaplain Richard Walter, 1748, often reprinted. A share in the work has been claimed on dubious grounds for Benjamin Robins, the mathematician. Another and much inferior account was published in 1745 by Pascoe Thomas, the schoolmaster of the "Centurion."

(D. H.)

ANSON, SIR WILLIAM REYNELL, BART. (1843-), English jurist, was born on the 14th of November 1843, at Walberton, Sussex, son of the second baronet. Educated at Eton and Balliol College, Oxford, he took a first class in the final classical schools in 1866, and was elected to a fellowship of All Souls in the following year. In 1869 he was called to the bar, and went the home circuit until 1873, when he succeeded to the baronetcy. In 1874 he became Vinerian reader in English law at Oxford, a post which he held until he became, in 1881, warden of All Souls College. He identified himself both with local and university interests; he became an alderman of the city of Oxford in 1892, chairman of quarter sessions for the county in 1894, was vice-chancellor of the university in 1898-1899, and chancellor of the diocese of Oxford in 1899. In that year he was returned, without opposition, as M.P. for the university in the Liberal Unionist interest, and consequently resigned the vice-chancellorship. In parliament he preserved an active interest in education, being a member of the newly created consultative committee of the Board of Education in 1900, and in 1902 he became parliamentary secretary. He took an active part in the foundation of a school of law at Oxford, and his volumes on *The Principles of the English Law of Contract*, (1884, 11th ed. 1906), and on *The Law and Custom of the Constitution* in two parts, "The Parliament" and "The Crown" (1886-1892. 3rd ed. 1907, pt. i. vol. ii.), are standard works.

ANSONIA, a city of New Haven county, Connecticut, U.S.A., coextensive with the township of the same name, on the Naugatuck river, immediately N. of Derby and about 12 m. N.W. of New Haven. It is served by the New York, New Haven & Hartford railway, and by interurban electric lines running N., S. and E. Pop. (1900) 12,681, of whom 4296 were foreign born; (1910 census) 13,152. Land area about 5.4 sq. m. The city has extensive manufactures of heavy machinery, electric supplies, brass and copper products and silk goods. In 1905 the capital invested in manufacturing was $7,625,864, and the value of the products was $19,132,455. Ansonia, Derby and Shelton form one of the most important industrial communities in the state. The city, settled in 1840 and named in honour of the

merchant and philanthropist, Anson Green Phelps (1781-1853), was originally a part of the township of Derby; it was chartered as a borough in 1864 and as a city in 1893, when the township of Ansonia, which had been incorporated in 1889, and the city were consolidated.

ANSTED, DAVID THOMAS (1814-1880), English geologist, was born in London on the 5th of February 1814. He was educated at Jesus College, Cambridge, and after taking his degree of M.A. in 1839 was elected to a fellowship of the college. Inspired by the teachings of Adam Sedgwick, his attention was given to geology, and in 1840 he was elected professor of geology in King's College, London, a post which he held until 1853. Meanwhile he became a fellow of the Royal Society in 1844, and from that date until 1847 he was vice-secretary of the Geological Society and edited its Quarterly Journal. The practical side of geology now came to occupy his chief attention, and he visited various parts of Europe and the British Islands as a consulting geologist and mining engineer. He was also in 1868 and for many years examiner in physical geography to the science and art department. He died at Melton near Woodbridge, on the 13th of May 1880.

PUBLICATIONS.—*Geology, Introductory, Descriptive and Practical* (2 vols., 1844); *The Ionian Islands* (1863); *The Applications of Geology to the Arts and Manufactures* (1865); *Physical Geography* (1867); *Water and Water Supply* (Surface Water) (1878); and *The Channel Islands* (with R.G. Latham) (1862).

ANSTEY, CHRISTOPHER (1724-1805), English poet, was the son of the rector of Brinkley, Cambridgeshire, where he was born on the 31st of October 1724. He was educated at Eton and King's College, Cambridge, where he distinguished himself for his Latin verses. He became a fellow of his college (1745); but the degree of M.A. was withheld from him, owing to the offence caused by a speech made by him beginning: "Doctores sine doctrina, magistri artium sine artibus, et baccalaurei baculo potius quam lauro digni." In 1754 he succeeded to the family estates and left Cambridge; and two years later he married the daughter of Felix Calvert of Albury Hall, Herts. For some time Anstey published nothing of any note, though he cultivated letters as well as his estates. Some visits to Bath, however, where later, in 1770, he made his permanent home, resulted in 1766 in his famous rhymed letters, *The New Bath Guide* or *Memoirs of the B ... r ... d* [*Blunderhead*] *Family* ..., which had immediate success, and was enthusiastically praised for its original kind of humour by Walpole and Gray. The *Election Ball, in Poetical Letters from Mr Inkle at Bath to his Wife at Gloucester* (1776) sustained the reputation won by the Guide. Anstey's other productions in verse and prose are now forgotten. He died on the 3rd of August 1805. His *Poetical Works* were collected in 1808 (2 vols.) by the author's son John (d. 1819), himself author of *The Pleader's Guide* (1796), in the same vein with the *New Bath Guide*.

ANSTRUTHER (locally pronounced *Anster*), a seaport of Fifeshire, Scotland. It comprises the royal and police burghs of Anstruther Easter (pop. 1190), Anstruther Wester (501) and Kilrenny (2542), and lies 9 m. S.S.E. of St Andrews, having a station on the North British railway company's branch line from Thornton Junction to St Andrews. The chief industries include coast and deep-sea fisheries, shipbuilding, tanning, the making of cod-liver oil and fish-curing. The harbour was completed in 1877 at a cost of £80,000. The two Anstruthers are divided only by a small stream called Dreel Burn. James Melville (1556-1614), nephew of the more celebrated reformer, Andrew Melville, who was minister of Kilrenny, has given in his *Diary* a graphic account of the arrival at Anstruther of a weatherbound ship of the Armada, and the tradition of the intermixture of Spanish and Fifeshire blood still prevails in the district. Anstruther fair supplied William Tennant (1784-1848), who was born and buried

in the town, with the subject of his poem of “Anster Fair.” Sir James Lumsden, a soldier of fortune under Gustavus Adolphus, who distinguished himself in the Thirty Years’ War, was born in the parish of Kilrenny about 1598. David Martin (1737-1798), the painter and engraver; Thomas Chalmers (1780-1847), the great divine; and John Goodsir (1814-1867), the anatomist, were natives of Anstruther. Little more than a mile to the west lies the royal and police burgh of Pittenweem (Gaelic, “the hollow of the cave”), a quaint old fishing town (pop. 1863), with the remains of a priory. About 2 m. still farther westwards is the fishing town of St Monans or Abercromby (pop. 1898), with a fine old Gothic church, picturesquely perched on the rocky shore. These fisher towns on the eastern and south-eastern coasts of Fifeshire furnish artists with endless subjects. Archibald Constable (1774-1827), Sir Walter Scott’s publisher, was born in the parish of Carnbee, about 3 m. to the north of Pittenweem. The two Anstruthers, Kilrenny and Pittenweem unite with St Andrews, Cupar and Crail, in sending one member to parliament.

ANSWER (derived from *and*, against, and the same root as *swear*), originally a solemn assertion in opposition to some one or something, and thus generally any counter-statement or defence, a reply to a question or objection, or a correct solution of a problem. In English law, the “answer” in pleadings was, previous to the Judicature Acts 1873-1875, the statement of defence, especially as regards the facts and not the law. Its place is now taken by a “statement of defence.” “Answer” is the term still applied in divorce proceedings to the reply of the respondent (see PLEADING). The famous Latin *Responsa Prudentum* (“answers of the learned”) were the accumulated views of many successive generations of Roman lawyers, a body of legal opinion which gradually became authoritative. In music an “answer” is the technical name in counterpoint for the repetition by one part or instrument of a theme proposed by another.

ANT (O. Eng. *aémete*, from Teutonic *a*, privative, and *maitan*, cut or bite off, *i.e.* “the biter off”; *aémete* in Middle English became differentiated in dialect use to *amete*, then *amte*, and so *ant*, and also to *emete*, whence the synonym “emmet,” now only used provincially, “ant” being the general literary form). The fact that the name of the ant has come down in English from a thousand years ago shows that this class of insects impressed the old inhabitants of England as they impressed the Hebrews and Greeks. The social instincts and industrious habits of ants have always made them favourite objects of study, and a vast amount of literature has accumulated on the subject of their structure and their modes of life.

Characters.—An ant is easily recognized both by the casual observer and by the student of insects. Ants form a distinct and natural family (*Formicidae*) of the great order *Hymenoptera*, to which bees, wasps and sawflies also belong. The insects of this order have mandibles adapted for biting, and two pairs of membranous wings are usually present; the first abdominal segment (propodeum) becomes closely associated with the fore-body (thorax), of which it appears to form a part. In all ants the second (apparently the first) abdominal segment is very markedly constricted at its front and hind edges, so that it forms a “node” at the base of the hind-body (fig. 1), and in many ants the third abdominal segment is similarly “nodular” in form (fig. 3, *b, c*). It is this peculiar “waist” that catches the eye of the observer, and makes the insects so easy of recognition. Another conspicuous and well-known feature of ants is the wingless condition of the “workers,” as the specialized females, with undeveloped ovaries, which form the largest proportion of the population of ant-communities, are called. Such “workers” are essential to the formation of a social community of Hymenoptera, and their wingless condition among the ants shows that their specialization has been carried further in this family than among the wasps and bees. Further, while among wasps and bees we find some solitary and some social genera, the ants as a family are social, though some aberrant species are dependent on the workers of other ants. It is interesting and suggestive that in a few families of digging Hymenoptera (such as the *Mutillidae*), allied to the ants, the females are wingless. The perfect female or “queen” ants (figs. 1, *1*, 3, *a*) often cast their wings (fig. 3, *b*) after the nuptial flight; in a few

species the females, and in still fewer the males, never develop wings. (For the so-called “white ants,” which belong to an order far removed from the *Hymenoptera*, see TERMITE.)

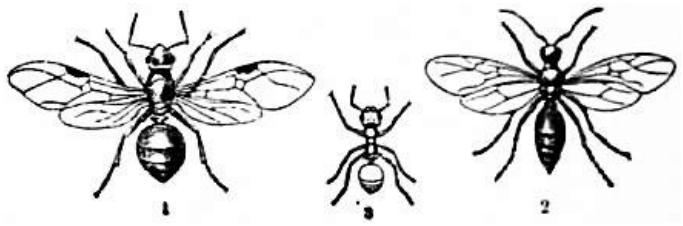


FIG. 1.—Wood Ant (*Formica rufa*). 1, Queen; 2, male; 3, worker.

Structure.—The head of an ant carries a pair of elbowed feelers, each consisting of a minute basal and an elongate second segment, forming the stalk or “scape,” while from eight to eleven short segments make up the terminal “flagellum.” These segments are abundantly supplied with elongate tooth-like projections connected with nerve-endings probably olfactory in function. The brain is well developed and its “mushroom-bodies” are exceptionally large. The mandibles, which are frequently used for carrying various objects, are situated well to the outside of the maxillae, so that they can be opened and shut without interfering with the latter. The peculiar form and arrangement of the anterior abdominal segments have already been described. The fourth abdominal segment is often very large, and forms the greater part of the hind-body; this segment is markedly constricted at its basal (forward) end, where it is embraced by the small third segment. In many of those ants whose third abdominal segment forms a second “node,” the basal dorsal region of the fourth segment is traversed by a large number of very fine transverse striations; over these the sharp hinder edge of the third segment can be scraped to and fro, and the result is a stridulating organ which gives rise to a note of very high pitch. For the appreciation of the sounds made by these stridulators, the ants are furnished with delicate organs of hearing (chordotonal organs) in the head, in the three thoracic and two of the abdominal segments and in the shins of the legs.

The hinder abdominal segments and the stings of the queens and workers resemble those of other stinging Hymenoptera. But there are several subfamilies of ants whose females have the lancets of the sting useless for piercing, although the poison-glands are functional, their secretion being ejected by the insect, when occasion may arise, from the greatly enlarged reservoir, the reduced sting acting as a squirt.

Nests.—The nests of different kinds of ants are constructed in very different situations; many species (*Lasius*, for example) make underground nests; galleries and chambers being hollowed out in the soil, and opening by small holes on the surface, or protected above by a large stone. The wood ant (*Formica rufa*, fig. 1) piles up a heap of leaves, twigs and other vegetable refuse, so arranged as to form an orderly series of galleries, though the structure appears at first sight a chaotic heap. Species of *Camponotus* and many other ants tunnel in wood. In tropical countries ants sometimes make their nests in the hollow thorns of trees or on leaves; species with this habit are believed to make a return to the tree for the shelter that it affords by protecting it from the ravages of other insects, including their own leaf-cutting relations.

Early Stages.—The larvae of ants (fig. 3, *e*) are legless and helpless maggots with very small heads (fig. 3, *f*), into whose mouths the requisite food has to be forced by the assiduous “nurse” workers. The maggots are tended by these nurses with the greatest care, and carried to those parts of the nest most favourable for their health and growth. When fully grown, the maggot spins an oval silken cocoon within which it pupates (fig. 3, *g*). These cocoons, which may often be seen carried between the mandibles of the workers, are the “ants’ eggs” prized as food for fish and pheasants. The workers of a Ceylonese ant (*Oecophylla smaragdina*) are stated by D. Sharp to hold the maggots between their mandibles and induce them to spin together the leaves of trees from which they form their shelters, as the adult ants have no silk-producing organs.

Origin of Societies.—Ant-colonies are founded either by a single female or by several in association. The foundress of the nest lays eggs and at first feeds and rears the larvae, the earliest of which develop into workers. C. Janet observed that in a nest of *Lasius alienus*, established by a single female, the first workers emerged from their cocoons on the 102nd day. These workers then take on themselves the labour of the colony, some collecting food, which they transfer to their comrades within the nest whose duty is to tend and feed the larvae. The foundress-queen is now waited on by the workers, who supply her with food and

spare her all cares of work, so that henceforth she may devote her whole energies to egg-laying. The population of the colony increases fast, and a well-grown nest contains several “queens” and males, besides a large number of workers. One of the most interesting features of ant-societies is the dimorphism or polymorphism that may often be seen among the workers, the same species being represented by two or more forms. Thus the British “wood ant” (*Formica rufa*) has a smaller and a larger race of workers (“minor” and “major” forms), while in *Ponera* we find a blind race of workers and another race provided with eyes, and in *Atta*, *Eciton* and other genera, four or five forms of workers are produced, the largest of which, with huge heads and elongate trenchant mandibles, are known as the “soldier” caste. The development of such diversely-formed insects as the offspring of the unmodified females which show none of their peculiarities raises many points of difficulty for students in heredity. It is thought that the differences are, in part at least, due to differences in the nature of the food supplied to larvae, which are apparently all alike. But the ovaries of worker ants are in some cases sufficiently developed for the production of eggs, which may give rise parthenogenetically to male, queen or worker offspring.

Food.—Different kinds of ants vary greatly in the substances which they use for food. Honey forms the staple nourishment of many ants, some of the workers seeking nectar from flowers, working it up into honey within their stomachs and regurgitating it so as to feed their comrades within the nest, who, in their turn, pass it on to the grubs. A curious specialization of certain workers in connexion with the transference of honey has been demonstrated by H.C. McCook in the American genus *Myrmecocystus*, and by later observers in Australian and African species of *Plagiolepis* and allied genera. The workers in question remain within the nest, suspended by their feet, and serve as living honey-pots for the colony, becoming so distended by the supplies of honey poured into their mouths by their foraging comrades that their abdomens become sub-globular, the pale intersegmental membrane being tightly stretched between the widely-separated dark sclerites. The “nurse” workers in the nest can then draw their supplies from these “honey-pots.” Very many ants live by preying upon various insects, such as the British “red ants” with well-developed stings (*Myrmica rubra*), and the notorious “driver ants” of Africa and America, the old-world species of which belong to *Dorylus* and allied genera, and the new-world species to *Eciton* (fig. 2, *2, 3*). In these ants the difference between the large, heavy, winged males and females, and the small, long-legged, active workers, is so great, that various forms of the same species have been often referred to distinct genera; in *Eciton*, for example, the female has a single petiolate abdominal segment, the worker two. The workers of these ants range over the country in large armies, killing and carrying off all the insects and spiders that they find and sometimes attacking vertebrates. They have been known to enter human dwellings, removing all the verminous insects contained therein. These driver ants shelter in temporary nests made in hollow trees or similar situations, where the insects may be seen, according to T. Belt, “clustered together in a dense mass like a great swarm of bees hanging from the roof.”

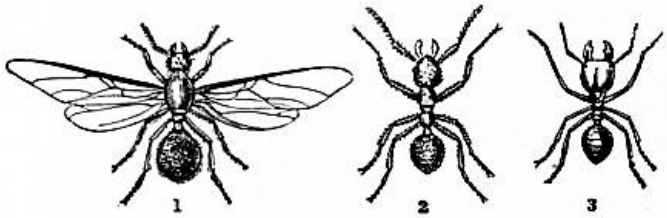


FIG. 2.—Leaf-cutting and Foraging Ants. 1. *Atta cephalus*; 2. *Eciton drepanophora*; 3. *Eciton erratica*.

The harvesting habits of certain ants have long been known, the subterranean store-houses of Mediterranean species of *Aphaenogaster* having been described by J.T. Moggridge and A. Forel, and the complex industries of the Texan *Pogonomyrmex barbatus* by H.C. McCook and W.M. Wheeler. The colonies of *Aphaenogaster* occupy nests extending over an area of fifty to a hundred square yards several feet below the surface of the ground. Into these underground chambers the ants carry seeds of grasses and other plants of which they accumulate large stores. The species of *Pogonomyrmex* strip the husks from the seeds and carry them out of the nest, making a refuse heap near the entrance. The seeds are harvested from various grasses, especially from *Aristida oligantha*, a species known as “ant rice,” which often grows in quantity close to the site selected for the nest, but the statement that the ants deliberately sow this grass is an error, due, according to Wheeler, to the sprouting of germinating seeds which the ants have turned out of their store-chambers.

Perhaps no ants have such remarkable habits as those of the genus *Atta*,—the leaf-cutting

ants of tropical America (fig. 2, *1*). There are several forms of worker in these species, some with enormous heads, which remain in the underground nests, while their smaller comrades scour the country in search of suitable trees, which they ascend, biting off small circular pieces from the leaves, and carrying them off to the nests. Their labour often results in the complete defoliation of the tree. The tracks along which the ants carry the leaves to their nests are often in part subterranean. H.C. McCook describes an almost straight tunnel, nearly 450 ft. long, made by *Atta fervens*.

Within the nest, the leaves are cut into very minute fragments and gathered into small spherical heaps forming a spongy mass, which—according to the researches of A. Möller—serves as the substratum for a special fungus (*Rozites gongylophora*), the staple food of the ants. The insects cultivate their fungus, weeding out mould and bacterial growths, and causing the appearance, on the surface of their "mushroom garden," of numerous small white bodies formed by swollen ends of the fungus hyphae. When the fungus is grown elsewhere than in the ants' nest it produces gonidia instead of the white masses on which the ants feed, hence it seems that these masses are indeed produced as the result of some unknown cultural process. Other genera of South American ants—*Apterostigma* and *Cyphomyrmex*—make similar fungal cultivations, but they use wood, grain or dung as the substratum instead of leaf fragments. Each kind of ant is so addicted to its own particular fungal food that it refuses disdainfully, even when hungry, the produce of an alien nest.

Guests of Ants.—Many ants feed largely and some almost entirely on the saccharine secretions of other insects, the best known of which are the Aphides (plant-lice or "green-fly"). This consideration leads us to one of the most remarkable and fascinating features of ant-communities—the presence in the nests of insects and other small arthropods, which are tended and cared for by the ants as their "guests," rendering to the ants in return the sweet food which they desire. The relation between ants and aphids has often been compared to that between men and milch cattle. Sir J. Lubbock (Lord Avebury) states that the common British yellow ants (*Lasius flavus*) collect flocks of root-feeding aphids in their underground nests, protect them, build earthen shelters over them, and take the greatest care of their eggs. Other ants, such as the British black garden species (*L. niger*), go after the aphids that frequent the shoots of plants. Many species of aphid migrate from one plant to another at certain stages in their life-cycle when their numbers have very largely increased, and F.M. Webster has observed ants, foreseeing this emigration, to carry aphids from apple trees to grasses. It has been shown by M. Büsgen that the sweet secretion (honey-dew) of the aphids is not derived, as generally believed, from the paired cornicles on the fifth abdominal segment, but from the intestine, whence it exudes in drops and is swallowed by the ants.

Besides the aphids, other insects, such as scale insects (*Coccidae*), caterpillars of blue butterflies (*Lycaenidae*), and numerous beetles, furnish the ants with nutrient secretions. The number of species of beetles that inhabit ants' nests is almost incredibly large, and most of these are never found elsewhere, being blind, helpless and dependent on the ants' care for protection and food; these beetles belong for the most part to the families *Pselaphidae, Paussidae* and *Staphylinidae*. Spring-tails and bristle-tails (order *Aptera*) of several species also frequent ants' nests. While some of these "guest" insects produce secretions that furnish the ants with food, some seem to be useless inmates of the nest, obtaining food from the ants and giving nothing in return. Others again play the part of thieves in the ant society; C. Janet observed a small bristle-tail (*Lepismima*) to lurk beneath the heads of two Lasius workers, while one passed food to the other, in order to steal the drop of nourishment and to make off with it. The same naturalist describes the association with Lasius of small mites (*Antennophorus*) which are carried about by the worker ants, one of which may have a mite beneath her mouth, and another on either side of her abdomen. On patting their carrier or some passing ant, the mites are supplied with food, no service being rendered by them in return for the ants' care. Perhaps the ants derive from these seemingly useless guests the same satisfaction as we obtain by keeping pet animals. Recent advance in our knowledge of the guests and associates of ants is due principally to E. Wasmann, who has compiled a list of nearly 1500 species of insects, arachnids and crustaceans, inhabiting ants' nests. The warmth, shelter and abundant food in the nests, due both to the fresh supplies brought in by the ants and to the large amount of waste matter that accumulates, must prove strongly attractive to the various "guests." Some of the inmates of ants' nests are here for the purpose of preying upon the ants or their larvae, so that we find all kinds of relations between the owners of the nests and their companions, from mutual benefit to active hostility.

Among these associations or guests other species of ants are not wanting. For example, a minute species (*Solenopsis fugax*) lives in a compound nest with various species of *Formica*,

forming narrow galleries which open into the larger galleries of its host. The *Solenopsis* can make its way into the territory of the *Formica* to steal the larvae which serve it as food, but the *Formica* is too large to pursue the thief when it returns to its own galleries.

Slaves.—Several species of ants are found in association with another species which stands to them in the relation of slave to master. *Formica sanguinea* is a well-known European slave-making ant that inhabits England; its workers raid the nests of *F. fusca* and other species, and carry off to their own nests pupae from which workers are developed that live contentedly as slaves of their captors. *F. sanguinea* can live either with or without slaves, but another European ant (*Polyergus rufescens*) is so dependent on its slaves—various species of *Formica*—that its workers are themselves unable to feed the larvae. The remarkable genus *Anergates* has no workers, and its wingless males and females are served by communities of *Tetramorium cespitum* (fig. 3).

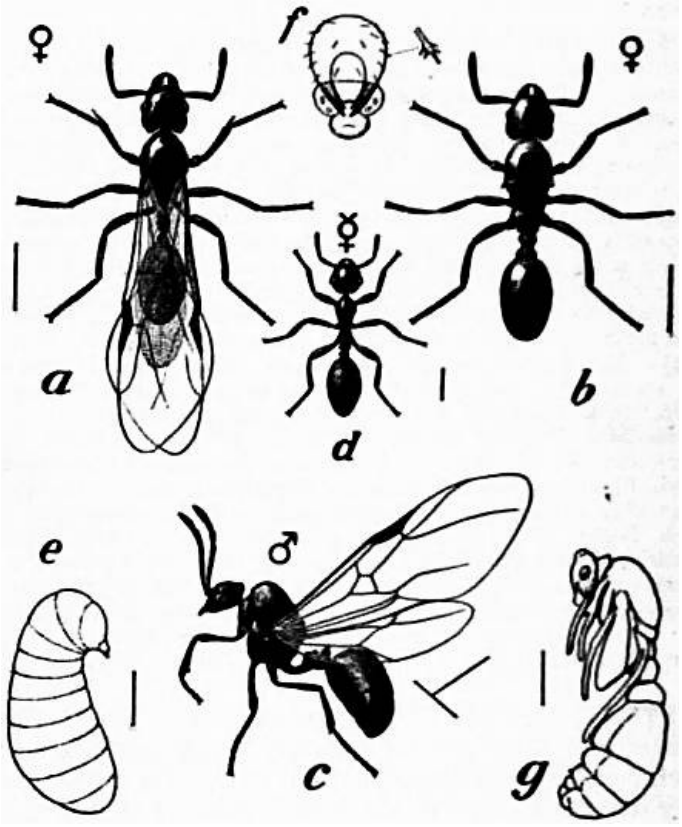


FIG. 3.—Ant, *Tetramorium cespitum* (Linn.), *a*, Female; *b*, female after loss of wings; *c*, male; *d*, worker; *e*, larva; *g*, pupa; *f*, head of larva more highly magnified. After Marlatt, *Bull.* 4 (n.s.) *Div. Ent. U.S. Dept. Agriculture*.

Senses and Intelligence of Ants.—That ants possess highly developed senses and the power of communicating with one another has long been known to students of their habits; the researches of P. Huber and Sir J. Lubbock (Lord Avebury) on these subjects are familiar to all naturalists. The insects are guided by light, being very sensitive to ultra-violet rays, and also by scent and hearing. Recent experiments by A.M. Fielde show that an ant follows her own old track by a scent exercised by the tenth segment of the feeler, recognizes other inmates of her nest by a sense of smell resident in the eleventh segment, is guided to the eggs, maggots and pupae, which she has to tend, by sensation through the eighth and ninth segments, and appreciates the general smell of the nest itself by means of organs in the twelfth segment. Lubbock's experiments of inducing ants to seek objects that had been removed show that they are guided by scent rather than by sight, and that any disturbance of their surroundings often causes great uncertainty in their actions. Ants invite one another to work, or ask for food from one another, by means of pats with the feelers; and they respond to the solicitations of their guest—beetles or mites, who ask for food by patting the ants with their feet. In all probability the actions of ants are for the most part instinctive or reflex, and some observers, such as A. Bethe, deny them all claim to psychical qualities. But it seems impossible to doubt that in many cases ants behave in a manner that must be considered intelligent, that they can learn by experience and that they possess memory. Lubbock goes so far as to conclude the account of his experiments with the remark that "It is difficult altogether to deny them the gift of reason ... their mental powers differ from those of men, not so much in kind as in degree." Wasmann considers that ants are neither miniature human beings nor mere reflex automata, and most students of their habits will

probably accept this intermediate position as the most satisfactory. C.L. Morgan sums up a discussion on Lubbock's experiments in which the ants failed to utilize particles of earth for bridge-making, with the suggestive remark that "What these valuable experiments seem to show is that the ant, probably the most intelligent of all insects, has no claim to be regarded as a rational being." Nevertheless, ants can teach "rational beings" many valuable lessons.

BIBLIOGRAPHY.—The literature on ants is so vast that it is only possible to refer the reader to a few of the most important works on the family. Pierre Huber's *Traité des moeurs des fourmis indigènes* (Genève, 1810) is the most famous of the older memoirs. H.W. Bates, *A Naturalist on the Amazons*; T. Belt, *A Naturalist in Nicaragua*; H.C. McCook, *Agricultural Ant of Texas* (Philadelphia, 1880); and A. Moller's paper in *Botan. Mitt, aus den Tropen*, (1893), contain classical observations on American species. Sir J. Lubbock's (Lord Avebury) *Ants, Bees and Wasps* (London 1882), dealing with British and European species, has been followed by numerous important papers by A. Forel and C. Emery in various Swiss and German periodicals, and especially by C. Janet in his *Êtudes sur les fourmis, les guêpes et les abeilles* (Paris, &c., 1893-1904). Forel (*Ann. Soc. Ent. Belg.* xlvii., 1893, *Journ. Bomnay N.H. Soc.* 1900-1903, and *Biologia Cent. Americana*) and Emery (*Zool. Jahrb. Syst.* viii., 1896) have written on the classification of the *Formicidae*. Among recent American writers on habit may be mentioned W.M. Wheeler (*American Naturalist*, 1900-1902) and A.M. Fielde (*Proc. Acad. Sci. Philadelphia*, 1901); E. Wasmann (*Kritisches Verzeichniss der myrmecophilen und termitophilen Arthropoden*, Berlin, 1894, and *3me Congrès Intern. Zool.* 1895) is the great authority on ant-guests and associates. D. Sharp's general account of ants in the *Cambridge Nat. Hist*. (vol. vi., 1898) is excellent. For discussions on intelligence see A. Bethe, *Journ. f. d. ges. Physiol.* lxx. (1898); Wasmann, *Die psychischen Fahigkeiten der Ameisen* (Stuttgart, 1899); C. Ll. Morgan, *Animal Behaviour* (London, 1900.)

(G. H. C.)

ANTAE (a Lat. plural word, possibly from *ante*, before), an architectural term given to slightly projecting pilaster strips which terminate the winged walls of the naos of a Greek temple. They owe their origin to the vertical posts of timber employed in the primitive palaces or temples of Greece, as at Tiryns and in the Heraeum at Olympia, to carry the roof timbers, as no reliance could be placed on the walls built with unburnt brick or in rubble masonry with clay mortar. When between these winged walls there are columns to carry the architrave, so as to form a porch, the latter is said to be in-antis. (See TEMPLE.)

ANTAEUS, in Greek mythology, a giant of Libya, the son of Poseidon and Gaea. He compelled all strangers passing through the country to wrestle with him, and as, when thrown, he derived fresh strength from each successive contact with his mother earth, he proved invincible. With the skulls of those whom he had slain he built a temple to his father. Heracles, in combat with him, discovered the source of his strength, and lifting him up from the earth crushed him to death (Apollodorus ii. 5; Hyginus, *Fab*. 31). The struggle between Antaeus and Heracles is a favourite subject in ancient sculpture.

ANTALCIDAS, Spartan soldier and diplomatist. In 393 (or 392 B.C.) he was sent to Tiribazus, satrap of Sardis, to undermine the friendly relations then existing between Athens and Persia by offering to recognize Persian claims to the whole of Asia Minor. The Athenians sent an embassy under Conon to counteract his efforts. Tiribazus, who was favourable to Sparta, threw Conon into prison, but Artaxerxes II. (Mnemon) disapproved and recalled his satrap. In 388 Antalcidas, then commander of the Spartan fleet, accompanied Tiribazus to the Persian court, and secured the active assistance of Persia against Athens. The success of his naval operations in the neighbourhood of the Hellespont was such that Athens was glad

to accept terms of peace (the “Peace of Antalcidas”), by which (1) the whole of Asia Minor, with the islands of Clazomenae and Cyprus, was recognized as subject to Persia, (2) all other Greek cities—so far as they were not under Persian rule—were to be independent, except Lemnos, Imbros and Scyros, which were to belong, as formerly, to the Athenians. The terms were announced to the Greek envoys at Sardis in the winter 387-386, and were finally accepted by Sparta in 386. Antalcidas continued in favour with Artaxerxes, until the annihilation of Spartan supremacy at Leuctra diminished his influence. A final mission to Persia, probably in 367, was a failure, and Antalcidas, deeply chagrined and fearful of the consequences, is said to have starved himself to death. (See SPARTA.)

ANTANÀNARÌVO, *i.e.* “town of a thousand” (Fr. spelling *Tananarive*), the capital of Madagascar, situated centrally as regards the length of the island, but only about 90 m. distant from the eastern coast, in 18° 55′ S., 47° 30′ E. It is 135 m. W.S.W. of Tamatave, the principal seaport of the island, with which it is connected by railway, and for about 60 m. along the coast lagoons, a service of small steamers. The city occupies a commanding position, being chiefly built on the summit and slopes of a long and narrow rocky ridge, which extends north and south for about 2½ m., dividing to the north in a Y-shape, and rising at its highest point to 690 ft. above the extensive rice plain to the west, which is itself 4060 ft. above sea-level. For long only the principal village of the Hova chiefs, Antananarivo advanced in importance as those chiefs made themselves sovereigns of the greater part of Madagascar, until it became a town of some 80,000 inhabitants. Until 1869 all buildings within the city proper were of wood or rush, but even then it possessed several timber palaces of considerable size, the largest being 120 ft. high. These crown the summit of the central portion of the ridge; and the largest palace, with its lofty roof and towers, is the most conspicuous object from every point of view. Since the introduction of stone and brick, the whole city has been rebuilt and now contains numerous structures of some architectural pretension, the royal palaces, the houses formerly belonging to the prime minister and nobles, the French residency, the Anglican and Roman Catholic cathedrals, several stone churches, as well as others of brick, colleges, schools, hospitals, courts of justice and other government buildings, and hundreds of good dwelling-houses. Since the French conquest in 1895 good roads have been constructed throughout the city, broad flights of steps connect places too steep for the formation of carriage roads, and the central space, called Andohalo, has become a handsome *place*, with walks and terraces, flower-beds and trees. A small park has been laid out near the residency, and the planting of trees and the formation of gardens in various parts of the city give it a bright and attractive appearance. Water is obtained from springs at the foot of the hill, but it is proposed to bring an abundant supply from the river Ikopa, which skirts the capital to the south and west. The population, including that of the suburbs, is 69,000 (1907). The city is guarded by two forts built on hills to the east and south-west respectively. Including an Anglican and a Roman Catholic cathedral, there are about fifty churches in the city and its suburbs, as well as a Mahommedan mosque.

(J. SI.*)

‘ANTARA IBN SHADDĀD, Arabian poet and warrior of the 6th century, was famous both for his poetry and his adventurous life. His chief poem is contained in the *Mo‘allakât*. The account of his life forms the basis of a long and extravagant romance. His father Shaddād was a soldier, his mother Zabūba a negro slave. Neglected at first, he soon claimed attention and respect for himself, and by his remarkable personal qualities and courage in battle he gained his freedom and the acknowledgment of his father. He took part in the great war between the related tribes of Abs and Dhubyān, which began over a contest of horses and was named after them the war of Dāhis and Ghabrā. He died in a fight against the tribe of Ṭai. His poems, which are chiefly concerned with fighting or with his love for Abla, are published in W. Ahlwardt’s *The Diwans of the six ancient Arabic Poets* (London, 1870); they have also been published separately at Beirût (1888). As regards their genuineness, cf. W. Ahlwardt’s *Bemerkungen uber die Aechtheit der alten arabichen Gedichte* (Greifswald,

1872), pp. 50 ff. *The Romance of ʻAntar* (Sîrat ʻAntar ibn Shaddād) is a work which was long handed down by oral tradition only, has grown to immense proportions and has been published in 32 vols. at Cairo, 1307 (A.D. 1889), and in 10 vols. at Beirût, 1871. It was partly translated by Terrick Hamilton under the title *ʻAntar, a Bedoueen Romance* (4 vols., London, 1820).

For an account of the poet and his works see H. Thorbeckes, *Antarah, ein vorislamischer Dichter* (Leipzig, 1867), and cf. the *Book of Songs* (see ABULFARAJ), vol. vii. pp. 148-153.

(G. W. T.)

ANTARCTIC (Gr. ἀντί, opposite, and ἄρκτος, the Bear, the northern constellation of *Ursa Major*), the epithet applied to the region (including both the ocean and the lands) round the South Pole. The Antarctic circle is drawn at 66° 30′ S., but polar conditions of climate, &c., extend considerably north of the area thus enclosed. (See POLAR REGIONS.)

ANTEATER, a term applied to several mammals, but (zoologically at any rate) specially indicating the tropical American anteaters of the family *Myrmecophagidae* (see EDENTATA). The typical and largest representative of the group is the great anteater or ant-bear (*Myrmecophaga jubata*), an animal measuring 4 ft. in length without the tail, and 2 ft. in height at the shoulder. Its prevailing colour is grey, with a broad black band, bordered with white, commencing on the chest, and passing obliquely over the shoulder, diminishing gradually in breadth as it approaches the loins, where it ends in a point. It is extensively distributed in the tropical parts of South and Central America, frequenting low swampy savannas, along the banks of rivers, and the depths of the humid forests, but is nowhere abundant. Its food consists mainly of termites, to obtain which it opens their nests with its powerful sharp anterior claws, and as the insects swarm to the damaged part of their dwelling, it draws them into its mouth by means of its long, flexible, rapidly moving tongue covered with glutinous saliva. The great anteater is terrestrial in habits, not burrowing underground like armadillos. Though generally an inoffensive animal, when attacked it can defend itself vigorously and effectively with its sabre-like anterior claws. The female produces a single young at a birth. The tamandua anteaters, as typified by *Tamandua* (or *Uroleptes*) *tetradactyla*, are much smaller than the great anteater, and differ essentially from it in their habits, being mainly arboreal. They inhabit the dense primeval forests of South and Central America. The usual colour is yellowish-white, with a broad black lateral band, covering nearly the whole of the side of the body.

The little or two-toed anteater (*Cyclopes* or *Cycloturus didactylus*) is a native of the hottest parts of South and Central America, and about the size of a rat, of a general yellowish colour, and exclusively arboreal in its habits. The name scaly anteater is applied to the pangolin (*q.v.*); the banded anteater (*Myrmecobius fasciatus*) is a marsupial, and the spiny anteater (*Echidna*) is one of the monotremes (see MARSUPIALIA and MONOTREMATA).

ANTE-CHAPEL, the term given to that portion of a chapel which lies on the western side of the choir screen. In some of the colleges at Oxford and Cambridge the ante-chapel is carried north and south across the west end of the chapel, constituting a western transept or narthex. This model, based on Merton College chapel (13th century), of which only chancel and transept were built though a nave was projected, was followed at Wadham, New and Magdalen Colleges, Oxford, in the new chapel of St John’s College, Cambridge, and in Eton College. In Jesus College, Cambridge, the transept and a short nave constitute the ante-chapel; in Clare College an octagonal vestibule serves the same purpose; and in

Christ's, Trinity and King's Colleges, Cambridge, the ante-chapel is a portion of the main chapel, divided off from the chancel by the choir screen.

ANTE-CHOIR, the term given to the space enclosed in a church between the outer gate or railing of the rood screen and the door of the screen; sometimes there is only one rail, gate or door, but in Westminster Abbey it is equal in depth to one bay of the nave. The ante-choir is also called the "fore choir."

ANTE-FIXAE (from Lat. *antefigere*, to fasten before), the vertical blocks which terminate the covering tiles of the roof of a Greek temple; as spaced they take the place of the cymatium and form a cresting along the sides of the temple. The face of the ante-fixae was richly carved with the anthemion (*q.v.*) ornament.

ANTELOPE, a zoological name which, so far as can be determined, appears to trace its origin, through the Latin, to *Panthalops*, the old Coptic, and *Antholops*, the late Greek name of the fabled unicorn. Its adoption by the languages of Europe cannot apparently be traced farther back than the 4th century of our era, at which date it was employed to designate an imaginary animal living on the banks of the Euphrates. By the earlier English naturalists, and afterwards by Buffon, it was, however, applied to the Indian blackbuck, which is thus entitled to rank as *the* antelope. It follows that the subfamily typified by this species, in which are included the gazelles, is the one to which alone the term antelopes should be applied if it were employed in a restricted and definable sense.

Although most people have a general vague idea of what constitutes an "antelope," yet the group of animals thus designated is one that does not admit of accurate limitations or definition. Some, for instance, may consider that the chamois and the so-called white goat of the Rocky Mountains are entitled to be included in the group; but this is not the view held by the authors of the *Book of Antelopes* referred to below; and, as a matter of fact, the term is only a vague designation for a number of more or less distinct groups of hollow-horned ruminants which do not come under the designation of cattle, sheep or goats; and in reality there ought to be a distinct English group-name for each subfamily into which "antelopes" are subdivided.

The great majority of antelopes, exclusive of the doubtful chamois group (which, however, will be included in the present article), are African, although the gazelles are to a considerable extent an Asiatic group. They include ruminants varying in size from a hare to an ox; and comprise about 150 species, although this number is subject to considerable variation according to personal views as to the limitations of species and races. No true antelopes are American, the prongbuck (*Antilocapra*), which is commonly called "antelope" in the United States, representing a distinct group; while, as already mentioned, the Rocky Mountain or white goat stands on the borderland between antelopes and goats.

The first group, or *Tragelaphinae*, is represented by the African elands (*Taurotragus*), bongo (*Boöcercus*), kudus (*Strepsiceros*) and bushbucks or harnessed antelopes (*Tragelaphus*), and the Indian nilgai (*Boselaphus*). Except in the bongo and elands, horns are present only in the males, and these are angulated and generally spirally twisted, and without rings. The muzzle is naked, small glands are present on the face

below the eyes, and the tail is comparatively long. The colours are often brilliant; white spots and stripes being prevalent. The harnessed antelopes, or bushbucks, are closely allied to the kudus, from which they chiefly differ by the spiral formed by the horns generally having fewer turns. They include some of the most brilliantly coloured of all antelopes; the ornamentation taking the form of vertical white lines and rows of spots. Usually the sexes differ in colour. Whereas most of the species have hoofs of normal shape, in some, such as the nakong, or situtunga (*Tragelaphus spekei*), these are greatly elongated, in order to be suited for walking in soft mud, and these have accordingly been separated as *Limnotragus*. The last-named species spends most of its time in water, where it may be observed not infrequently among the reeds with all but its head and horns submerged. The true or smaller bushbucks, represented by the widely spread *Tragelaphus scriptus*, with several local races (fig. 1) are sometimes separated as *Sylvicapra*, leaving the genus *Tragelaphus* to be represented by the larger *T. angasi* and its relatives. The genus *Strepsiceros* is represented by the true or great kudu (*S. capensis* or *S. strepsiceros*), fig. 2, ranging from the Cape to Somaliland, and the smaller *S. imberbis* of North-East Africa, which has no throat-fringe. The large and brightly coloured bongo (*Boöcercus euryceros*) of the equatorial forest-districts serves in some respects to connect the bushbucks with the elands, having horns in both sexes, and a tufted tail, but a brilliant orange coat with vertical white stripes. Still larger are the elands, of which the typical *Taurotragus oryx* of the Cape is uniformly sandy-coloured, although stripes appear in the more northern *T. o. livingstonei*, while the black-necked eland (*T. derbianus*) of Senegambia and the Bahr-el-Ghazal district is a larger and more brilliantly coloured animal. The small horns and bluish-grey colour of the adult bulls serve to distinguish the Indian nilgai (*q.v.*), *Boselaphus tragocamdus*, from the other members of the subfamily.

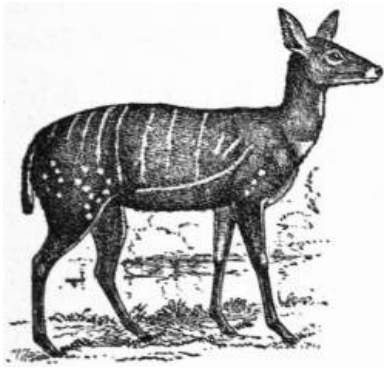


FIG. 1.—Female Bushbuck (*Tragelaphus scriptus*).

FIG. 2.—Male Kudu (*Strepsicero capensis*).

The second group, which is mainly African, but also represented in Syria, is that of the *Hippotraginae*, typified by the sable antelope (*Hippotragus niger*) and roan antelope (*H. equinus*), but also including the oryxes (*Oryx*) and addax. These are for the most part large antelopes, with long cylindrical horns, which are present in both sexes, hairy muzzles, no face-glands, long tufted tails and tall thick molars of the ox-type. In *Hippotragus* the stout and thickly ringed horns rise vertically from a ridge above the eyes at an obtuse angle to the plane of the lower part of the face, and then sweep backwards in a bold curve; while there are tufts of long white hairs near the eyes. The sable antelope is a southern species in which both sexes are black or blackish when adult, while the lighter-coloured and larger roan antelope has a much wider distribution. The South African blauwbok (*H. leucophaeus*) is extinct. In the addax (*Addax nasomaculatus*), which is a distinct species common to North Africa and Syria, the ringed horns form an open spiral ascending in the plane of the face, and there is long, shaggy, dark hair on the fore-quarters in winter. The various species of

oryx differ from *Hippotragus* by the absence of the white eye-tufts, and by the horns sloping backwards in the plane of the face. In the South African gemsbuck (*Oryx gazella*), fig. 3, the East African beisa or true oryx (*O. beisa*), and the white Arabian (*O. beatrix*) the horns are straight, but in the North African white oryx or algazel (*O. leucoryx* or *O. algazal*) they are scimitar-shaped, the colour of this species being white and pale chestnut (see Addax, Oryx, and Sable Antelope).

The third subfamily is the *Antilopinae*, the members of which have a much wider geographical range than either of the foregoing groups. The subfamily is characterized by the narrow crowns of the molars, which are similar to those of sheep, and the hairy muzzle. Generally there are face-glands below the eyes; and the tail is moderate or short. Pits are present in the forehead of the skull, and the horns are ringed for part of their length, with a compressed base, their form being often lyrate, but sometimes spiral. Lateral hoofs are generally present.

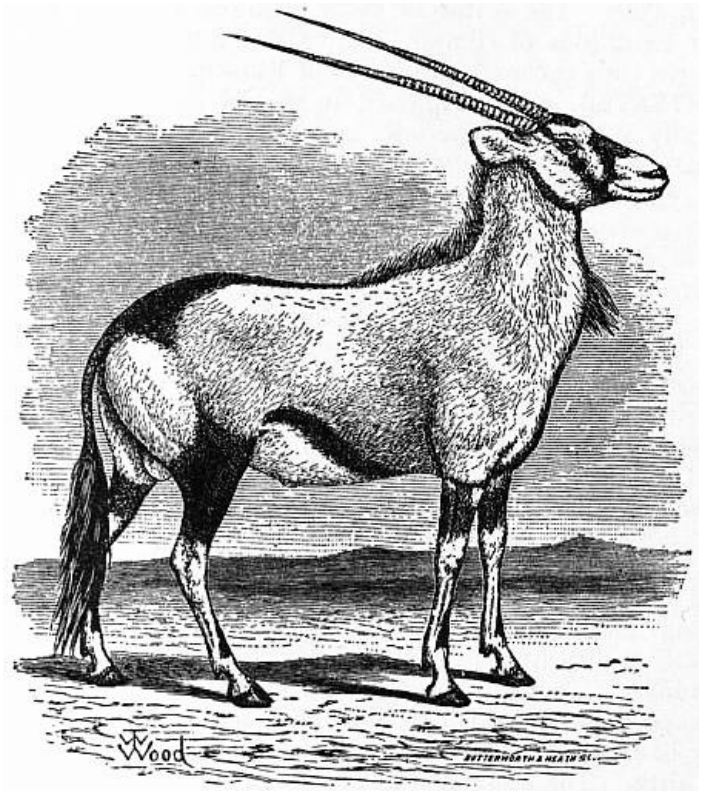


Fig. 3.—Gemsbuck, or Cape Oryx (*Oryx gazella*).

Gazelles (*Gazella*), which form by far the largest genus of the subfamily, are inhabitants of open and frequently more or less desert districts. They are mostly of a sandy colour, with dark and light markings on the face, and often a dark band on the flanks. The horns are more or less lyrate, and generally developed in both sexes; there are frequently brushes of hair on the knees. Gazelles may be divided into groups. The one to which the North African *G. dorcas* belongs is characterized by the presence of lyrate or sub-lyrate horns in both sexes, and by the white of the buttocks not extending on to the haunches. Nearly allied is the group including the Indian *G. bennetti* and the Arabian *G. arabica*, in which the horns have a somewhat S-shaped curvature in profile. In the group represented by the African *G. granti*, *G. thomsoni*, *G. mohr*, &c., the white of the buttocks often sends a prolongation on to the flanks, the horns are long and the size is large. Lastly, the Central Asian *G. gutturosa*, *G. subgutturosa* and *G. picticaudata* form a group in which the females are hornless and the face-markings inconspicuous or wanting.

The South African springbuck (*Antidorcas euchore*) is nearly related to the gazelles, from which it is distinguished by the presence on the middle line of the loins of an evertible pouch, lined with long white hairs capable of erection. It has also one premolar tooth less in the lower jaw. Formerly these beautiful antelopes existed in countless numbers on the plains of South Africa, and were in the habit of migrating in droves which completely filled entire valleys. Now they are comparatively rare.

The dibatag or Clarke's gazelle (*Ammodorcas clarkei*), of Somaliland, forms a kind of connecting link between the true gazelles and the gerenuk, this being especially shown in the skull. The face has the ordinary gazelle-markings; but the rather short horns—which are wanting in the female—have a peculiar upward and forward curvature, unlike that obtaining

in the gazelles and somewhat resembling that of the reedbuck. The neck is longer and more slender than in ordinary gazelles, and the tail is likewise relatively long. Although local, these animals are fairly common in the interior of Somaliland, where they are known by the name of dibatag. In running, the head and neck are thrown backwards, while the tail is turned forwards over the back.

The East African gerenuk (*q.v.*), or Waller's gazelle (*Lithocranius walleri*), of which two races have been named, is a very remarkable ruminant, distinguished not only by its exceedingly elongated neck and limbs, but also by the peculiar hooked form of the very massive horns of the bucks, the dense structure and straight profile of the skull, and the extreme slenderness of the lower jaw.

A still more aberrant gazelle is a small North-East African species known as the beira (*Dorcatragus melanotis*), with very short horns, large hoofs and a general appearance recalling that of some of the members of the subfamily *Neotraginae*, although in other respects gazelle-like. The blackbuck (*Antilope cervicapra* or *A. bezoartica*) of India, a species taking its name from the deep black coat assumed by the adult bucks, and easily recognized by the graceful, spirally twisted horns ornamenting the heads of that sex, is now the sole representative of the genus *Antilope*, formerly taken to embrace the whole of the true antelopes. Large face-glands are characteristic of the species, which inhabits the open plains of India in large herds. They leap high in the air, like the springbuck, when on the move.

With the palla (*q.v.*), or impala (*Aepyceros melampus*), we reach an exclusively African genus, characterized by the lyrate horns of the bucks, the absence of lateral hoofs, and the presence of a pair of glands with black tufts of hair on the hind-feet.

The sheep-like saiga (*q.v.*), *Saiga tatarica*, of the Kirghiz steppes stands apart from all other antelopes by its curiously puffed and trunk-like nose, which can be wrinkled up when the animal is feeding and has the nostrils opening downwards. More or less nearly related to the saiga is the chiru (*q.v.*), *Pantholops hodgsoni* of Tibet, characterized by the long upright black horns of the bucks, and the less convex nose, in which the nostrils open anteriorly instead of downwards.

The *Neotraginae* (or *Nanotraginae*) form an exclusively African group of small-sized antelopes divided into several, for the most part nearly related, genera. Almost the only characters they possess in common are the short and spike-like horns of the bucks, which are ringed at the base, with smooth tips, and the large size of the face-gland, which opens by a circular aperture. *Neotragus* is represented by the pigmy royal antelope (*N. pygmaeus*) of Guinea; *Hylarnus* includes one species from Cameroon and a second from the Semliki forest; while *Nesotragus* comprises the East African suni antelopes, *N. moschatus* and *N. livingstonianus*. All three might, however, well be included in *Neotragus*. The royal antelope is the smallest of the Bovidae.

The steinbok (*Rhaphiceros campestris*) and the *grysbok* (*R. melanotis*) are the best-known representatives of a group characterized by the vertical direction of the horns and the small gland-pit in the skull; lateral hoofs being absent in the first-named and present in the second. A bare gland-patch behind the ear serves to distinguish the oribis or ourebis, as typified by *Oribia montana* of the Cape; lateral hoofs being present and the face-pit large.

From all the preceding the tiny dik-diks (*Madoqua*) of North-East Africa differ by their hairy noses, expanded in some species into short trunks; while the widely spread klipspringer (*q.v.*), *Oreotragus saltator*, with its several local races, is unfailingly distinguishable by its rounded blunt hoofs and thick, brittle, golden-flecked hair.

In some respects connecting the last group with the *Cervicaprinae* is the rhebok, or vaal-rhebok (*Pelea capreolus*), a grey antelope of the size of a roebuck, with small upright horns in the bucks recalling those of the last group, and small lateral hoofs, but no face-glands. In size and several structural features it approximates to the more typical *Cervicaprinae*, as represented by the reedbuck (*Cervicapra*), and the waterbucks and kobs (*Cobus* or *Kobus*), all of which are likewise African. These are medium-sized or large antelopes with naked muzzles, narrow sheep-like upper molars, fairly long tails, rudimentary or no face-glands, and pits in the frontal bones of the skull. Reedbuck (*q.v.*), or rietbok (*Cervicapra*), are foxy-red antelopes ranging in size from a fallow-deer to a roe, with thick bushy tails, forwardly curving black horns, and a bare patch of glandular skin behind each ear. They keep to open country near water. The waterbuck (*q.v.*), *Cobus*, on the other hand, actually seek refuge from pursuit in the water. They have heavily fringed necks, tufted tails, long lyrate horns in the bucks (fig. 4) but no glandular ear-patches. The true waterbuck (*C. ellipsiprymnus*), and

the defassa or sing-sing (*C. defassa*), are the two largest species, equal in size to red deer, and grey or reddish in colour. Of the smaller forms or kobs, *C. maria* and *C. leucotis* of the swamps of the White Nile are characterized by the black coats of the adult bucks; the West African *C. cob*, and its East African representative *C. thomasi*, are wholly red antelopes of the size of roedeer; the lichi or lechwe (*C. lichi*) is characterized by its long horns, black fore-legs and superior size; while the puku (*C. vardoni*), which is also a swamp-loving species from South-Central Africa, differs from the three preceding species by the fore-legs being uniformly foxy.

FIG. 4.—Waterbuck (*Cobus ellipsiprymnus*).

The duikers, or duikerboks (*Cephalophus*), of Africa, which range in size from a large hare to a fallow-deer, typify the subfamily *Cephalophinae*, characterized by the spike-like horns of the bucks, the elongated aperture of the face-glands, the naked muzzle, the relatively short tail, and the square-crowned upper molars; lateral hoofs being present. In the duikers themselves the single pair of horns is set in the midst of a tuft of long hairs, and the face-gland opens in a long naked line on the side of the face above the muzzle. The group is represented in India by the chousingha or four-horned antelope (*Tetraceros quadricornis*), generally distinguished by the feature from which it takes its name (see DUIKER).

The last section of the true antelopes is the *Bubalinae*, represented by the hartebeest (*q.v.*), *Bubalis*, blesbok and sassaby (*Damaliscus*), and the gnu (*q.v.*) or wildebeest (*Connochaetes*, also called *Catoblepas*), all being African with the exception of one or two hartebeests which range into Syria. All these are large and generally more or less uniformly coloured antelopes with horns in both sexes, long and more or less hairy tails, high withers, small face-glands, naked muzzles, tall, narrow upper molars, and the absence of pits in the frontal bones. The long face, high crest for the horns, which are ringed, lyrate and more or less strongly angulated, and the moderately long tail, are the distinctive features of the hartebeests. They are large red antelopes (fig. 5), often with black markings on the face and limbs. In *Damaliscus*, which includes, among many other species, the blesbok and bontebok (*D. albifrons* and *D. pygargus*) and the sassaby or bastard hartebeest (*D. lunatus*), the face is shorter, and the horns straighter and set on a less elevated crest. The colour, too, of these antelopes tends in many cases to purple, with white markings. From the hartebeest the gnus (fig. 6) differ by their smooth and outwardly or downwardly directed horns, broad bristly muzzles, heavy manes and long horse-like tails. There are two chief types, the white-tailed gnu or black wildebeest (*Connochaetes gnu*) of South Africa, now nearly extinct (fig. 6), and the brindled gnu, or blue wildebeest (*C. taurinus*), which, with some local variation, has a large range in South and East Africa.

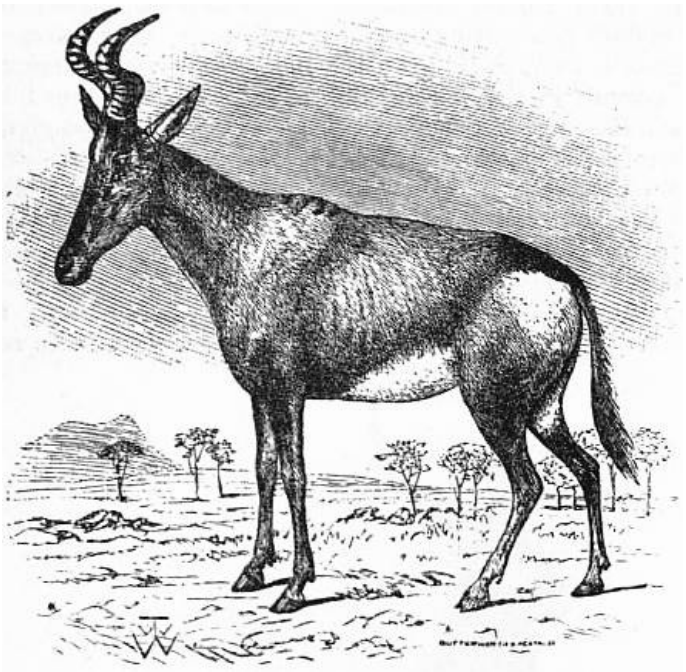


FIG. 5.—Cape Hartebeest (*Bubalis cama*).

FIG. 6.—White-tailed Gnu, or Black Wildebeest (*Connochaetes gnu*).

In concluding this survey of living antelopes, reference may be made to the subfamily *Rupicaprinae* (typified by the European chamois), the members of which, as already stated, are in some respects intermediate between antelopes and goats. They are all small or medium-sized mountain ruminants, for the most part European and Asiatic, but with one North American representative. They are heavily built ruminants, with horns of nearly equal size in both sexes, short tapering tails, large hoofs, narrow goat-like upper molars, and usually small face-glands. The horns are generally rather small, upright, ringed at the base, and more or less curved backwards, but in the takin they are gnu-like. The group is represented by the European chamois or gemse (*Rupicapra tragus* or *R. rupicapra*), broadly distinguished by its well-known hook-like horns, and the Asiatic gorals (*Urotragus*) and serows (*Nemorhaedus*), which are represented by numerous species ranging from Tibet, the Himalaya, and China, to the Malay Peninsula and islands, being in the two latter areas the sole representatives of both antelopes and goats. In the structure of its horns the North American white Rocky Mountain goat (*Oreamnus*) is very like a serow, from which it differs by its extremely short cannon-bones. In the latter respect this ruminant resembles the takin (*Budorcas*) of Tibet, which, as already mentioned, has horns recalling those of the white-tailed gnu. Possibly the Arctic musk-ox (*Ovibos*) may be connected with the takin by means of certain extinct ruminants, such as the North American Pleistocene *Euceratherium* and the European Pliocene *Criotherium* (see CHAMOIS, GORAL, SEROW, ROCKY MOUNTAIN GOAT and TAKIN).

Extinct Antelopes.—Only a few lines can be devoted to extinct antelopes, the earliest of which apparently date from the European Miocene. An antelope from the Lower Pliocene of Northern India known as *Bubalis*, or *Damaliscus, palaeindicus* indicates the occurrence of the hartebeest group in that country. *Cobus* also occurs in the same formation, as does likewise *Hippotragus*. *Palaeoryx* from the corresponding horizon in Greece and Samos is to some extent intermediate between *Hippotragus* and *Oryx*. Gazelles are common in the Miocene and Pliocene of both Europe and Asia. Elands and kudus appear to have been represented in India during the Pliocene; the European *Palaeoreas* of the same age seems to be intermediate between the two, while *Protragelaphus* is evidently another European representative of the group. *Helicophora* is another spiral-horned European Pliocene antelope, but of somewhat doubtful affinity; the same being the case with the large *Criotherium* of the Samos Pliocene, in which the short horns are curiously twisted. As already stated, there is a possibility of this latter ruminant being allied both to the takin and the musk-ox. *Palaeotragus* and *Tragoceros*, of the Lower Pliocene of Greece, at one time regarded as antelopes, are now known to be ancestors of the okapi.

For antelopes in general, see P.L. Sclater and O. Thomas, *The Book of Antelopes* (4 vols., London, 1894-1900).

(R. L.*)

ANTEMNAE (Lat. *ante amnem*, sc. *Anienem*; Varro, *Ling. Lat*. v. 28), an ancient village of Latium, situated on the W. of the Via Salaria, 2 m. N. of Rome, where the Anio falls into the Tiber. It is said to have been conquered by Romulus after the rape of the Sabine women, and to have assisted the Tarquins. Certainly it soon lost its independence, and in Strabo’s time was a mere village. The site is one of great strength, and is now occupied by a fort, in the construction of which traces of the outer walls and of huts, and several wells and a cistern, all belonging to the primitive village, were discovered, and also the remains of a villa of the end of the Republic.

See T. Ashby in *Papers of the British School at Rome*, iii. 14.

ANTENOR, an Athenian sculptor, of the latter part of the 6th century B.C. He was the author of the group of the tyrannicides Harmodius and Aristogeiton, set up by the Athenians on the expulsion of the Peisistratidae, and carried away to Persia by Xerxes. A basis with the signature of Antenor, son of Eumares, has been shown to belong to one of the dedicated female figures of archaic style which have been found on the Acropolis of Athens.

See GREEK ART; and E.A. Gardner’s *Handbook of Greek Sculpture*, i. p. 182.

ANTENOR, in Greek legend, one of the wisest of the Trojan elders and counsellors. He advised his fellow-townsmen to send Helen back to her husband, and showed himself not unfriendly to the Greeks and an advocate of peace. In the later story, according to Dares and Dictys, he was said to have treacherously opened the gates of Troy to the enemy; in return for which, at the general sack of the city, his house, distinguished by a panther’s skin at the door, was spared by the victors. Afterwards, according to various versions of the legend, he either rebuilt a city on the site of Troy, or settled at Cyrene, or became the founder of Patavium.

Homer, *Iliad*, iii. 148, vii. 347; Horace, *Epp*. i. 2. 9; Livy i. 1; Pindar, *Pythia*, v. 83; Virgil, *Aen*. i. 242.

ANTEQUERA (the ancient *Anticaria*), a town of southern Spain, in the province of Málaga; on the Bobadilla-Granada railway. Pop. (1900) 31,609. Antequera overlooks the fertile valley bounded on the S. by the Sierra de los Torcales, and on the N. by the river Guadalhorce. It occupies a commanding position, while the remains of its walls, and of a fine Moorish castle on a rock that overhangs the town, show how admirably its natural defences were supplemented by art. Besides several interesting churches and palaces, it contains a fine arch, erected in 1595 in honour of Philip II., and partly constructed of inscribed Roman masonry. In the eastern suburbs there is one of the largest grave-mounds in Spain, said to be of prehistoric date, and with subterranean chambers excavated to a depth of 65 ft. The Peña de los Enamorados, or "Lovers' Peak," is a conspicuous crag which owes its name to the romantic legend adapted by Robert Southey (1774-1843) in his *Laila and Manuel*. Woollen fabrics are manufactured, and the sugar industry established in 1890 employs several thousand hands; but the majority of the inhabitants are occupied by the trade in grain, fruit, wine and oil. Marble is quarried; and at El Torcal, 6 m. south, there is a very curious labyrinth of red marble rocks. Antequera was captured from the Moors in 1410, and became until 1492 one of the most important outposts of the Christian power in Spain.

See C. Fernandez, *Historia de Antequera, desde su fondacion* (Malaga, 1842).

ANTEROS, pope for some weeks at the end of the year 235. He died on the 3rd of January 236. His original epitaph was discovered in the Catacombs.

ANTHELION (late Gr. ἀνθήλιος, opposite the sun), the luminous ring or halo sometimes seen in Alpine or polar regions surrounding the shadow of the head of an observer cast upon a bank of cloud or mist. The halo diminishes in brightness from the centre outwards, and is probably due to the diffraction of light. Under favourable conditions four concentric rings may be seen round the shadow of the observer's head, the outermost, which seldom appears, having an angular radius of 40°.

ANTHEM, derived from the Gr. ἀντίφωνα, through the Saxon *antefn*, a word which originally had the same meaning as antiphony (*q.v.*). It is now, however, generally restricted to a form of church music, particularly in the service of the Church of England, in which it is appointed by the rubrics to follow the third collect at both morning and evening prayer, "in choirs and places where they sing." It is just as usual in this place to have an ordinary hymn as an anthem, which is a more elaborate composition than the congregational hymns. Several anthems are included in the English coronation service. The words are selected from Holy Scripture or in some cases from the Liturgy, and the music is generally more elaborate and varied than that of psalm or hymn tunes. Anthems may be written for solo voices only, for the full choir, or for both, and according to this distinction are called respectively *Verse, Full*, and *Full with Verse*. Though the anthem of the Church of England is analogous to the *motet* of the Roman Catholic and Lutheran Churches, both being written for a trained choir and not for the congregation, it is as a musical form essentially English in its origin and development. The English school of musicians has from the first devoted its chief attention to this form, and scarcely a composer of any note can be named who has not written several good anthems. Tallis, Tye, Byrd, and Farrant in the 16th century; Orlando Gibbons, Blow, and Purcell in the 17th, and Croft, Boyce, James Kent, James Nares, Benjamin Cooke, and Samuel Arnold in the 18th were famous composers of anthems, and in more recent times the names are too numerous to mention.

ANTHEMION (from the Gr. ἀνθέμιον, a flower), the conventional design of flower or leaf forms which was largely employed by the Greeks to decorate (1) the fronts of ante-fixae, (2) the upper portion of the stele or vertical tombstones, (3) the necking of the Ionic columns of the Erechtheum and its continuation as a decorative frieze on the walls of the same, and (4) the cymatium of a cornice. Though generally known as the honeysuckle ornament, from its resemblance to that flower, its origin will be found in the flower of the acanthus plant.

ANTHEMIUS, Greek mathematician and architect, who produced, under the patronage of Justinian (A.D. 532), the original and daring plans for the church of St Sophia in Constantinople, which strikingly displayed at once his knowledge and his ignorance. He was one of five brothers—the sons of Stephanus, a physician of Tralles—who were all more or less eminent in their respective departments. Dioscorus followed his father's profession in his native place; Alexander became at Rome one of the most celebrated medical men of his time; Olympius was deeply versed in Roman jurisprudence; and Metrodorus was one of the distinguished grammarians of the great Eastern capital. It is related of Anthemius that, having a quarrel with his next-door neighbour Zeno, he annoyed him in two ways. First, he made a number of leathern tubes the ends of which he contrived to fix among the joists and flooring of a fine upper-room in which Zeno entertained his friends, and then subjected it to a miniature earthquake by sending steam through the tubes. Secondly, he simulated thunder and lightning, the latter by flashing in Zeno's eyes an intolerable light from a slightly hollowed mirror. Certain it is that he wrote a treatise on burning-glasses. A fragment of this was published under the title Περὶ παραδόξων μηχανημάτων by L. Dupuy in 1777, and also appeared in 1786 in the forty-second volume of the *Hist. de l'Acad. des Inscr.*; A. Westermann gave a revised edition of it in his Παραδοξογράφοι (*Scriptores rerum mirabilium Graeci*), 1839. In the course of constructions for surfaces to reflect to one and the same point (1) all rays in whatever direction passing through another point, (2) a set of parallel rays, Anthemius assumes a property of an ellipse not found in Apollonius (the equality of the angles subtended at a focus by two tangents drawn from a point), and (having given the focus and a double ordinate) he uses the focus and directrix to obtain any number of points on a parabola—the first instance on record of the practical use of the directrix.

On Anthemius generally, see Procopius, *De Aedific*. i. 1; Agathias, *Hist*. v. 6-9; *Gibbon's Decline and Fall*, cap. xl.

(T. L. H.)

ANTHESTERIA, one of the four Athenian festivals in honour of Dionysus, held annually for three days (11th-13th) in the month of Anthesterion (February-March). The object of the festival was to celebrate the maturing of the wine stored at the previous vintage, and the beginning of spring. On the first day, called *Pithoigia* (opening of the casks), libations were offered from the newly opened casks to the god of wine, all the household, including servants and slaves, joining in the festivities. The rooms and the drinking vessels in them were adorned with spring flowers, as were also the children over three years of age. The second day, named *Choës* (feast of beakers), was a time of merrymaking. The people dressed themselves gaily, some in the disguise of the mythical personages in the suite of Dionysus, and paid a round of visits to their acquaintances. Drinking clubs met to drink off matches, the winner being he who drained his cup most rapidly. Others poured libations on the tombs of deceased relatives. On the part of the state this day was the occasion of a peculiarly solemn and secret ceremony in one of the sanctuaries of Dionysus in the Lenaeum, which for the rest of the year was closed. The basilissa (or basilinna), wife of the archon basileus for the time, went through a ceremony of marriage to the wine god, in which she was assisted by fourteen Athenian matrons, called *geraerae*, chosen by the basileus and sworn to secrecy. The days on which the Pithoigia and Choës were celebrated were both regarded as ἀποφράδες (*nefasti*) and μιαραί ("defiled"), necessitating expiatory libations; on them the souls of the dead came up from the underworld and walked abroad; people chewed leaves of whitethorn and besmeared their doors with tar to protect

themselves from evil. But at least in private circles the festive character of the ceremonies predominated. The third day was named *Chytri* (feast of pots, from χύτρος, a pot), a festival of the dead. Cooked pulse was offered to Hermes, in his capacity of a god of the lower world, and to the souls of the dead. Although no performances were allowed at the theatre, a sort of rehearsal took place, at which the players for the ensuing dramatic festival were selected.

The name Anthesteria, according to the account of it given above, is usually connected with ἄνθος ("flower," or the "bloom" of the grape), but A.W. Verrall (*Journal of Hellenic Studies*, xx., 1900, p. 115) explains it as a feast of "revocation" (from ἀναθέσσασθαι, to "pray back" or "up"), at which the ghosts of the dead were recalled to the land of the living (*cp.* the Roman *mundus patet*). J.E. Harrison (*ibid.* 100, 109, and *Prolegomena*), regarding the Anthesteria as primarily a festival of all souls, the object of which was the expulsion of ancestral ghosts by means of placation, explains πιθοιγία as the feast of the opening of the graves (πίθος meaning a large urn used for burial purposes), χόες as the day of libations, and χύτροι as the day of the grave-holes (not "pots," which is χύτροι), in point of time really anterior to the πιθοιγία. E. Rohde and M.P. Nilsson, however, take the χύτροι to mean "water vessels," and connect the ceremony with the Hydrophoria, a libation festival to propitiate the dead who had perished in the flood of Deucalion.

See F. Hiller von Gartringen in Pauly-Wissowa's *Realencyclopadie* (*s.v.*); J. Girard in Daremberg and Saglio, *Dictionnaire des antiquités* (*s.v.* "Dionysia"); and F.A. Voigt in Roscher's *Lexikon der Mythologie* (*s.v.* "Dionysos"); J.E. Harrison, *Prolegomena to the Study of Greek Religion* (1903); M.P. Nilsson, *Studia de Dionysiis Atticis* (1900) and *Griechische Feste* (1906); G.F. Schömann, *Griechische Alterthümer*, ii. (ed. J.H. Lipsius, 1902), p. 516; A. Mommsen, *Feste der Stadt Athen* (1898); E. Rohde, *Psyche* (4th ed., 1907), p. 237.

ANTHIM THE IBERIAN, a notable figure in the ecclesiastical history of Rumania. A Georgian by birth, he came to Rumania early in the second half of the 17th century, as a simple monk. He became bishop of Râmnicu in 1705, and in 1708 archbishop of Walachia. Taking a leading part in the political movements of the time, he came into conflict with the newly appointed Greek hospodars, and was exiled to Rumelia. But on his crossing the Danube in 1716 he was thrown into the water and drowned, as it is alleged, at the instigation of the prince of Walachia. He was a man of great talents and spoke and wrote many Oriental and European languages. Though a foreigner, he soon acquired a thorough knowledge of Rumanian, and was instrumental in helping to introduce that language into the church as its official language. He was a master printer and an artist of the first order. He cut the wood blocks for the books which he printed in Tirgovishtea, Râmnicu, Snagov and Bucharest. He was also the first to introduce Oriental founts of type into Rumania, and he printed there the first Arabic missal for the Christians of the East (Râmnicu, 1702). He also trained Georgians in the art of printing, and cut the type with which under his pupil Mihail Ishtvanovitch they printed the first Georgian Gospels (Tiflis, 1709). A man of great oratorical power, Anthim delivered a series of sermons (Didahii), and some of his pastoral letters are models of style and of language as well as of exact and beautiful printing. He also completed a whole *corpus* of lectionaries, missals, gospels, &c.

See M. Gaster, *Chrestomathie roumaine* (1881), and "Gesch. d. rumänischen Litteratur," in Grober, *Grundriss d. rom. Philologie*, vol. ii. (1899); and E. Picot, *Notice sur Anthim d'Ivir* (Paris, 1886).

(M. G.)

ANTHOLOGY. The term "anthology," literally denoting a garland or collection of flowers, is figuratively applied to any selection of literary beauties, and especially to that great body of fugitive poetry, comprehending about 4500 pieces, by upwards of 300 writers, which is commonly known as the *Greek Anthology*.

Literary History of the Greek Anthology.—The art of occasional poetry had been cultivated in Greece from an early period,—less, however, as the vehicle of personal feeling, than as

the recognized commemoration of remarkable individuals or events, on sepulchral monuments and votive offerings: Such compositions were termed epigrams, *i.e.* inscriptions. The modern use of the word is a departure from the original sense, which simply indicated that the composition was intended to be engraved or inscribed. Such a composition must necessarily be brief, and the restraints attendant upon its publication concurred with the simplicity of Greek taste in prescribing conciseness of expression, pregnancy of meaning, purity of diction and singleness of thought, as the indispensable conditions of excellence in the epigrammatic style. The term was soon extended to any piece by which these conditions were fulfilled. The transition from the monumental to the purely literary character of the epigram was favoured by the exhaustion of more lofty forms of poetry, the general increase, from the general diffusion of culture, of accomplished writers and tasteful readers, but, above all, by the changed political circumstances of the times, which induced many who would otherwise have engaged in public affairs to addict themselves to literary pursuits. These causes came into full operation during the Alexandrian era, in which we find every description of epigrammatic composition perfectly developed. About 60 B.C., the sophist and poet, Meleager of Gadara, undertook to combine the choicest effusions of his predecessors into a single body of fugitive poetry. Collections of monumental inscriptions, or of poems on particular subjects, had previously been formed by Polemon Periegetes and others; but Meleager first gave the principle a comprehensive application. His selection, compiled from forty-six of his predecessors, and including numerous contributions of his own, was entitled *The Garland* (Στέφανος); and in an introductory poem each poet is compared to some flower, fancifully deemed appropriate to his genius. The arrangement of his collection was alphabetical, according to the initial letter of each epigram.

In the age of the emperor Tiberius (or Trajan, according to others) the work of Meleager was continued by another epigrammatist, Philippus of Thessalonica, who first employed the term anthology. His collection, which included the compositions of thirteen writers subsequent to Meleager, was also arranged alphabetically, and contained an introductory poem. It was of inferior quality to Meleager's. Somewhat later, under Hadrian, another supplement was formed by the sophist Diogenianus of Heracleia (2nd century A.D.), and Strato of Sardis compiled his elegant but tainted Μοῦσα Παιδική (Musa Puerilis) from his productions and those of earlier writers. No further collection from various sources is recorded until the time of Justinian, when epigrammatic writing, especially of an amatory character, experienced a great revival at the hands of Agathias of Myrina, the historian, Paulus Silentiarius, and their circle. Their ingenious but mannered productions were collected by Agathias into a new anthology, entitled *The Circle* (Κύκλος); it was the first to be divided into books, and arranged with reference to the subjects of the pieces.

These and other collections made during the middle ages are now lost. The partial incorporation of them into a single body, classified according to the contents in 15 books, was the work of a certain Constantinus Cephalas, whose name alone is preserved in the single MS. of his compilation extant, but who probably lived during the temporary revival of letters under Constantine Porphyrogenitus, at the beginning of the 10th century. He appears to have merely made excerpts from the existing anthologies, with the addition of selections from Lucillius, Palladas, and other epigrammatists, whose compositions had been published separately. His arrangement, to which we shall have to recur, is founded on a principle of classification, and nearly corresponds to that adopted by Agathias. His principle of selection is unknown; it is only certain that while he omitted much that he should have retained, he has preserved much that would otherwise have perished. The extent of our obligations may be ascertained by a comparison between his anthology and that of the next editor, the monk Maximus Planudes (A.D. 1320), who has not merely grievously mutilated the anthology of Cephalas by omissions, but has disfigured it by interpolating verses of his own. We are, however, indebted to him for the preservation of the epigrams on works of art, which seem to have been accidentally omitted from our only transcript of Cephalas.

The Planudean (in seven books) was the only recension of the anthology known at the revival of classical literature, and was first published at Florence, by Janus Lascaris, in 1494. It long continued to be the only accessible collection, for although the Palatine MS., the sole extant copy of the anthology of Cephalas, was discovered in the Palatine library at Heidelberg, and copied by Saumaise (Salmasius) in 1606, it was not published until 1776, when it was included in Brunck's *Analecta Veterum Poetarum Graecorum*. The MS. itself had frequently changed its quarters. In 1623, having been taken in the sack of Heidelberg in the Thirty Years' War, it was sent with the rest of the Palatine Library to Rome as a present from Maximilian I. of Bavaria to Gregory XV., who had it divided into two parts, the first of which was by far the larger; thence it was taken to Paris in 1797. In 1816 it went back to Heidelberg, but in an incomplete state, the second part remaining at Paris. It is now

represented at Heidelberg by a photographic facsimile. Brunck's edition was superseded by the standard one of Friedrich Jacobs (1794-1814, 13 vols.), the text of which was reprinted in a more convenient form in 1813-1817, and occupies three pocket volumes in the Tauchnitz series of the classics. The best edition for general purposes is perhaps that of Dubner in Didot's *Bibliotheca* (1864-1872), which contains the Palatine Anthology, the epigrams of the Planudean Anthology not comprised in the former, an appendix of pieces derived from other sources, copious notes selected from all quarters, a literal Latin prose translation by Boissonade, Bothe, and Lapaume and the metrical Latin versions of Hugo Grotius. A third volume, edited by E. Cougny, was published in 1890. The best edition of the Planudean Anthology is the splendid one by van Bosch and van Lennep (1795-1822). There is also a complete edition of the text by Stadlmuller in the Teubner series.

Arrangement.—The Palatine MS., the archetype of the present text, was transcribed by different persons at different times, and the actual arrangement of the collection does not correspond with that signalized in the index. It is as follows: Book 1. Christian epigrams; 2. Christodorus's description of certain statues; 3. Inscriptions in the temple at Cyzicus; 4. The prefaces of Meleager, Philippus, and Agathias to their respective collections; 5. Amatory epigrams; 6. Votive inscriptions; 7. Epitaphs; 8. The epigrams of Gregory of Nazianzus; 9. Rhetorical and illustrative epigrams; 10. Ethical pieces; 11. Humorous and convivial; 12. Strata's Musa Puerilis; 13. Metrical curiosities; 14. Puzzles, enigmas, oracles; 15. Miscellanies. The epigrams on works of art, as already stated, are missing from the *Codex Palatinus*, and must be sought in an appendix of epigrams only occurring in the Planudean Anthology. The epigrams hitherto recovered from ancient monuments and similar sources form appendices in the second and third volumes of Dübner's edition.

Style and Value.—One of the principal claims of the Anthology to attention is derived from its continuity, its existence as a living and growing body of poetry throughout all the vicissitudes of Greek civilization. More ambitious descriptions of composition speedily ran their course, and having attained their complete development became extinct or at best lingered only in feeble or conventional imitations. The humbler strains of the epigrammatic muse, on the other hand, remained ever fresh and animated, ever in intimate union with the spirit of the generation that gave them birth. To peruse the entire collection, accordingly, is as it were to assist at the disinterment of an ancient city, where generation has succeeded generation on the same site, and each stratum of soil enshrines the vestiges of a distinct epoch, but where all epochs, nevertheless, combine to constitute an organic whole, and the transition from one to the other is hardly perceptible. Four stages may be indicated:—1. The Hellenic proper, of which Simonides of Ceos (*c.* 556-469 B.C.), the author of most of the sepulchral inscriptions on those who fell in the Persian wars, is the characteristic representative. This is characterized by a simple dignity of phrase, which to a modern taste almost verges upon baldness, by a crystalline transparency of diction, and by an absolute fidelity to the original conception of the epigram. Nearly all the pieces of this era are actual *bona fide* inscriptions or addresses to real personages, whether living or deceased; narratives, literary exercises, and sports of fancy are exceedingly rare. 2. The epigram received a great development in its second or Alexandrian era, when its range was so extended as to include anecdote, satire, and amorous longing; when epitaphs and votive inscriptions were composed on imaginary persons and things, and men of taste successfully attempted the same subjects in mutual emulation, or sat down to compose verses as displays of their ingenuity. The result was a great gain in richness of style and general interest, counterbalanced by a falling off in purity of diction and sincerity of treatment. The modification—a perfectly legitimate one, the resources of the old style being exhausted—had its real source in the transformation of political life, but may be said to commence with and to find its best representative in the playful and elegant Leonidas of Tarentum, a contemporary of Pyrrhus, and to close with Antipater of Sidon, about 140 B.C. (or later). It should be noticed, however, that Callimachus, one of the most distinguished of the Alexandrian poets, affects the sternest simplicity in his epigrams, and copies the austerity of Simonides with as much success as an imitator can expect. 3. By a slight additional modification in the same direction, the Alexandrian passes into what, for the sake of preserving the parallelism with eras of Greek prose literature, we may call the Roman style, although the peculiarities of its principal representative are decidedly Oriental. Meleager of Gadara was a Syrian; his taste was less severe, and his temperament more fervent than those of his Greek predecessors; his pieces are usually erotic, and their glowing imagery sometimes reminds us of the Song of Solomon. The luxuriance of his fancy occasionally betrays him into far-fetched conceits, and the lavishness of his epithets is only redeemed by their exquisite felicity. Yet his effusions are manifestly the offspring of genuine feeling, and his epitaph on himself indicates a great advance on the exclusiveness of antique Greek patriotism, and is perhaps the first clear enunciation of the spirit of universal humanity

characteristic of the later Stoic philosophy. His gaiety and licentiousness are imitated and exaggerated by his somewhat later contemporary, the Epicurean Philodemus, perhaps the liveliest of all the epigrammatists; his fancy reappears with diminished brilliancy in Philodemus's contemporary, Zonas, in Crinagoras, who wrote under Augustus, and in Marcus Argentarius, of uncertain date; his peculiar gorgeousness of colouring remains entirely his own. At a later period of the empire another *genre*, hitherto comparatively in abeyance, was developed, the satirical. Lucillius, who flourished under Nero, and Lucian, more renowned in other fields of literature, display a remarkable talent for shrewd, caustic epigram, frequently embodying moral reflexions of great cogency, often lashing vice and folly with signal effect, but not seldom indulging in mere trivialities, or deformed by scoffs at personal blemishes. This style of composition is not properly Greek, but Roman; it answers to the modern definition of epigram, and has hence attained a celebrity in excess of its deserts. It is remarkable, however, as an almost solitary example of direct Latin influence on Greek literature. The same style obtains with Palladas, an Alexandrian grammarian of the 4th century, the last of the strictly classical epigrammatists, and the first to be guilty of downright bad taste. His better pieces, however, are characterized by an austere ethical impressiveness, and his literary position is very interesting as that of an indignant but despairing opponent of Christianity. 4. The fourth or Byzantine style of epigrammatic composition was cultivated by the *beaux-esprits* of the court of Justinian. To a great extent this is merely imitative, but the circumstances of the period operated so as to produce a species of originality. The peculiarly ornate and *recherché* diction of Agathias and his compeers is not a merit in itself, but, applied for the first time, it has the effect of revivifying an old form, and many of their new locutions are actual enrichments of the language. The writers, moreover, were men of genuine poetical feeling, ingenious in invention, and capable of expressing emotion with energy and liveliness; the colouring of their pieces is sometimes highly dramatic.

It would be hard to exaggerate the substantial value of the Anthology, whether as a storehouse of facts bearing on antique manners, customs and ideas, or as one among the influences which have contributed to mould the literature of the modern world. The multitudinous votive inscriptions, serious and sportive, connote the phases of Greek religious sentiment, from pious awe to irreverent familiarity and sarcastic scepticism; the moral tone of the nation at various periods is mirrored with corresponding fidelity; the sepulchral inscriptions admit us into the inmost sanctuary of family affection, and reveal a depth and tenderness of feeling beyond the province of the historian to depict, which we should not have surmised even from the dramatists; the general tendency of the collection is to display antiquity on its most human side, and to mitigate those contrasts with the modern world which more ambitious modes of composition force into relief. The constant reference to the details of private life renders the Anthology an inexhaustible treasury for the student of archaeology; art, industry and costume receive their fullest illustration from its pages. Its influence on European literatures will be appreciated in proportion to the inquirer's knowledge of each. The further his researches extend, the greater will be his astonishment at the extent to which the Anthology has been laid under contribution for thoughts which have become household words in all cultivated languages, and at the beneficial effect of the imitation of its brevity, simplicity, and absolute verbal accuracy upon the undisciplined luxuriance of modern genius.

Translations, Imitations, &c.—The best versions of the Anthology ever made are the Latin renderings of select epigrams by Hugo Grotius. They have not been printed separately, but will be found in Bosch and Lennep's edition of the Planudean *Anthology*, in the Didot edition, and in Dr Wellesley's *Anthologia Polyglotta*. The number of more or less professed imitations in modern languages is infinite, that of actual translations less considerable. French and Italian, indeed, are ill adapted to this purpose, from their incapacity of approximating to the form of the original, and their poets have usually contented themselves with paraphrases or imitations, often exceedingly felicitous. F.D. Dehèque's French prose translation, however (1863), is most excellent and valuable. The German language alone admits of the preservation of the original metre—a circumstance advantageous to the German translators, Herder and Jacobs, who have not, however, compensated the loss inevitably consequent upon a change of idiom by any added beauties of their own. Though unfitted to reproduce the precise form, the English language, from its superior terseness, is better adapted to preserve the spirit of the original than the German; and the comparative ill success of many English translators must be chiefly attributed to the extremely low standard of fidelity and brevity observed by them. Bland, Merivale, and their associates (1806-1813), are often intolerably diffuse and feeble, from want, not of ability, but of taking pains. Archdeacon Wrangham's too rare versions are much more spirited; and John Sterling's translations of the inscriptions of Simonides deserve high praise. Professor Wilson (*Blackwood's Magazine*,

1833-1835) collected and commented upon the labours of these and other translators, with his accustomed critical insight and exuberant geniality, but damaged his essay by burdening it with the indifferent attempts of William Hay. In 1849 Dr Wellesley, principal of New Inn Hall, Oxford, published his *Anthologia Polyglotta*, a most valuable collection of the best translations and imitations in all languages, with the original text. In this appeared some admirable versions by Goldwin Smith and Dean Merivale, which, with the other English renderings extant at the time, will be found accompanying the literal prose translation of the *Public School Selections*, executed by the Rev. George Burges for Bohn's Classical Library (1854). This is a useful volume, but the editor's notes are worthless. In 1864 Major R.G. Macgregor published an almost complete translation of the Anthology, a work whose stupendous industry and fidelity almost redeem the general mediocrity of the execution. *Idylls and Epigrams*, by R. Garnett (1869, reprinted 1892 in the Cameo series), includes about 140 translations or imitations, with some original compositions in the same style. Recent translations (selections) are: J.W. Mackail, *Select Epigrams from the Greek Anthology* (with text, introduction, notes, and prose translation), 1890, revised 1906, a most charming volume; Graham R. Tomson (Mrs Marriott Watson), *Selections from the Greek Anthology* (1889); W.H.D. Rouse, *Echo of Greek Song* (1899); L.C. Perry, *From the Garden of Hellas* (New York, 1891); W.R. Paton, *Love Epigrams* (1898). An agreeable little volume on the Anthology, by Lord Neaves, is one of Collins's series of *Ancient Classics for Modern Readers*. The earl of Cromer, with all the cares of Egyptian administration upon him, found time to translate and publish an elegant volume of selections (1903). Two critical contributions to the subject should be noticed, the Rev. James Davies's essay on Epigrams in the *Quarterly Review* (vol. cxvii.), especially valuable for its lucid illustration of the distinction between Greek and Latin epigram; and the brilliant disquisition in J.A. Symonds's *Studies of the Greek Poets* (1873; 3rd ed., 1893).

Latin Anthology.—The *Latin Anthology* is the appellation bestowed upon a collection of fugitive Latin verse, from the age of Ennius to about A.D. 1000, formed by Peter Burmann the Younger. Nothing corresponding to the Greek anthology is known to have existed among the Romans, though professional epigrammatists like Martial published their volumes on their own account, and detached sayings were excerpted from authors like Ennius and Publius Syrus, while the *Priapeïa* were probably but one among many collections on special subjects. The first general collection of scattered pieces made by a modern scholar was Scaliger's *Catalecta veterum Poetarum* (1573), succeeded by the more ample one of Pithoeus, *Epigrammata et Poemata e Codicibus et Lapidibus collecta* (1590). Numerous additions, principally from inscriptions, continued to be made, and in 1759-1773 Burmann digested the whole into his *Anthologia veterum Latinorum Epigrammatum et Poematum*. This, occasionally reprinted, was the standard edition until 1869, when Alexander Riese commenced a new and more critical recension, from which many pieces improperly inserted by Burmann are rejected, and his classified arrangement is discarded for one according to the sources whence the poems have been derived. The first volume contains those found in MSS., in the order of the importance of these documents; those furnished by inscriptions following. The first volume (in two parts) appeared in 1869-1870, a second edition of the first part in 1894, and the second volume, *Carmina Epigraphica* (in two parts), in 1895-1897, edited by F. Bücheler. An *Anthologiae Latinae Supplementa*, in the same series, followed. Having been formed by scholars actuated by no aesthetic principles of selection, but solely intent on preserving everything they could find, the Latin anthology is much more heterogeneous than the Greek, and unspeakably inferior. The really beautiful poems of Petronius and Apuleius are more properly inserted in the collected editions of their writings, and more than half the remainder consists of the frigid conceits of pedantic professional exercises of grammarians of a very late period of the empire, relieved by an occasional gem, such as the apostrophe of the dying Hadrian to his spirit, or the epithalamium of Gallienus. The collection is also, for the most part, too recent in date, and too exclusively literary in character, to add much to our knowledge of classical antiquity. The epitaphs are interesting, but the genuineness of many of them is very questionable.

(R. G.)

ANTHON, CHARLES (1797-1867), American classical scholar, was born in New York city on the 19th of November 1797. After graduating with honours at Columbia College in 1815, he began the study of law, and in 1819 was admitted to the bar, but never practised. In 1820 he was appointed assistant professor of Greek and Latin in his old college, full professor ten

years later, and at the same time headmaster of the grammar school attached to the college, which post he held until 1864. He died at New York on the 29th of July 1867. He produced for use in colleges and schools a large number of classical works, which enjoyed great popularity, although his editions of classical authors were by no means in favour with schoolmasters, owing to the large amount of assistance, especially translations, contained in the notes.

ANTHONY, SAINT, the first Christian monk, was born in Egypt about 250. At the age of twenty he began to practise an ascetical life in the neighbourhood of his native place, and after fifteen years of this life he withdrew into solitude to a mountain by the Nile, called Pispir, now Der el Memun, opposite Arsinoë in the Fayum. Here he lived strictly enclosed in an old fort for twenty years. At last in the early years of the 4th century he emerged from his retreat and set himself to organize the monastic life of the crowds of monks who had followed him and taken up their abode in the caves around him. After a time, again in pursuit of more complete solitude, he withdrew to the mountain by the Red Sea, where now stands the monastery that bears his name (Der Mar Antonios). Here he died about the middle of the 4th century. His *Life* states that on two occasions he went to Alexandria, to strengthen the Christians in the Diocletian persecution and to preach against Arianism. Anthony is recognized as the first Christian monk and the first organizer and father of Christian monachism (see Monasticism). Certain letters and sermons are attributed to him, but their authenticity is more than doubtful. The monastic rule which bears his name was not written by him, but was compiled out of these writings and out of discourses and utterances put into his mouth in the *Life* and the *Apophthegmata Patrum*. According to this rule live a number of Coptic Syrian and Armenian monks to this day. The chief source of information about St Anthony is the *Life*, attributed to St Athanasius. This attribution, as also the historical character of the book, and even the very existence of St Anthony, were questioned and denied by the sceptical criticism of thirty years ago; but such doubts are no longer entertained by critical scholars.

The Greek *Vita* is among the works of St Athanasius; the almost contemporary Latin translation is among Rosweyd's *Vitae Patrum* (Migne, *Patrol. Lat.* lxxiii.); an English translation is in the Athanasius volume of the "Nicene and Post-Nicene Library." Accounts of St Anthony are given by Card. Newman, *Church of the Fathers* (Historical Sketches) and Alban Butler, *Lives of the Saints* (Jan. 17). Discussions of the historical and critical questions raised will be found in E.C. Butler's *Lausiac History of Palladius* (1898, 1904), Part I. pp. 197, 215-228; Part II. pp. ix.-xii.

(E. C. B.)

ANTHONY OF PADUA, SAINT (1195-1231), the most celebrated of the followers of Saint Francis of Assisi, was born at Lisbon on the 15th of August 1195. In his fifteenth year he entered the Augustinian order, and subsequently joined the Franciscans in 1220. He wished to devote himself to missionary labours in North Africa, but the ship in which he sailed was cast by a storm on the coast of Sicily, whence he made his way to Italy. He taught theology at Bologna, Toulouse, Montpellier and Padua, and won a great reputation as a preacher throughout Italy. He was the leader of the rigorous party in the Franciscan order against the mitigations introduced by the general Elias. His death took place at the convent of Ara Coeli, near Padua, on the 13th of June 1231. He was canonized by Gregory IX. in the following year, and his festival is kept on the 13th of June. He is regarded as the patron saint of Padua and of Portugal, and is appealed to by devout clients for finding lost objects. The meagre accounts of his life which we possess have been supplemented by numerous popular legends, which represent him as a continuous worker of miracles, and describe his marvellous eloquence by pictures of fishes leaping out of the water to hear him. There are many confraternities established in his honour throughout Christendom, and the number of "pious" biographies devoted to him would fill many volumes.

The most trustworthy modern works are by A. Lepître, *St Antoine de Padoue* (Paris, 1902,

in *Les Saints* series: good bibliography; Eng. trans. by Edith Guest, London, 1902), and by Léopold de Chérancé, *St Antoine de Padoue* (Paris, 1895; Eng. trans., London, 1896). His works, consisting of sermons and a mystical commentary on the Bible, were published in an appendix to those of St Francis, in the *Annales Minorum* of Luke Wadding (Antwerp, 1623), and are also reproduced by Horoy, *Medii aevi bibliotheca patristica* (1880, vi. pp. 555 et sqq.); see art. “Antonius von Padua” in Herzog-Hauck, *Realencyklopadie*.

ANTHONY, SUSAN BROWNELL (1820-1906), American reformer, was born at Adams, Massachusetts, on the 15th of February 1820, the daughter of Quakers. Soon after her birth, her family moved to the state of New York, and after 1845 she lived in Rochester. She received her early education in a school maintained by her father for his own and neighbours’ children, and from the time she was seventeen until she was thirty-two she taught in various schools. In the decade preceding the outbreak of the Civil War she took a prominent part in the anti-slavery and temperance movements in New York, organizing in 1852 the first woman’s state temperance society in America, and in 1856 becoming the agent for New York state of the American Anti-slavery Society. After 1854 she devoted herself almost exclusively to the agitation for woman’s rights, and became recognized as one of the ablest and most zealous advocates, both as a public speaker and as a writer, of the complete legal equality of the two sexes. From 1868 to 1870 she was the proprietor of a weekly paper, *The Revolution*, published in New York, edited by Mrs Elizabeth Cady Stanton, and having for its motto, “The true republic—men, their rights and nothing more; women, their rights and nothing less.” She was vice-president-at-large of the National Woman’s Suffrage Association from the date of its organization in 1869 until 1892, when she became president. For casting a vote in the presidential election of 1872, as, she asserted, the Fourteenth Amendment to the Federal Constitution entitled her to do, she was arrested and fined $100, but she never paid the fine. In collaboration with Mrs Elizabeth Cady Stanton, Mrs Matilda Joslyn Gage, and Mrs Ida Husted Harper, she published *The History of Woman Suffrage* (4 vols., New York, 1884-1887). She died at Rochester, New York, on the 13th of March 1906.

See Mrs Ida Husted Harper’s *Life and Work of Susan B. Anthony* (3 vols., Indianapolis, 1898-1908).

ANTHOZOA (*i.e.* “flower-animals”), the zoological name for a class of marine polyps forming “coral” (*q.v.*). Although corals have been familiar objects since the days of antiquity, and the variety known as the precious red coral has been for a long time an article of commerce in the Mediterranean, it was only in the 18th century that their true nature and structure came to be understood. By the ancients and the earlier naturalists of the Christian era they were regarded either as petrifactions or as plants, and many supposed that they occupied a position midway between minerals and plants. The discovery of the animal nature of red coral is due to J.A. de Peyssonel, a native of Marseilles, who obtained living specimens from the coral fishers on the coast of Barbary and kept them alive in aquaria. He was thus able to see that the so-called “flowers of coral” were in fact nothing else than minute polyps resembling sea-anemones. His discovery, made in 1727, was rejected by the Academy of Sciences of France, but eventually found acceptance at the hands of the Royal Society of London, and was published by that body in 1751. The structure and classification of polyps, however, were at that time very imperfectly understood, and it was fully a century before the true anatomical characters and systematic position of corals were placed on a secure basis.

The hard calcareous substance to which the name coral is applied is the supporting skeleton of certain members of the *Anthozoa*, one of the classes of the phylum Coelentera. The most familiar Anthozoan is the common sea-anemone, *Actinia equina*, L., and it will serve, although it does not form a skeleton or *corallum*, as a good example of the structure of a typical Anthozoan polyp or zooid. The individual animal or zooid of *Actinia equina* has

the form of a column fixed by one extremity, called the *base*, to a rock or other object, and bearing at the opposite extremity a crown of *tentacles*. The tentacles surround an area known as the *peristome*, in the middle of which there is an elongated mouth-opening surrounded by tumid lips. The mouth does not open directly into the general cavity of the body, as is the case in a hydrozoan polyp, but into a short tube called the *stomodaeum*, which in its turn opens below into the general body-cavity or *coelenteron*. In Actinia and its allies, and most generally, though not invariably, in Anthozoa, the stomodaeum is not circular, but is compressed from side to side so as to be oval or slit-like in transverse section. At each end of the oval there is a groove lined by specially long vibratile cilia. These grooves are known as the *sulcus* and *sulculus*, and will be more particularly described hereafter. The elongation of the mouth and stomodaeum confer a bilateral symmetry on the body of the zooid, which is extended to other organs of the body. In Actinia, as in all Anthozoan zooids, the coelenteron is not a simple cavity, as in a Hydroid, but is divided by a number of radial folds or curtains of soft tissue into a corresponding number of radial chambers. These radial folds are known as *mesenteries*, and their position and relations may be understood by reference to figs. 1 and 2. Each mesentery is attached by its upper margin to the peristome, by its outer margin to the body-wall, and by its lower margin to the basal disk. A certain number of mesenteries, known as complete mesenteries, are attached by the upper parts of their internal margins to the stomodaeum, but below this level their edges hang in the coelenteron. Other mesenteries, called incomplete, are not attached to the stomodaeum, and their internal margins are free from the peristome to the basal disk. The lower part of the free edge of every mesentery, whether complete or incomplete, is thrown into numerous puckers or folds, and is furnished with a glandular thickening known as a *mesenterial filament*. The reproductive organs or gonads are borne on the mesenteries, the germinal cells being derived from the inner layer or endoderm.

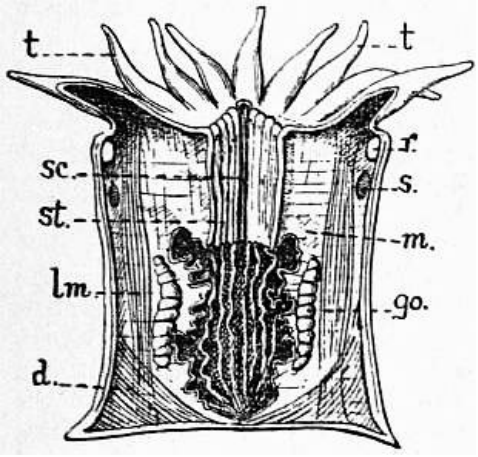


FIG. 1. Diagrammatic longitudinal section of an Anthozoan zooid.

m, Mesentery.
t, Tentacles.
st, Stomodaeum.
sc, Sulcus.
r, Rotteken's muscle.
s, Stoma.
lm, Longitudinal muscle.
d, Diagonal Muscle.
go, Gonads.

In common with all Coelenterate animals, the walls of the columnar body and also the tentacles and peristome of Actinia are composed of three layers of tissue. The external layer, or ectoderm, is made up of cells, and contains also muscular and nervous elements. The preponderating elements of the ectodermic layer are elongated columnar cells, each containing a nucleus, and bearing cilia at their free extremities. Packed in among these are *gland cells, sense cells*, and *cnidoblasts*. The last-named are specially numerous on the tentacles and on some other regions of the body, and produce the well-known "thread cells," or *nematocysts*, so

characteristic of the Coelentera. The inner layer or endoderm is also a cellular layer, and is chiefly made up of columnar cells, each bearing a cilium at its free extremity and terminating internally in a long muscular fibre. Such cells, made up of epithelial and muscular components, are known as epithelio-muscular or myo-epithelial cells. In Actinians the epithelio-muscular cells of the endoderm are crowded with yellow spherical bodies, which are unicellular plants or Algae, living symbiotically in the tissues of the zooid. The endoderm contains in addition gland cells and nervous elements. The middle layer or mesogloea is not originally a cellular layer, but a gelatinoid structureless substance, secreted by the two cellular layers. In the course of development, however, cells from the ectoderm and endoderm may migrate into it. In *Actinia equina* the mesogloea consists of fine fibres imbedded in a homogeneous matrix, and between the fibres are minute branched or spindle-shaped cells. For further details of the structure of Actinians, the reader should consult the work of O. and R. Hertwig.

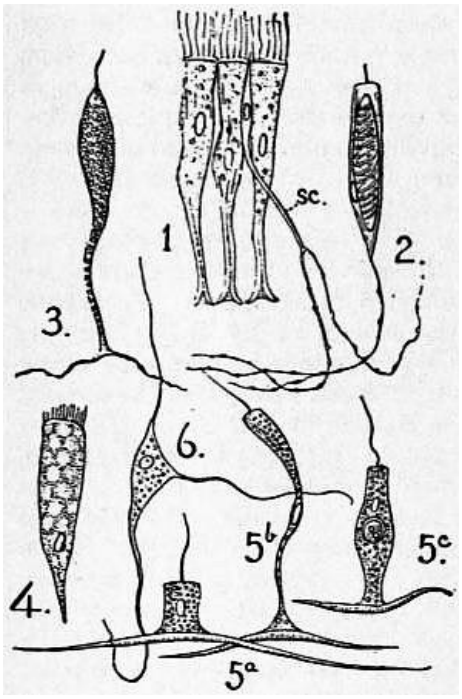


FIG. 2.—1, Portion of epithelium from the tentacle of an Actinian, showing three supporting cells and one sense cell (*sc*); 2, a cnidoblast with enclosed nematocyst from the same specimen; 3 and 4 two forms of gland cell from the stomodaeum; 5^a, 5^b, epithelio-muscular cells from the tentacle in different states of contraction; 5^c, an epithelio-muscular cell from the endoderm, containing a symbiotic zooxanthella; 6, a ganglion cell from the ectoderm of the peristome. (After O. and R. Hertwig.)

The Anthozoa are divisible into two sub-classes, sharply marked off from one another by definite anatomical characters. These are the ALCYONARIA and the ZOANTHARIA. To the first-named belong the precious red coral and its allies, the sea-fans or Gorgoniae, to the second belong the white or Madreporarian corals.

Alcyonaria.—In this sub-class the zooid has very constant anatomical characters, differing in some important respects from the Actinian zooid, which has been taken as a type. There is only one ciliated groove, the sulcus, in the stomodaeum. There are always eight tentacles, which are hollow and fringed on their sides, with hollow projections or pinnae; and always eight mesenteries, all of which are complete, *i.e.* inserted on the stomodaeum. The mesenteries are provided with well-developed longitudinal retractor muscles, supported on longitudinal folds or plaits of the mesogloea, so that in cross-section they have a branched appearance. These *muscle-banners*, as they are called, have a highly characteristic arrangement; they are all situated on those faces of the mesenteries which look towards the sulcus. (fig. 4). Each mesentery has a filament; but two of them, namely, the pair farthest from the sulcus, are longer than the rest, and have a different form of filament. It has been shown that these asulcar filaments are derived from the ectoderm, the remainder from the endoderm. The only exceptions to this structure are found in the arrested or modified zooids, which occur in many of the colonial Alcyonaria. In these the tentacles are stunted or suppressed and the mesenteries are ill-developed, but the sulcus is unusually large and has long cilia. Such

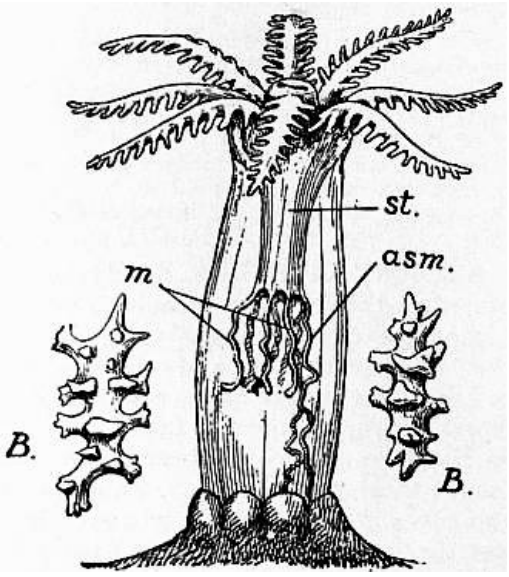


FIG. 3.—An expanded Alcyonarian zooid, showing the mouth surrounded by eight pinnate tentacles. *st*, Stomodaeum in the the centre of the transparent body; *m*, mesenteries; *asm*, asulcar mesenteries; B, spicules, enlarged.

modified zooids are called siphonozooids, their function being to drive currents of fluid through the canal-systems of the colonies to which they belong. With very few exceptions a calcareous skeleton is present in all Alcyonaria; it usually consists of spicules of carbonate of lime, each spicule being formed within an ectodermic cell (fig. 3, B). Most commonly the spicule-forming cells pass out of the ectoderm and are imbedded in the mesogloea, where they may remain separate from one another or may be fused together to form a strong mass. In addition to the spicular skeleton an organic horny skeleton is frequently present, either in the form of a horny external investment (*Cornularia*), or an internal axis (*Gorgonia*), or it may form a matrix in which spicules are imbedded (*Keroeides, Meistodes*).

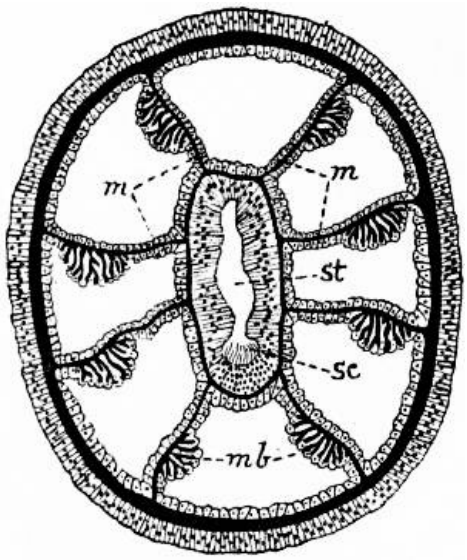


FIG. 4.—Transverse section of an Alcyonarian zooid *mm*, Mesenteries; *mb*, muscle banners; *sc*, sulcus; *st*, stomodaeum.

Nearly all the Alcyonaria are colonial. Four solitary species have been described, viz. *Haimea funebris* and *H. hyalina, Hartea elegans*, and *Monoxenia Darwinii*; but it is doubtful whether these are not the young forms of colonies. For the present the solitary forms may be placed in a grade, *Protal-cyonacea*, and the colonial forms may be grouped in another grade, *Synalcyonacea*. Every Alcyonarian colony is developed by budding from a single parent zooid. The buds are not direct outgrowths of the body-wall, but are formed on the courses of hollow out growths of the base or body-wall, called *solenia*. These form a more or less complicated canal system, lined by endoderm, and communicating with the cavities of the zooids. The most simple form of budding is found in the genus *Cornularia*, in which the mother zooid gives off from its base one or more simple radiciform outgrowths. Each outgrowth contains a single tube or solenium, and at a longer or shorter distance from the mother zooid a daughter zooid is formed as a bud. This gives off new outgrowths, and these, branching and anastomosing with one another, may form a network, adhering to stones, corals, or other objects, from which zooids arise at intervals. In *Clavularia* and its allies each outgrowth contains several solenia, and the outgrowths may take the form of flat expansions, composed of a number of solenial tubes felted together to form a lamellar surface of attachment. Such outgrowths are called *stolons*, and a stolon may be simple, *i.e.* contain only one solenium, as in *Cornularia*, or may be complex and built up of many solenia, as in *Clavularia*. Further complications arise when the lower walls of the mother zooid become thickened and interpenetrated with solenia, from which buds are developed, so that lobose, tufted, or branched colonies are formed. The chief orders of the Synalcyonacea are founded upon the different architectural features of colonies produced by different modes of budding. We recognize six orders—the STOLONIFERA, ALCYONACEA, PSEUDAXONIA, AXIFERA, STELECHOTOKEA, and CORNOTHECALIA.

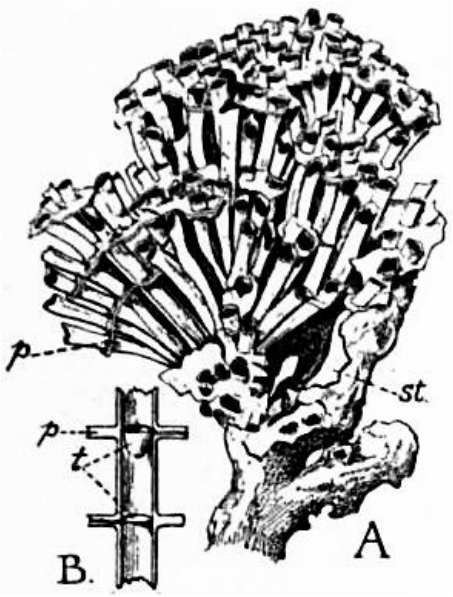


FIG. 5.

A. Skeleton of a young colony of

In the order STOLONIRERA the zooids spring at intervals from branching or lamellar stolons, and are usually free from one another, except at their bases, but in some cases horizontal solenia arising at various heights from the body-wall may place the more distal portions of the zooids in communication with one another. In the genus *Tubipora* these horizontal solenia unite to form a series of horizontal platforms (fig. 5). The order comprises the families *Cornulamdae, Syringopordae, Tubipondae*, and *Favositidae*. In the first-named, the zooids are united only by their bases and the skeleton consists of loose spicules. In the *Tubipondae* the spicules of the proximal part of the body-wall are fused together to form a firm tube, the corallite, into which the distal part of the zooid can be retracted. The corallites are connected at intervals by horizontal platforms containing solenia, and at the level of each platform the cavity of the corallite is divided by a

Tubipora purpurea. st, Stolon; *p*, platform.

B. Diagrammatic longitudinal section of a corallite, showing two platforms, *p* and cup-shaped tabulae, *t*. (After S.J. Hickson.)

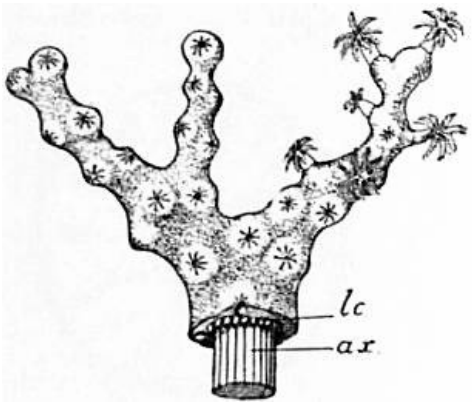


FIG. 6.—Portion of a colony of *Coralinum rubrum*, showing expanded and contracted zooids. In the lower part of the figure the cortex has been cut away to show the *axis, ax*, and the longitudinal canals, *lc*, surrounding it.

transverse calcareous partition, either flat or cup-shaped, called a *tabula*. Formerly all corals in which tabulae are present were classed together as Tabulata, but Tubipora is an undoubted Alcyonarian with a lamellar stolon, and the structure of the fossil genus Syringopora, which has vertical corallites united by horizontal solenia, clearly shows its affinity to Tubipora. The Favositidae, a fossil family from the Silurian and Devonian, have a massive corallum composed of numerous polygonal corallites closely packed together. The cavities of adjacent corallites communicate by means of numerous perforations, which appear to represent solenia, and numerous transverse tabulae are also present. In *Favosites hemisphaerica* a number of radial spines, projecting into the cavity of the corallite, give it the appearance of a madreporarian coral.

In the order ALCYONACEA the colony consists of bunches of elongate cylindrical zooids, whose proximal portions are united by solenia and compacted, by fusion of their own walls and those of the solenia, into a fleshy mass called the coenenchyma. Thus the coenenchyma forms a stem, sometimes branched, from the surface of which the free portions of the zooids project. The skeleton of the Alcyonacea consists of separate calcareous spicules, which are often, especially in the Nephthyidae, so abundant and so closely interlocked as to form a tolerably firm and hard armour. The order comprises the families *Xeniidae, Alcyonidae* and *Nephthyidae*. *Alcyonium digitatum*, a pink digitate form popularly known as “dead men’s fingers,” is common in 10-20 fathoms of water off the English coasts.

In the order PSEUDAXONIA the colonies are upright and branched, consisting of a number of short zooids whose proximal ends are imbedded in a coenenchyma containing numerous ramifying solenia and spicules. The coenenchyma is further differentiated into a medullary portion and a cortex. The latter contains the proximal moieties of the zooids and numerous but separate spicules. The medullary portion is densely crowded with spicules of different shape from those in the cortex, and in some forms the spicules are cemented together to form a hard supporting axis. There are four families of Pseudaxonia—the *Briareidae, Sclerogorgidae, Melitodidae*, and *Corallidae*. In the first-named the medulla is penetrated by solenia and forms an indistinct axis; in the remainder the medulla is devoid of solenia, and in the *Melitodidae* and *Corallidae* it forms a dense axis, which in the *Melitodidae* consists of alternate calcareous and horny joints. The precious red coral of commerce, *Corallium rubrum* (fig. 6), a member of the family *Corallidae*, is found at depths varying from 15 to 120 fathoms the Mediterranean Sea, chiefly on the African coast. It owes its commercial value to the beauty of its hard red calcareous axis which in life is covered by a cortex in which the proximal moieties of the zooids are imbedded. *Corallium rubrum* has been the subject of a beautifully-illustrated memoir by de Lacaze-Duthiers, which

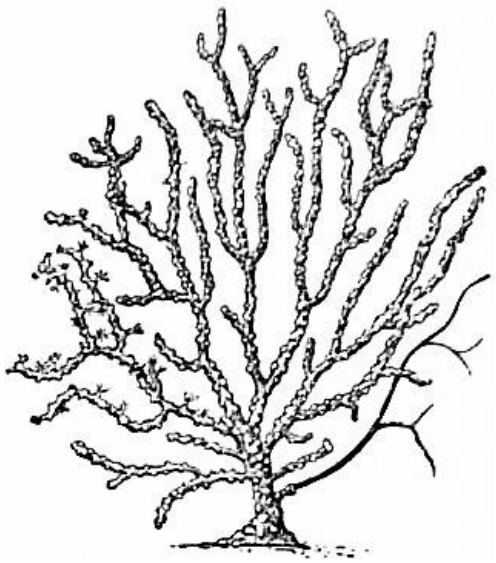


FIG. 7.—The sea-fan (*Gorgonia cavolinii*).

should be consulted for details of anatomy.

The AXIFERA comprise those corals that have a horny or calcified axis, which in position corresponds to the axis of the Pscudaxonia, but, unlike it, is never formed of fused spicules; the most familiar example is the pink sea-fan, *Gorgonia cavolinii*, which is found in abundance in 10-25 fathoms of water off the English coasts (fig. 7). In this order the axis is formed as an ingrowth of the ectoderm of the base of the mother zooid of the colony, the cavity of the ingrowth being filled by a horny substance secreted by the ectoderm. In *Gorgonia* the axis remains horny throughout life, but in many forms it is further strengthened by a deposit of calcareous matter In the family *Isidinae* the axis consists of alternate segments of horny and calcareous substance, the latter being amorphous. The order contains six families—the *Dasygorgidae, Isidae, Primnoidae, Muriceidae, Plexauridae*, and *Gorgoniaae*.

In the order STELECHOTOKEA the colony consists of a stem formed by a greatly-elongated mother zooid, and the daughter zooids are borne as lateral buds on the stem. In the section *Asiphonacea* the colonies are upright and branched, springing from membranous or ramifying stolons. They resemble and are closely allied to certain families of the Cornulariidae, differing from them only in mode of budding and in the dispostion of the daughter zooids round a central, much-elongated mother zooid. The section contains two families, the *Telestidae* and the *Coelogorgidae*. The second section comprises the *Pennatulacea* or sea-pens, which are remarkable from the fact that the colony is not fixed by the base to a rock or other object, but is imbedded in sand or mud by the proximal portion of the stem known as the peduncle. In the typical genus, Pennatula (fig. 8), the colony looks like a feather having a stem divisible into an upper moiety or rachis, bearing lateral central leaflets (pinnae), and a lower peduncle, which is sterile and imbedded in sand or mud. The stem represents a greatly enlarged and elongated mother zooid. It is divided longitudinally by a partition separating a so-called “ventral” or prorachidial canal from a so-called “dorsal” or metarachidial canal. A rod-like supporting axis of peculiar texture is developed in the longitudinal partition, and a longitudinal canal is hollowed out on either side of the axis in the substance of the longitudinal partition, so that there are four stem-canals in all. The prorachidial and metarachidial aspects of the rachis are sterile, but the sides or pararachides bear numerous daughter zooids of two kinds—(1) fully-formed autozooids, (2) small stunted siphonozooids. The pinnae are formed by the elongated autozooids, whose proximal portions are fused together to form a leaf-like expansion, from the upper edge of which the distal extremities of the zooids project. The siphonozooids are very numerous and lie between the bases at the pinnae on the pararachides; they extend also on the prorachidial and metarachidial surfaces. The calcareous skeleton of the Pennatulacea consists of scattered spicules, but in one species, *Protocaulon molle*, spicules are absent. Although of great interest the Pennatulacea do not form an enduring skeleton or “coral,” and need not be considered in detail in this place.

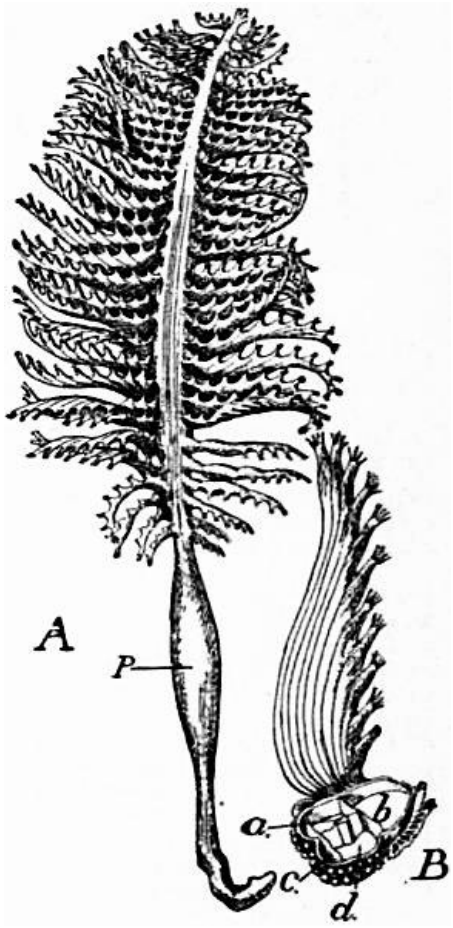


FIG. 8.

A. Colony of *Pennatula phosphorea* from the metarachidial aspect. *p*, The peduncle.
B. Section of the rachis bearing a single pinna, *a*, Axis; *b*, metarachidial; *c*, prorachidial; *d*, pararachidial stem canals.

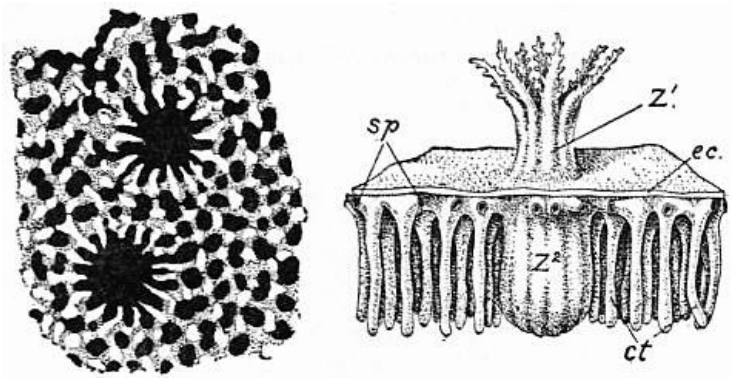


FIG. 9.

A, Portion of the surface of a colony of *Heliopora coerulea* magnified, showing two calices and the surrounding coenenchymal tubes.
B, Single zooid with the adjacent soft tissues as seen after removal of the skeleton by decalcification. Z^1, the distal, and Z^2, the proximal or intracalicular portion of the zooid; *ec*, ectoderm; *ct*, coenenchymal tubes; *sp*, superficial network of solenia.

The order COENOTHECALIA is represented by a single living species, *Heliopora coerulea*, which differs from all recent Alcyonaria in the fact that its skeleton is not composed of spicules, but is formed as a secretion from a layer of cells called calicoblasts, which originate from the ectoderm. The corallum of Heliopora is of a blue colour, and has the form of broad, upright, lobed, or digitate masses flattened from side to side. The surfaces are pitted all over with perforations of two kinds, viz. larger star-shaped cavities, called *calices*, in which the zooids are lodged, and very numerous smaller round or polygonal apertures, which in life contain as many short unbranched tubes, known as the *coenenchymal tubes* (fig. 9, A). The walls of the calices and coenenchymal tubes are formed of flat plates of calcite, which are so disposed that the walls of one tube enter into the composition of the walls of adjacent tubes, and the walls of the calices are formed by the walls of adjacent coenenchymal tubes. Thus the architecture of the Helioporid colony differs entirely from such forms as Tubipora or Favosites, in which each corallite has its own distinct and proper wall. The cavities both of the calices and coenenchymal tubes of Heliopora are closed below by horizontal partitions or *tabulae*, hence the genus was formerly included in the group Tabulata, and was supposed to belong to the madreporarian corals, both because of its lamellar skeleton, which resembles that of a Madrepore, and because each calicle has from twelve to fifteen radial partitions or septa projecting into its cavity. The structure of the zooid of Heliopora, however, is that of a typical Alcyonarian, and the septa have only a resemblance to, but no real homology with, the similarly named structures in madreporarian corals. *Heliopora coerulea* is found between tide-marks on the shore platforms of coral islands. The order was more abundantly represented in Palaeozoic times by the *Heliolitidae* from the Upper and Lower Silurian and the Devonian, and by the *Thecidae* from the Wenlock limestone. In *Heliolites porosus* the colonies had the form of spheroidal masses; the calices were furnished with twelve pseudosepta, and the coenenchymal tubes were more or less regularly hexagonal.

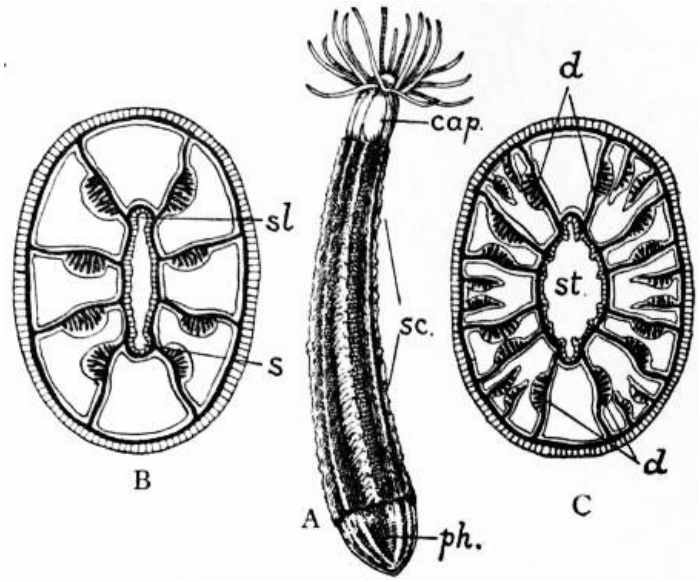


FIG. 10.

A, *Edwardsia claparedii* (after A. Andres). *Cap*, capitulum; *sc*, scapus; *ph*, physa.
B, Transverse section of the same, showing the arrangement of the mesenteries, *s*, Sulcus; *sl*, sulculus.
C, Transverse section of *Halcampa*. *d, d*, Directive mesenteries; *st*, stomodaeum.

Zoantharia.—In this sub-class the arrangement of the mesenteries is subject to a great deal of variation, but all the types hitherto observed may be referred to a common plan, illustrated by the living genus *Edwardsia* (fig. 10, A, B). This is a small solitary Zoantharian which lives embedded in sand. Its body is divisible into three portions, an upper *capitulum* bearing the mouth and tentacles, a median *scapus* covered by a friable cuticle, and a terminal physa which is rounded. Both capitulum and physa can be retracted within the scapus. There are from sixteen to thirty-two simple tentacles, but only eight mesenteries, all of which are complete. The stomodaeum is compressed laterally, and is furnished with two longitudinal grooves, a sulcus and a sulculus. The arrangement of the muscle-banners on the mesenteries is characteristic. On six of the mesenteries the muscle-banners have the same position as in the Alcyonaria, namely, on the sulcar faces; but in the two remaining mesenteries, namely, those which are attached on either side of the sulcus, the muscle-banners are on the opposite or sulcular faces. It is not known whether all the eight mesenteries of *Edwardsia* are developed simultaneously or not, but in the youngest form which has been studied all the eight mesenteries were present, but only two of them, namely the sulco-laterals, bore mesenterial filaments, and so it is presumed that they are the first pair to be developed. In the common sea-anemone, *Actinia equina* (which has already been quoted as a type of Anthozoan structure), the mesenteries are numerous and are arranged in cycles. The mesenteries of the first cycle are complete (*i.e.* are attached to the stomodaeum), are twelve in number, and arranged in couples, distinguishable by the position of the muscle-banners. In the four couples of mesenteries which are attached to the sides of the elongated stomodaeum the muscle-banners of each couple are turned towards one another, but in the sulcar and sulcular couples, known as the directive mesenteries, the muscle-banners are on the outer faces of the mesenteries, and so are turned away from one another (see fig. 10, C). The space enclosed between two mesenteries of the same couple is called an *entocoele*; the space enclosed between two mesenteries of adjacent couples is called an *exocoele*. The second cycle of mesenteries consists of six couples, each formed in an exocoele of the primary cycle, and in each couple the muscle-banners are *vis-à-vis*. The third cycle comprises twelve couples, each formed in an exocoele between the primary and secondary couples and so on, it being a general rule (subject, however, to exceptions) that new mesenterial couples are always formed in the exocoeles, and not in the entocoeles.

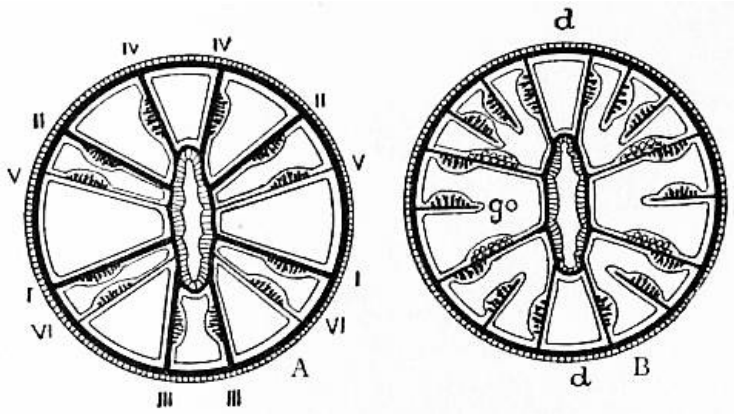


FIG. 11.—A, Diagram showing the sequence of mesenterial development in an Actinian. B, Diagrammatic transverse section of *Gonactinia prolifera*.

While the mesenterial couples belonging to the second and each successive cycle are formed simultaneously, those of the first cycle are formed in successive pairs, each member of a pair being placed on opposite sides of the stomodaeum. Hence the arrangement in six couples is a secondary and not a primary feature. In most Actinians the mesenteries appear in the following order:—At the time when the stomodaeum is formed, a single pair of mesenteries, marked I, I in the diagram (fig. 11, A), makes its appearance, dividing the coelenteric cavity into a smaller sulcar and a large sulcular chamber. The muscle-banners of this pair are placed on the sulcar faces of the mesenteries. Next, a pair of mesenteries, marked II, II in the diagram, is developed in the sulcular chamber, its muscle-banners facing the same way as those of I, I. The third pair is formed in the sulcar chamber, in close

connexion with the sulcus, and in this case the muscle-banners are on the *sulcular* faces. The fourth pair, having its muscle-banners on the sulcar faces, is developed at the opposite extremity of the stomodaeum in close connexion with the sulculus. There are now eight mesenteries present, having exactly the same arrangement as in Edwardsia. A pause in the development follows, during which no new mesenteries are formed, and then the six-rayed symmetry characteristic of a normal Actinian zooid is completed by the formation of the mesenteries V, V in the lateral chambers, and VI, VI in the sulco-lateral chambers, their muscle-banners being so disposed that they form couples respectively with II, II and I, I. In *Actinia equina* the Edwardsia stage is arrived at somewhat differently. The mesenteries second in order of formation form the sulcular directives, those fourth in order of formation form with the fifth the sulculo-lateral couples of the adult.

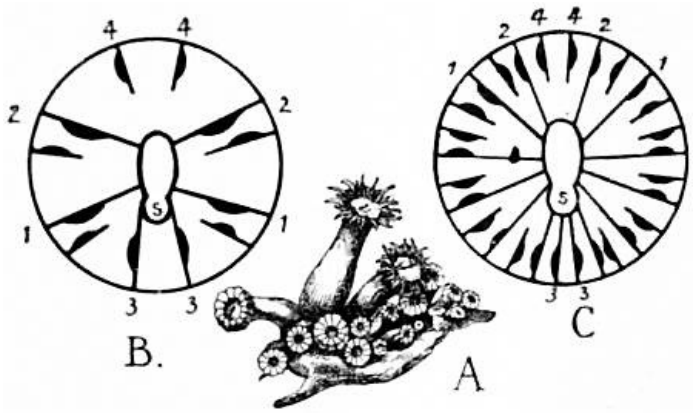


FIG. 12.

A, Zoanthid colony, showing the expanded zooids.
B, Diagram showing the arrangement of mesenteries in a young Zoanthid.
C, Diagram showing the arrangement of mesenteries in an adult Zoanthid.
1, 2, 3, 4, Edwardsian mesenteries.

As far as the anatomy of the zooid is concerned, the majority of the stony or madreporarian corals agree exactly with the soft-bodied Actinians, such as *Actinia equina*, both in the number and arrangement of the adult mesenteries and in the order of development of the first cycle. The few exceptions will be dealt with later, but it may be stated here that even in these the first cycle of six couples of mesenteries is always formed, and in all the cases which have been examined the course of development described above is followed. There are, however, several groups of Zoantharia in which the mesenterial arrangement of the adult differs widely from that just described. But it is possible to refer all these cases with more or less certainty to the Edwardsian type.

The order ZOANTHIDEA comprises a number of soft-bodied Zoantharians generally encrusted with sand. Externally they resemble ordinary sea-anemones, but there is only one ciliated groove, the sulcus, in the stomodaeum, and the mesenteries are arranged on a peculiar pattern. The first twelve mesenteries are disposed in couples, and do not differ from those of Actinia except in size. The mesenterial pairs I, II and III are attached to the stomodaeum, and are called macromesenteries (fig. 12, B), but IV, V and VI are much shorter, and are called micromesenteries. The subsequent development is peculiar to the group. New mesenteries are formed only in the sulco-lateral exocoeles. They are formed in couples, each couple consisting of a macromesentery and a micromesentery, disposed so that the former is nearest to the sulcar directives. The derivation of the Zoanthidea from an Edwardsia form is sufficiently obvious.

The order CERIANTHIDEA comprises a few soft-bodied Zoantharians with rounded aboral extremities pierced by pores. They have two circlets of tentacles, a labial and a marginal, and there is only one ciliated groove in the stomodaeum, which appears to be the sulculus. The mesenteries are numerous, and the longitudinal muscles, though distinguishable, are so feebly developed that there are no muscle-banners. The larval forms of the type genus *Cerianthus* float freely in the sea, and were once considered to belong to a separate genus, *Arachnactis*. In this larva four pairs of mesenteries having the typical Edwardsian arrangement are developed, but the fifth and sixth pairs, instead of forming couples with the first and second, arise in the sulcar chamber, the fifth pair inside the fourth, and the sixth pair inside the fifth. New mesenteries are continually added in the sulcar chamber, the seventh pair within the sixth, the eighth pair within the seventh, and so on (fig. 13). In the Cerianthidea, as in the Zoanthidea, much as the adult arrangement of mesenteries differs from that of Actinia, the derivation from an Edwardsia stock is obvious.

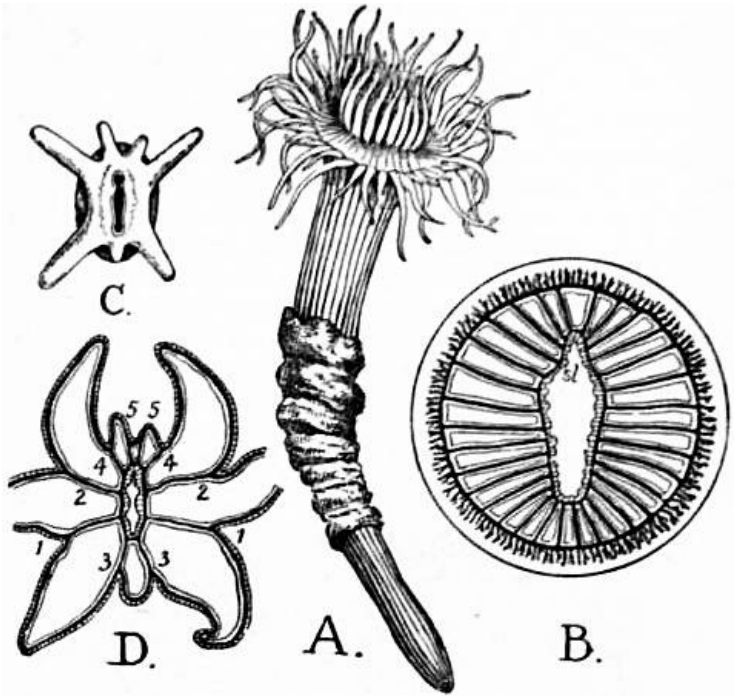


FIG. 13.

A, *Cerianthus solitarius* (after A. Andres).
B, Transverse section of the stomodaeum, showing the sulculus, *sl*, and the arrangement of the mesenteries.
C, Oral aspect of *Arachnactis brachiolata*, the larva of *Cerianthus*, with seven tentacles.
D, Transverse section of an older larva. The numerals indicate the order of development of the mesenteries.

The order ANTIPATHIDEA is a well-defined group whose affinities are more obscure. The type form, *Antipathes dichotoma* (fig. 14), forms arborescent colonies consisting of numerous zooids arranged in a single series along one surface of a branched horny axis. Each zooid has six tentacles; the stomodaeum is elongate, but the sulcus and sulculus are very feebly represented. There are ten mesenteries in which the musculature is so little developed as to be almost indistinguishable. The sulcar and sulcular pairs of mesenteries are short, the sulco-lateral and sulculo-lateral pairs are a little longer, but the two transverse are very large and are the only mesenteries which bear gonads. As the development of the Antipathidea is unknown, it is impossible to say what is the sequence of the mesenterial development, but in *Leiopathes glaberrima*, a genus with twelve mesenteries, there are distinct indications of an Edwardsia stage.

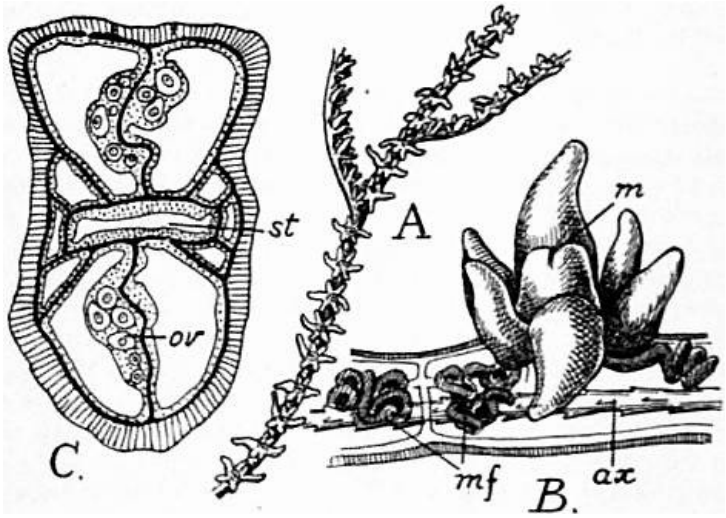


FIG. 14.

A, Portion of a colony of *Antipathes dichotoma*.
B, Single zooid and axis of the same magnified. *m*, Mouth; *mf* mesenterial filament; *ax*, axis.
C, Transverse section through the oral cone of *Antipathella minor, st*, Stomodaeum; *ov*, ovary.

There are, in addition to these groups, several genera of Actinians whose mesenterial arrangement differs from the normal type. Of these perhaps the most interesting is *Gonactinia prolifera* (fig. 11, B), with eight macromesenteries arranged on the Edwardsian plan. Two pairs of micromesenteries form couples with the first and second Edwardsian pairs, and in addition there is a couple of micromesenteries in each of the sulculo-lateral exocoeles. Only the first and second pairs of Edwardsian macromesenteries are fertile, *i.e.* bear gonads.

The remaining forms, the ACTINIIDEA, are divisible into the Malacactiniae, or soft-bodied sea-anemones, which have already been described sufficiently in the course of this article, and the Scleractiniae (= Madreporaria) or true corals.

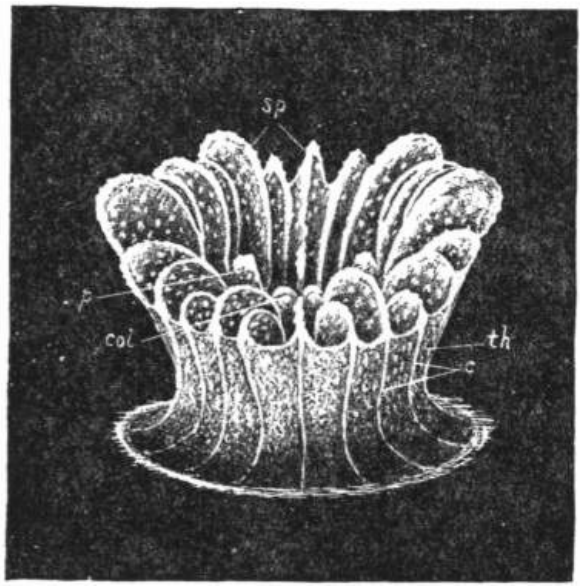


FIG. 15.—Corallum of *Caryophyllia*; semi-diagrammatic. *th*, Theca; *c*, costae; *sp*, septa; *p*, palus; *col*, columella.

All recent corals, as has already been said, conform so closely to the anatomy of normal Actinians that they cannot be classified apart from them, except that they are distinguished by the possession of a calcareous skeleton. This skeleton is largely composed of a number of radiating plates or *septa*, and it differs both in origin and structure from the calcareous skeleton of all Alcyonaria except Heliopora. It is formed, not from fused spicules, but as a secretion of a special layer of cells derived from the basal ectoderm, and known as *calicoblasts*. The skeleton or corallum of a typical solitary coral—the common Devonshire cup-coral *Caryophyllia smithii* (fig. 15) is a good example—exhibits the followings parts:—(1) The *basal plate*, between the zooid and the surface of attachment. (2) The *septa*, radial plates of calcite reaching from the periphery nearly or quite to the centre of the coral-cup or calicle. (3) The *theca* or wall, which in many corals is not an independent structure, but is formed by the conjoined thickened peripheral ends of the septa. (4) The *columella*, a structure which occupies the centre of the calicle, and may arise from the basal plate, when it is called essential, or may be formed by union of trabecular offsets of the septa, when it is called unessential. (5) The *costae*, longitudinal ribs or rows of spines on the outer surface of the theca. True costae always correspond to the septa, and are in fact the peripheral edges of the latter. (6) *Epitheca*, an offset of the basal plate which surrounds the base of the theca in a ring-like manner, and in some corals may take the place of a true theca. (7) *Pali*, spinous or blade-like upgrowths from the bottom of the calicle, which project between the inner edges of certain septa and the columella. In addition to these parts the following structures may exist in corals:— *Dissepiments* are oblique calcareous partitions, stretching from septum to septum, and closing the interseptal chambers below. The whole system of dissepiments in any given calicle is often called *endotheca*. *Synapticulae* are calcareous bars uniting adjacent septa. *Tabulae* are stout horizontal partitions traversing the centre of the calicle and dividing it into as many superimposed chambers. The septa in recent corals always bear a definite relation to the mesenteries, being found either in every entocoele or in every entocoele and exocoele. Hence in corals in which there is only a single cycle of mesenteries the septa are correspondingly few in number; where several cycles of mesenteries are present the septa are correspondingly numerous. In some cases—*e.g.* in some species of *Madrepora*—only two septa are fully developed, the remainder being very feebly represented.

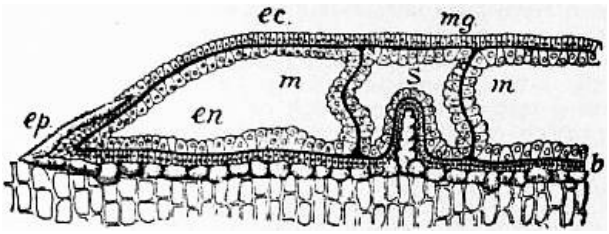


FIG. 16.—Tangential section of a larva of *Astroides calicularis* which has fixed itself on a piece of cork. *ec*, Ectoderm; *en*, endoderm; *mg*, mesogloea; *m, m*, mesenteries; *s*, septum; *b*, basal plate formed of ellipsoids of carbonate of lime secreted by the basal ectoderm; *ep*, epitheca. (After von Koch.)

Though the corallum appears to live within the zooid, it is morphologically external to it, as is best shown by its developmental history. The larvae of corals are free swimming ciliated forms known as planulae, and they do not acquire a corallum until they fix themselves. A ring-shaped plate of calcite, secreted by the ectoderm, is then formed, lying between the embryo and the surface of attachment. As the mesenteries are formed, the endoderm of the basal disk lying above the basal plate is raised up in the form of radiating folds. There may be six of these folds, one in each entocoele of the primary cycle of mesenteries, or there may be twelve, one in each exocoele and entocoele. The ectoderm beneath each fold becomes detached from the surface of the basal plate, and both it and the mesogloea are folded conformably with the endoderm. The cells forming the limbs of the ectodermic folds secrete nodules of calcite, and these, fusing together, give rise to six (or twelve) vertical radial plates or septa. As growth proceeds new septa are formed simultaneously with the new couples of secondary mesenteries. In some corals, in which all the septa are entocoelic, each new system is embraced by a mesenteric couple; in others, in which the septa are both entocoelic and exocoelic, three septa are formed in every chamber between two primary mesenterial couples, one in the entocoele of the newly formed mesenterial couple of the secondary cycle, and one in each exocoele between a primary and a secondary couple. These latter are in turn embraced by the couples of the tertiary cycle of mesenteries, and new septa are formed in the exocoeles on either side of them, and so forth.

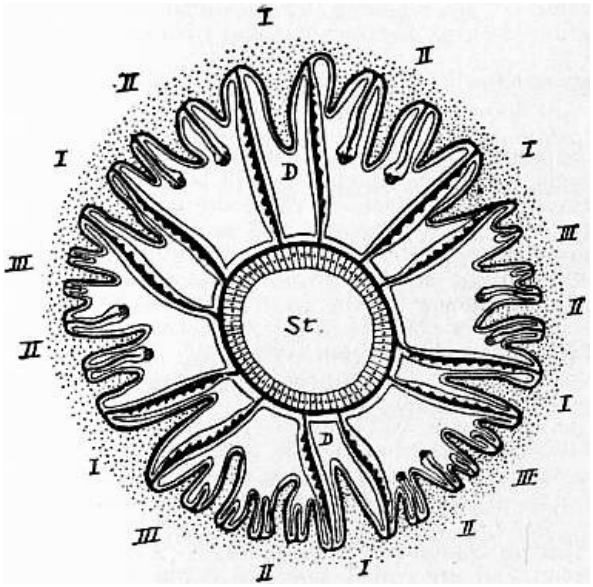


FIG. 17.—Transverse section through a zooid of *Cladocora*. The corallum shaded with dots, the mesogloea represented by a thick line. Thirty-two septa are present, six in the entocoeles of the primary cycle of mesenteries, I; six in the entocoeles of the secondary cycle of mesenteries, II; four in the entocoeles of the tertiary cycle of mesenteries, III, only four pairs of the latter being developed; and sixteen in the entocoeles between the mesenterial pairs. *D, D*, Directive mesenteries; *st*, stomodaeum. (After Duerden.)

It is evident from an inspection of figs. 16 and 17 that every septum is covered by a fold of endoderm, mesogloea, and ectoderm, and is in fact pushed into the cavity of the zooid from without. The zooid then is, as it were, moulded upon the corallum. When fully extended, the upper part of the zooid projects for some distance out of the calicle, and its wall is reflected for some distance over the lip of the latter, forming a fold of soft tissue extending to a greater or less distance over the theca, and containing in most cases a cavity continuous

over the lip of the calicle with the coelenteron. This fold of tissue is known as the *edge-zone* In some corals the septa are solid imperforate plates of calcite, and their peripheral ends are either firmly welded together, or are united by interstitial pieces so as to form imperforate theca. In others the peripheral ends of the septa are united only by bars or trabeculae, so that the theca is perforate, and in many such perforate corals the septa themselves are pierced by numerous perforations. In the former, which have been called aporose corals, the only communication between the cavity of the edge-zone and the general cavity of the zooid is by way of the lip of the calicle; in the latter, or perforate corals, the theca is permeated by numerous branching and anastomosing canals lined by endoderm, which place the cavity of the edge-zone in communication with the general cavity of the zooid.

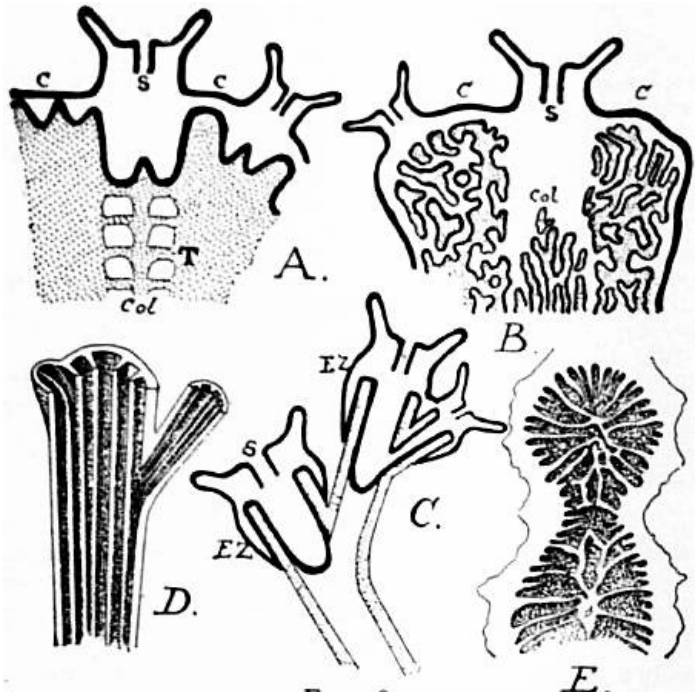


FIG. 18.

A, Schematic longitudinal section through a zooid and bud of *Stylophora digitata*. In A, B, and C the thick black lines represent the soft tissues; the corallum is dotted. *s*, Stomodaeum; *c*, *c*, coenosarc; *col*, columella, *T* tabulae.
B, Similar section through a single zooid and bud of *Astroides calicularis*.
C, Similar section through three corallites of *Lophohelia prolifera*. *ez*, Edge-zone.
D, Diagram illustrating the process of budding by unequal division.
E, Section through a dividing calicle of *Mussa*, showing the union of two septa in the plane of division and the origin of new septa at right angles to them.
(C original; the rest after von Koch.)

A large number of corals, both aporose and perforate, are colonial. The colonies are produced by either budding or division. In the former case the young daughter zooid, with its corallum, arises wholly outside the cavity of the parent zooid, and the component parts of the young corallum, septa, theca, columella, &c., are formed anew in every individual produced. In division a vertical constriction divides a zooid into two equal or unequal parts, and the several parts of the two corals thus produced are severally derived from the corresponding parts of the dividing corallum. In colonial corals a bud is always formed from the edge-zone, and this bud develops into a new zooid with its corallum. The cavity of the bud in an aporose coral (fig. 18, A, C) does not communicate directly with that of the parent form, but through the medium of the edge-zone. As growth proceeds, and parent and bud become separated farther from one another, the edge-zone forms a sheet of soft tissue, bridging over the space between the two, and resting upon projecting spines of the corallum. This sheet of tissue is called the *coenosarc*. Its lower surface is clothed with a layer of calicoblasts which continue to secrete carbonate of lime, giving rise to a secondary deposit which more or less fills up the spaces between the individual coralla, and is distinguished as *coenenchyme*. This coenenchyme may be scanty, or may be so abundant that the individual corallites produced by budding seem to be immersed in it. Budding takes place in an analogous manner in perforate corals (fig. 18, B), but the presence of the canal system in the perforate theca leads to a modification of the process. Buds arise from the edge-zone which already communicate with the cavity of the zooid by the canals. As the

buds develop the canal system becomes much extended, and calcareous tissue is deposited between the network of canals, the confluent edge-zones of mother zooid and bud forming a coenosarc. As the process continues a number of calicles are formed, imbedded in a spongy tissue in which the canals ramify, and it is impossible to say where the theca of one corallite ends and that of another begins. In the formation of colonies by division a constriction at right angles to the long axis of the mouth involves first the mouth, then the peristome, and finally the calyx itself, so that the previously single corallite becomes divided into two (fig. 18, E). After division the corallites continue to grow upwards, and their zooids may remain united by a bridge of soft tissue or coenosarc. But in some cases, as they grow farther apart, this continuity is broken, each corallite has its own edge-zone, and internal continuity is also broken by the formation of dissepiments within each calicle, all organic connexion between the two zooids being eventually lost. Massive meandrine corals are produced by continual repetition of a process of incomplete division, involving the mouth and to some extent the peristome: the calyx, however, does not divide, but elongates to form a characteristic meandrine channel containing several zooid mouths.

Corals have been divided into *Aporosa* and *Perforata*, according as the theca and septa are compact and solid, or are perforated by pores containing canals lined by endoderm. The division is in many respects convenient for descriptive purposes, but recent researches show that it does not accurately represent the relationships of the different families. Various attempts have been made to classify corals according to the arrangement of the septa, the characters of the theca, the microscopic structure of the corallum, and the anatomy of the soft parts. The last-named method has proved little more than that there is a remarkable similarity between the zooids of all recent corals, the differences which have been brought to light being for the most part secondary and valueless for classificatory purposes. On the other hand, the study of the anatomy and development of the zooids has thrown much light upon the manner in which the corallum is formed, and it is now possible to infer the structure of the soft parts from a microscopical examination of the septa, theca, &c., with the result that unexpected relationships have been shown to exist between corals previously supposed to stand far apart. This has been particularly the case with the group of Palaeozoic corals formerly classed together as *Rugosa*. In many of these so-called rugose forms the septa have a characteristic arrangement, differing from that of recent corals chiefly in the fact that they show a tetrameral instead of a hexameral symmetry. Thus in the family *Stauridae* there are four chief septa whose inner ends unite in the middle of the calicle to form a false columella, and in the *Zaphrentidae* there are many instances of an arrangement, such as that depicted in fig. 19, which represents the septal arrangement of *Streptelasma corniculum* from the lower Silurian. In this coral the calicle is divided into quadrants by four principal septa, the *main septum, counter septum*, and two *alar septa*. The remaining septa are so disposed that in the quadrants abutting on the chief septum they converge towards that septum, whilst in the other quadrants they converge towards the alar septa. The secondary septa show a regular gradation in size, and, assuming that the smallest were the most recently formed, it will be noticed that in the chief quadrants the youngest septa lie nearest to the main septum; in the other quadrants the youngest septa lie nearest to the alar septa. This arrangement, however, is by no means characteristic even of the Zaphrentidae, and in the family *Cyathophyllidae* most of the genera exhibit a radial symmetry in which no trace of the bilateral arrangement described above is recognizable, and indeed in the genus *Cyathophyllum* itself a radial arrangement is the rule. The connexion between the Cyathophyllidae and modern Astraeidae is shown by *Moseleya latistellata*, a living reef-building coral from Torres Strait. The general structure of this coral leaves no doubt that it is closely allied to the Astraeidae, but in the young calicles a tetrameral symmetry is indicated by the presence of four large septa placed at right angles to one another. Again, in the family *Amphiastraeidae* there is commonly a single septum much larger than the rest, and it has been shown that in the young calicles, *e.g.* of *Thecidiosmilia*, two septa, corresponding to the main- and counter-septa of Streptelasma, are first formed, then two alar septa, and afterwards the remaining septa, the latter taking on a generally radial arrangement, though the original bilaterality is marked by the preponderance of the main septum. As the microscopic character of the corallum of these extinct forms agrees with that of recent corals, it may be assumed that the anatomy of the soft parts also was similar, and the tetrameral arrangement, when present, may obviously be referred to a stage when only the first two pairs of Edwardsian mesenteries were present and septa were formed in the intervals between them.

Space forbids a discussion of the proposals to classify corals after the minute structure of their coralla, but it will suffice to say that it has been

shown that the septa of all corals are built up of a number of curved bars called trabeculae, each of which is composed of a number of nodes. In many secondary corals (*Cyclolites, Thamnastraea*) the trabeculae are so far separate that the individual bars are easily recognizable, and each looks something like a bamboo owing to the thickening of the two ends of each node. The trabeculae are united together by these thickened internodes, and the result is a fenestrated septum, which in older septa may become solid and aporose by continual deposit of calcite in the fenestrae. Each node of a trabecula may be simple, *i.e.* have only one centre of calcification, or may be compound. The septa of modern perforate corals are shown to have a structure nearly identical with that of the secondary forms, but the trabeculae and their nodes are only apparent on microscopical examination. The aporose corals, too, have a practically identical structure, their compactness being due to the union of the trabeculae throughout their entire lengths instead of at intervals, as in the Perforata. Further, the trabeculae may be evenly spaced throughout the septum, or may be grouped together, and this feature is probably of value in estimating the affinities of corals. (For an account of coral formations see Coral-Reefs.)

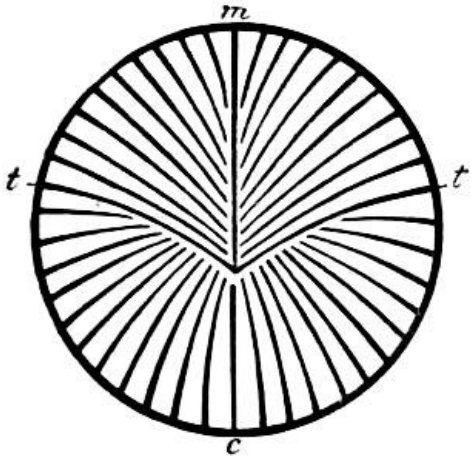


Fig. 19.—Diagram of the arrangement of the septa in a Zaphrentid coral. *m*, Main septum; *c*, counter septum; *t, t*, alar septa.

In the present state of our knowledge the Zoantharia in which a primary cycle of six couples of mesenteries is (or may be inferred to be) completed by the addition of two pairs to the eight Edwardsian mesenteries, and succeeding cycles are formed in the exocoeles of the pre-existing mesenterial cycles, may be classed in an order Actiniidea, and this may be divided into the suborders *Malacactiniae*, comprising the soft-bodied Actinians, such as *Actinia, Sagartia, Bunodes*, &c., and the *Scleractiniae*, comprising the corals. The Scleractiniae may best be divided into groups of families which appear to be most closely related to one another, but it should not be forgotten that there is great reason to believe that many if not most of the extinct corals must have differed from modern Actiniidea in mesenterial characters, and may have only possessed Edwardsian mesenteries, or even have possessed only four mesenteries, in this respect showing close affinities to the Stauromedusae. Moreover, there are some modern corals in which the secondary cycle of mesenteries departs from the Actinian plan. For example, J.E. Duerden has shown that in *Porites* the ordinary zooids possess only six couples of mesenteries arranged on the Actinian plan. But some zooids grow to a larger size and develop a number of additional mesenteries, which arise either in the sulcar or the sulcular entocoele, much in the same manner as in Cerianthus. Bearing this in mind, the following arrangement may be taken to represent the most recent knowledge of coral structure:—

Group A.

Family I. Zaphrentidae.—Solitary Palaeozoic corals with an epithecal wall. Septa numerous, arranged pinnately with regard to four principal septa. Tabulae present. One or more pits or fossulae present in the calicle. Typical genera—*Zaphrentis*, Raf. *Amplexus*, M. Edw. and H. *Streptelasma*, Hall. *Omphyma*, Raf.

Family 2. Turbinolidae.—Solitary, rarely colonial corals, with radially arranged septa and without tabulae. Typical genera— *Flabellum*, Lesson. *Turbinolia*, M. Edw. and H. *Caryophyllia*, Lamarck. *Sphenotrochus*, Moseley, &c.

Family 3. Amphiastraeidae.—Mainly colonial, rarely solitary corals, with radial septa, but bilateral arrangement indicated by persistence of a main septum. Typical genera —*Amphiastraea*, Étallon. *Thecidiosmilia*.

Family 4. Stylinidae.—Colonial corals allied to the Amphiastraeidae, but with radially symmetrical septa arranged in cycles. Typical genera—*Stylina*, Lamarck (Jurassic). *Convexastraea*, D'Orb. (Jurassic). *Isastraea*, M. Edw. and H.(Jurassic). Ogilvie refers the modern genus *Galaxea* to this family.

Group B.

Family 5. Oculinidae.—Branching or massive aporose corals, the calices projecting above the level of a compact coenenchyme formed from the coenosarc which covers the exterior of the corallum. Typical genera—*Lophohelia*, M. Edw. and H. *Oculina*, M. Edw. and H.

Family 6. Pocilloporidae.—Colonial branching aporose corals, with small calices sunk in the coenenchyme. Tabulae present, and two larger septa, an axial and abaxial, are always present, with traces of ten smaller septa. Typical genera—*Pocillopora*, Lamarck. *Seriatopora*, Lamarck.

Family 7. Madreporidae.—Colonial branching or palmate perforate corals, with abundant trabecular coenenchyme. Theca porous; septa compact and reduced in number. Typical genera— *Madrepora*, Linn. *Turbinaria*, Oken. *Montipora*, Quoy and G.

Family 8. Poritidae.—Incrusting or massive colonial perforate corals; calices usually in contact by their edges, sometimes disjunct and immersed in coenenchyme. Theca and septa perforate. Typical genera—*Porites*, M. Edw. and H. *Goniopora*, Quoy and G. *Rhodaraea*, M. Edw. and H.

Group C.

Family 9. Cyathophyllidae.—Solitary and colonial aporose corals. Tabulae and vesicular endotheca present. Septa numerous, generally radial, seldom pinnate. Typical genera —*Cyathophyllum*, Goldfuss (Devonian and Carboniferous). *Moseleya*, Quelch (recent).

Family 10. Astraeidae.—Aporpse, mainly colonial corals, massive, branching, or maeandroid. Septa radial; dissepiments present; an epitheca surrounds the base of massive or maeandroid forms, but only surrounds individual corallites in simple or branching forms. Typical genera—*Goniastraea*, M. Edw. and H. *Heliastraea*, M. Edw. and H. *Maeandrina*, Lam. *Coeloria*, M. Edw. and H. *Favia*, Oken.

Family 11. Fungidae.—Solitary and colonial corals, with numerous radial septa united by synapticulae. Typical genera— *Lophoseris*, M. Edw. and H. *Thamnastraea*, Le Sauvage. *Leptophyllia*, Reuss (Jurassic and Cretaceous). *Fungia*, Dana. *Siderastraea*, Blainv.

Group D.

Family 12. Eupsammidae.—Solitary or colonial perforate corals, branching, massive, or encrusting. Septa radial; the primary septa usually compact, the remainder perforate. Theca perforate. Synapticula present in some genera. Typical genera—*Stephanophyllia*, Michelin. *Eupsammia*, M. Edw. and H. *Astroides*, Blainv. *Rhodopsammia*, M. Edw. and H. *Dendrophyllia*, M. Edw. and H.

Group E.

Family 13. Cystiphyllidae.—Solitary corals with rudimentary septa, and the calicle filled with vesicular endotheca. Genera—*Cystiphyllum*, Lonsdale (Silurian and Devonian). *Goniophyllum*, M. Edw. and H. (In this Silurian genus the calyx is provided with a movable operculum, consisting of four paired triangular pieces, the bases of each being attached to the sides of the calyx, and their apices meeting in the middle when the operculum is closed). *Calcecla*, Lam. (In this Devonian genus there is a single semicircular operculum furnished with a stout median septum and numerous feebly developed secondary septa. The calyx is triangular in section, pointed below, and the operculum is attached to it by hinge-like teeth.)

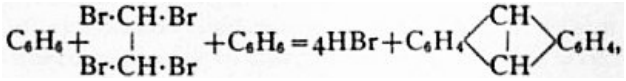
Authorities.—The following list contains only the names of the more important and more general works on the structure and classification of corals and on coral reefs. For a fuller bibliography the works marked with an asterisk should be consulted: * A. Andres, *Fauna und Flora des Golfes von Neapel*, ix. (1884); H.M. Bernard, “Catalogue of Madreporarian Corals” in Brit. Museum, ii. (1896), iii. (1897); * G.C. Bourne, “Anthozoa,” in E. Ray Lankester’s *Treatise on Zoology*, vol. ii. (London, 1900); G. Brook, “*Challenger* Reports,” *Zoology*, xxxii. (1899) (*Antipatharia*); “Cat. Madrep. Corals,” Brit. Museum, i. (1893); D.C. Danielssen, “Report Norwegian North Atlantic Exploring Expedition,” *Zoology*, xix. (1890); J.E. Duerden, “Some Results on the Morphology and Development of Recent and Fossil Corals,” *Rep. Brit. Association*, 1903, pp. 684-685; “The Morphology of the Madreporaria,” *Biol. Bullet*, vii. pp. 79-104; P.M. Duncan, *Journ. Linnean Soc.* xviii. (1885); P.H. Gosse, *Actinologia britannica* (London, 1860); O. and R. Hertwig, *Die Actinien* (Jena, 1879); R. Hertwig, “*Challenger* Reports,” *Zoology*, vi. (1882) and xxvi. (1888); * C.B. Klunzinger, *Die Korallthiere des Rothen Meeres* (Berlin, 1877); * G. von Koch, *Fauna und Flora des Golfes van Neapel*, xv. (1887); *Mitth. Zool. Stat. Neapel*, ii. (1882) and xii. (1897); *Palaeontographica*, xxix. (1883); (also many papers in the *Morphol. Jahrbuch* from 1878 to 1898); F. Koby, “Polypiers jurassiques

de la Suisse," *Mem. Soc. Palaeont. Suisse*, vii.-xvi. (1880-1889); A. von Kölliker, "Die Pennatuliden," *Abh. d. Senck. Naturf. Gesell.* vii.; * "*Challenger* Reports," *Zoology*, i. *Pennatulidae* (1880); Koren and Danielssen, *Norske Nordhaus Exped., Alcyonida* (1887); H. de Lacaze-Duthiers, *Hist. nat. du corail* (Paris, 1864); H. Milne-Edwards and J. Haime, *Hist. nat. des coralliaires* (Paris, 1857); H.N. Moseley, "*Challenger* Reports," *Zoology*, ii. (1881); H.A. Nicholson, *Palaeozoic Tabulate Corals* (Edinburgh, 1879); M.M. Ogilvie, *Phil. Transactions*, clxxxvii. (1896); E. Pratz, *Palaeontographica*, xxix. (1882); J.J. Quelch, "*Challenger* Reports," *Zoology*, xvi. (1886); * P.S. Wright and Th. Studer, "*Challenger* Reports," *Zoology*, xxxi. (1889).

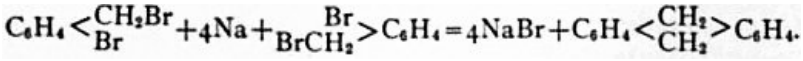
(G. C. B.)

ANTHRACENE (from the Greek ἄνθραξ, coal), $C_{14}H_{10}$, a hydrocarbon obtained from the fraction of the coal-tar distillate boiling between 270° and 400° C. This high boiling fraction is allowed to stand for some days, when it partially solidifies. It is then separated in a centrifugal machine, the low melting-point impurities are removed by means of hot water, and the residue is finally hot-pressed. The crude anthracene cake is purified by treatment with the higher pyridine bases, the operation being carried out in large steam-jacketed boilers. The whole mass dissolves on heating, and the anthracene crystallizes out on cooling. The crystallized anthracene is then removed by a centrifugal separator and the process of solution in the pyridine bases is repeated. Finally the anthracene is purified by sublimation.

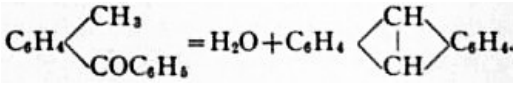
Many synthetical processes for the preparation of anthracene and its derivatives are known. It is formed by the condensation of acetylene tetrabromide with benzene in the presence of aluminium chloride:—

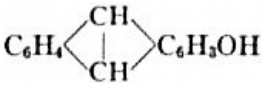
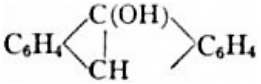


and similarly from methylene dibromide and benzene, and also when benzyl chloride is heated with aluminium chloride to 200° C. By condensing ortho-brombenzyl bromide with sodium, C.L. Jackson and J.F. White (*Ber.*, 1879, 12, p. 1965) obtained dihydro-anthracene



Anthracene has also been obtained by heating ortho-tolylphenyl ketone with zinc dust



Anthracene crystallizes in colourless monoclinic tables which show a fine blue fluorescence. It melts at 213° C. and boils at 351° C. It is insoluble in water, sparingly soluble in alcohol and ether, but readily soluble in hot benzene. It unites with picric acid to form a picrate, $C_{14}H_{10}\cdot C_6H_2(NO_2)_3\cdot OH$, which crystallizes in needles, melting at 138° C. On exposure to sunlight a solution of anthracene in benzene or xylene deposits para-anthracene $(C_{14}H_{10})_2$, which melts at 244° C. and passes back into the ordinary form. Chlorine and bromine form both addition and substitution products with anthracene; the addition product, anthracene dichloride, $C_{14}H_{10}Cl_2$, being formed when chlorine is passed into a cold solution of anthracene in carbon bisulphide. On treatment with potash, it forms the substitution product, monochlor-anthracene, $C_{14}H_9Cl$. Nitro-anthracenes are not as yet known. The mono-oxyanthracenes (anthrols), $C_{14}H_9OH$ or  (α) and (β) resemble the phenols, whilst  (γ) (anthranol) is a reduction product of anthraquinone. β-anthrol and anthranol give the corresponding amino compounds (anthramines) when heated with ammonia.

Numerous sulphonic acids of anthracene are known, a monosulphonic acid being obtained with dilute sulphuric acid, whilst concentrated sulphuric acid produces mixtures of the anthracene disulphonic acids. By the action of sodium amalgam on an alcoholic solution of anthracene, an anthracene dihydride, $C_{14}H_{12}$, is obtained, whilst by the use of stronger reducing agents, such as hydriodic acid and amorphous phosphorus, hydrides of composition $C_{14}H_{16}$ and $C_{14}H_{24}$ are produced.

Methyl and phenyl anthracenes are known; phenyl anthranol (phthalidin) being somewhat closely related to the phenolphthaleins (*q.v.*). Oxidizing agents convert anthracene into anthraquinone (*q.v.*); the production of this substance by oxidizing anthracene in glacial acetic acid solution, with chromic acid, is the usual method employed for the estimation of anthracene.

ANTHRACITE (Gr. ἄνθραξ, coal), a term applied to those varieties of coal which do not give off tarry or other hydrocarbon vapours when heated below their point of ignition; or, in other words, which burn with a smokeless and nearly non-luminous flame. Other terms having the same meaning are, “stone coal” (not to be confounded with the German *Steinkohle*) or “blind coal” in Scotland, and “Kilkenny coal” in Ireland. The imperfect anthracite of north Devon, which however is only used as a pigment, is known as *culm*, the same term being used in geological classification to distinguish the strata in which it is found, and similar strata in the Rhenish hill countries which are known as the Culm Measures. In America, culm is used as an equivalent for waste or slack in anthracite mining.

Physically, anthracite differs from ordinary bituminous coal by its greater hardness, higher density, 1.3-1.4, and lustre, the latter being often semi-metallic with a somewhat brownish reflection. It is also free from included soft or fibrous notches and does not soil the fingers when rubbed. Structurally it shows some alteration by the development of secondary divisional planes and fissures so that the original stratification lines are not always easily seen. The thermal conductivity is also higher, a lump of anthracite feeling perceptibly colder when held in the warm hand than a similar lump of bituminous coal at the same temperature. The chemical composition of some typical anthracites is given in the article Coal.

Anthracite may be considered to be a transition stage between ordinary bituminous coal and graphite, produced by the more or less complete elimination of the volatile constituents of the former; and it is found most abundantly in areas that have been subjected to considerable earth-movements, such as the flanks of great mountain ranges. The largest and most important anthracite region, that of the north-eastern portion of the Pennsylvania coal-field, is a good example of this; the highly contorted strata of the Appalachian region produce anthracite exclusively, while in the western portion of the same basin on the Ohio and its tributaries, where the strata are undisturbed, free-burning and coking coals, rich in volatile matter, prevail. In the same way the anthracite region of South Wales is confined to the contorted portion west of Swansea and Llanelly, the central and eastern portions producing steam, coking and house coals.

Anthracites of newer, tertiary or cretaceous age, are found in the Crow’s Nest part of the Rocky Mountains in Canada, and at various points in the Andes in Peru.

The principal use of anthracite is as a smokeless fuel. In the eastern United States, it is largely employed as domestic fuel, usually in close stoves or furnaces, as well as for steam purposes, since, unlike that from South Wales, it does not decrepitate when heated, or at least not to the same extent. For proper use, however, it is necessary that the fuel should be supplied in pieces as nearly uniform in size as possible, a condition that has led to the development of the breaker which is so characteristic a feature in American anthracite mining (see Coal). The large coal as raised from the mine is passed through breakers with toothed rolls to reduce the lumps to smaller pieces, which are separated into different sizes by a system of graduated sieves, placed in descending order. Each size can be perfectly well burnt alone on an appropriate grate, if kept free from larger or smaller admixtures. The common American classification is as follows:—

Lump, steamboat, egg and stove coals, the latter in two or three sizes, all three being above 1½ in. size on round-hole screens.

Chestnut	below 1½ inch	above ⅞ inch.
Pea	” ⅞ ”	” 9/16 ”
Buckwheat	” 9/16 ”	” ⅜ ”
Rice	” ⅜ ”	” 3/16 ”
Barley	” 3/16 ”	” 3/32 ”

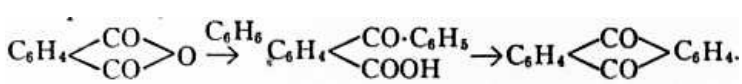
From the pea size downwards the principal use is for steam purposes. In South Wales a less elaborate classification is adopted; but great care is exercised in hand-picking and cleaning the coal from included particles of pyrites in the higher qualities known as best malting coals, which are used for kiln-drying malt and hops.

Formerly, anthracite was largely used, both in America and South Wales, as blast-furnace fuel for iron smelting, but for this purpose it has been largely superseded by coke in the former country and entirely in the latter. An important application has, however, been developed in the extended use of internal combustion motors driven by the so-called “mixed,” “poor,” “semi-water” or “Dowson gas” produced by the gasification of anthracite with air and a small proportion of steam. This is probably the most economical method of obtaining power known; with an engine as small as 15 horse-power the expenditure of fuel is at the rate of only 1 lb per horse-power hour, and with larger engines it is proportionately less. Large quantities of anthracite for power purposes are now exported from South Wales to France, Switzerland and parts of Germany.

(H. B.)

ANTHRACOTHERIUM (“coal-animal,” so called from the fact of the remains first described having been obtained from the Tertiary lignite-beds of Europe), a genus of extinct artiodactyle ungulate mammals, characterized by having 44 teeth, with five semi-crescentic cusps on the crowns of the upper molars. In many respects, especially the form of the lower jaw, *Anthracotherium*, which is of Oligocene and Miocene age in Europe, and typifies the family *Anthracotheriidae*, is allied to the hippopotamus, of which it is probably an ancestral form. The European *A. magnum* was as large as the last-mentioned animal, but there were several smaller species and the genus also occurs in Egypt, India and North America. (See ARTIODACTYLA.)

ANTHRAQUINONE, $C_{14}H_8O_2$, an important derivative of anthracene, first prepared in 1834 by A. Laurent. It is prepared commercially from anthracene by stirring a sludge of anthracene and water in horizontal cylinders with a mixture of sodium bichromate and caustic soda. This suspension is then run through a conical mill in order to remove all grit, the cones of the mill fitting so tightly that water cannot pass through unless the mill is running; the speed of the mill when working is about 3000 revolutions per minute. After this treatment, the mixture is run into lead-lined vats and treated with sulphuric acid, steam is blown through the mixture in order to bring it to the boil, and the anthracene is rapidly oxidized to anthraquinone. When the oxidation is complete, the anthraquinone is separated in a filter press, washed and heated to 120° C. with commercial oil of vitriol, using about 2½ parts of vitriol to 1 of anthraquinone. It is then removed to lead-lined tanks and again washed with water and dried; the product obtained contains about 95% of anthraquinone. It may be purified by sublimation. Various synthetic processes have been used for the preparation of anthraquinone. A. Behr and W.A. v. Dorp (*Ber.*, 1874, 7, p. 578) obtained orthobenzoyl benzoic acid by heating phthalic anhydride with benzene in the presence of aluminium chloride. This compound on heating with phosphoric anhydride loses water and yields anthraquinone,



It may be prepared in a similar manner by heating phthalyl chloride with benzene in the

presence of aluminium chloride. Dioxy- and tetraoxy-anthraquinones are obtained when meta-oxy- and dimeta-dioxy-benzoic acids are heated with concentrated sulphuric acid.

Anthraquinone crystallizes in yellow needles or prisms, which melt at 277° C. It is soluble in hot benzene, sublimes easily, and is very stable towards oxidizing agents. On the other hand, it is readily attacked by reducing agents. With zinc dust in presence of caustic soda it yields the secondary alcohol oxan-thranol, $C_6H_4 : CO{\cdot}CHOH : C_6H_4$, with tin and hydrochloric acid, the phenolic compound anthranol, $C_6H_4 : CO{\cdot}C(OH) : C_6H_4$; and with hydriodic acid at 150° C. or on distillation with zinc dust, the hydrocarbon anthracene, $C_{14}H_{10}$. When fused with caustic potash, it gives benzoic acid. It behaves more as a ketone than as a quinone, since with hydroxylamine it yields an oxime, and on reduction with zinc dust and caustic soda it yields a secondary alcohol, whilst it cannot be reduced by means of sulphurous acid. Various sulphonic acids of anthraquinone are known, as well as oxy-derivatives, for the preparation and properties of which see ALIZARIN.

ANTHRAX (the Greek for “coal,” or “carbuncle,” so called by the ancients because they regarded it as burning like coal; cf. the French equivalent *charbon*; also known as *fièvre charbonneuse, Milzbrand*, splenic fever, and malignant pustule), an acute, specific, infectious, virulent disease, caused by the *Bacillus anthracis*, in animals, chiefly cattle, sheep and horses, and frequently occurring in workers in the wool or hair, as well as in those handling the hides or carcases, of beasts which have been affected.

Animals.—As affecting wild as well as domesticated animals and man, anthrax has been widely diffused in one or more of its forms, over the surface of the globe. It at times decimates the reindeer herds in Lapland and the Polar regions, and is only too well known in the tropics and in temperate latitudes. It has been observed and described in Russia, Siberia, Central Asia, China, Cochin-China, Egypt, West Indies, Peru, Paraguay, Brazil, Mexico, and other parts of North and South America, in Australia, and on different parts of the African continent, while for other European countries the writings which have been published with regard to its nature, its peculiar characteristics, and the injury it inflicts are innumerable. Countries in which are extensive marshes, or the subsoil of which is tenacious or impermeable, are usually those most frequently and seriously visited. Thus there have been regions notorious for its prevalence, such as the marshes of Sologne, Dombes and Bresse in France; certain parts of Germany, Hungary and Poland; in Spain the half-submerged valleys and the maritime coasts of Catalonia, as well as the Romagna and other marshy districts of Italy; while it is epizootic, and even panzootic, in the swampy regions of Esthonia, Livonia, Courland, and especially of Siberia, where it is known as the *Sibirskaja jaswa* (Siberian boil-plague). The records of anthrax go back to a very ancient date. It is supposed to be the murrain of Exodus. Classical writers allude to anthrax as if it were the only cattle disease worthy of mention (see Virgil, *Georg.* iii.). It figures largely in the history of the early and middle ages as a devastating pestilence attacking animals, and through them mankind; the oldest Anglo-Saxon manuscripts contain many fantastic recipes, leechdoms, charms and incantations for the prevention or cure of the “blacan blezene” (black blain) and the relief of the “elfshot” creatures. In the 18th and 19th centuries it sometimes spread like an epizootic over the whole of Europe, from Siberia to France. It was in this malady that disease-producing germs (*bacteria*) were first discovered, in 1840, by Pollender of Wipperfürth, and, independently, by veterinary surgeon Brauell of Dorpat, and their real character afterwards verified by C.J. Davaine (1812-1882) of Alfort in 1863; and it was in their experiments with this disease that Toussaint, Pasteur and J.B. Chauveau first showed how to make the morbific poison its own antidote. (See VIVISECTION.)

The symptoms vary with the species of animal, the mode of infection, and the seat of the primary lesion, internal or external. In all its forms anthrax is an inoculable disease, transmission being surely and promptly effected by this means, and it may be conveyed to nearly all animals by inoculation of a wound of the skin or through the digestive organs. Cattle, sheep and horses nearly always owe their infection to spores or bacilli ingested with their food or water, and pigs usually contract the disease by eating the flesh of animals dead of anthrax.

Internal anthrax, of cattle and sheep, exhibits no premonitory symptoms that can be relied on. Generally the first indication of an outbreak is the sudden death of one or more of the

herd or flock. Animals which do not die at once may be noticed to stagger and tremble; the breathing becomes hurried and the pulse very rapid, while the heart beats violently; the internal temperature of the body is high, 104° to 106° F.; blood oozes from the nose, mouth and anus, the visible mucous membranes are dusky or almost black. The animal becomes weak and listless, the temperature falls and death supervenes in a few hours, being immediately preceded by delirium, convulsions or coma. While death is usually rapid or sudden when the malady is general, constituting what is designated splenic apoplexy, internal anthrax in cattle is not invariably fatal. In some cases the animal rallies from a first attack and gradually recovers.

In the external or localized form, marked by the formation of carbuncles before general infection takes place, death may not occur for several days. The carbuncles may appear in any part of the body, being preceded or accompanied by fever. They are developed in the subcutaneous connective tissue where this is loose and plentiful, in the interstices of the muscles, lymphatic glands, in the mucous membranes of the mouth and tongue (glossanthrax of cattle), pharynx and larynx (*anthrax angina* of horses and pigs), and the rectum. They begin as small circumscribed swellings which are warm, slightly painful and oedematous. In from two to eight hours they attain a considerable size, are cold, painless and gangrenous, and when they are incised a quantity of a blood-stained gelatinous exudate escapes. When the swellings have attained certain proportions symptoms of general infection appear, and, running their course with great rapidity, cause death in a few hours. Anthrax of the horse usually begins as an affection of the throat or bowel. In the former there is rapid obstructive oedema of the mucous membrane of the pharynx and larynx with swelling of the throat and neck, fever, salivation, difficulty in swallowing, noisy breathing, frothy discharge from the nose and threatening suffocation. General invasion soon ensues, and the horse may die in from four to sixteen hours. The intestinal form is marked by high temperature, great prostration, small thready pulse, tumultuous action of the heart, laboured breathing and symptoms of abdominal pain with straining and diarrhoea. When moved the horse staggers and trembles. Profuse sweating, a falling temperature and cyanotic mucous membranes indicate the approach of a fatal termination.

In splenic fever or splenic apoplexy, the most marked alterations observed after death are —the effects of rapid decomposition, evidenced by the foul odour, disengagement of gas beneath the skin and in the tissues and cavities of the body, yellow or yellowish-red gelatinous exudation into and between the muscles, effusion of citron or rust-coloured fluid in various cavities, extravasations of blood and local congestions throughout the body, the blood in the vessels generally being very dark and tar-like. The most notable feature, however, in the majority of cases is the enormous enlargement of the spleen, which is engorged with blood to such an extent that it often ruptures, while its tissue is changed into a violet or black fluid mass.

The bacillus of anthrax, under certain conditions, retains its vitality for a long time, and rapidly grows when it finds a suitable field in which to develop, its mode of multiplication being by scission and the formation of spores, and depending, to a great extent at least, on the presence of oxygen. The morbid action of the bacillus is indeed said to be due to its affinity for oxygen; by depriving the red corpuscles of the blood of that most essential gas, it renders the vital fluid unfit to sustain life. Albert Hoffa and others assert that the fatal lesions are produced by the poisonous action of the toxins formed by the bacilli and not by the blocking up of the minute blood-vessels, or the abstraction of oxygen from the blood by the bacilli.

It was by the cultivation of this micro-organism, or attenuation of the virus, that Pasteur was enabled to produce a prophylactic remedy for anthrax. His discovery was first made with regard to the cholera of fowls, a most destructive disorder which annually carries off great numbers of poultry. Pasteur produced his inoculation material by the cultivation of the bacilli at a temperature of 42° C. in oxygen. Two vaccines are required. The first or weak vaccine is obtained by incubating a bouillon culture for twenty-four days at 42° C., and the second or less attenuated vaccine by incubating a bouillon culture, at the same temperature, for twelve days. Pasteur’s method of protective inoculation comprises two inoculations with an interval of twelve days between them. Immunity, established in about fifteen days after the injection of the second vaccine, lasts from nine months to a year.

Toussaint had, previous to Pasteur, attenuated the virus of anthrax by the action of heat; and Chauveau subsequently corroborated by numerous experiments the value of Toussaint’s method, demonstrating that, according to the degree of heat to which the virus is subjected, so is its inocuousness when transferred to a healthy creature. In outbreaks of anthrax on farms where many animals are exposed to infection immediate temporary protection can be

conferred by the injection of anthrax serum.

Human Beings.—For many years cases of sudden death had been observed to occur from time to time among healthy men engaged in woollen manufactories, particularly in the work of sorting or combing wool. In some instances death appeared to be due to the direct inoculation of some poisonous material into the body, for a form of malignant pustule was observed upon the skin; but, on the other hand, in not a few cases without any external manifestation, symptoms of blood-poisoning, often proving rapidly fatal, suggested the probability of other channels for the introduction of the disease. In 1880 the occurrence of several such cases among woolsorters at Bradford, reported by Dr J.H. Bell of that town, led to an official inquiry in England by the Local Government Board, and an elaborate investigation into the pathology of what was then called “woolsorters’ disease” was at the same time conducted at the Brown Institution, London, by Professor W.S. Greenfield. Among the results of this inquiry it was ascertained: (1) that the disease appeared to be identical with that occurring among sheep and cattle; (2) that in the blood and tissues of the body was found in abundance, as in the disease in animals, the *Bacillus anthracis*, and (3) that the skins, hair, wool, &c., of animals dying of anthrax retain this infecting organism, which, under certain conditions, finds ready access to the bodies of the workers.

Two well-marked forms of this disease in man are recognized, “external anthrax” and “internal anthrax.” In external anthrax the infecting agent is accidentally inoculated into some portion of skin, the seat of a slight abrasion, often the hand, arm or face. A minute swelling soon appears at the part, and develops into a vesicle containing serum or bloody matter, and varying in size, but seldom larger than a shilling. This vesicle speedily bursts and leaves an ulcerated or sloughing surface, round about which are numerous smaller vesicles which undergo similar changes, and the whole affected part becomes hard and tender, while the surrounding surface participates in the inflammatory action, and the neighbouring lymphatic glands are also inflamed. This condition, termed “malignant pustule,” is frequently accompanied with severe constitutional disturbance, in the form of fever, delirium, perspirations, together with great prostration and a tendency to death from septicaemia, although on the other hand recovery is not uncommon. It was repeatedly found that the matter taken from the vesicle during the progress of the disease, as well as the blood in the body after death, contained the *Bacillus anthracis*, and when inoculated into small animals produced rapid death, with all the symptoms and post-mortem appearances characteristic of che disease as known to affect them.

In internal anthrax there is no visible local manifestation of the disease, and the spores or bacilli appear to gain access to the system from the air charged with them, as in rooms where the contaminated wool or hair is unpacked, or again during the process of sorting. The symptoms usually observed are those of rapid physical prostration, with a small pulse, somewhat lowered temperature (rarely fever), and quickened breathing. Examination of the chest reveals inflammation of the lungs and pleura. In some cases death takes place by collapse in less than one day, while in others the fatal issue is postponed for three or four days, and is preceded by symptoms of blood-poisoning, including rigors, perspirations, extreme exhaustion, &c. In some cases of internal anthrax the symptoms are more intestinal than pulmonary, and consist in severe exhausting diarrhoea, with vomiting and rapid sinking. Recovery from the internal variety, although not unknown, is more rare than from the external, and its most striking phenomena are its sudden onset in the midst of apparent health, the rapid development of physical prostration, and its tendency to a fatal termination despite treatment. The post-mortem appearances in internal anthrax are such as are usually observed in septicaemia, but in addition evidence of extensive inflammation of the lungs, pleura and bronchial glands has in most cases been met with. The blood and other fluids and the diseased tissues are found loaded with the *Bacillus anthracis*.

Treatment in this disease appears to be of but little avail, except as regards the external form, where the malignant pustule may be excised or dealt with early by strong caustics to destroy the affected textures. For the relief of the general constitutional symptoms, quinine, stimulants and strong nourishment appear to be the only available means. An anti-anthrax serum has also been tried. As preventive measures in woollen manufactories, the disinfection of suspicious material, or the wetting of it before handling, is recommended as lessening the risk to the workers.

(J. Mac.)

ANTHROPOID APES, or MANLIKE APES, the name given to the family of the Simiidae, because, of all the ape-world, they most closely resemble man. This family includes four kinds, the gibbons of S.E. Asia, the orangs of Borneo and Sumatra, the gorillas of W. Equatorial Africa, and the chimpanzees of W. and Central Equatorial Africa. Each of these apes resembles man most in some one physical characteristic: the gibbons in the formation of the teeth, the orangs in the brain-structure, the gorillas in size, and the chimpanzees in the sigmoid flexure of the spine. In general structure they all closely resemble human beings, as in the absence of tails; in their semi-erect position (resting on finger-tips or knuckles); in the shape of vertebral column, sternum and pelvis; in the adaptation of the arms for turning the palm uppermost at will; in the possession of a long vermiform appendix to the short caecum of the intestine; in the size of the cerebral hemispheres and the complexity of their convolutions. They differ in certain respects, as in the proportion of the limbs, in the bony development of the eyebrow ridges, and in the opposable great toe, which fits the foot to be a climbing and grasping organ.

Man differs from them in the absence of a hairy coat; in the development of a large lobule to the external ear; in his fully erect attitude; in his flattened foot with the non-opposable great toe; in the straight limb-bones; in the wider pelvis; in the marked sigmoid flexure of his spine; in the perfection of the muscular movements of the arm; in the delicacy of hand; in the smallness of the canine teeth and other dental peculiarities; in the development of a chin; and in the small size of his jaws compared to the relatively great size of the cranium. Together with man and the baboons, the anthropoid apes form the group known to science as Catarhini, those, that is, possessing a narrow nasal septum, and are thus easily distinguishable from the flat-nosed monkeys or Platyrhini. The anthropoid apes are arboreal and confined to the Old World. They are of special interest from the important place assigned to them in the arguments of Darwin and the Evolutionists. It is generally admitted now that no fundamental anatomical difference can be proved to exist between these higher apes and man, but it is equally agreed that none probably of the Simiidae is in the direct line of human ancestry. There is a great gap to be bridged between the highest anthropoid and the lowest man, and much importance has been attached to the discovery of an extinct primate, Pithecanthropus (*q.v.*), which has been regarded as the “missing link.”

See Huxley’s *Man’s Place in Nature* (1863); Robt. Hartmann’s *Anthropoid Apes* (1883; London, 1885); A.H. Keane’s *Ethnology* (1896); Darwin’s *Descent of Man* (1871; pop. ed., 1901); Haeckel’s *Anthropogeny* (Leipzig, 1874, 1903; Paris, 1877; Eng. ed., 1883); W.H. Flower and Rich. Lydekker, *Mammals Living and Extinct* (London, 1891).

ANTHROPOLOGY (Gr. ἄνθρωπος man, and λόγος, theory or science), the science which, in its strictest sense, has as its object the study of man as a unit in the animal kingdom. It is distinguished from ethnology, which is devoted to the study of man as a *racial* unit, and from ethnography, which deals with the *distribution* of the races formed by the aggregation of such units. To anthropology, however, in its more general sense as the natural history of man, ethnology and ethnography may both be considered to belong, being related as parts to a whole.

Various other sciences, in conformity with the above definition, must be regarded as subsidiary to anthropology, which yet hold their own independent places in the field of knowledge. Thus anatomy and physiology display the structure and functions of the human body, while psychology investigates the operations of the human mind. Philology deals with the general principles of language, as well as with the relations between the languages of particular races and nations. Ethics or moral science treats of man’s duty or rules of conduct toward his fellow-men. Sociology and the science of culture are concerned with the origin and development of arts and sciences, opinions, beliefs, customs, laws and institutions generally among mankind within historic time; while beyond the historical limit the study is continued by inferences from relics of early ages and remote districts, to interpret which is the task of prehistoric archaeology and geology.

I. *Man’s Place in Nature.*—In 1843 Dr J.C. Prichard, who perhaps of all others merits the title of founder of modern anthropology, wrote in his *Natural History of Man*:—

> “The organized world presents no contrasts and resemblances more remarkable than those which we discover on comparing mankind with the inferior tribes. That creatures

should exist so nearly approaching to each other in all the particulars of their physical structure, and yet differing so immeasurably in their endowments and capabilities, would be a fact hard to believe, if it were not manifest to our observation. The differences are everywhere striking: the resemblances are less obvious in the fulness of their extent, and they are never contemplated without wonder by those who, in the study of anatomy and physiology, are first made aware how near is man in his physical constitution to the brutes. In all the principles of his internal structure, in the composition and functions of his parts, man is but an animal. The lord of the earth, who contemplates the eternal order of the universe, and aspires to communion with its invisible Maker, is a being composed of the same materials, and framed on the same principles, as the creatures which he has tamed to be the servile instruments of his will, or slays for his daily food. The points of resemblance are innumerable; they extend to the most recondite arrangements of that mechanism which maintains instrumentally the physical life of the body, which brings forward its early development and admits, after a given period, its decay, and by means of which is prepared a succession of similar beings destined to perpetuate the race."

The acknowledgment of man's structural similarity with the anthropomorphous species nearest approaching him, viz.: the higher or anthropoid apes, had long before Prichard's day been made by Linnaeus, who in his *Systema Naturae* (1735) grouped them together as the highest order of Mammalia, to which he gave the name of Primates. The *Amoenitates Academicae* (vol. vi., Leiden, 1764), published under the auspices of Linnaeus, contains a remarkable picture which illustrates a discourse by his disciple Hoppius, and is here reproduced (see Plate, fig. 1). In this picture, which shows the crudeness of the zoological notions current in the 18th century as to both men and apes, there are set in a row four figures: (*a*) a recognizable orang-utan, sitting and holding a staff; (*b*) a chimpanzee, absurdly humanized as to head, hands, and feet; (*c*) a hairy woman, with a tail a foot long; (*d*) another woman, more completely coated with hair. The great Swedish naturalist was possibly justified in treating the two latter creatures as quasi-human, for they seem to be grotesque exaggerations of such tailed and hairy human beings as really, though rarely, occur, and are apt to be exhibited as monstrosities (see Bastian and Hartmann, *Zeitschrift für Ethnologie*, Index, "Geschwänzte Menschen"; Gould and Pile, *Anomalies and Curiosities of Medicine*, 1897). To Linnaeus, however, they represented normal anthropomorpha or man-like creatures, vouched for by visitors to remote parts of the world. This opinion of the Swedish naturalist seems to have been little noticed in Great Britain till it was taken up by the learned but credulous Scottish judge, Lord Monboddo (see his *Origin and Progress of Language*, 1774, &c.; *Antient Metaphysics*, 1778). He had not heard of the tailed men till he met with them in the work of Linnaeus, with whom he entered into correspondence, with the result that he enlarged his range of mankind with races of sub-human type. One was founded on the description by the Swedish sailor Niklas Köping of the ferocious men with long tails inhabiting the Nicobar Islands. Another comprised the orang-utans of Sumatra, who were said to take men captive and set them to work as slaves. One of these apes, it was related, served as a sailor on board a Jamaica ship, and used to wait on the captain. These are stories which seem to carry their own explanation. When the Nicobar Islands were taken over by the British government two centuries later, the native warriors were still wearing their peculiar loin-cloth hanging behind in a most tail-like manner (E.H. Man, *Journal Anthropological Institute*, vol. xv. p. 442). As for the story of the orang-utan cabin boy, this may even be verbally true, it being borne in mind that in the Malay languages the term *orang-utan*, "man of the forest," was originally used for inland forest natives and other rude men, rather than for the *miyas* apes to which it has come to be generally applied by Europeans. The speculations as to primitive man connected with these stories diverted the British public, headed by Dr Johnson, who said that Monboddo was "as jealous of his tail as a squirrel." Linnaeus's primarily zoological classification of man did not, however, suit the philosophical opinion of the time, which responded more readily to the systems represented by Buffon, and later by Cuvier, in which the human mind and soul formed an impassable wall of partition between him and other mammalia, so that the definition of man's position in the animal world was treated as not belonging to zoology, but to metaphysics and theology. It has to be borne in mind that Linnaeus, plainly as he recognized the likeness of the higher simian and the human types, does not seem to have entertained the thought of accounting for this similarity by common descent. It satisfied his mind to consider it as belonging to the system of nature, as indeed remained the case with a greater anatomist of the following century, Richard Owen. The present drawing, which under the authority of Linnaeus shows an anthropomorphic series from which the normal type of man, the *Homo sapiens*, is conspicuously absent, brings zoological similarity into view without suggesting kinship to account for it. There are few ideas more ingrained in ancient and low civilization than that of relationship by descent between the lower animals and man. Savage and barbaric religions

recognize it, and the mythology of the world has hardly a more universal theme. But in educated Europe such ideas had long been superseded by the influence of theology and philosophy, with which they seemed too incompatible. In the 19th century, however, Lamarck's theory of the development of new species by habit and circumstance led through Wallace and Darwin to the doctrines of the hereditary transmission of acquired characters, the survival of the fittest, and natural selection. Thenceforward it was impossible to exclude a theory of descent of man from ancestral beings whom zoological similarity connects also, though by lines of descent not at all clearly defined, with ancestors of the anthropomorphic apes. In one form or another such a theory of human descent has in our time become part of an accepted framework of zoology, if not as a demonstrable truth, at any rate as a working hypothesis which has no effective rival.

The new development from Linnaeus's zoological scheme which has thus ensued appears in Huxley's diagram of simian and human skeletons (fig. 2, (*a*) gibbon; (*b*) orang; (*c*) chimpanzee; (*d*) gorilla; (*e*) man). Evidently suggested by the Linnean picture, this is brought up to the modern level of zoology, and continued on to man, forming an introduction to his zoological history hardly to be surpassed. Some of the main points it illustrates may be briefly stated here, the reader being referred for further information to Huxley's *Essays*. In tracing the osteological characters of apes and man through this series, the general system of the skeletons, and the close correspondence in number and arrangement of vertebrae and ribs, as well as in the teeth, go far towards justifying the opinion of hereditary connexion. At the same time, the comparison brings into view differences in human structure adapted to man's pre-eminent mode of life, though hardly to be accounted its chief causes. It may be seen how the arrangement of limbs suited for going on all-fours belongs rather to the apes than to man, and walking on the soles of the feet rather to man than the apes. The two modes of progression overlap in human life, but the child's tendency when learning is to rest on the soles of the feet and the palms of the hands, unlike the apes, which support themselves on the sides of the feet and the bent knuckles of the hands. With regard to climbing, the long stretch of arm and the grasp with both hands and feet contribute to the arboreal life of the apes, contrasting with what seem the mere remains of the climbing habit to be found even among forest savages. On the whole, man's locomotive limbs are not so much specialized to particular purposes, as generalized into adaptation to many ends. As to the mechanical conditions of the human body, the upright posture has always been recognized as the chief. To it contributes the balance of the skull on the cervical vertebrae, while the human form of the pelvis provides the necessary support to the intestines in the standing attitude. The marked curvature of the vertebral column, by breaking the shock to the neck and head in running and leaping, likewise favours the erect position. The lowest coccygeal vertebrae of man remain as a rudimentary tail. While it is evident that high importance must be attached to the adaptation of the human body to the life of diversified intelligence and occupation he has to lead, this must not be treated as though it were the principal element of the superiority of man, whose comparison with all lower genera of mammals must be mainly directed to the intellectual organ, the brain. Comparison of the brains of vertebrate animals (see Brain) brings into view the immense difference between the small, smooth brain of a fish or bird and the large and convoluted organ in man. In man, both size and complexity contribute to the increased area of the cortex or outer layer of the brain, which has been fully ascertained to be the seat of the mysterious processes by which sensation furnishes the groundwork of thought. Schäfer (*Textbook of Physiology*, vol. ii. p. 697) thus defines it: "The cerebral cortex is the seat of the intellectual functions, of intelligent sensation or consciousness, of ideation, of volition, and of memory."

The relations between man and ape are most readily stated in comparison with the gorilla, as on the whole the most anthropomorphous ape. In the general proportions of the body and limbs there is a marked difference between the gorilla and man. The gorilla's brain-case is smaller, its trunk larger, its lower limbs shorter, its upper limbs longer in proportion than those of man. The differences between a gorilla's skull and a man's are truly immense. In the gorilla, the face, formed largely by the massive jaw-bones, predominates over the brain-case or cranium; in the man these proportions are reversed. In man the occipital foramen, through which passes the spinal cord, is placed just behind the centre of the base of the skull, which is thus evenly balanced in the erect posture, whereas the gorilla, which goes habitually on all fours, and whose skull is inclined forward, in accordance with this posture has the foramen farther back. In man the surface of the skull is comparatively smooth, and the brow-ridges project but little, while in the gorilla these ridges overhang the cavernous orbits like penthouse roofs. The absolute capacity of the cranium of the gorilla is far less than that of man; the smallest adult human cranium hardly measuring less than 63 cub. in., while the largest gorilla cranium measured had a content of only 34½ cub. in. The largest

proportional size of the facial bones, and the great projection of the jaws, confer on the gorilla's skull its small facial angle and brutal character, while its teeth differ from man's in relative size and number of fangs. Comparing the lengths of the extremities, it is seen that the gorilla's arm is of enormous length, in fact about one-sixth longer than the spine, whereas a man's arm is one-fifth shorter than the spine; both hand and foot are proportionally much longer in the gorilla than in man; the leg does not so much differ. The vertebral column of the gorilla differs from that of man in its curvature and other characters, as also does the conformation of its narrow pelvis. The hand of the gorilla corresponds essentially as to bones and muscles with that of man, but is clumsier and heavier; its thumb is "opposable" like a human thumb, that is, it can easily meet with its extremity the extremities of the other fingers, thus possessing a character which does much to make the human hand so admirable an instrument; but the gorilla's thumb is proportionately shorter than man's. The foot of the higher apes, though often spoken of as a hand, is anatomically not such, but a prehensile foot. It has been argued by Sir Richard Owen and others that the position of the great toe converts the foot of the higher apes into a hand, an extremely important distinction from man; but against this Professor T.H. Huxley maintained that it has the characteristic structure of a foot with a very movable great toe. The external unlikeness of the apes to man depends much on their hairiness, but this and some other characteristics have no great zoological value. No doubt the difference between man and the apes depends, of all things, on the relative size and organization of the brain. While similar as to their general arrangement to the human brain, those of the higher apes, such as the chimpanzee, are much less complex in their convolutions, as well as much less in both absolute and relative weight—the weight of a gorilla's brain hardly exceeding 20 oz., and a man's brain hardly weighing less thin 32 oz., although the gorilla is considerably the larger animal of the two.

These anatomical distinctions are undoubtedly of great moment, and it is an interesting question whether they suffice to place man in a zoological order by himself. It is plain that some eminent zoologists, regarding man as absolutely differing as to mind and spirit from any other animal, have had their discrimination of mere bodily differences unconsciously sharpened, and have been led to give differences, such as in the brain or even the foot of the apes and man, somewhat more importance than if they had merely distinguished two species of apes. Many naturalists hold the opinion that the anatomical differences which separate the gorilla or chimpanzee from man are in some respects less than those which separate these man-like apes from apes lower in the scale. Yet all authorities class both the higher and lower apes in the same order. This is Huxley's argument, some prominent points of which are the following: As regards the proportion of limbs, the hylobates or gibbon is as much longer in the arms than the gorilla as the gorilla is than the man, while on the other hand, it is as much longer in the legs than the man as the man is than the gorilla. As to the vertebral column and pelvis, the lower apes differ from the gorilla as much as, or more than, it differs from man. As to the capacity of the cranium, men differ from one another so extremely that the largest known human skull holds nearly twice the measure of the smallest, a larger proportion than that in which man surpasses the gorilla; while, with proper allowance for difference of size of the various species, it appears that some of the lower apes fall nearly as much below the higher apes. The projection of the muzzle, which gives the character of brutality to the gorilla as distinguished from the man, is yet further exaggerated in the lemurs, as is also the backward position of the occipital foramen. In characters of such importance as the structure of the hand and foot, the lower apes diverge extremely from the gorilla; thus the thumb ceases to be opposable in the American monkeys, and in the marmosets is directed forwards, and armed with a curved claw like the other digits, the great toe in these latter being insignificant in proportion. The same argument can be extended to other points of anatomical structure, and, what is of more consequence, it appears true of the brain. A series of the apes, arranged from lower to higher orders, shows gradations from a brain little higher that that of a rat, to a brain like a small and imperfect imitation of a man's; and the greatest structural break in the series lies not between man and the man-like apes, but between the apes and monkeys on one side, and the lemurs on the other. On these grounds Huxley, restoring in principle the Linnean classification, desired to include man in the order of *Primates*. This order he divided into seven families: first, the *Anthropini*, consisting of man only; second, the *Catarhini* or Old World apes; third, the *Platyrhini*, all New World apes, except the marmosets; fourth, the *Arclopithecini*, or marmosets; fifth, the *Lemurini*, or lemurs; sixth and seventh, the *Cheiromyini* and *Galeopithecini*.

It is in assigning to man his place in nature on psychological grounds that the greater difficulty arises. Huxley acknowledged an immeasurable and practically infinite divergence,

ending in the present enormous psychological gulf between ape and man. It is difficult to account for this intellectual chasm as due to some minor structural difference. The opinion is deeply rooted in modern as in ancient thought, that only a distinctively human element of the highest import can account for the severance between man and the highest animal below him. Differences in the mechanical organs, such as the perfection of the human hand as an instrument, or the adaptability of the human voice to the expression of human thought, are indeed of great value. But they have not of themselves such value, that to endow an ape with the hand and vocal organs of a man would be likely to raise it through any large part of the interval that now separates it from humanity. Much more is to be said for the view that man's larger and more highly organized brain accounts for those mental powers in which he so absolutely surpasses the brutes.

The distinction does not seem to lie principally in the range and delicacy of direct sensation, as may be judged from such well-known facts as man's inferiority to the eagle in sight, or to the dog in scent. At the same time, it seems that the human sensory organs may have in various respects acuteness beyond those of other creatures. But, beyond a doubt, man possesses, and in some way possesses by virtue of his superior brain, a power of co-ordinating the impressions of his senses, which enables him to understand the world he lives in, and by understanding to use, resist, and even in a measure rule it. No human art shows the nature of this human attribute more clearly than does language. Man shares with the mammalia and birds the direct expression of the feelings by emotional tones and interjectional cries; the parrot's power of articulate utterance almost equals his own; and, by association of ideas in some measure, some of the lower animals have even learnt to recognize words he utters. But, to use words in themselves unmeaning, as symbols by which to conduct and convey the complex intellectual processes in which mental conceptions are suggested, compared, combined, and even analysed, and new ones created— this is a faculty which is scarcely to be traced in any lower animal. The view that this, with other mental 111
processes, is a function of the brain, is remarkably corroborated by modern investigation of the disease of aphasia, where the power of thinking remains, but the power is lost of recalling the word corresponding to the thought, and this mental defect is found to accompany a diseased state of a particular locality of the brain (see Aphasia). This may stand among the most perfect of the many evidences that, in Professor Bain's words, "the brain is the principal, though not the sole organ of mind." As the brains of the vertebrate animals form an ascending scale, more and more approaching man's in their arrangement, the fact here finds its explanation, that lower animals perform mental processes corresponding in their nature to our own, though of generally less power and complexity. The full evidence of this correspondence will be found in such works as Brehm's *Thierleben*; and some of the salient points are set forth by Charles Darwin, in the chapter on "Mental Powers," in his *Descent of Man*. Such are the similar effects of terror on man and the lower animals, causing the muscled to tremble, the heart to palpitate, the sphincters to be relaxed, and the hair to stand on end. The phenomena of memory, as to both persons and places, is strong in animals, as is manifest by their recognition of their masters, and their returning at once to habits of which, though disused for many years, their brain has not lost the stored-up impressions. Such facts as that dogs "hunt in dreams," make it likely that their minds are not only sensible to actual events, present and past, but can, like our minds, combine revived sensations into ideal scenes in which they are actors,—that is to say, they have the faculty of imagination. As for the reasoning powers in animals, the accounts of monkeys learning by experience to break eggs carefully, and pick off bits of shell, so as not to lose the contents, or of the way in which rats or martens after a while can no longer be caught by the same kind of trap, with innumerable similar facts, show in the plainest way that the reason of animals goes so far as to form by new experience a new hypothesis of cause and effect which will henceforth guide their actions. The employment of mechanical instruments, of which instances of monkeys using sticks and stones furnish the only rudimentary traces among the lower animals, is one of the often-quoted distinctive powers of man. With this comes the whole vast and ever-widening range of inventive and adaptive art, where the uniform hereditary instinct of the cell-forming bee and the nest-building bird is supplanted by multiform processes and constructions, often at first rude and clumsy in comparison to those of the lower instinct, but carried on by the faculty of improvement and new invention into ever higher stages. "From the moment," writes A.R. Wallace (*Natural Selection*), "when the first skin was used as a covering, when the first rude spear was formed to assist in the chase, when fire was first used to cook his food, when the first seed was sown or shoot planted, a grand revolution was effected in nature, a revolution which in all the previous ages of the earth's history had had no parallel; for a being had arisen who was no longer necessarily subject to change with the changing universe,—a being who was in some degree superior to nature, inasmuch as he knew how to control and regulate her action, and could

keep himself in harmony with her, not by a change in body, but by an advance of mind."

As to the lower instincts tending directly to self-preservation, it is acknowledged on all hands that man has them in a less developed state than other animals; in fact, the natural defencelessness of the human being, and the long-continued care and teaching of the young by the elders, are among the commonest themes of moral discourse. Parental tenderness and care for the young are strongly marked among the lower animals, though so inferior in scope and duration to the human qualities; and the same may be said of the mutual forbearance and defence which bind together in a rudimentary social bond the families and herds of animals. Philosophy seeking knowledge for its own sake; morality, manifested in the sense of truth, right, and virtue; and religion, the belief in and communion with superhuman powers ruling and pervading the universe, are human characters, of which it is instructive to trace, if possible, the earliest symptoms in the lower animals, but which can there show at most only faint and rudimentary signs of their wondrous development in mankind. That the tracing of physical and even intellectual continuity between the lower animals and our own race, does not necessarily lead the anthropologist to lower the rank of man in the scale of nature, may be shown by citing A.R. Wallace. Man, he considers, is to be placed "apart, as not only the head and culminating point of the grand series of organic nature, but as in some degree a new and distinct order of being."

To regard the intellectual functions of the brain and nervous system as alone to be considered in the psychological comparison of man with the lower animals, is a view satisfactory to those thinkers who hold materialistic views. According to this school, man is a machine, no doubt the most complex and wonderfully adapted of all known machines, but still neither more nor less than an instrument whose energy is provided by force from without, and which, when set in action, performs the various operations for which its structure fits it, namely, to live, move, feel, and think. This view, however, always has been strongly opposed by those who accept on theological grounds a spiritualistic doctrine, or what is, perhaps, more usual, a theory which combines spiritualism and materialism in the doctrine of a composite nature in man, animal as to the body and in some measure as to the mind, spiritual as to the soul. It may be useful, as an illustration of one opinion on this subject, to continue here the citation of Dr Prichard's comparison between man and the lower animals:—

> "If it be inquired in what the still more remarkable difference consists, it is by no means easy to reply. By some it will be said that man, while similar in the organization of his body to the lower tribes, is distinguished from them by the possession of an immaterial soul, a principle capable of conscious feeling, of intellect and thought. To many persons it will appear paradoxical to ascribe the endowment of a soul to the inferior tribes in the creation, yet it is difficult to discover a valid argument that limits the possession of an immaterial principle to man. The phenomena of feeling, of desire and aversion, of love and hatred, of fear and revenge, and the perception of external relations manifested in the life of brutes, imply, not only through the analogy which they display to the human faculties, but likewise from all that we can learn or conjecture of their particular nature, the superadded existence of a principle distinct from the mere mechanism of material bodies. That such a principle must exist in all beings capable of sensation, or of anything analogous to human passions and feelings, will hardly be denied by those who perceive the force of arguments which metaphysically demonstrate the immaterial nature of the mind. There may be no rational grounds for the ancient dogma that the souls of the lower animals were imperishable, like the soul of man: this is, however, a problem which we are not called upon to discuss; and we may venture to conjecture that there may be immaterial essences of divers kinds, and endowed with various attributes and capabilities. But the real nature of these unseen principles eludes our research: they are only known to us by their external manifestations. These manifestations are the various powers and capabilities, or rather the habitudes of action, which characterize the different orders of being, diversified according to their several destinations."

Dr Prichard here puts forward distinctly the time-honoured doctrine which refers the mental faculties to the operation of the soul. The view maintained by a distinguished comparative anatomist, Professor St George Mivart, in his *Genesis of Species*, ch. xii., may fairly follow. "Man, according to the old scholastic definition, is 'a rational animal' (*animal rationale*), and his animality is distinct in nature from his rationality, though inseparably joined, during life, in one common personality. Man's animal body must have had a different source from that of the spiritual soul which informs it, owing to the distinctness of the two orders to which those two existences severally belong." The two extracts just given, however, significant in themselves, fail to render an account of the view of the human constitution which would probably, among the theological and scholastic leaders of public

opinion, count the largest weight of adherence. According to this view, not only life but thought are functions of the animal system, in which man excels all other animals as to height of organization: but beyond this, man embodies an immaterial and immortal spiritual principle which no lower creature possesses, and which makes the resemblance of the apes to him but a mocking simulance. To pronounce any absolute decision on these conflicting doctrines is foreign to our present purpose, which is to show that all of them count among their adherents men of high rank in science.

II. *Origin of Man.*—Opinion as to the genesis of man is divided between the theories of creation and evolution. In both schools, the ancient doctrine of the contemporaneous appearance on earth of all species of animals having been abandoned under the positive evidence of geology, it is admitted that the animal kingdom, past and present, includes a vast series of successive forms, whose appearances and disappearances have taken place at intervals during an immense lapse of ages. The line of inquiry has thus been directed to ascertaining what formative relation subsists among these species and genera, the last link of the argument reaching to the relation between man and the lower creatures preceding him in time. On both the theories here concerned it would be admitted, in the words of Agassiz (*Principles of Zoology*, pp. 205-206), that "there is a manifest progress in the succession of beings on the surface of the earth. This progress consists in an increasing similarity of the living fauna, and, among the vertebrates especially, in their increasing resemblance to man." Agassiz continues, however, in terms characteristic of the creationist school: "But this connexion is not the consequence of a direct lineage between the faunas of different ages. There is nothing like parental descent connecting them. The fishes of the Palaeozoic age are in no respect the ancestors of the reptiles of the Secondary age, nor does man descend from the mammals which preceded him in the Tertiary age. The link by which they are connected is of a higher and immaterial nature; and their connexion is to be sought in the view of the Creator himself, whose aim in forming the earth, in allowing it to undergo the successive changes which geology has pointed out, and in creating successively all the different types of animals which have passed away, was to introduce man upon the surface of our globe. Man is the end towards which all the animal creation has tended from the first appearance of the first Palaeozoic fishes." The evolutionist, on the contrary (see Evolution), maintains that different successive species of animals are in fact connected by parental descent, having become modified in the course of successive generations. The result of Charles Darwin's application of this theory to man may be given in his own words (*Descent of Man*, part i. ch. 6):—

> "The Catarhine and Platyrhine monkeys agree in a multitude of characters, as is shown by their unquestionably belonging to one and the same order. The many characters which they possess in common can hardly have been independently acquired by so many distinct species; so that these characters must have been inherited. But an ancient form which possessed many characters common to the Catarhine and Platyrhine monkeys, and others in an intermediate condition, and some few perhaps distinct from those now present in either group, would undoubtedly have been ranked, if seen by a naturalist, as an ape or a monkey. And as man under a genealogical point of view belongs to the Catarhine or Old World stock, we must conclude, however much the conclusion may revolt our pride, that our early progenitors would have been properly thus designated. But we must not fall into the error of supposing that the early progenitor of the whole Simian stock, including man, was identical with, or even closely resembled, any existing ape or monkey."

The problem of the origin of man cannot be properly discussed apart from the full problem of the origin of species. The homologies between man and other animals which both schools try to account for; the explanation of the intervals, with apparent want of intermediate forms, which seem to the creationists so absolute a separation between species; the evidence of useless "rudimentary organs," such as in man the external shell of the ear, and the muscle which enables some individuals to twitch their ears, which rudimentary parts the evolutionists claim to be only explicable as relics of an earlier specific condition,—these, which are the main points of the argument on the origin of man, belong to general biology. The philosophical principles which underlie the two theories stand for the most part in strong contrast, the theory of evolution tending toward the supposition of ordinary causes, such as "natural selection," producing modifications in species, whether by gradual accumulation or more sudden leaps, while the theory of creation has recourse to acts of supernatural intervention (see the duke of Argyll, *Reign of Law*, ch. v.). St George Mivart (*Genesis of Species*) propounded a theory of a natural evolution of man as to his body, combined with a supernatural creation as to his soul; but this attempt to meet the difficulties on both sides seems to have satisfied neither.

The wide acceptance of the Darwinian theory, as applied to the descent of man, has

naturally roused anticipation that geological research, which provides evidence of the animal life of incalculably greater antiquity, would furnish fossil remains of some comparatively recent being intermediate between the anthropomorphic and the anthropic types. This expectation has hardly been fulfilled, but of late years the notion of a variety of the human race, geologically ancient, differing from any known in historic times, and with characters approaching the simian, has been supported by further discoveries. To bring this to the reader's notice, top and side views of three skulls, as placed together in the human development series in the Oxford University Museum, are represented in the plate, for the purpose of showing the great size of the orbital ridges, which the reader may contrast with his own by a touch with his fingers on his forehead. The first (fig. 3) is the famous Neanderthal skull from near Düsseldorf, described by Schaafhausen in Müller's *Archiv*, 1858; Huxley in Lyell, *Antiquity of Man*, p. 86, and in *Man's Place in Nature*. The second (fig. 4) is the skull from the cavern of Spy in Belgium (de Puydt and Lohest, *Compte rendu du Congrès de Namur*, 1886). The foreheads of these two skulls have an ape-like form, obvious on comparison with the simian skulls of the gorilla and other apes, and visible even in the small-scale figures in the Plate, fig. 2. Among modern tribes of mankind the forehead of the Australian aborigines makes the nearest approach to this type, as was pointed out by Huxley. This brief description will serve to show the importance of a later discovery. At Trinil, in Java, in an equatorial region where, if anywhere, a being intermediate between the higher apes and man would seem likely to be found, Dr Eugene Dubois in 1891-1892 excavated from a bed, considered by him to be of Sivalik formation (Pliocene), a thighbone which competent anatomists decide to be human, and a remarkably depressed calvaria or skull-cap (fig. 5), bearing a certain resemblance in its proportions to the corresponding part of the simian skull. These remains were referred by their discoverer to an animal intermediate between man and ape, to which he gave the name of *Pithecanthropus erectus* (*q.v.*), but the interesting discussions on the subject have shown divergence of opinion among anatomists. At any rate, classing the Trinil skull as human, it may be described as tending towards the simian type more than any other known.

III. *Races of Mankind.*—The classification of mankind into a number of permanent varieties or races, rests on grounds which are within limits not only obvious but definite. Whether from a popular or a scientific point of view, it would be admitted that a Negro, a Chinese, and an Australian belong to three such permanent varieties of men, all plainly distinguishable from one another and from any European. Moreover, such a division takes for granted the idea which is involved in the word race, that each of these varieties is due to special ancestry, each race thus representing an ancient breed or stock, however these breeds or stocks may have had their origin. The anthropological classification of mankind is thus zoological in its nature, like that of the varieties or species of any other animal group, and the characters on which it is based are in great measure physical, though intellectual and traditional peculiarities, such as moral habit and language, furnish important aid. Among the best-marked race-characters are the colour of the skin, eyes and hair; and the structure and arrangement of the latter. Stature is by no means a general criterion of race, and it would not, for instance, be difficult to choose groups of Englishmen, Kaffirs, and North American Indians, whose mean height should hardly differ. Yet in many cases it is a valuable means of distinction, as between the tall Patagonians and the stunted Fuegians, and even as a help in minuter problems, such as separating the Teutonic and Celtic ancestry in the population of England (see Beddoe, "Stature and Bulk of Man in the British Isles," in *Mem. Anthrop. Soc. London*, vol. iii.) Proportions of the limbs, compared in length with the trunk, have been claimed as constituting peculiarities of African and American races; and other anatomical points, such as the conformation of the pelvis, have speciality. But inferences of this class have hardly attained to sufficient certainty and generality to be set down in the form of rules. The conformation of the skull is second only to the colour of the skin as a criterion for the distinction of race; and the position of the jaws is recognized as important, races being described as prognathous when the jaws project far, as in the Australian or Negro, in contradistinction to the orthognathous type, which is that of the ordinary well-shaped European skull. On this distinction in great measure depends the celebrated "facial angle," measured by Camper as a test of low and high races; but this angle is objectionable as resulting partly from the development of the forehead and partly from the position of the jaws. The capacity of the cranium is estimated in cubic measure by filling it with sand, &c., with the general result that the civilized white man is found to have a larger brain than the barbarian or savage. Classification of races on cranial measurements has long been attempted by eminent anatomists, and in certain cases great reliance may be placed on such measurements. Thus the skulls of an Australian and a Negro would be generally distinguished by their narrowness and the projection of the jaw from that of any Englishman; but the Australian skull would usually differ perceptibly from the Negroid in its

upright sides and strong orbital ridges. The relation of height to breadth may also furnish a valuable test; but it is acknowledged by all experienced craniologists, that the shape of the skull may vary so much within the same tribe, and even the same family, that it must be used with extreme caution, and if possible only in conjunction with other criteria of race. The general contour of the face, in part dependent on the form of the skull, varies much in different races, among whom it is loosely defined as oval, lozenge-shaped, pentagonal, &c. Of particular features, some of the most marked contrasts to European types are seen in the oblique Chinese eyes, the broad-set Kamchadale cheeks, the pointed Arab chin, the snub Kirghiz nose, the fleshy protuberant Negro lips, and the broad Kalmuck ear. Taken altogether, the features have a typical character which popular observation seizes with some degree of correctness, as in the recognition of the Jewish countenance in a European city.

Were the race-characters constant in degree or even in kind, the classification of races would be easy; but this is not so. Every division of mankind presents in every character wide deviations from a standard. Thus the Negro race, well marked as it may seem at the first glance, proves on closer examination to include several shades of complexion and features, in some districts varying far from the accepted Negro type; while the examination of a series of native American tribes shows that, notwithstanding their asserted uniformity of type, they differ in stature, colour, features and proportions of skull. (See Prichard, *Nat. Hist. of Man*; Waitz, *Anthropology*, part i. sec. 5.) Detailed anthropological research, indeed, more and more justifies Blumenbach's words, that "innumerable varieties of mankind run into one another by insensible degrees." This state of things, due partly to mixture and crossing of races, and partly to independent variation of types, makes the attempt to arrange the whole human species within exactly bounded divisions an apparently hopeless task. It does not follow, however, that the attempt to distinguish special races should be given up, for there at least exist several definable types, each of which so far prevails in a certain population as to be taken as its standard. L.A.J. Quetelet's plan of defining such types will probably meet with general acceptance as the scientific method proper to this branch of anthropology. It consists in the determination of the standard or typical "mean man" (*homme moyen*) of a population, with reference to any particular quality, such as stature, weight, complexion, &c. In the case of stature, this would be done by measuring a sufficient number of men, and counting how many of them belong to each height on the scale. If it be thus ascertained, as it might be in an English district, that the 5 ft. 7 in. men form the most numerous group, while the 5 ft. 6 in. and 5 ft. 8 in. men are less in number, and the 5 ft. 5 in. and 5 ft. 9 in. still fewer, and so on until the extremely small number of extremely short or tall individuals of 5 ft. or 7 ft. is reached, it will thus be ascertained that the stature of the mean or typical man is to be taken as 5 ft. 7 in. The method is thus that of selecting as the standard the most numerous group, on both sides of which the groups decrease in number as they vary in type. Such classification may show the existence of two or more types, in a community, as, for instance, the population of a Californian settlement made up of Whites and Chinese might show two predominant groups (one of 5 ft. 8 in., the other of 5 ft. 4 in.) corresponding to these two racial types. It need hardly be said that this method of determining the mean type of a race, as being that of its really existing and most numerous class, is altogether superior to the mere calculation of an average, which may actually be represented by comparatively few individuals, and those the exceptional ones. For instance, the average stature of the mixed European and Chinese population just referred to might be 5 ft. 6 in.—a worthless and indeed misleading result. (For particulars of Quetelet's method, see his *Physique sociale* (1869), and *Anthropométrie* (1871).)

Classifications of man have been numerous, and though, regarded as systems, most of them are unsatisfactory, yet they have been of great value in systematizing knowledge, and are all more or less based on indisputable distinctions. J.F. Blumenbach's division, though published as long ago as 1781, has had the greatest influence. He reckons five races, viz. Caucasian, Mongolian, Ethiopian, American, Malay. The ill-chosen name of Caucasian, invented by Blumenbach in allusion to a South Caucasian skull of specially typical proportions, and applied by him to the so-called white races, is still current; it brings into one race peoples such as the Arabs and Swedes, although these are scarcely less different than the Americans and Malays, who are set down as two distinct races. Again, two of the best-marked varieties of mankind are the Australians and the Bushmen, neither of whom, however, seems to have a natural place in Blumenbach's series. The yet simpler classification by Cuvier into Caucasian, Mongol and Negro corresponds in some measure with a division by mere complexion into white, yellow and black races; but neither this threefold division, nor the ancient classification into Semitic, Hamitic and Japhetic nations can be regarded as separating the human types either justly or sufficiently (see Prichard, *Natural History of Man*, sec. 15; Waitz, *Anthropology*, vol. i. part i. sec. 5). Schemes which

set up a larger number of distinct races, such as the eleven of Pickering, the fifteen of Bory de St Vincent and the sixteen of Desmoulins, have the advantage of finding niches for most well-defined human varieties; but no modern naturalist would be likely to adopt any one of these as it stands. In criticism of Pickering's system, it is sufficient to point out that he divides the white nations into two races, entitled the Arab and the Abyssinian (Pickering, *Races of Man*, ch. i.). Agassiz, Nott, Crawfurd and others who have assumed a much larger number of races or species of man, are not considered to have satisfactorily defined a corresponding number of distinguishable types. On the whole, Huxley's division probably approaches more nearly than any other to such a tentative classification as may be accepted in definition of the principal varieties of mankind, regarded from a zoological point of view, though anthropologists may be disposed to erect into separate races several of his widely-differing sub-races. He distinguishes four principal types of mankind, the Australioid, Negroid, Mongoloid and Xanthochroic ("fair whites"), adding a fifth variety, the Melanochroic ("dark whites").

In determining whether the races of mankind are to be classed as varieties of one species, it is important to decide whether every two races can unite to produce fertile offspring. It is settled by experience that the most numerous and well-known crossed races, such as the Mulattos, descended from Europeans and Negroes—the Mestizos, from Europeans and American indigenes—the Zambos, from these American indigenes and Negroes, &c., are permanently fertile. They practically constitute sub-races, with a general blending of the characters of the two parents, and only differing from fully-established races in more or less tendency to revert to one or other of the original types. It has been argued, on the other hand, that not all such mixed breeds are permanent, and especially that the cross between Europeans and Australian indigenes is almost sterile; but this assertion, when examined with the care demanded by its bearing on the general question of hybridity, has distinctly broken down. On the whole, the general evidence favours the opinion that any two races may combine to produce a new sub-race, which again may combine with any other variety. Thus, if the existence of a small number of distinct races of mankind be taken as a starting-point, it is obvious that their crossing would produce an indefinite number of secondary varieties, such as the population of the world actually presents. The working out in detail of the problem, how far the differences among complex nations, such as those of Europe, may have been brought about by hybridity, is still, however, a task of almost hopeless intricacy. Among the boldest attempts to account for distinctly-marked populations as resulting from the intermixture of two races, are Huxley's view that the Hottentots are hybrid between the Bushmen and the Negroes, and his more important suggestion, that the Melanochroic peoples of southern Europe are of mixed Xanthochroic and Australioid stock.

The problem of ascertaining how the small number of races, distinct enough to be called primary, can have assumed their different types, has been for years the most disputed field of anthropology, the battle-ground of the rival schools of monogenists and polygenists. The one has claimed all mankind to be descended from one original stock, and generally from a single pair; the other has contended for the several primary races being separate species of independent origin. The great problem of the monogenist theory is to explain by what course of variation the so different races of man have arisen from a single stock. In ancient times little difficulty was felt in this, authorities such as Aristotle and Vitruvius seeing in climate and circumstance the natural cause of racial differences, the Ethiopian having been blackened by the tropical sun, &c. Later and closer observations, however, have shown such influences to be, at any rate, far slighter in amount and slower in operation than was once supposed. A. de Quatrefages brings forward (*Unité de l'espèce humaine*) his strongest arguments for the variability of races under change of climate, &c. (*action du milieu*), instancing the asserted alteration in complexion, constitution and character of Negroes in America, and Englishmen in America and Australia. But although the reality of some such modification is not disputed, especially as to stature and constitution, its amount is not enough to upset the counter-proposition of the remarkable permanence of type displayed by races, ages after they have been transported to climates extremely different from that of their former home. Moreover, physically different peoples, such as the Bushmen and Negroes in Africa, show no signs of approximation under the influence of the same climate; while, on the other hand, the coast tribes of Tierra del Fuego and forest tribes of tropical Brazil continue to resemble one another, in spite of extreme differences of climate and food. Darwin is moderate in his estimation of the changes produced on races of man by climate and mode of life within the range of history (*Descent of Man*, part i. ch. 4 and 7). The slightness and slowness of variation in human races having become known, a great difficulty of the monogenist theory was seen to lie in the apparent shortness of the Biblical chronology. Inasmuch as several well-marked races of mankind, such as the Egyptian,

Phoenician, Ethiopian, &c., were much the same three or four thousand years ago as now, their variation from a single stock in the course of any like period could hardly be accounted for without a miracle. This difficulty the polygenist theory escaped, and in consequence it gained ground. Modern views have however tended to restore, though under a new aspect, the doctrine of a single human stock. The fact that man has existed during a vast period of time makes it more easy to assume the continuance of very slow natural variation as having differentiated even the white man and the Negro among the descendants of a common progenitor. On the other hand it does not follow necessarily from a theory of evolution of species that mankind must have descended from a single stock, for the hypothesis of development admits of the argument, that several simian species may have culminated in several races of man. The general tendency of the development theory, however, is against constituting separate species where the differences are moderate enough to be accounted for as due to variation from a single type. Darwin's summing-up of the evidence as to unity of type throughout the races of mankind is as distinctly a monogenist argument as those of Blumenbach, Prichard or Quatrefages—

> "Although the existing races of man differ in many respects, as in colour, hair, shape of skull, proportions of the body, &c., yet, if their whole organization be taken into consideration, they are found to resemble each other closely in a multitude of points. Many of these points are of so unimportant, or of so singular a nature, that it is extremely improbable that they should have been independently acquired by aboriginally distinct species or races. The same remark holds good with equal or greater force with respect to the numerous points of mental similarity between the most distinct races of man.... Now, when naturalists observe a close agreement in numerous small details of habits, tastes and dispositions between two or more domestic races, or between nearly allied natural forms, they use this fact as an argument that all are descended from a common progenitor who was thus endowed; and, consequently, that all should be classed under the same species. The same argument may be applied with much force to the races of man."—(Darwin, *Descent of Man*, part i. ch. 7.)

The main difficulty of the monogenist school has ever been to explain how races which have remained comparatively fixed in type during the long period of history, such as the white man and the Negro, should, in even a far longer period, have passed by variation from a common original. To meet this A.R. Wallace suggests that the remotely ancient representatives of the human species, being as yet animals too low in mind to have developed those arts of maintenance and social ordinances by which man holds his own against influences from climate and circumstance, were in their then wild state much more plastic than now to external nature; so that "natural selection" and other causes met with but feeble resistance in forming the permanent varieties or races of man, whose complexion and structure still remained fixed in their descendants (see Wallace, *Contributions to the Theory of Natural Selection*, p. 319). On the whole, it may be asserted that the doctrine of the unity of mankind stands on a firmer basis than in previous ages. It would be premature to judge how far the problem of the origin of races may be capable of exact solution; but the experience gained since 1871 countenances Darwin's prophecy that before long the dispute between the monogenists and the polygenists would die a silent and unobserved death.

IV. *Antiquity of Man.*—Until the 10th century man's first appearance on earth was treated on a historical basis as matter of record. It is true that the schemes drawn up by chronologists differed widely, as was natural, considering the variety and inconsistency of their documentary data. On the whole, the scheme of Archbishop Usher, who computed that the earth and man were created in 4004 B.C., was the most popular (see CHRONOLOGY). It is no longer necessary, however, to discuss these chronologies. Geology has made it manifest that our earth must have been the seat of vegetable and animal life for an immense period of time; while the first appearance of man, though comparatively recent, is positively so remote, that an estimate between twenty and a hundred thousand years may fairly be taken as a minimum. This geological claim for a vast antiquity of the human race is supported by the similar claims of prehistoric archaeology and the science of culture, the evidence of all three departments of inquiry being intimately connected, and in perfect harmony.

Human bones and objects of human manufacture have been found in such geological relation to the remains of fossil species of elephant, rhinoceros, hyena, bear, &c., as to lead to the distinct inference that man already existed at a remote period in localities where these mammalia are now and have long been extinct. The not quite conclusive researches of Tournal and Christol in limestone caverns of the south of France date back to 1828. About the same time P.C. Schmerling of Liége was exploring the ossiferous caverns of the valley of the Meuse, and satisfied himself that the men whose bones he found beneath the stalagmite floors, together with bones cut and flints shaped by human workmanship, had inhabited this

Belgian district at the same time with the cave-bear and several other extinct animals whose bones were imbedded with them (*Recherches sur les ossements fossiles découverts dans les cavernes de la province de Liége* (Liége, 1833-1834)). This evidence, however, met with little acceptance among scientific men. Nor, at first, was more credit given to the discovery by M. Boucher de Perthes, about 1841, of rude flint hatchets in a sand-bed containing remains of mammoth and rhinoceros at Menchecourt near Abbeville, which first find was followed by others in the same district (see Boucher de Perthes, *De l'Industrie primitive, ou les arts à leur origine* (1846); *Antiquités celtiques et antédiluviennes* (Paris, 1847), &c.). Between 1850 and 1860 French and English geologists were induced to examine into the facts, and found irresistible the evidence that man existed and used rude implements of chipped flint during the Quaternary or Drift period. Further investigations were then made, and overlooked results of older ones reviewed. In describing Kent's Cavern (*q.v.*) near Torquay, R.A.C. Godwin-Austen had maintained, as early as 1840 (*Proc. Geo. Soc. London*, vol. iii. p. 286), that the human bones and worked flints had been deposited indiscriminately together with the remains of fossil elephant, rhinoceros, &c. Certain caves and rock-shelters in the province of Dordogne, in central France, were examined by a French and an English archaeologist, Edouard Lartet and Henry Christy, the remains discovered showing the former prevalence of the reindeer in this region, at that time inhabited by savages, whose bone and stone implements indicate a habit of life similar to that of the Eskimos. Moreover, the co-existence of man with a fauna now extinct or confined to other districts was brought to yet clearer demonstration by the discovery in these caves of certain drawings and carvings of the animals done by the ancient inhabitants themselves, such as a group of reindeer on a piece of reindeer horn, and a sketch of a mammoth, showing the elephant's long hair, on a piece of a mammoth's tusk from La Madeleine (Lartet and Christy, *Reliquiae Aquitanicae*, ed. by T.R. Jones (London, 1865), &c.).

This and other evidence (which is considered in more detail in the article Archaeology) is now generally accepted by geologists as carrying back the existence of man into the period of the post-glacial drift, in what is now called the Quaternary period, an antiquity at least of tens of thousands of years. Again, certain inferences have been tentatively made from the depth of mud, earth, peat, &c., which has accumulated above relics of human art imbedded in ancient times. Among these is the argument from the numerous borings made in the alluvium of the Nile valley to a depth of 60 ft., where down to the lowest level fragments of burnt brick and pottery were always found, showing that people advanced enough in the arts to bake brick and pottery have inhabited the valley during the long period required for the Nile inundations to deposit 60 ft. of mud, at a rate probably not averaging more than a few inches in a century. Another argument is that of Professor von Morlot, based on a railway section through a conical accumulation of gravel and alluvium, which the torrent of the Tinière has gradually built up where it enters the Lake of Geneva near Villeneuve. Here three layers of vegetable soil appear, proved by the objects imbedded in them to have been the successive surface soils in two prehistoric periods and in the Roman period, but now lying 4, 10 and 19 ft. underground. On this it is computed that if 4 ft. of soil were formed in the 1500 years since the Roman period, we must go 5000 years farther back for the date of the earliest human inhabitants. Calculations of this kind, loose as they are, deserve attention.

The interval between the Quaternary or Drift period and the period of historical antiquity is to some extent bridged over by relics of various intermediate civilizations, *e.g.* the Lake-dwellings (*q.v.*) of Switzerland, mostly of the lower grades, and in some cases reaching back to remote dates. And further evidence of man's antiquity is afforded by the kitchen-middens or shell-heaps (*q.v.*), especially those in Denmark. Danish peat-mosses again show the existence of man at a time when the Scotch fir was abundant; at a later period the firs were succeeded by oaks, which have again been almost superseded by beeches, a succession of changes which indicate a considerable lapse of time.

Lastly, chronicles and documentary records, taken in connexion with archaeological relics of the historical period, carry back into distant ages the starting-point of actual history, behind which lies the evidently vast period only known by inferences from the relations of languages and the stages of development of civilization. The most recent work of Egyptologists proves a systematic civilization to have existed in the valley of the Nile at least 6000 to 7000 years ago (see Chronology).

It was formerly held that the early state of society was one of comparatively high culture, and thus there was no hesitation in assigning the origin of man to a time but little beyond the range of historical records and monuments. But the researches of anthropologists in recent years have proved that the civilization of man has been gradually developed from an

original stone-age culture, such as characterizes modern savage life. To the 6000 years to which ancient civilization dates back must be added a vast period during which the knowledge, arts and institutions of such a civilization as that of ancient Egypt attained the high level evidenced by the earliest records. The evidence of comparative philology supports the necessity for an enormous time allowance. Thus, Hebrew and Arabic are closely related languages, neither of them the original of the other, but both sprung from some parent language more ancient than either. When, therefore, the Hebrew records have carried back to the most ancient admissible date the existence of the Hebrew language, this date must have been long preceded by that of the extinct parent language of the whole Semitic family; while this again was no doubt the descendant of languages slowly shaping themselves through ages into this peculiar type. Yet more striking is the evidence of the Indo-European (formerly called Aryan) family of languages. The Hindus, Medes, Persians, Greeks, Romans, Germans, Celts and Slavs make their appearance at more or less remote dates as nations separate in language as in history. Nevertheless, it is now acknowledged that at some far remoter time, before these nations were divided from the parent stock, and distributed over Asia and Europe, a single barbaric people stood as physical and political representative of the nascent Aryan race, speaking a now extinct Aryan language, from which, by a series of modifications not to be estimated as possible within many thousands of years, there arose languages which have been mutually unintelligible since the dawn of history, and between which it was only possible for an age of advanced philology to trace the fundamental relationship.

From the combination of these considerations, it will be seen that the farthest date to which documentary or other records extend is now generally regarded by anthropologists as but the earliest distinctly visible point of the historic period, beyond which stretches back a vast indefinite series of prehistoric ages.

V. *Language.*—In examining how the science of language bears on the general problems of anthropology, it is not necessary to discuss at length the critical questions which arise, the principal of which are considered elsewhere (see Language). Philology is especially appealed to by anthropologists as contributing to the following lines of argument. A primary mental similarity of all branches of the human race is evidenced by their common faculty of speech, while at the same time secondary diversities of race-character and history are marked by difference of grammatical structure and of vocabularies. The existence of groups or families of allied languages, each group being evidently descended from a single language, affords one of the principal aids in classifying nations and races. The adoption by one language of words originally belonging to another, proving as it does the fact of intercourse between two races, and even to some extent indicating the results of such intercourse, affords a valuable clue through obscure regions of the history of civilization.

Communication by gesture-signs, between persons unable to converse in vocal language, is an effective system of expression common to all mankind. Thus, the signs used to ask a deaf and dumb child about his meals and lessons, or to communicate with a savage met in the desert about game or enemies, belong to codes of gesture-signals identical in principle, and to a great extent independent both of nationality and education; there is even a natural syntax, or order of succession, in such gesture-signs. To these gestures let there be added the use of the interjectional cries, such as *oh! ugh! hey!* and imitative sounds to represent the cat's *mew*, the *click* of a trigger, the *clap* or *thud* of a blow, &c. The total result of this combination of gesture and significant sound will be a general system of expression, imperfect but serviceable, and naturally intelligible to all mankind without distinction of race. Nor is such a system of communication only theoretically conceivable; it is, and always has been, in practical operation between people ignorant of one another's language, and as such is largely used in the intercourse of savage tribes. It is true that to some extent these means of utterance are common to the lower animals, the power of expressing emotion by cries and tones extending far down in the scale of animal life, while rudimentary gesture-signs are made by various mammals and birds. Still, the lower animals make no approach to the human system of natural utterance by gesture-signs and emotional-imitative sounds, while the practical identity of this human system among races physically so unlike as the Englishman and the native of the Australian bush indicates extreme closeness of mental similarity throughout the human species.

When, however, the Englishman and the Australian speak each in his native tongue, only such words as belong to the interjectional and imitative classes will be naturally intelligible, and as it were instinctive to both. Thus the savage, uttering the sound *waow!* as an explanation of surprise and warning, might be answered by the white man with the not less evidently significant *sh!* of silence, and the two speakers would be on common ground when

the native indicated by the name *bwirri* his cudgel, flung *whirring* through the air at a flock of birds, or when the native described as a *jakkal-yakkal* the bird called by the foreigner a *cockatoo*. With these, and other very limited classes of natural words, however, resemblance in vocabulary practically ceases. The Australian and English languages each consist mainly of a series of words having no apparent connexion with the ideas they signify, and differing utterly; of course, accidental coincidences and borrowed words must be excluded from such comparisons. It would be easy to enumerate other languages of the world, such as Basque, Turkish, Hebrew, Malay, Mexican, all devoid of traceable resemblance to Australian and English, and to one another. There is, moreover, extreme difference in the grammatical structure both of words and sentences in various languages. The question then arises, how far the employment of different vocabularies, and that to a great extent on different grammatical principles, is compatible with similarity of the speakers' minds, or how far does diversity of speech indicate diversity of mental nature? The obvious answer is, that the power of using words as signs to express thoughts with which their sound does not directly connect them, in fact as arbitrary symbols, is the highest grade of the special human faculty in language, the presence of which binds together all races of mankind in substantial mental unity. The measure of this unity is, that any child of any race can be brought up to speak the language of any other race.

Under the present standard of evidence in comparing languages and tracing allied groups to a common origin, the crude speculations as to a single primeval language of mankind, which formerly occupied so much attention, are acknowledged to be worthless. Increased knowledge and accuracy of method have as yet only left the way open to the most widely divergent suppositions. For all that known dialects prove to the contrary, on the one hand, there may have been one primitive language, from which the descendant languages have varied so widely, that neither their words nor their formation now indicate their unity in long past ages, while, on the other hand, the primitive tongues of mankind may have been numerous, and the extreme unlikeness of such languages as Basque, Chinese, Peruvian, Hottentot and Sanskrit may arise from absolute independence of origin.

The language spoken by any tribe or nation is not of itself absolute evidence as to its race-affinities. This is clearly shown in extreme cases. Thus the Jews in Europe have almost lost the use of Hebrew, but speak as their vernacular the language of their adopted nation, whatever it may be; even the Jewish-German dialect, though consisting so largely of Hebrew words, is philologically German, as any sentence shows: "*Ich hab noch hoiom lo geachelt*," "I have not yet eaten to-day." The mixture of the Israelites in Europe by marriage with other nations is probably much greater than is acknowledged by them; yet, on the whole, the race has been preserved with extraordinary strictness, as its physical characteristics sufficiently show. Language thus here fails conspicuously as a test of race and even of national history. Not much less conclusive is the case of the predominantly Negro populations of the West India Islands, who, nevertheless, speak as their native tongues dialects of English or French, in which the number of intermingled native African words is very scanty: "*Dem hitti netti na ini watra bikasi dem de fisiman*," "They cast a net into the water, because they were fishermen." (Surinam Negro-Eng.) "*Bef pas ca jamain lasse poter cônes li*," "Le boeuf n'est jamais las de porter ses cornes." (Haitian Negro-Fr.) If it be objected that the linguistic conditions of these two races are more artificial than has been usual in the history of the world, less extreme cases may be seen in countries where the ordinary results of conquest-colonization have taken place. The Mestizos, who form so large a fraction of the population of modern Mexico, numbering several millions, afford a convenient test in this respect, inasmuch as their intermediate complexion separates them from both their ancestral races, the Spaniard, and the chocolate-brown indigenous Aztec or other Mexican. The mother-tongue of this mixed race is Spanish, with an infusion of Mexican words; and a large proportion cannot speak any native dialect. In most or all nations of mankind, crossing or intermarriage of races has thus taken place between the conquering invader and the conquered native, so that the language spoken by the nation may represent the results of conquest as much or more than of ancestry. The supersession of the Celtic Cornish by English, and of the Slavonic Old-Prussian by German, are but examples of a process which has for untold ages been supplanting native dialects, whose very names have mostly disappeared. On the other hand, the language of the warlike invader or peaceful immigrant may yield, in a few generations, to the tongue of the mass of the population, as the Northman's was replaced by French, and modern German gives way to English in the United States. Judging, then, by the extirpation and adoption of languages within the range of history, it is obvious that to classify mankind into, races, Aryan, Semitic, Turanian, Polynesian, Kaffir, &c., on the mere evidence of language, is intrinsically unsound.

VI. *Development of Civilization.*—The conditions of man at the lowest and highest known

levels of culture are separated by a vast interval; but this interval is so nearly filled by known intermediate stages, that the line of continuity between the lowest savagery and the highest civilization is unbroken at any critical point.

An examination of the details of savage life shows not only that there is an immeasurable difference between the rudest man and the highest lower animal, but also that the least cultured savages have themselves advanced far beyond the lowest intellectual and moral state at which human tribes can be conceived as capable of existing, when placed under favourable circumstances of warm climate, abundant food, and security from too severe destructive influences. The Australian black-fellow or the forest Indian of Brazil, who may be taken as examples of the lowest modern savage, had, before contact with whites, attained to rudimentary stages in many of the characteristic functions of civilized life. His language, expressing thoughts by conventional articulate sounds, is the same in essential principle as the most cultivated philosophic dialect, only less exact and copious. His weapons, tools and other appliances such as the hammer, hatchet, spear, knife, awl, thread, net, canoe, &c., are the evident rudimentary analogues of what still remains in use among Europeans. His structures, such as the hut, fence, stockade, earthwork, &c., may be poor and clumsy, but they are of the same nature as our own. In the simple arts of broiling and roasting meat, the use of hides and furs for covering, the plaiting of mats and baskets, the devices of hunting, trapping and fishing, the pleasure taken in personal ornament, the touches of artistic decoration on objects of daily use, the savage differs in degree but not in kind from the civilized man. The domestic and social affections, the kindly care of the young and the old, some acknowledgment of marital and parental obligation, the duty of mutual defence in the tribe, the authority of the elders, and general respect to traditional custom as the regulator of life and duty, are more or less well marked in every savage tribe which is not disorganized and falling to pieces. Lastly, there is usually to be discerned amongst such lower races a belief in unseen powers pervading the universe, this belief shaping itself into an animistic or spiritualistic theology, mostly resulting in some kind of worship. If, again, high savage or low barbaric types be selected, as among the North American Indians, Polynesians, and Kaffirs of South Africa, the same elements of culture appear, but at a more advanced stage, namely, a more full and accurate language, more knowledge of the laws of nature, more serviceable implements, more perfect industrial processes, more definite and fixed social order and frame of government, more systematic and philosophic schemes of religion and a more elaborate and ceremonial worship. At intervals new arts and ideas appear, such as agriculture and pasturage, the manufacture of pottery, the use of metal implements and the device of record and communication by picture writing. Along such stages of improvement and invention the bridge is fairly made between savage and barbaric culture; and this once attained to, the remainder of the series of stages of civilization lies within the range of common knowledge.

The teaching of history, during the three to four thousand years of which contemporary chronicles have been preserved, is that civilization is gradually developed in the course of ages by enlargement and increased precision of knowledge, invention and improvement of arts, and the progression of social and political habits and institutions towards general well-being. That processes of development similar to these were in prehistoric times effective to raise culture from the savage to the barbaric level, two considerations especially tend to prove. First, there are numerous points in the culture even of rude races which are not explicable otherwise than on the theory of development. Thus, though difficult or superfluous arts may easily be lost, it is hard to imagine the abandonment of contrivances of practical daily utility, where little skill is required and materials are easily accessible. Had the Australians or New Zealanders, for instance, ever possessed the potter’s art, they could hardly have forgotten it. The inference that these tribes represent the stage of culture before the invention of pottery is confirmed by the absence of buried fragments of pottery in the districts they inhabit. The same races who were found making thread by the laborious process of twisting with the hand, would hardly have disused, if they had ever possessed, so simple a labour-saving device as the spindle, which consists merely of a small stick weighted at one end; the spindle may, accordingly, be regarded as an instrument invented somewhere between the lowest and highest savage levels (Tylor, *Early Hist. of Mankind*, p. 193). Again, many devices of civilization bear unmistakable marks of derivation from a lower source; thus the ancient Egyptian and Assyrian harps, which differ from ours in having no front pillar, appear certainly to owe this remarkable defect to having grown up through intermediate forms from the simple strung bow, the still used type of the most primitive stringed instrument. In this way the history of numeral words furnishes actual proof of that independent intellectual progress among savage tribes which some writers have rashly denied. Such words as *hand, hands, foot, man*, &c., are used as numerals signifying 5, 10,

15, 20, &c., among many savage and barbaric peoples; thus Polynesian *lima*, *i.e.* “hand,” means 5; Zulu *tatisitupa*, *i.e.* “taking the thumb,” means 6; Greenlandish *arfersanek-pingasut*, *i.e.* “on the other foot three,” means 18; Tamanac *tevin itoto*, *i.e.* “one man,” means 20, &c., &c. The existence of such expressions demonstrates that the people who use them had originally no spoken names for these numbers, but once merely counted them by gesture on their fingers and toes in low savage fashion, till they obtained higher numerals by the inventive process of describing in words these counting-gestures. Second, the process of “survival in culture” has caused the preservation in each stage of society of phenomena, belonging to an earlier period, but kept up by force of custom into the later, thus supplying evidence of the modern condition being derived from the ancient. Thus the mitre over an English bishop’s coat-of-arms is a survival which indicates him as the successor of bishops who actually wore mitres, while armorial bearings themselves, and the whole craft of heraldry, are survivals bearing record of a state of warfare and social order whence our present state was by vast modification evolved. Evidence of this class, proving the derivation of modern civilization, not only from ancient barbarism, but beyond this, from primeval savagery, is immensely plentiful, especially in rites and ceremonies, where the survival of ancient habits is peculiarly favoured. Thus the modern Hindu, though using civilized means for lighting his household fires, retains the savage “fire-drill” for obtaining fire by friction of wood when what he considers pure or sacred fire has to be produced for sacrificial purposes; while in Europe into modern times the same primitive process has been kept up in producing the sacred and magical “need-fire,” which was lighted to deliver cattle from a murrain. Again, the funeral offerings of food, clothing, weapons, &c., to the dead are absolutely intelligible and purposeful among savage races, who believe that the souls of the departed are ethereal beings capable of consuming food, and of receiving and using the souls or phantoms of any objects sacrificed for their use. The primitive philosophy to which these conceptions belong has to a great degree been discredited by modern science; yet the clear survivals of such ancient and savage rites may still be seen in Europe, where the Bretons leave the remains of the All Souls’ supper on the table for the ghosts of the dead kinsfolk to partake of, and Russian peasants set out cakes for the ancestral manes on the ledge which supports the holy pictures, and make dough ladders to assist the ghosts of the dead to ascend out of their graves and start on their journey for the future world; while other provision for the same spiritual journey is made when the coin is still put in the hand of the corpse at an Irish wake. In like manner magic still exists in the civilized world as a survival from the savage and barbaric times to which it originally belongs, and in which is found the natural source and proper home of utterly savage practices still carried on by ignorant peasants in Great Britain, such as taking omens from the cries of animals, or bewitching an enemy by sticking full of pins and hanging up to shrivel in the smoke an image or other object, that similar destruction may fall on the hated person represented by the symbol (Tylor, *Primitive Culture*, ch. i., iii., iv., xi., xii.; *Early Hist. of Man*, ch. vi.).

The comparative science of civilization thus not only generalizes the data of history, but supplements its information by laying down the lines of development along which the lowest prehistoric culture has gradually risen to the highest modern level. Among the most clearly marked of these lines is that which follows the succession of the Stone, Bronze, and Iron Ages (see Archaeology). The Stone Age represents the early condition of mankind in general, and has remained in savage districts up to modern times, while the introduction of metals need not at once supersede the use of the old stone hatchets and arrows, which have often long continued in dwindling survival by the side of the new bronze and even iron ones. The Bronze Age had its most important place among ancient nations of Asia and Europe, and among them was only succeeded after many centuries by the Iron Age; while in other districts, such as Polynesia and Central and South Africa, and America (except Mexico and Peru), the native tribes were moved directly from the Stone to the Iron Age without passing through the Bronze Age at all. Although the three divisions of savage, barbaric, and civilized man do not correspond at all perfectly with the Stone, Bronze, and Iron Ages, this classification of civilization has proved of extraordinary value in arranging in their proper order of culture the nations of the Old World.

Another great line of progress has been followed by tribes passing from the primitive state of the wild hunter, fisher and fruit-gatherer to that of the settled tiller of the soil, for to this change of habit may be plainly in great part traced the expansion of industrial arts and the creation of higher social and political institutions. These, again, have followed their proper lines along the course of time. Among such is the immense legal development by which the primitive law of personal vengeance passed gradually away, leaving but a few surviving relics in the modern civilized world, and being replaced by the higher doctrine that crime is an offence against society, to be repressed for the public good. Another vast social change

has been that from the patriarchal condition, in which the unit is the family under the despotic rule of its head, to the systems in which individuals make up a society whose government is centralized in a chief or king. In the growth of systematic civilization, the art of writing has had an influence so intense, that of all tests to distinguish the barbaric from the civilized state, none is so generally effective as this, whether they have but the failing link with the past which mere memory furnishes, or can have recourse to written records of past history and written constitutions of present order. Lastly, still following the main lines of human culture, the primitive germs of religious institutions have to be traced in the childish faith and rude rites of savage life, and thence followed in their expansion into the vast systems administered by patriarchs and priests, henceforth taking under their charge the precepts of morality, and enforcing them under divine sanction, while also exercising in political life an authority beside or above the civil law.

The state of culture reached by Quaternary man is evidenced by the stone implements in the drift-gravels, and other relics of human art in the cave deposits. His drawings on bone or tusk found in the caves show no mean artistic power, as appears by the three specimens copied in the Plate. That representing two deer (fig. 6) was found so early as 1852 in the breccia of a limestone cave on the Charente, and its importance recognized in a remarkable letter by Prosper Merimée, as at once historically ancient and geologically modern (*Congrès d'anthropologie et d'archéologie préhistoriques*, Copenhagen (1869), p. 128). The other two are the famous mammoth from the cave of La Madeleine, on which the woolly mane and huge tusks of *Elephas primigenius* are boldly drawn (fig. 7); and the group of man and horses (fig. 8). There has been found one other contemporary portrait of man, where a hunter is shown stalking an aurochs.

That the men of the Quaternary period knew the savage art of producing fire by friction, and roasted the flesh on which they mainly subsisted, is proved by the fragments of charcoal found in the cave deposits, where also occur bone awls and needles, which indicate the wearing of skin clothing, like that of the modern Australians and Fuegians. Their bone lance-heads and dart-points were comparable to those of northern and southern savages. Particular attention has to be given to the stone implements used by these earliest known of mankind. The division of tribes in the stone implement stage into two classes, the Palaeolithic or Old Stone Age, and the Neolithic or New Stone Age, according to their proficiency in this most important art furnishes in some respects the best means of determining their rank in general culture.

In order to put this argument clearly before the reader, a few selected implements are figured in the Plate. The group in fig. 9 contains tools and weapons of the Neolithic period such as are dug up on European soil; they are evident relics of ancient populations who used them till replaced by metal. The stone hatchets are symmetrically shaped and edged by grinding, while the cutting flakes, scrapers, spear and arrow heads are of high finish. Direct knowledge of the tribes who made them is scanty, but implements so similar in make and design having been in use in North and South America until modern times, it may be assumed for purposes of classification that the Neolithic peoples of the New World were at a similar barbarous level in industrial arts, social organization, moral and religious ideas. Such comparison, though needing caution and reserve, at once proved of great value to anthropology. When, however, there came to light from the drift-gravels and limestone caves of Europe the Palaeolithic implements, of which some types are shown in the group (fig. 10), the difficult problem presented itself, what degree of general culture these rude implements belonged to. On mere inspection, their rudeness, their unsuitability for being hafted, and the absence of shaping and edging by the grindstone, mark their inferiority to the Neolithic implements. Their immensely greater antiquity was proved by their geological position and their association with a long extinct fauna, and they were not, like the Neoliths, recognizable as corresponding closely to the implements used by modern tribes. There was at first a tendency to consider the Palaeoliths as the work of men ruder than savages, if, indeed, their makers were to be accounted human at all. Since then, however, the problem has passed into a more manageable state. Stone implements, more or less approaching the European Palaeolithic type, were found in Africa from Egypt southwards, where in such parts as Somaliland and Cape Colony they lie about on the ground, as though they had been the rough tools and weapons of the rude inhabitants of the land at no very distant period. The group in fig. 11 in the Plate shows the usual Somaliland types. These facts tended to remove the mystery from Palaeolithic man, though too little is known of the ruder ancient tribes of Africa to furnish a definition of the state of culture which might have co-existed with the use of Palaeolithic implements. Information to this purpose, however, can now be furnished from a more outlying region. This is Tasmania, where as in the adjacent continent of Australia, the survival of marsupial animals indicates long isolation from the rest of the

world. Here, till far on into the 19th century, the Englishmen could watch the natives striking off flakes of stone, trimming them to convenient shape for grasping them in the hand, and edging them by taking off successive chips on one face only. The group in fig. 12 shows ordinary Tasmanian forms, two of them being finer tools for scraping and grooving. (For further details reference may be made to H. Ling Roth, *The Tasmanians*, (2nd ed., 1899); R. Brough Smyth, *Aborigines of Victoria* (1878), vol. ii.; *Papers and Proceedings of Royal Society of Tasmania*; and papers by the present writer in *Journal of the Anthropological Institute*.) The Tasmanians, when they came in contact with the European explorers and settlers, were not the broken outcasts they afterwards became. They were a savage people, perhaps the lowest in culture of any known, but leading a normal, self-supporting, and not unhappy life, which had probably changed little during untold ages. The accounts, imperfect as they are, which have been preserved of their arts, beliefs and habits, thus present a picture of the arts, beliefs and habits of tribes whose place in the Stone Age was a grade lower than that of Palaeolithic man of the Quaternary period.

PLATE

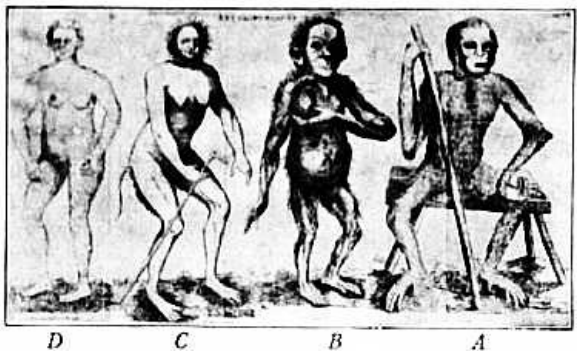


FIG. 1.

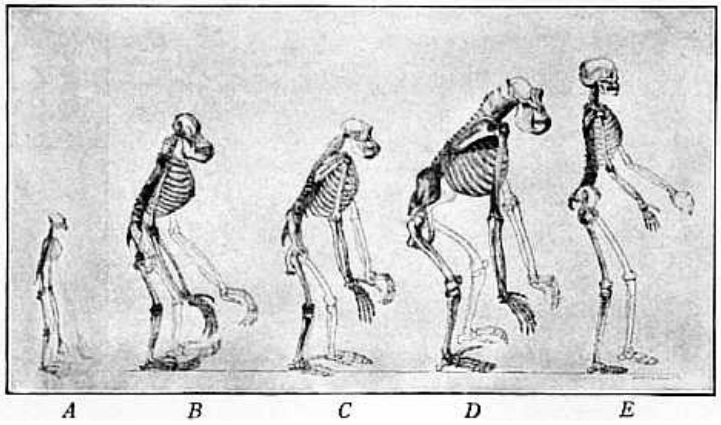


FIG. 2.

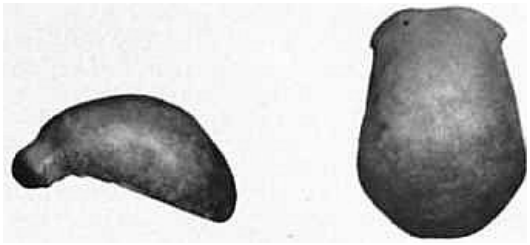


FIG. 3.

FIG. 4.

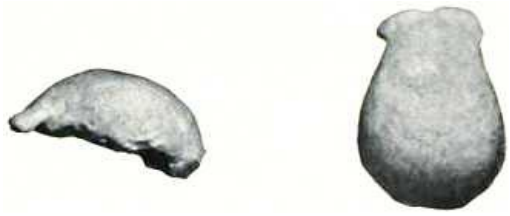


FIG. 5.

FIG. 6.

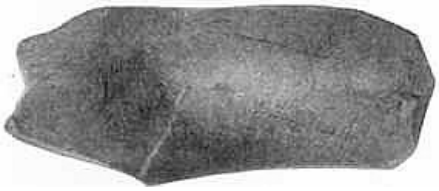


FIG. 7.

FIG. 8.

Fig. 9.

Fig. 10.

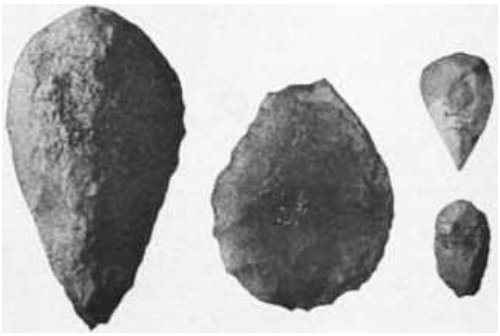


Fig. 11.

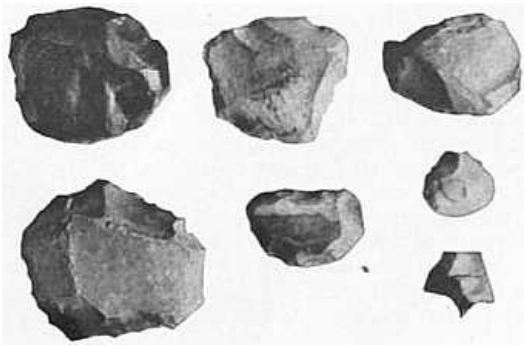


Fig. 12.

The Tasmanian stone implements, figured in the Plate, show their own use when it is noticed that the rude chipping forms a good hand-grip above, and an effective edge for chopping, sawing, and cutting below. But the absence of the long-shaped implements, so characteristic of the Neolithic and Palaeolithic series, and serviceable as picks, hatchets, and chisels, shows remarkable limitation in the mind of these savages, who made a broad, hand-grasped knife their tool of all work to cut, saw, and chop with. Their weapons were the wooden club or waddy notched to the grasp, and spears of sticks, often crooked but well balanced, with points sharpened by tool or fire, and sometimes jagged. No spear thrower or bow and arrow was known. The Tasmanian savages were crafty warriors and kangaroo-hunters, and the women climbed the highest trees by notching, in quest of opossums. Shell-fish and crabs were taken, and seals knocked on the head with clubs, but neither fish-hook nor fishing-net was known, and indeed swimming fish were taboo as food. Meat and vegetable food, such as fern-root, was broiled over the fire, but boiling in a vessel was unknown. The fire was produced by the ordinary savage fire-drill. Ignorant of agriculture, with no dwellings but rough huts or breakwinds of sticks and bark, without dogs or other domestic animals, these savages, until the coming of civilized man, roamed after food within their tribal bounds. Logs and clumsy floats of bark and grass enabled them to cross water under favourable circumstances. They had clothing of skins rudely stitched together with bark thread, and they were decorated with simple necklaces of kangaroo teeth, shells and berries. Among their simple arts, plaiting and basket-work was one in which they approached the civilized level. The pictorial art of the Tasmanians was poor and childish, quite below that of the Palaeolithic men of Europe. The Tasmanians spoke a fairly copious agglutinating language, well marked as to parts of speech, syntax and inflexion. Numeration was at a low level, based on counting fingers on one hand only, so that the word for man (*puggana*) stood also for the number 5. The religion of the Tasmanians, when cleared from ideas apparently learnt from the whites, was a simple form of animism based on the shadow (*warrawa*) being the soul or spirit. The strongest belief of the natives was in the power of the ghosts of the dead, so that they carried the bones of relatives to secure themselves from harm, and they fancied the forest swarming with malignant demons. They placed weapons near the grave for the dead friend’s soul to use, and drove out disease from the sick by exorcising the ghost which was supposed to have caused it. Of greater special spirits of Nature we find something vaguely mentioned. The earliest recorders of the native social life set down such features as their previous experience of rude civilized life had made them judges of. They notice the self-denying affection of the mothers, and the hard treatment of the wives by the husbands, polygamy and the shifting marriage unions. But when we meet with a casual remark as to the tendency of the Tasmanians to take wives from other tribes than their own, it seems likely that they had some custom of exogamy which the foreigners did not understand. Meagre as is the information preserved of the arts, thoughts, and customs of these survivors from the lower Stone Age, it is of value as furnishing even a

temporary and tentative means of working out the development of culture on a basis not of conjecture but of fact.

Conclusion.—To-day anthropology is grappling with the heavy task of systematizing the vast stores of knowledge to which the key was found by Boucher de Perthes, by Lartet, Christy and their successors. There have been recently no discoveries to rival in novelty those which followed the exploration of the bone-caves and drift-gravels, and which effected an instant revolution in all accepted theories of man's antiquity, substituting for a chronology of centuries a vague computation of hundreds of thousands of years. The existence of man in remote geological time cannot now be questioned, but, despite much effort made in likely localities, no bones, with the exception of those of the much-discussed *Pithecanthropus*, have been found which can be regarded as definitely bridging the gulf between man and the lower creation. It seems as if anthropology had in this direction reached the limits of its discoveries. Far different are the prospects in other directions where the work of co-ordinating the material and facts collected promises to throw much light on the history of civilization. Anthropological researches undertaken all over the globe have shown the necessity of abandoning the old theory that a similarity of customs and superstitions, of arts and crafts, justifies the assumption of a remote relationship, if not an identity of origin, between races. It is now certain that there has ever been an inherent tendency in man, allowing for difference of climate and material surroundings, to develop culture by the same stages and in the same way. American man, for example, need not necessarily owe the minutest portion of his mental, religious, social or industrial development to remote contact with Asia or Europe, though he were proved to possess identical usages. An example in point is that of pyramid-building. No ethnical relationship can ever have existed between the Aztecs and the Egyptians; yet each race developed the idea of the pyramid tomb through that psychological similarity which is as much a characteristic of the species man as is his physique.

BIBLIOGRAPHY.—J.C. Prichard, *Natural History of Man* (London, 1843); T.H. Huxley, *Man's Place in Nature* (London, 1863); and "Geographical Distribution of Chief Modifications of Mankind," in *Journal Ethnological Society* for 1870; E.B. Tylor, *Early History of Man* (London, 1865), *Primitive Culture* (London, 1871), and *Anthropology* (London, 1881); A. de Quatrefages, *Histoire générale des races humaines* (Paris, 1889), *Human Species* (Eng. trans., 1879); Lord Avebury, *Prehistoric Times* (1865, 6th ed. 1900) and *Origin of Civilization* (1870, 6th ed. 1902), Theo. Waitz, *Anthropologie der Naturvolker* (1859-1871), E.H. Haeckel, *Anthropogenie* (Leipzig, 1874-1891), Eng. trans., 1879; O. Peschel, *Volkerkunde* (Leipzig, 1874-1897); P. Topinard, *L'Anthropologie* (Paris, 1876); *Éleménts d'anthropologie générale* (Paris, 1885); D.G. Brinton, *Races and Peoples* (1890); A.H. Keane, *Ethnology* (1896), and *Man: Past and Present* (1899); G. Sergi, *The Mediterranean Race* (Eng. ed., 1889); F. Ratzel, *History of Mankind* (Eng. trans., 1897); G. de Mortillet, *Le Préhistorique* (Paris, 1882); A.C. Haddon, *Study of Man* (1897); J. Deniker, *The Races of Man* (London, 1900); W.Z. Ripley, *The Races of Europe* (1900, with long bibliography); *The Journal of the Anthropological Institute of Great Britain*; *Revue d'anthropologie* (Paris); *Zeitschrift für Ethnologie* (Berlin). See also bibliographies under separate ethnological headings (AUSTRALIA, AFRICA, ARABS, AMERICA, &c.).

(E. B. T.)

ANTHROPOMETRY (Gr. ἄνθρωπος, man, and μέτρον, measure), the name given by the French savant, Alphonse Bertillon (b. 1853), to a system of identification (*q.v.*) depending on the unchanging character of certain measurements of parts of the human frame. He found by patient inquiry that several physical features and the dimensions of certain bones or bony structures in the body remain practically constant during adult life. He concluded from this that when these measurements were made and recorded systematically every single individual would be found to be perfectly distinguishable from others. The system was soon adapted to police methods, as the immense value of being able to fix a person's identity was fully realized, both in preventing false personation and in bringing home to any one charged with an offence his responsibility for previous wrongdoing. "Bertillonage," as it was called, became widely popular, and after its introduction into France in 1883, where it was soon credited with highly gratifying results, was applied to the administration of justice in most civilized countries. England followed tardily, and it was not until 1894 that an investigation of the methods used and results obtained was made by a special committee sent to Paris for

the purpose. It reported favourably, especially on the use of the measurements for primary classification, but recommended also the adoption in part of a system of "finger prints" as suggested by Francis Galton, and already practised in Bengal.

M. Bertillon selected the following five measurements as the basis of his system: (1) head length; (2) head breadth; (3) length of middle finger; (4) of left foot, and (5) of cubit or forearm from the elbow to the extremity of the middle finger. Each principal heading was further subdivided into three classes of "small," "medium" and "large," and as an increased guarantee height, length of little finger, and the colour of the eye were also recorded. From this great mass of details, soon represented in Paris by the collection of some 100,000 cards, it was possible, proceeding by exhaustion, to sift and sort down the cards till a small bundle of half a dozen produced the combined facts of the measurements of the individual last sought. The whole of the information is easily contained in one cabinet of very ordinary dimensions, and most ingeniously contrived so as to make the most of the space and facilitate the search. The whole of the record is independent of names, and the final identification is by means of the photograph which lies with the individual's card of measurements.

Anthropometry, however, gradually fell into disfavour, and it has been generally supplanted by the superior system of finger prints (*q.v.*). Bertillonage exhibited certain defects which were first brought to light in Bengal. The objections raised were (1) the costliness of the instruments employed and their liability to get out of order; (2) the need for specially instructed measurers, men of superior education; (3) the errors that frequently crept in when carrying out the processes and were all but irremediable. Measures inaccurately taken, or wrongly read off, could seldom, if ever, be corrected, and these persistent errors defeated all chance of successful search. The process was slow, as it was necessary to repeat it three times so as to arrive at a mean result. In Bengal measurements were already abandoned by 1897, when the finger print system was adopted throughout British India. Three years later England followed suit; and as the result of a fresh inquiry ordered by the Home Office, finger prints were alone relied upon for identification.

AUTHORITIES.—Lombroso, *Antropometria di 400 delinquenti* (1872); Roberts, *Manual of Anthropometry* (1878); Ferri, *Studi comparati di antropometria* (2 vols., 1881-1882); Lombroso, *Rughe anomale speciali ai criminali* (1890); Bertillon, *Instructions signalétiques pour l'identification anthropométrique* (1893); Livi, *Anthropometria* (Milan, 1900); Fürst, *Indextabellen zum anthropometrischen Gebrauch* (Jena, 1902); *Report of Home Office Committee on the Best Means of Identifying Habitual Criminals* (1893-1894).

(A. G.)

ANTHROPOMORPHISM (Gr. ἄνθρωπος, man, μορφή, form), the attribution (*a*) of a human body, or (*b*) of human qualities generally, to God or the gods. The word anthropomorphism is a modern coinage (possibly from 18th century French). The *New English Dictionary* is misled by the 1866 reprint of Paul Bayne on Ephesians when it quotes "anthropomorphist" as 17th century English. Seventeenth century editions print "anthropomorphits," *i.e.* anthropomorphites, in sense (*a*). The older abstract term is "anthropopathy," literally "attributing human feelings," in sense (*b*).

Early religion, among its many objects of worship, includes beasts (see ANIMAL-WORSHIP), considered, in the more refined theology of the later Greeks and Romans, as metamorphoses of the great gods. Similarly we find "therianthropic" forms—half animal, half human—in Egypt or Assyria-Babylonia. In contrast with these, it is considered one of the glories of the Olympian mythology of Greece that it believed in happy manlike beings (though exempt from death, and using special rarefied foods, &c.), and celebrated them in statues of the most exquisite art. Israel shows us animal images, doubtless of a ruder sort, when Yahweh is worshipped in the northern kingdom under the image of a steer. (Some scholars think the title "mighty one of Jacob," Psalm cxxxii., 2, 5, *et al.*, ריבא as if from רבא is really "steer" ריבא "of Jacob.") But the higher religion of Israel inclined to morality more than to art, and forbade image worship altogether. This prepared the way for the conception of God as an immaterial Spirit. True mythical anthropomorphisms occur in early parts of the Old Testament (*e.g.* Genesis iii. 8, cf. vi. 2), though in the majority of Old Testament passages such expressions are merely verbal (*e.g.* Isaiah lix. 1). In the Christian Church (and again in early Mahommedanism) simple minds believed in the corporeal nature of God. Gibbon and

other writers quote from John Cassian the tale of the poor monk, who, being convinced of his error, burst into tears, exclaiming, “You have taken away my God! I have none now whom I can worship!” According to a fragment of Origen (on Genesis i. 26), Melito of Sardis shared this belief. Many have thought Melito’s work, περὶ ἐνσωμάτου θεοῦ, must have been a treatise on the Incarnation; but it is hard to think that Origen could blunder so. Epiphanius tells of Audaeus of Mesopotamia and his followers, Puritan sectaries in the 4th century, who were orthodox except for this belief and for Quartodecimanism (see Easter). Tertullian, who is sometimes called an anthropomorphist, stood for the Stoical doctrine, that all reality, even the divine, is in a sense material.

The reaction against anthropomorphism begins in Greek philosophy with the satirical spirit of Xenophanes (540 B.C.), who puts the case as broadly as any. The “greatest God” resembles man “neither in form nor in mind.” In Judaism—unless we should refer to the prophets’ polemic against images—a reaction is due to the introduction of the codified law. God seemed to grow more remote. The old sacred name Yahweh is never pronounced; even “God” is avoided for allusive titles like “heaven” or “place.” Still, amid all this, the God of Judaism remains a personal, almost a limited, being. In Philo we see Jewish scruples uniting with others drawn from Greek philosophy. For, though the quarrel with popular anthropomorphism was patched up, and the gods of the Pantheon were described by Stoics and Epicureans as manlike in form, philosophy nevertheless tended to highly abstract conceptions of supreme, or real, deity. Philo followed out the line of this tradition in teaching that God cannot be named. How much exactly he meant is disputed. The same inheritance of Greek philosophy appears in the Christian fathers, especially Origen. He names and condemns the “anthropomorphites,” who ascribe a human body to God (on Romans i., *sub fin.*; Rufinus’ Latin version). In Arabian philosophy the reaction sought to deny that God had any attributes. And, under the influence of Mahommedan Aristotelianism, the same paralysing speculation found entrance among the learned Jews of Spain (see Maimonides).

Till modern times the philosophical reaction was not carried out with full vigour. Spinoza (*Ethics*, i. 15 and 17), representing here as elsewhere both a Jewish inheritance and a philosophical, but advancing further, sweeps away all community between God and man. So later J.G. Fichte and Matthew Arnold (“a magnified and non-natural man”),—strangely, in view of their strong belief in an objective moral order. For the use of the *word* “anthropomorphic,” or kindred forms, in this new spirit of condemnation for all conceptions of God as manlike—sense (*b*) noted above—see J.J. Rousseau in *Émile* iv. (cited by Littré),—*Nous sommes pour la plupart de vrais anthropomorphites*. Rousseau is here speaking of the language of Christian theology,—a divine Spirit: divine Persons. At the present day this usage is universal. What it means on the lips of pantheists is plain. But when theists charge one another with “anthropomorphism,” in order to rebuke what they deem unduly manlike conceptions of God, they stand on slippery ground. All theism implies the assertion of kinship between man, especially in his moral being, and God. As a brilliant theologian, B. Duhm, has said, physiomorphism is the enemy of Christian faith, not anthropomorphism.

The latest extension of the word, proposed in the interests of philosophy or psychology, uses it of the principle according to which man is said to interpret all things (not God merely) through himself. Common-sense intuitionalism would deny that man does this, attributing to him immediate knowledge of reality. And idealism in all its forms would say that man, interpreting through his reason, does rightly, and reaches truth. Even here then the use of the word is not colourless. It implies blame. It is the symptom of a philosophy which confines knowledge within narrow limits, and which, when held by Christians (*e.g.* Peter Browne, or H.L. Mansel), believes only in an “analogical” knowledge of God.

(R. Ma.)

ANTI, or Campa, a tribe of South American Indians of Arawakan stock, inhabiting the forests of the upper Ucayali basin, east of Cuzco, on the eastern side of the Andes, south Peru. The Antis, who gave their name to the eastern province of Antisuyu, have always been notorious for ferocity and cannibalism. They are of fine physique and generally good-looking. Their dress is a robe with holes for the head and arms. Their long hair hangs down over the shoulders, and round their necks a toucan beak or a bunch of feathers is worn as an ornament.

ANTIBES, a seaport town in the French department of the Alpes-Maritimes (formerly in that of the Var, but transferred after the Alpes-Maritimes department was formed in 1860 out of the county of Nice). Pop. (1906) of the town, 5730; of the commune, 11,753. It is 12½ m. by rail S.W. of Nice, and is situated on the E. side of the Garoupe peninsula. It was formerly fortified, but all the ramparts (save the Fort Carré, built by Vauban) have now been demolished, and a new town is rising on their site. There is a tolerable harbour, with a considerable fishing industry. The principal exports are dried fruits, salt fish and oil. Much perfume distilling is done here, as the surrounding country produces an abundance of flowers. Antibes is the ancient Antipolis. It is said to have been founded before the Christian era (perhaps about 340 B.C.) by colonists from Marseilles, and is mentioned by Strabo. It was the seat of a bishopric from the 5th century to 1244, when the see was transferred to Grasse.

(W. A. B. C.)

ANTICHRIST (ἀντίχριστος). The earliest mention of the name Antichrist, which was probably first coined in Christian eschatological literature, is in the Epistles of St John (I. ii. 18, 22, iv. 3; II. 7), and it has since come into universal use. The conception, paraphrased in this word, of a mighty ruler who will appear at the end of time, and whose essence will be enmity to God (Dan. xi. 36; cf. 2 Thess. ii. 4; ἀντικείμενος), is older, and traceable to Jewish eschatology. Its origin is to be sought in the first place in the prophecy of Daniel, written at the beginning of the Maccabean period. The historical figure who served as a model for the "Antichrist" was Antiochus IV. Epiphanes, the persecutor of the Jews, and he has impressed indelible traits upon the conception. Since then ever-recurring characteristics of this figure (cf. especially Dan xi. 40, &c.) are, that he would appear as a mighty ruler at the head of gigantic armies, that he would destroy three rulers (the three horns, Dan. vii. 8, 24), persecute the saints (vii. 25), rule for three and a half years (vii. 25, &c.), and subject the temple of God to a horrible devastation (βδέλυγμα τῆς ἐρημώσεως). When the end of the world foretold by Daniel did not take place, but the book of Daniel retained its validity as a sacred scripture which foretold future things, the personality of the tyrant who was God's enemy disengaged itself from that of Antiochus IV., and became merely a figure of prophecy, which was applied now to one and now to another historical phenomenon. Thus for the author of the *Psalms of Solomon* (*c.* 60 B.C.), Pompey, who destroyed the independent rule of the Maccabees and stormed Jerusalem, was the Adversary of God (cf. ii. 26, &c.); so too the tyrant whom the *Ascension of Moses* (*c.* A.D. 30) expects at the end of all things, possesses, besides the traits of Antiochus IV., those of Herod the Great. A further influence on the development of the eschatological imagination of the Jews was exercised by such a figure as that of the emperor Caligula (A.D. 37-41), who is known to have given the order, never carried out, to erect his statue in the temple of Jerusalem. In the little Jewish Apocalypse, the existence of which is assumed by many scholars, which in Mark xiii. and Matt. xxiv. is combined with the words of Christ to form the great eschatological discourse, the prophecy of the "abomination of desolation" (Mark xiii. 14 et seq.) may have originated in this episode of Jewish history. Later Jewish and Christian writers of Apocalypses saw in Nero the tyrant of the end of time. The author of the Syriac *Apocalypse of Baruch* (or his source), cap. 36-40, speaks in quite general terms of the last ruler of the end of time. In 4 Ezra v. 6 also is found the allusion: *regnabit quem non sperant*.

The roots of this eschatological fancy are to be sought perhaps still deeper in a purely mythological and speculative expectation of a battle at the end of days between God and the devil, which has no reference whatever to historical occurrences. This idea has its original source in the apocalypses of Iran, for these are based upon the conflict between Ahura-Mazda (Auramazda, Ormazd) and Angro-Mainyush (Ahriman) and its consummation at the end of the world. This Iranian dualism is proved to have penetrated into the late Jewish eschatology from the beginning of the 1st century before Christ, and did so probably still earlier. Thus the opposition between God and the devil already plays a part in the Jewish groundwork of the *Testaments of the Patriarchs*, which was perhaps composed at the end of

the period of the Maccabees. In this the name of the devil appears, besides the usual form (σατανᾶς, διάβολος), especially as Belial (Beliar, probably, from Ps. xviii. 4, where the rivers of Belial are spoken of, originally a god of the underworld), a name which also plays a part in the Antichrist tradition. In the *Ascension of Moses* we already hear, at the beginning of the description of the latter time (x. 1): "And then will God's rule be made manifest over all his creatures, then will the devil have an end" (cf. Matt. xii. 28; Luke xi. 20; John xii. 31, xiv. 30, xvi. 11).[1] This conception of the strife of God with the devil was further interwoven, before its introduction into the Antichrist myth, with another idea of different origin, namely, the myth derived from the Babylonian religion, of the battle of the supreme God (Marduk) with the dragon of chaos (Tiamat), originally a myth of the origin of things which, later perhaps, was changed into an eschatological one, again under Iranian influence.[2] Thus it comes that the devil, the opponent of God, appears in the end often also in the form of a terrible dragon-monster; this appears most clearly in Rev. xii. Now it is possible that the whole conception of Antichrist has its final roots in this already complicated myth, that the form of the mighty adversary of God is but the equivalent in human form of the devil or of the dragon of chaos. In any case, however, this myth has exercised a formative influence on the conception of Antichrist. For only thus can we explain how his figure acquires numerous superhuman and ghostly traits, which cannot be explained by any particular historical phenomenon on which it may have been based. Thus the figure of Antiochus IV. has already become superhuman, when in Dan. viii. 10, it is said that the little horn "waxed great, even to the host of heaven; and cast down some of the host and of the stars to the ground." Similarly Pompey, in the second psalm of Solomon, is obviously represented as the dragon of chaos, and his figure exalted into myth. Without this assumption of a continual infusion of mythological conceptions, we cannot understand the figure of Antichrist. Finally, it must be mentioned that Antichrist receives, at least in the later sources, the name originally proper to the devil himself.[3]

From the Jews, Christianity took over the idea. It is present quite unaltered in certain passages, specifically traceable to Judaism, *e.g.* (Rev. xi.). "The Beast that ascendeth out of the bottomless pit" and, surrounded by a mighty host of nations, slays the "two witnesses" in Jerusalem, is the entirely superhuman Jewish conception of Antichrist. Even if the beast (ch. xiii.), which rises from the sea at the summons of the devil, be interpreted as the Roman empire, and, specially, as any particular Roman ruler, yet the original form of the malevolent tyrant of the latter time is completely preserved.

A fundamental change of the whole idea from the specifically Christian point of view, then, is signified by the conclusion of ch. ii. of the Second Epistle to the Thessalonians.[4] There can, of course, be no doubt as to the identity of the "man of sin, the son of perdition" here described with the dominating figure of Jewish eschatology (cf. ii. 3 &c., ὁ ἄνθρωπος τῆς ἀνομίας, *i.e.* Beliar (?), ὁ ἀντικείμενος—the allusion that follows to Dan xi. 36). But Antichrist here appears as a tempter, who works by signs and wonders (ii. 9) and seeks to obtain divine honours; it is further signified that this "man of sin" will obtain credence, more especially among the Jews, because they have not accepted the truth. The conception, moreover, has become almost more superhuman than ever (cf. ii. 4, "showing himself that he is God"). The destruction of the Adversary is drawn from Isaiah xi. 4, where it is said of the Messiah: "with the breath of his lips shall he slay the wicked."[5] The idea that Antichrist was to establish himself in the temple of Jerusalem (ii. 4) is very enigmatical, and has not yet been explained. The "abomination of desolation" has naturally had its influence upon it; possibly also the experience of the time of Caligula (see above). Remarkable also is the allusion to a power which still retards the revelation of Antichrist (2 Thess. ii. 6 &c., τὸ κατέχον; ὁ κατέχων), an allusion which, in the tradition of the Fathers of the church, came to be universally, and probably correctly, referred to the Roman empire. In this then consists the significant turn given by St Paul in the Second Epistle to the Thessalonians to the whole conception, namely, in the substitution for the tyrant of the latter time who should persecute the Jewish people, of a pseudo-Messianic figure, who, establishing himself in the temple of God, should find credence and a following precisely among the Jews. And while the originally Jewish idea led straight to the conception, set forth in Revelation, of the Roman empire or its ruler as Antichrist, here, on the contrary, it is probably the Roman empire that is the power which still retards the reign of Antichrist. With this, the expectation of such an event at last separates itself from any connexion with historical fact, and becomes purely ideal. In this process of transformation of the idea, which has become of importance for the history of the world, is revealed probably the genius of Paul, or at any rate, that of the young Christianity which was breaking its ties with Judaism and establishing itself in the world of the Roman empire.

This version of the figure of Antichrist, who may now really for the first time be described by this name, appears to have been at once widely accepted in Christendom. The idea that the Jews would believe in Antichrist, as punishment for not having believed in the true Christ, seems to be expressed by the author of the fourth gospel (v. 43). The conception of Antichrist as a perverter of men, leads naturally to his connexion with false doctrine (1 John ii. 18, 22; iv. 3; 2 John 7). The *Teaching of the Apostles* (xvi. 4) describes his form in the same way as 2 Thessalonians (καὶ τότε φαινήσεται ὁ κοσμοπλάνος ὡς υἱὸς θεοῦ καὶ ποιεῖ σημεῖα καὶ τέρατα). In the late Christian Sibylline fragment (iii. 63 &c.) also, "Beliar" appears above all as a worker of wonders, this figure having possibly been influenced by that of Simon Magus. Finally the author of the Apocalypse of St John also has made use of the new conception of Antichrist as a wonder-worker and seducer, and has set his figure beside that of the "first" Beast which was for him the actual embodiment of Antichrist (xiii. II &c.). Since this second Beast could not appear along with the first as a power demanding worship and directly playing the part of Antichrist, he made out of him the false prophet (xvi. 13, xix. 20, xx. 10) who seduces the inhabitants of the earth to worship the first Beast, and probably interpreted this figure as applying to the Roman provincial priesthood.[6]

But this version of the idea of Antichrist, hostile to the Jews and better expressing the relation of Christianity to the Roman empire, was prevented from obtaining an absolute ascendancy in Christian tradition by the rise of the belief in the ultimate return of Nero, and by the absorption of this outcome of pagan superstition into the Jewish-Christian apocalyptic conceptions. It is known that soon after the death of Nero rumours were current that he was not dead. This report soon took the more concrete form that he had fled to the Parthians and would return thence to take vengeance on Rome. This expectation led to the appearance of several pretenders who posed as Nero; and as late as A.D. 100 many still held the belief that Nero yet lived.[7] This idea of Nero's return was in the first instance taken up by the Jewish apocalyptic writers. While the Jewish author of the fourth Sibylline book (*c.* A.D. 80) still only refers simply to the heathen belief, the author of the (Jewish?) original of the 17th chapter of the Apocalypse of St John expects the return of Nero with the Parthians to take vengeance on Rome, because she had shed the blood of the Saints (destruction of Jerusalem!). In the fifth Sibylline book, which, with the exception of verses 1-51, was mainly composed by a Jewish writer at the close of the first century, the return of Nero plays a great part. Three times the author recurs to this theme, 137-154; 214-227; 361-385. He sees in the coming again of Nero, whose figure he endows with supernatural and daemonic characteristics, a judgment of God, in whose hand the revivified Nero becomes a rod of chastisement. Later, the figure of Nero *redivivus* became, more especially in Christian thought, entirely confused with that of Antichrist. The less it became possible, as time went on, to believe that Nero yet lived and would return as a living ruler, the greater was the tendency for his figure to develop into one wholly infernal and daemonic. The relation to the Parthians is also gradually lost sight of; and from being the adversary of Rome, Nero becomes the adversary of God and of Christ. This is the version of the expectation of Nero's second coming preserved in the form given to the prophecy, under Domitian, by the collaborator in the Apocalypse of John (xiii., xvii.). Nero is here the beast that returns from the bottomless pit, "that was, and is not, and yet is"; the head "as it were wounded to death" that lives again; the gruesome similitude of the Lamb that was slain, and his adversary in the final struggle. The number of the Beast, 666, points certainly to Nero (666 = נרון קסר, or 616 = נרן קסר). In the little apocalypse of the *Ascensio Jesaiae* (iii. 13b-iv. 18), which dates perhaps from the second, perhaps only from the first, decade of the third century,[8] it is said that Beliar, the king of this world, would descend from the firmament in the human form of Nero. In the same way, in *Sibyll.* v. 28-34, Nero and Antichrist are absolutely identical (mostly obscure reminiscences, *Sib.* viii. 68 &c., 140 &c., 151 &c.). Then the Nero-legend gradually fades away. But Victorinus of Pettau, who wrote during the persecution under Diocletian, still knows the relation of the Apocalypse to the legend of Nero; and Commodian, whose *Carmen Apologeticum* was perhaps not written until the beginning of the 4th century, knows two Antichrist-figures, of which he still identifies the first with Nero *redivivus*.

In proportion as the figure of Nero again ceased to dominate the imagination of the faithful, the wholly unhistorical, unpolitical and anti-Jewish conception of Antichrist, which based itself more especially on 2 Thess. ii., gained the upper hand, having usually become associated with the description of the universal conflagration of the world which had also originated in the Iranian eschatology. On the strength of exegetical combinations, and with the assistance of various traditions, it was developed even in its details, which it thenceforth maintained practically unchanged. In this form it is in great part present in the eschatological portions of the *Adv. Haereses* of Irenaeus, and in the *de Antichristo* and commentary on Daniel of Hippolytus. In times of political excitement, during the following

centuries, men appealed again and again to the prophecy of Antichrist. Then the foreground scenery of the prophecies was shifted; special prophecies, having reference to contemporary events, are pushed to the front, but in the background remains standing, with scarcely a change, the prophecy of Antichrist that is bound up with no particular time. Thus at the beginning of the *Testamentum Domini*, edited by Rahmani, there is an apocalypse, possibly of the time of Decius, though it has been worked over (Harnack, *Chronol. der altchrist. Litt.* ii. 514 &c.) In the third century, the period of Aurelianus and Gallienus, with its wild warfare of Romans and Persians, and of Roman pretenders one with another, seems especially to have aroused the spirit of prophecy. To this period belongs the Jewish apocalypse of Elijah (ed. Buttenwieser), of which the Antichrist is possibly Odaenathus of Palmyra, while *Sibyll.* xiii., a Christian writing of this period, glorifies this very prince. It is possible that at this time also the Sibylline fragment (iii. 63 &c.) and the Christian recension of the two first Sibylline books were written.[9] To this time possibly belongs also a recension of the Coptic apocalypse of Elijah, edited by Steindorff (*Texte und Untersuchungen*, N. F. ii. 3). To the 4th century belongs, according to Kamper (*Die deutsche Kaiseridee*, 1896, p. 18) and Sackur (*Texte und Forschungen*, 1898, p. 114 &c.), the first nucleus of the “Tiburtine” Sibyl, very celebrated in the middle ages, with its prophecy of the return of Constans, and its dream, which later on exercised so much influence, that after ruling over the whole world he would go to Jerusalem and lay down his crown upon Golgotha. To the 4th century also perhaps belongs a series of apocalyptic pieces and homilies which have been handed down under the name of Ephraem. At the beginning of the Mahommedan period, then, we meet with the most influential and the most curious of these prophetic books, the *Pseudo-Methodius*,[10] which prophesied of the emperor who would awake from his sleep and conquer Islam. From the *Pseudo-Methodius* are derived innumerable Byzantine prophecies (cf. especially Vassiliev, *Anecdota Graeco-Byzantina*) which follow the fortunes of the Byzantine emperors and their governments. A prophecy in verse, adorned with pictures, which is ascribed to Leo VI. the Philosopher (Migne, *Patr. Gracca*, cvii. p. 1121 &c.), tells of the downfall of the house of the Comneni and sings of the emperor of the future who would one day awake from death and go forth from the cave in which he had lain. Thus the prophecy of the sleeping emperor of the future is very closely connected with the Antichrist tradition. There is extant a Daniel prophecy which, in the time of the Latin empire, foretells the restoration of the Greek rule.[11] In the East, too, Antichrist prophecies were extraordinarily flourishing during the period of the rise of Islam and of the Crusades. To these belong the apocalypses in Arabic, Ethiopian and perhaps also in Syrian, preserved in the so-called *Liber Clementis discipuli S. Petri* (*Petri apostoli apocalypsis per Clementem*), the late Syrian apocalypse of Ezra (Bousset, *Antichrist*, 45 &c.), the Coptic (14th) vision of Daniel (in the appendix to Woide’s edition of the *Codex Alexandrinus*; Oxford, 1799), the Ethiopian *Wisdom of the Sibyl*, which is closely related to the Tiburtine Sibyl (see Basset, *Apocryphes éthiopiennes*, x.); in the last mentioned of these sources long series of Islamic rulers are foretold before the final time of Antichrist. Jewish apocalypse also awakes to fresh developments in the Mahommedan period, and shows a close relationship with the Christian Antichrist literature. One of the most interesting apocalypses is the Jewish *History of Daniel*, handed down in Persian.[12]

This whole type of prophecy reached the West above all through the *Pseudo-Methodius*, which was soon translated into Latin. Especially influential, too, in this respect was the letter which the monk Adso in 954 wrote to Queen Gerberga, *De ortu et tempere Antichristi*. The old Tiburtine Sibylla went through edition after edition, in each case being altered so as to apply to the government of the monarch who happened to be ruling at the time. Then in the West the period arrived in which eschatology, and above all the expectation of the coming of Antichrist, exercised a great influence on the world’s history. This period, as is well known, was inaugurated, at the end of the 12th century, by the apocalyptic writings of the abbot Joachim of Floris. Soon the word Antichrist re-echoed from all sides in the embittered controversies of the West. The pope bestowed this title upon the emperor, the emperor upon the pope, the Guelphs on the Ghibellines and the Ghibellines on the Guelphs. In the contests between the rival powers and courts of the period, the prophecy of Antichrist played a political part. It gave motives to art, to lyrical, epic and dramatic poetry.[13] Among the visionary Franciscans, enthusiastic adherents of Joachim’s prophecies, arose above all the conviction that the pope was Antichrist, or at least his precursor. From the Franciscans, influenced by Abbot Joachim, the lines of connexion are clearly traceable with Milic of Kremsier (*Libellus de Antichristo*) and Matthias of Janow. For Wycliffe and his adherent John Purvey (probably the author of the *Commentarius in Apocalypsin ante centum annos editus*, edited in 1528 by Luther), as on the other hand for Hus, the conviction that the papacy is essentially Antichrist is absolute. Finally, if Luther advanced in his contest with the papacy with greater and greater energy, he did so because he was borne on by the conviction that the pope in Rome was Antichrist. And if in the *Augustana*. the expression of this conviction

was suppressed for political reasons, in the Articles of Schmalkalden, drawn up by him, Luther propounded it in the most uncompromising fashion. This sentence was for him an *articulus stantis et cadentis ecclesiae*. To write the history of the idea of Antichrist in the last centuries of the middle ages, would be almost to write that of the middle ages themselves.

AUTHORITIES.—See, for the progress of the idea in Jewish and New Testament times, the modern commentaries on Revelation and the 2nd Epistle to the Thessalonians; Bousset, *Antichrist* (1895), and the article "Antichrist" in the *Encyclop. Biblica*; R.H. Charles, *Ascension of Isaiah*, Introduction, li.-lxxiii. For the history of the legend of Nero, see J. Geffcken, *Nachrichten der Göttinger Gesellschaft der Wisscnschaft* (1899), p. 446 &c.; Th. Zahn, *Zeitschrift für kirchliche Wissenschaft und kirchliches Leben* (1886), p. 337 &c.; Bousset, *Kritisch-exegetisches Kommentar zur Offenbarung Johannis*, cap. 17, and the article "Sibyllen" in Herzog-Hauck, *Realencyklopadie für Theologie und Kirche* (3rd ed.), xviii. 265 &c.; Nordmeyer, *Der Tod Neros in der Legende*, a *Festschrift* of the Gymnasium of Moos. For the later history of the legend, see Bousset, *Antichrist*, where will be found a more detailed discussion of nearly all the sources named; Bousset, "Beiträge zur Geschichte der Eschatologie," in *Zeitschrift für Kirchengeschichte*, xx. 2, and especially xx. 3, on the later Byzantine prophecies; Vassiliev, *Anecdota Graeco-Byzantina*, i. (Moscow, 1893), which gives the texts of a series of Byzantine prophecies; E. Sackur, *Sibyllinische Texte und Forschungen* (1898), containing (i) *Pseudo-Methodius*, Latin text, (2) *Epistola Adsonis*, (3) the *Tiburtine Sibylla*; V. Istrin, *The Apocalypse of Methodius of Patara and the Apocryphal Visions of Daniel in Byzantine and Slavo-Russian Literature*, Russian (Moscow, 1897); J. Kampers, *Die deutsche Kaiseridee in Prophetie und Sage* (Munich, 1896), and "Alexander der Grosse und die Idee des Weltimperiums," in H. Grauert's *Studien und Darstellungen aus dem Gebiet der Geschichte*, vol. i. 2-3 (Freiburg, 1901); E. Wadstein, *Die eschatologische Ideengruppe, Antichrist, Weltsabbat, Weltende und Welgericht* (Leipzig, 1896), which contains excellent material for the history of the idea in the West during the middle ages; W. Meyer, "Ludus de Antichristo," in *Sitzberichl der Münchener Akad.* (Phil. hist. Klasse 1882, H. i.); Kropatschek, *Das Schriftprincip der lutherischen Kirche*, i. 247 &c. (Leipzig, 1904); H. Preuss, *Die Vorstellungen vom Antichrist im späteren Mittelalter, bei Luther u. i. d. Konfessionellen Polemik* (Leipzig, 1906).

(W. Bo.)

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1 See further, Bousset, *Religion des Judentums*, ed. ii. pp. 289 &c., 381 &c., 585 &c.

2 See Gunkel, *Schöpfung und Chaos* (1893).

3 It is, of course, uncertain whether this phenomenon already occurs in 2 Cor. vi. 15, since here Belial might still be Satan; cf. however, *Ascensio Jesaiae* iv. 2 &c.; *Sibyll*. iii. 63 &c., ii. 167 &c.

4 It is not necessary to decide whether the epistle is by St Paul or by a pupil of Paul, although the former seems to the present writer to be by far the more probable, in spite of the brilliant attack on the genuineness of the epistle by Wrede in *Texte und Übersetzungen*, N.F. ix. 2.

5 Cf. 2 Thess. ii. 8; the Targum also, in its comment on the passage of Isaiah, applies "the wicked" to Antichrist.

6 See Bousset, *Kommentar zur Offenbarung Johannis*, on these passages.

7 *Ibid.* ch. xvii.: and Charles, *Ascension of Isaiah*, lvii. sq.

8 Harnack, *Chronologie der altchristlichen Literatur*, i. 573

9 See Bousset, in Herzog-Hauck, *Realencyklop. für Theologie und Kirsche* (ed. 3), xviii. 273 &c.

10 Latin text by Sackur, cf. *op. cit.* 1 &c.; Greek text by V. Istrin.

11 See Bousset, *Zeitschrift für Kirchengeschichte*, xx. p. 289 &c.

12 Published in Merx, *Archiv zur Erforschung des Alten Testament*.

13 See especially the *Ludus de Antichristo*, ed. W. Meyer.

ANTICLIMAX (*i.e.* the opposite to "climax"), in rhetoric, an abrupt declension (either deliberate or unintended) on the part of a speaker or writer from the dignity of idea which he appeared to be aiming at; as in the following well-known distich:—

"The great Dalhousie, he, the god of war,
Lieutenant-colonel to the earl of Mar."

An anticlimax can be intentionally employed only for a jocular or satiric purpose. It frequently partakes of the nature of antithesis, as—

"Die and endow a *college* or a *cat*."

It is often difficult to distinguish between "anticlimax" and "bathos"; but the former is more decidedly a relative term. A whole speech may never rise above the level of bathos; but a climax of greater or less elevation is the necessary antecedent of an anticlimax.

ANTICOSTI, an island of the province of Quebec, Canada, situated in the Gulf of St Lawrence, between 49° and 50° N., and between 61° 40′ and 64° 30′ W., with a length of 135 m. and a breadth of 30 m. Population 250, consisting chiefly of the keepers of the numerous lighthouses erected by the Canadian government. The coast is dangerous, and the only two harbours, Ellis Bay and Fox Bay, are very indifferent. Anticosti was sighted by Jacques Cartier in 1534, and named Assomption. In 1763 it was ceded by France to Britain, and in 1774 became part of Canada. Wild animals, especially bears, are numerous, but prior to 1896 the fish and game had been almost exterminated by indiscriminate slaughter. In that year Anticosti and the shore fisheries were leased to M. Menier, the French chocolate manufacturer, who converted the island into a game preserve, and attempted to develop its resources of lumber, peat and minerals.

See Logan, *Geological Survey of Canada, Report of Progress from its Commencement to 1863* (Montreal, 1863-1865); E. Billings, *Geological Survey of Canada: Catalogue of the Silurian Fossils of Anticosti* (Montreal, 1866); J. Schmitt, *Anticosti* (Paris, 1904).

ANTICYCLONE (*i.e.* opposite to a cyclone), an atmospheric system in which there is a descending movement of the air and a relative increase in barometric pressure over the part of the earth's surface affected by it. At the surface the air tends to flow outwards in all directions from the central area of high pressure, and is deflected on account of the earth's rotation (see FERREL'S LAW) so as to give a spiral movement in the direction of the hands of a watch face upwards in the northern hemisphere, against that direction in the southern hemisphere. Since the air in an anticyclone is descending, it becomes warmed and dried, and therefore transmits radiation freely whether from the sun to the earth or from the earth into space. Hence in winter anticyclonic weather is characterized by clear air with periods of frost, causing fogs in towns and low-lying damp areas, and in summer by still cloudless days with gentle variable airs and fine weather.

ANTICYRA, the ancient name of three cities of Greece, (1) (Mod. *Aspraspitia*), in Phocis, on the bay of Anticyra, in the Corinthian gulf; some remains are still visible. It was a town of considerable importance in ancient times; was destroyed by Philip of Macedon; recovered its prosperity; and was captured by T. Quinctius Flamininus in 198 B.C. The city was famous for its black hellebore, a herb which was regarded as a cure for insanity. This circumstance gave rise to a number of proverbial expressions, like Ἀντικύρας σε δεῖ or "naviget Anticyram," and to frequent allusions in the Greek and Latin writers. Hellebore was likewise considered beneficial in cases of gout and epilepsy. (2) In Thessaly, on the right bank of the river Spercheus, near its mouth. (3) In Locris, on the north side of the entrance to the

Corinthian gulf, near Naupactus.

ANTIETAM, the name of a Maryland creek, near which, on the 16th-17th of September 1862, was fought the battle of Antietam or Sharpsburg (see American Civil War), between the Federals under McClellan and the Confederates commanded by Lee. General McClellan had captured the passes of South Mountain farther east on the 14th, and his Army of the Potomac marched to meet Lee's forces which, hitherto divided, had, by the 16th, successfully concentrated between the Antietam and the Potomac. The Confederate Army of Northern Virginia occupied a position which, in relation to the surrounding country, may be compared to the string of a bow in the act of being drawn, Lee's left wing forming the upper half of the string, his right the lower, and the Potomac in his rear the bow itself. The town of Sharpsburg represents the fingers of the archer drawing the bow. The right wing of the position was covered by the Antietam as it approaches the Potomac, the upper course of that stream formed no part of the battlefield. Generals Longstreet and Jackson commanded the right and left wings. The division of A.P. Hill was at Harper's Ferry, but had received orders to rejoin Lee. McClellan's troops appeared late on the 16th, and Hooker was immediately sent across the upper Antietam. He had a sharp fight with Jackson's men, but night soon put an end to the contest. Early on the 19th the corps of Sumner and Mansfield followed Hooker across the upper stream whilst McClellan's left wing (Burnside's corps) drew up opposite Lee's extreme right. The Federal leader intended to hold back his centre whilst these two forces were rolling up Lee's wings. The battle began with a furious assault on the extreme right by Hooker's corps. After a very severe struggle he was repulsed with the loss of a quarter of his men, Jackson's divisions suffering even more severely and losing nearly all their generals and colonels. It was only the arrival of Hood and D.H. Hill which enabled Stonewall Jackson's corps to hold its ground, and had the other Federal corps been at hand to support Hooker the result might have been very different. Mansfield next attacked farther to the left and with better fortune. Mansfield was killed, but his successor led the corps well, and after heavy fighting Hood and D.H. Hill were driven back. Again want of support checked the Federals and the fight became stationary, both sides losing many men. Sumner now came into action, and overhaste involved him in a catastrophe, his troops being attacked in front and flank and driven back in great confusion with nearly half their number killed and wounded; and their retreat involved the gallant remnants of Mansfield's corps. Soon afterwards the Federal divisions of French and Richardson attacked D.H. Hill, whose men were now exhausted by continuous fighting. Here occurred the fighting in the "Bloody Lane," north of Sharpsburg which French and Richardson eventually carried. Opposed as they were by D.H. Hill, whose men had fought the battle of South Mountain and had already been three times engaged *à fond* on this day, proper support must have enabled the Federals to crush Lee's centre, but Franklin and Porter in reserve were not allowed by McClellan to move forward and the opportunity passed. Burnside, on the southern wing, had received his orders late, and acted on them still later. The battle was over on the right before he fired a shot, and Lee had been able to use nearly all his right wing troops to support Jackson. At last Burnside moved forward, and, after a brilliant defence by the handful of men left to oppose him, forced the Antietam and began to roll up Lee's right, only to be attacked in rear himself by A.P. Hill's troops newly arrived from Harper's Ferry. The repulse of Burnside ended the battle. Pressure was brought to bear on McClellan to renew the fight, but he refused and Lee retired across the Potomac unmolested. The Army of the Potomac had lost 11,832 men out of 46,000 engaged; the cavalry and two corps in reserve had only lost 578. Lee's 31,200 men lost over 8000 of their number.

See the bibliography appended to American Civil War, and also General Palfrey's *Antietam and Fredericksburg*.

ANTI-FEDERALISTS, the name given in the political history of the United States to those who, after the formation of the federal Constitution of 1787, opposed its ratification by the people of the several states. The "party" (though it was never regularly organized as such)

was composed of states rights, particularistic, individualistic and radical democratic elements; that is, of those persons who thought that a stronger government threatened the sovereignty and prestige of the states, or the special interests, individual or commercial, of localities, or the liberties of individuals, or who fancied they saw in the government proposed a new centralized, disguised “monarchic” power that would only replace the cast-off despotism of Great Britain. In every state the opposition to the Constitution was strong, and in two—North Carolina and Rhode Island—it prevented ratification until the definite establishment of the new government practically forced their adhesion. The individualistic was the strongest element of opposition; the necessity, or at least the desirability, of a bill of rights was almost universally felt. Instead of accepting the Constitution upon the condition of amendments,—in which way they might very likely have secured large concessions,—the Anti-Federalists stood for unconditional rejection, and public opinion, which went against them, proved that for all its shortcomings the Constitution was regarded as preferable to the Articles of Confederation. After the inauguration of the new government, the composition of the Anti-Federalist party changed. The Federalist (*q.v.*) party gradually showed broad-construction, nationalistic tendencies; the Anti-Federalist party became a strict-construction party and advocated popular rights against the asserted aristocratic, centralizing tendencies of its opponent, and gradually was transformed into the Democratic-Republican party, mustered and led by Thomas Jefferson, who, however, had approved the ratification of the Constitution and was not, therefore, an Anti-Federalist in the original sense of that term.

See O.G. Libby, *Geographical Distribution of the Vote... on the Federal Constitution, 1787-1788* (University of Wisconsin, Bulletin, 1894); S.B. Harding, *Contest over the Ratification of the Federal Constitution in ... Massachusetts* (Harvard University Studies, New York, 1896); and authorities on political and constitutional history in the article United States.

ANTIGO, a city and the county-seat of Langlade county, Wisconsin, U.S.A., about 160 m. N.W. of Milwaukee. Pop. (1890) 4424; (1900) 5145, of whom 965 were foreign-born; (1905) 6663; (1910) 7196. It is served by the Chicago & North Western railway. Antigo is the centre of a good farming and lumbering district, and its manufactures consist principally of lumber, chairs, furniture, sashes, doors and blinds, hubs and spokes, and other wood products. The city has a Carnegie library. Antigo was first settled in 1880, and was chartered as a city in 1885. Its name is said to be part of an Indian word, *neequee-antigo-sebi*, meaning “evergreen.”

ANTIGONE, (1) in Greek legend, daughter of Oedipus and Iocaste (Jocasta), or, according to the older story, of Euryganeia. When her father, on discovering that Iocaste, the mother of his children, was also his own mother, put his eyes out and resigned the throne of Thebes, she accompanied him into exile at Colonus. After his death she returned to Thebes, where Haemon, the son of Creon, king of Thebes, became enamoured of her. When her brothers Eteocles and Polyneices had slain each other in single combat, she buried Polyneices, although Creon had forbidden it. As a punishment she was sentenced to be buried alive in a vault, where she hanged herself, and Haemon killed himself in despair. Her character and these incidents of her life presented an attractive subject to the Greek tragic poets, especially Sophocles in the *Antigone* and *Oedipus at Colonus*, and Euripides, whose *Antigone*, though now lost, is partly known from extracts incidentally preserved in later writers, and from passages in his *Phoenissae*. In the order of the events, at least, Sophocles departed from the original legend, according to which the burial of Polyneices took place while Oedipus was yet in Thebes, not after he had died at Colonus. Again, in regard to Antigone’s tragic end Sophocles differs from Euripides, according to whom the calamity was averted by the intercession of Dionysus and was followed by the marriage of Antigone and Haemon. In Hyginus’s version of the legend, founded apparently on a tragedy by some follower of Euripides, Antigone, on being handed over by Creon to her lover Haemon to be slain, was secretly carried off by him, and concealed in a shepherd’s hut, where she bore him a son Maeon. When the boy grew up, he went to some funeral games at Thebes, and

was recognized by the mark of a dragon on his body. This led to the discovery that Antigone was still alive. Heracles pleaded in vain with Creon for Haemon, who slew both Antigone and himself, to escape his father's vengeance. On a painted vase the scene of the intercession of Heracles is represented (Heydermann, *Über eine nacheuripideische Antigone*, 1868). Antigone placing the body of Polyneices on the funeral pile occurs on a sarcophagus in the villa Pamfili in Rome, and is mentioned in the description of an ancient painting by Philostratus (*Imag.* ii. 29), who states that the flames consuming the two brothers burnt apart, indicating their unalterable hatred, even in death.

(2) A second Antigone was the daughter of Eurytion, king of Phthia, and wife of Peleus. Her husband, having accidentally killed Eurytion in the Calydonian boar hunt, fled and obtained expiation from Acastus, whose wife made advances to Peleus. Finding that her affection was not returned, she falsely accused Peleus of infidelity to his wife, who thereupon hanged herself (Apollodorus, iii. 13).

ANTIGONUS CYCLOPS (or MONOPTHALMOS; so called from his having lost an eye) (382-301 B.C.), Macedonian king, son of Philip, was one of the generals of Alexander the Great. He was made governor of Greater Phrygia in 333, and in the division of the provinces after Alexander's death (323) Pamphylia and Lycia were added to his command. He incurred the enmity of Perdiccas, the regent, by refusing to assist Eumenes (*q.v.*) to obtain possession of the provinces allotted to him. In danger of his life he escaped with his son Demetrius into Greece, where he obtained the favour of Antipater, regent of Macedonia (321); and when, soon after, on the death of Perdiccas, a new division took place, he was entrusted with the command of the war against Eumenes, who had joined Perdiccas against the coalition of Antipater, Antigonus, and the other generals. Eumenes was completely defeated, and obliged to retire to Nora in Cappadocia, and a new army that was marching to his relief was routed by Antigonus. Polyperchon succeeding Antipater (d. 319) in the regency, to the exclusion of Cassander, his son, Antigonus resolved to set himself up as lord of all Asia, and in conjunction with Cassander and Ptolemy of Egypt, refused to recognize Polyperchon. He entered into negotiations with Eumenes; but Eumenes remained faithful to the royal house. Effecting his escape from Nora, he raised an army, and formed a coalition with the satraps of the eastern provinces. He was at last delivered up to Antigonus through treachery in Persia and put to death (316). Antigonus again claimed authority over the whole of Asia, seized the treasures at Susa, and entered Babylonia, of which Seleucus was governor. Seleucus fled to Ptolemy, and entered into a league with him (315), together with Lysimachus and Cassander. After the war had been carried on with varying success from 315 to 311, peace was concluded, by which the government of Asia Minor and Syria was provisionally secured to Antigonus. This agreement was soon violated on the pretext that garrisons had been placed in some of the free Greek cities by Antigonus, and Ptolemy and Cassander renewed hostilities against him. Demetrius Poliorcetes, the son of Antigonus, wrested part of Greece from Cassander. At first Ptolemy had made a successful descent upon Asia Minor and on several of the islands of the Archipelago; but he was at length totally defeated by Demetrius in a naval engagement off Salamis, in Cyprus (306). On this victory Antigonus assumed the title of king, and bestowed the same upon his son, a declaration that he claimed to be the heir of Alexander. Antigonus now prepared a large army, and a formidable fleet, the command of which he gave to Demetrius, and hastened to attack Ptolemy in his own dominions. His invasion of Egypt, however, proved a failure; he was unable to penetrate the defences of Ptolemy, and was obliged to retire. Demetrius now attempted the reduction of Rhodes, which had refused to assist Antigonus against Egypt; but, meeting with obstinate resistance, he was obliged to make a treaty upon the best terms that he could (304). In 302, although Demetrius was again winning success after success in Greece, Antigonus was obliged to recall him to meet the confederacy that had been formed between Cassander, Seleucus and Lysimachus. A decisive battle was fought at Ipsus, in which Antigonus fell, in the eighty-first year of his age.

Diodorus Siculus xviii., xx. 46-86; Plutarch, *Demetrius, Eumenes*; Nepos, *Eumenes*; Justin xv. 1-4. See MACEDONIAN EMPIRE; and Köhler, "Das Reich des Antigonos," in the *Sitzungsberichte d. Berl. Akad.*, 1898, p. 835 f.

ANTIGONUS GONATAS (*c.* 319-239 B.C.), Macedonian king, was the son of Demetrius Poliorcetes, and grandson of Antigonus Cyclops. On the death of his father (283), he assumed the title of king of Macedonia, but did not obtain possession of the throne till 276, after it had been successively in the hands of Pyrrhus, Lysimachus, Seleucus, and Ptolemy Ceraunus. Antigonus repelled the invasion of the Gauls, and continued in undisputed possession of Macedonia till 274, when Pyrrhus returned from Italy, and (in 273) made himself master of nearly all the country. On the advance of Pyrrhus into Peloponnesus, he recovered his dominions. He was again (between 263 and 255) driven out of his kingdom by Alexander, the son of Pyrrhus, and again recovered it. The latter part of his reign was comparatively peaceful, and he gained the affection of his subjects by his honesty and his cultivation of the arts. He gathered round him distinguished literary men—philosophers, poets, and historians. He died in the eightieth year of his age, and the forty-fourth of his reign. His surname was usually derived by later Greek writers from the name of his supposed birthplace, Gonni (Gonnus) in Thessaly; some take it to be a Macedonian word signifying an iron plate for protecting the knee; neither conjecture is a happy one, and in our ignorance of the Macedonian language it must remain unexplained.

Plutarch, *Demetrius, Pyrrhus, Aratus*; Justin xxiv. 1; xxv. 1-3; Polybius ii. 43-45, ix. 29, 34. See Thirlwall, *History of Greece*, vol viii. (1847); Holm, *Griech. Gesch.* vol. iv. (1894); Niese, *Gesch. d. griech. u. maked. Staaten*, vols. i. and ii. (1893, 1899); Beloch, *Griech. Gesch.* vol. iii. (1904); also Wilamowitz-Moellendorff, *Antigonos von Karystos* (1881).

ANTIGONUS OF CARYSTUS (in Euboea), Greek writer on various subjects, flourished in the 3rd century B.C. After some time spent at Athens and in travelling, he was summoned to the court of Attalus I. (241-197) of Pergamum. His chief work was the *Lives of Philosophers* drawn from personal knowledge, of which considerable fragments are preserved in Athenaeus and Diogenes Laertius. We still possess his *Collection of Wonderful Tales*, chiefly extracted from the θαυμάσια Ἀκούσματα attributed to Aristotle and the θαυμάσια of Callimachus. It is doubtful whether he is identical with the sculptor who, according to Pliny (*Nat. Hist.* xxxiv. 19), wrote books on his art.

Text in Keller, *Rerum Naturalium Scriptores Graeci Minores*, i. (1877); see Kopke, *De Antigono Carystio* (1862); Wilamowitz-Möllendorff, "A. von Karystos," in *Philologische Untersuchungen*, iv. (.1881).

ANTIGUA, an island in the British West Indies, forming, with Barbuda and Redonda, one of the five presidencies in the colony of the Leeward Islands. It lies 50 m. E. of St Kitts, in 17° 6′ N. and 61° 45′ W., and is 54 m. in circumference, with an area of 108 sq. m. The surface is comparatively flat, and there is no central range of mountains as in most other West Indian islands, but among the hills in the south-west an elevation of 1328 ft. is attained. Owing to the absence of rivers, the paucity of springs, and the almost complete deforestation, Antigua is subject to frequent droughts, and although the average rainfall is 45.6 in., the variations from year to year are great. The dryness of the air proves very beneficial to persons suffering from pulmonary complaints. The high rocky coast is much indented by bays and arms of the sea, several of which form excellent harbours, that of St John being safe and commodious, but inferior to English Harbour, which, although little frequented, is capable of receiving vessels of the largest size. The soil, especially in the interior, is very fertile. Sugar and pineapples are the chief products for export, but sweet potatoes, yams, maize and guinea corn are grown for local consumption. Antigua is the residence of the governor of the Leeward Islands, and the meeting place of the general legislative council, but there is also a local legislative council of 16 members, half official and half unofficial. Until 1898, when the Crown Colony system was adopted, the legislative council was partly elected, partly nominated. Elementary education is compulsory. Agricultural training is given under government control, and the Cambridge local examinations and those of the University of London are held annually. Antigua is the see of a

bishop of the Church of England, the members of which predominate here, but Moravians and Wesleyans are numerous. There is a small volunteer defence force. The island has direct steam communication with Great Britain, the United States and Canada, and is also served by the submarine cable. The three chief towns are St John, Falmouth and Parham. St John (pop. about 10,000), the capital, situated on the north-west, is an exceedingly picturesque town, built on an eminence overlooking one of the most beautiful harbours in the West Indies. Although both Falmouth and Parham have good harbours, most of the produce of the island finds its way to St John for shipment. The trade is chiefly with the United States, and the main exports are sugar, molasses, logwood, tamarinds, turtles, and pineapples. The cultivation of cotton has been introduced with success, and this also is exported. The dependent islands of Barbuda and Redonda have an area of 62 sq. m. Pop. of Antigua (1901), 34,178; of the presidency, 35,073.

Antigua was discovered in 1493 by Columbus, who is said to have named it after a church in Seville, called Santa Maria la Antigua. It remained, however, uninhabited until 1632, when a body of English settlers took possession of it, and in 1663 another settlement of the same nation was effected under the direction of Lord Willoughby, to whom the entire island was granted by Charles II. It was ravaged by the French in 1666, but was soon after reconquered by the British and formally restored to them by the treaty of Breda. Since then it has been a British possession.

ANTILEGOMENA (ἀντιλεγόμενα, contradicted or disputed), an epithet used by the early Christian writers to denote those books of the New Testament which, although sometimes publicly read in the churches, were not for a considerable time admitted to be genuine, or received into the canon of Scripture. They were thus contrasted with the *Homologoumena*, or universally acknowledged writings. Eusebius (*Hist. Eccl.* iii. 25) applies the term *Antilegomena* to the Epistle of James, the Epistle of Jude, 2 Peter, 2 and 3 John, the Acts of Paul, the Shepherd of Hermas, the Teaching of the Apostles, the Apocalypse of John, and the Gospel according to the Hebrews. In later usage it describes those of the New Testament books which have obtained a doubtful place in the Canon. These are the Epistles of James and Jude, 2 Peter, 2 and 3 John, the Apocalypse of John, and the Epistle to the Hebrews.

ANTILIA or Antillia, sometimes called the Island of the Seven Cities (Portuguese *Isla das Sete Cidades*), a legendary island in the Atlantic ocean. The origin of the name is quite uncertain. The oldest suggested etymology (1455) fancifully connects it with the name of the Platonic Atlantis, while later writers have endeavoured to derive it from the Latin *anterior* (*i.e.* the island that is reached "before" Cipango), or from the *Jezirat al Tennyn*, "Dragon's Isle," of the Arabian geographers. Antilia is marked in an anonymous map which is dated 1424 and preserved in the grand-ducal library at Weimar. It reappears in the maps of the Genoese B. Beccario or Beccaria (1435), and of the Venetian Andrea Bianco (1436), and again in 1455 and 1476. In most of these it is accompanied by the smaller and equally legendary islands of Royllo, St Atanagio, and Tanmar, the whole group being classified as *insulae de novo repertae*, "newly discovered islands." The Florentine Paul Toscanelli, in his letters to Columbus and the Portuguese court (1474), takes Antilia as the principal landmark for measuring the distance between Lisbon and the island of Cipango or Zipangu (Japan). One of the chief early descriptions of Antilia is that inscribed on the globe which the geographer Martin Behaim made at Nuremberg in 1492 (see Map: *History*). Behaim relates that in 734—a date which is probably a misprint for 714—and after the Moors had conquered Spain and Portugal, the island of Antilia or "Septe Cidade" was colonized by Christian refugees under the archbishop of Oporto and six bishops. The inscription adds that a Spanish vessel sighted the island in 1414. According to an old Portuguese tradition each of the seven leaders founded and ruled a city, and the whole island became a Utopian commonwealth, free from the disorders of less favoured states. Later Portuguese tradition localized Antilia in the island of St Michael's, the largest of the Azores. It is impossible to estimate how far this legend commemorates some actual but imperfectly recorded

discovery, and how far it is a reminiscence of the ancient idea of an elysium in the western seas which is embodied in the legends of the Isles of the Blest or Fortunate Islands.

ANTILLES, a term of somewhat doubtful origin, now generally used, especially by foreign writers, as synonymous with the expression “West India Islands.” Like “Brazil,” it dates from a period anterior to the discovery of the New World, “Antilia,” as stated above, being one of those mysterious lands, which figured on the medieval charts sometimes as an archipelago, sometimes as continuous land of greater or lesser extent, constantly fluctuating in mid-ocean between the Canaries and East India. But it came at last to be identified with the land discovered by Columbus. Later, when this was found to consist of a vast archipelago enclosing the Caribbean Sea and Gulf of Mexico, *Antilia* assumed its present plural form, *Antilles*, which was collectively applied to the whole of this archipelago.

A distinction is made between the Greater Antilles, including Cuba, Jamaica, Haiti, and Porto Riro; and the Lesser Antilles, covering the remainder of the islands.

ANTILOCHUS, in Greek legend, son of Nestor, king of Pylos. One of the suitors of Helen, he accompanied his father to the Trojan War. He was distinguished for his beauty, swiftness of foot, and skill as a charioteer; though the youngest among the Greek princes, he commanded the Pylians in the war, and performed many deeds of valour. He was a favourite of the gods, and an intimate friend of Achilles, to whom he was commissioned to announce the death of Patroclus. When his father was attacked by Memnon, he saved his life at the sacrifice of his own (Pindar, *Pyth.* vi. 28), thus fulfilling an oracle which had bidden him “beware of an Ethiopian.” His death was avenged by Achilles. According to other accounts, he was slain by Hector (Hyginus, *Fab.* 113), or by Paris in the temple of the Thymbraean Apollo together with Achilles (Dares Phrygius 34). His ashes, with those of Achilles and Patroclus, were deposited in a mound on the promontory of Sigeum, where the inhabitants of Ilium offered sacrifice to the dead heroes (*Odyssey*, xxiv. 72; Strabo xiii. p. 596). In the *Odyssey* (xi. 468) the three friends are represented as united in the underworld and walking together in the fields of asphodel; according to Pausanias (iii. 19) they dwell together in the island of Leuke.

ANTIMACASSAR, a separate covering for the back of a chair, or the head or cushions of a sofa, to prevent soiling of the permanent fabric. The name is attributable to the unguent for the hair commonly used in the early 19th century,—Byron calls it “thine incomparable oil, Macassar.” The original antimacassar was almost invariably made of white crochet-work, very stiff, hard, and uncomfortable, but in the third quarter of the 19th century it became simpler and less inartistic, and was made of soft coloured stuffs, usually worked with a simple pattern in tinted wools or silk.

ANTIMACHUS, of Colophon or Claros, Greek poet and grammarian, flourished about 400 B.C. Scarcely anything is known of his life. His poetical efforts were not generally appreciated, although he received encouragement from his younger contemporary Plato (Plutarch, *Lysander*, 18). His chief works were: a long-winded epic *Thebais*, an account of

the expedition of the Seven against Thebes and the war of the Epigoni; and an elegiac poem *Lyde*, so called from the poet's mistress, for whose death he endeavoured to find consolation by ransacking mythology for stories of unhappy love affairs (Plutarch, *Consol. ad Apoll.* 9; Athenaeus xiii. 597). Antimachus was the founder of "learned" epic poetry, and the forerunner of the Alexandrian school, whose critics allotted him the next place to Homer. He also prepared a critical recension of the Homeric poems.

Fragments, ed. Stoll (1845); Bergk, *Poetae Lyrici Graeci* (1882); Kinkel, *Fragmenta epicorum Graecorum* (1877).

ANTI-MASONIC PARTY, an American political organization which had its rise after the mysterious disappearance, in 1826, of William Morgan (*c.* 1776-*c.* 1826), a Freemason of Batavia, New York, who had become dissatisfied with his Order and had planned to publish its secrets. When his purpose became known to the Masons, Morgan was subjected to frequent annoyances, and finally in September 1826 he was seized and surreptitiously conveyed to Fort Niagara, whence he disappeared. Though his ultimate fate was never known, it was generally believed at the time that he had been foully dealt with. The event created great excitement, and led many to believe that Masonry and good citizenship were incompatible. Opposition to Masonry was taken up by the churches as a sort of religious crusade, and it also became a local political issue in western New York, where early in 1827 the citizens in many mass meetings resolved to support no Mason for public office. In New York at this time the National Republicans, or "Adams men," were a very feeble organization, and shrewd political leaders at once determined to utilize the strong anti-Masonic feeling in creating a new and vigorous party to oppose the rising Jacksonian Democracy. In this effort they were aided by the fact that Jackson was a high Mason and frequently spoke in praise of the Order. In the elections of 1828 the new party proved unexpectedly strong, and after this year it practically superseded the National Republican party in New York. In 1829 the hand of its leaders was shown, when, in addition to its antagonism to the Masons, it became a champion of internal improvements and of the protective tariff. From New York the movement spread into other middle states and into New England, and became especially strong in Pennsylvania and Vermont. A national organization was planned as early as 1827, when the New York leaders attempted, unsuccessfully, to persuade Henry Clay, though a Mason, to renounce the Order and head the movement. In September 1831 the party at a national convention in Baltimore nominated as its candidates for the presidency and vice-presidency William Wirt of Maryland and Amos Ellmaker (1787-1851) of Pennsylvania; and in the election of the following year it secured the seven electoral votes of the state of Vermont. This was the high tide of its prosperity; in New York in 1833 the organization was moribund, and its members gradually united with other opponents of Jacksonian Democracy in forming the Whig party. In other states, however, the party survived somewhat longer, but by 1836 most of its members had united with the Whigs. Its last act in national politics was to nominate William Henry Harrison for president and John Tyler for vice-president at a convention in Philadelphia in November 1838.

The growth of the anti-Masonic movement was due to the political and social conditions of the time rather than to the Morgan episode, which was merely the torch that ignited the train. Under the name of "Anti-Masons" able leaders united those who were discontented with existing political conditions, and the fact that William Wirt, their choice for the presidency in 1832, was not only a Mason but even defended the Order in a speech before the convention that nominated him, indicates that simple opposition to Masonry soon became a minor factor in holding together the various elements of which the party was composed.

See Charles McCarthy, *The Antimasonic Party: A Study of Political Anti-Masonry in the United States, 1827-1840*, in the Report of the American Historical Association for 1902 (Washington, 1903); the *Autobiography of Thurlow Weed* (2 vols., Boston, 1884); A.G. Mackey and W.R. Singleton, *The History of Freemasonry*, vol. vi. (New York, 1898); and J.D. Hammond, *History of Political Parties in the State of New York* (2 vols., Albany, 1842).

ANTIMONY (symbol Sb, atomic weight 120.2), one of the metallic chemical elements, included in the same natural family of the elements as nitrogen, phosphorus, arsenic, and bismuth. Antimony, in the form of its sulphide, has been known from very early times, more especially in Eastern countries, reference to it being made in the Old Testament. The Arabic name for the naturally occurring stibnite is “kohl”; Dioscorides mentions it under the term στίμμι, Pliny as *stibium*; and Geber as *antimonium*. By the German writers it is called *Speissglanz*. Basil Valentine alludes to it in his *Triumphal Car of Antimony* (circa 1600), and at a later date describes the preparation of the metal.

Native mineral antimony is occasionally found, and as such was first recognized in 1748. It usually occurs as lamellar or glanular masses, with a tin-white colour and metallic lustre, in limestone or in mineral veins often in association with ores of silver. Distinct crystals are rarely met with; these are rhombohedral and isomorphous with arsenic and bismuth; they have a perfect cleavage parallel to the basal plane, *c* (111), and are sometimes twinned on a rhombohedral plane, *e* (110). Hardness 3-3½ specific gravity 6.63-6.72. Sala in Sweden, Allemont in Dauphine, and Sarawak in Borneo may be mentioned as some of the localities for this mineral.

Antimony, however, occurs chiefly as the sulphide, stibnite; to a much smaller extent it occurs in combination with other metallic sulphides in the minerals wolfsbergite, boulangerite, bournonite, pyrargyrite, &c. For the preparation of metallic antimony the crude stibnite is first liquated, to free it from earthy and siliceous matter, and is then roasted in order to convert it into oxide. After oxidation, the product is reduced by heating with carbon, care being taken to prevent any loss through volatilization, by covering the mass with a layer of some protective substance such as potash, soda or glauber salt, which also aids the refining. For rich ores the method of roasting the sulphide with metallic iron is sometimes employed; carbon and salt or sodium sulphate being used to slag the iron. Electrolytic methods, in which a solution of antimony sulphide in sodium sulphide is used as the electrolyte, have been proposed (see German Patent 67973, and also Borcher’s *Electro-Metallurgie*), but do not yet appear to have been used on the large scale.

Antimony combines readily with many other metals to form alloys, some of which find extensive application in the arts. Type-metal is an alloy of lead with antimony and tin, to which occasionally a small quantity of copper or zinc is added. The presence of the antimony in this alloy gives to it hardness, and the property of expanding on solidification, thus allowing a sharp cast of the letter to be taken. An alloy of tin and antimony forms the basis of Britannia-metal, small quantities of copper, lead, zinc or bismuth being added. It is a white metal of bluish tint and is malleable and ductile. For the linings of brasses, various white metals are used, these being alloys of copper, antimony and tin, and occasionally lead.

Antimony is a silvery white, crystalline, brittle metal, and has a high lustre. Its specific gravity varies from 6.7 to 6.86; it melts at 432° C. (Dalton), and boils between 1090-1600° C. (T. Carnelley), or above 1300° (V. Meyer). Its specific heat is 0.0523 (H. Kopp). The vapour density of antimony at 1572° C. is 10.74, and at 1640° C. 9.78 (V. Meyer, *Berichte*, 1889, 22, p. 725), so that the antimony molecule is less complex than the molecules of the elements phosphorus and arsenic. An amorphous modification of antimony can be prepared by heating the metal in a stream of nitrogen, when it condenses in the cool part of the apparatus as a grey powder of specific gravity 6.22, melting at 614° C. and containing 98-99% of antimony (F. Herard, *Comptes Rendus*, 1888, cvii. 420).

Another form of the metal, known as explosive antimony, was discovered by G. Gore (*Phil. Trans.*, 1858, p. 185; 1859, p. 797; 1862, p. 623), on electrolysing a solution of antimony trichloride in hydrochloric acid, using a positive pole of antimony and a negative pole of copper or platinum wire. It has a specific gravity of 5.78 and always contains some unaltered antimony trichloride (from 6 to 20%, G. Gore). It is very unstable, a scratch causing it instantaneously to pass into the stable form with explosive violence and the development of much heat. Similar phenomena are exhibited in the electrolysis of solutions of antimony tribromide and tri-iodide, the product obtained from the tribromide having a specific gravity of 5.4, and containing 18-20% of antimony tribromide, whilst that from the tri-iodide has a specific gravity of 5.2-5.8 and contains about 22% of hydriodic acid and antimony tri-iodide.

The atomic weight of antimony has been determined by the analysis of the chloride, bromide and iodide. J.P. Cooke (*Proc. Amer. Acad.*, 1878, xiii. i) and J. Bongartz (*Berichte*, 1883, 16, p. 1942) obtained the value 120, whilst F. Pfeiffer (*Ann. Chim. et Phys.* ccix. 173) obtained the value 121 from the electrolysis of the chloride.

Pure antimony is quite permanent in air at ordinary temperatures, but when heated in air

or oxygen it burns, forming the trioxide. It decomposes steam at a red heat, and burns (especially when finely powdered) in chlorine. Dilute hydrochloric acid is without action on it, but on warming with the concentrated acid, antimony trichloride is formed; it dissolves in warm concentrated sulphuric acid, the sulphate $Sb_2(SO_4)_3$ being formed. Nitric acid oxidizes antimony either to the trioxide Sb_4O_6 or the pentoxide Sb_2O_5, the product obtained depending on the temperature and concentration of the acid. It combines directly with sulphur and phosphorus, and is readily oxidized when heated with metallic oxides (such as litharge, mercuric oxide, manganese dioxide, &c.). Antimony and its salts may be readily detected by the orange precipitate of antimony sulphide which is produced when sulphuretted hydrogen is passed through their acid solutions, and also by the Marsh test (see Arsenic); in this latter case the black stain produced is not soluble in bleaching powder solution. Antimony compounds when heated on charcoal with sodium carbonate in the reducing flame give brittle beads of metallic antimony, and a white incrustation of the oxide. The antimonious compounds are decomposed on addition of water, with formation of basic salts.

Antimony may be estimated quantitatively by conversion into the sulphide; the precipitate obtained is dried at 100° C. and heated in a current of carbon dioxide, or it may be converted into the tetroxide by nitric acid.

Antimony, like phosphorus and arsenic, combines directly with hydrogen. The compound formed, antimoniuretted hydrogen or stibine, SbH_3, may also be prepared by the action of hydrochloric acid on an alloy of antimony and zinc, or by the action of nascent hydrogen on antimony compounds. As prepared by these methods it contains a relatively large amount of hydrogen, from which it can be freed by passing through a tube immersed in liquid air, when it condenses to a white solid. It is a poisonous colourless gas, with a characteristic offensive smell. In its general behaviour it resembles arsine, burning with a violet flame and being decomposed by heat into its constituent elements. When passed into silver nitrate solution it gives a black precipitate of silver antimonide, $SbAg_3$. It is decomposed by the halogen elements and also by sulphuretted hydrogen. All three hydrogen atoms are replaceable by organic radicals and the resulting compounds combine with compounds of the type RCl, RBr and RI to form stibonium compounds.

There are three known oxides of antimony, the trioxide Sb_4O_6 which is capable of combining with both acids and bases to form salts, the tetroxide Sb_2O_4 and the pentoxide Sb_2O_5. Antimony trioxide occurs as the minerals valentinite and senarmontite, and can be artificially prepared by burning antimony in air; by heating the metal in steam to a bright red heat; by oxidizing melted antimony with litharge; by decomposing antimony trichloride with an aqueous solution of sodium carbonate, or by the action of dilute nitric acid on the metal. It is a white powder, almost insoluble in water, and when volatilized, condenses in two crystalline forms, either octahedral or prismatic. It is insoluble in sulphuric and nitric acids, but is readily soluble in hydrochloric and tartaric acids and in solutions of the caustic alkalies. On strongly heating in air it is converted into the tetroxide. The corresponding hydroxide, orthoantimonious acid, $Sb(OH)_3$, can be obtained in a somewhat impure form by precipitating tartar emetic with dilute sulphuric acid; or better by decomposing antimonyl tartaric acid with sulphuric acid and drying the precipitated white powder at 100° C. Antimony tetroxide is formed by strongly heating either the trioxide or pentoxide. It is a nonvolatile white powder, and has a specific gravity of 6.6952; it is insoluble in water and almost so in acids—concentrated hydrochloric acid dissolving a small quantity. It is decomposed by a hot solution of potassium bitartrate. Antimony pentoxide is obtained by repeatedly evaporating antimony with nitric acid and heating the resulting antimonic acid to a temperature not above 275° C.; by heating antimony with red mercuric oxide until the mass becomes yellow (J. Berzelius); or by evaporating antimony trichloride to dryness with nitric acid. It is a pale yellow powder (of specific gravity 6.5), which on being heated strongly gives up oxygen and forms the tetroxide. It is insoluble in water, but dissolves slowly in hydrochloric acid. It possesses a feeble acid character, giving metantimoniates when heated with alkaline carbonates.

Orthoantimonic acid, H_3SbO_4, is obtained by the decomposition of its potassium salt with nitric acid (A. Geuther); or by the addition of water to the pentachloride, the precipitate formed being dried over sulphuric acid (P. Conrad, *Chem. News*, 1879, xl. 198). It is a white powder almost insoluble in water and nitric acid, and when heated, is first converted into metantimonic acid, $HSbO_3$, and then into the pentoxide Sb_2O_5. Pyroantimonic acid, $H_4Sb_2O_7$ (the metantimonic acid of E. Frémy), is obtained by decomposing antimony pentachloride with hot water, and drying the precipitate so obtained at 100° C. It is a white powder which is more soluble in water and acids than orthoantimonic acid. It forms two series of salts, of the types $M_2H_2Sb_2O_7$ and $M_4Sb_2O_7$. Metantimonic acid, $HSbO_3$, can be obtained by heating

orthoantimonic acid to 175° C., or by long fusion of antimony with antimony sulphide and nitre. The fused mass is extracted with water, nitric acid is added to the solution, and the precipitate obtained washed with water (J. Berzelius). It is a white powder almost insoluble in water. On standing with water for some time it is slowly converted into the ortho-acid.

Compounds of antimony with all the halogen elements are known, one atom of the metal combining with three or five atoms of the halogen, except in the case of bromine, where only the tribromide is known. The majority of these halide compounds are decomposed by water, with the formation of basic salts. Antimony trichloride ("Butter of Antimony"), $SbCl_3$, is obtained by burning the metal in chlorine; by distilling antimony with excess of mercuric chloride; and by fractional distillation of antimony tetroxide or trisulphide in hydrochloric acid solution. It is a colourless deliquescent solid of specific gravity 3.06; it melts at 73.2° C. (H. Kopp) to a colourless oil; and boils at 223° (H. Capitaine). It is soluble in alcohol and in carbon bisulphide, and also in a small quantity of water; but with an excess of water it gives a precipitate of various oxychlorides, known as powder of algaroth (*q.v.*). These precipitated oxychlorides on continued boiling with water lose all their chlorine and ultimately give a residue of antimony trioxide. It combines with chlorides of the alkali metals to form double salts, and also with barium, calcium, strontium, and magnesium chlorides. Antimony pentachloride, $SbCl_5$ is prepared by heating the trichloride in a current of chlorine. It is a nearly colourless fuming liquid of unpleasant smell, which can be solidified to a mass of crystals melting at -6°C. It dissociates into the trichloride and chlorine when heated. It combines with water, forming the hydrates $SbCl_5 \cdot H_2O$ and $SbCl_5 \cdot 4H_2O$; it also combines with phosphorus oxychloride, hydrocyanic acid, and cyanogen chloride. In chloroform solution it combines with anhydrous oxalic acid to form a compound, $Sb_2Cl_8(C_2O_4)$, which is to be

considered as tetra-chlorstibonium oxalate $\begin{matrix} COOSbCl_4 \\ | \\ COOSbCl_4 \end{matrix}$ (R. Anschütz and Evans, *Annalen*, 1887, ccxxxix. 235). Antimonyl chloride, SbOCl, is produced by the decomposition of one part of the trichloride with four parts of water. Prepared in this way it contains a small quantity of the unaltered chloride, which can be removed by ether or carbon bisulphide. It is a white powder insoluble in water, alcohol and ether. On heating, it is converted into the oxychloride $Sb_4O_5Cl_2$ ($Sb_2O_3 \cdot SbOCl$). Antimony oxychloride, $SbOCl_3$, is formed by addition of the calculated quantity of water to ice-cooled antimony pentachloride, $SbCl_5 + H_2O = SbOCl_3 + 2HCl$. It forms a yellowish crystalline precipitate which in moist air goes to a thick liquid. Compounds of composition, $SbOCl_3 \cdot 2SbCl_5$ and $SbO_2Cl \cdot 2SbOCl_3$, have also been described (W.C. Williams, *Chem. News*. 1871, xxiv. 234).

Antimony tribromide, $SbBr_3$, and tri-iodide, SbI_3, may be prepared by the action of antimony on solutions of bromine or iodine in carbon bisulphide. The tribromide is a colourless crystalline mass of specific gravity 4.148 (23°), melting at 90° to 94° C. and boiling at 275.4° C. (H. Kopp). The tri-iodide forms red-coloured crystals of specific gravity 4.848 (26°), melting at 165° to 167° C. and boiling at 401° C. By the action of water they give oxybromides and oxyiodides SbOBr, $Sb_4O_5Br_2$, SbOI. Antimony penta-iodide, SbI_5, is formed by heating antimony with excess of iodine, in a sealed tube, to a temperature not above 130°C. It forms a dark brown crystalline mass, melting at 78° to 79° C., and is easily dissociated on heating. Antimony trifluoride, SbF_3, is obtained by dissolving the trioxide in aqueous hydrofluoric acid or by distilling antimony with mercuric fluoride. By rapid evaporation of its solution it may be obtained in small prisms. The pentafluoride SbF_5 results when metantimonic acid is dissolved in hydrofluoric acid, and the solution is evaporated. It forms an amorphous gummy mass, which is decomposed by heat. Oxyfluorides of composition SbOF and $SbOF_3$ are known.

Two sulphides of antimony are definitely known, the trisulphide Sb_2S_3 and the pentasulphide Sb_2S_5; a third, the tetrasulphide Sb_2S_4, has also been described, but its existence is doubtful. Antimony trisulphide, Sb_2S_3, occurs as the mineral antimonite or stibnite, from which the commercial product is obtained by a process of liquation. The amorphous variety may be obtained from the crystalline form by dissolving it in caustic potash or soda or in solutions of alkaline sulphides, and precipitating the hot solution by dilute sulphuric acid. The precipitate is then washed with water and dried at 100° C., by which treatment it is obtained in the anhydrous form. On precipitating antimony trichloride or tartar emetic in acid solution with sulphuretted hydrogen, an orange-red precipitate of the hydrated sulphide is obtained, which turns black on being heated to 200° C The trisulphide heated in a current of hydrogen is reduced to the metallic state; it burns in air forming the tetroxide, and is soluble in concentrated hydrochloric acid, in solutions of the caustic alkalis, and in alkaline sulphides. By the union of antimony trisulphide with basic sulphides, livers of antimony are obtained. These substances are usually prepared by fusing their components together, and are dark powders which are less soluble in water the more antimony they contain. These thioantimonites are used in the vulcanizing of rubber and in

the preparation of matches. Antimony pentasulphide, Sb_2S_5, is prepared by precipitating a solution of the pentachloride with sulphuretted hydrogen, by decomposing "Schlippe's salt" (*q.v.*) with an acid, or by passing sulphuretted hydrogen into water containing antimonic acid. It forms a fine dark orange powder, insoluble in water, but readily soluble in aqueous solutions of the caustic alkalis and alkaline carbonates. On heating in absence of air, it decomposes into the trisulphide and sulphur.

An antimony phosphide and arsenide are known, as is also a thiophosphate, $SbPS_4$, which is prepared by heating together antimony trichloride and phosphorus pentasulphide.

Many organic compounds containing antimony are known. By distilling an alloy of antimony and sodium with mythyl iodide, mixed with sand, trimethyl stibine, $Sb(CH_3)_3$, is obtained; this combines with excess of methyl iodide to form tetramethyl stibonium iodide, $Sb(CH_3)_4I$. From this iodide the trimethyl stibine may be obtained by distillation with an alloy of potassium and antimony in a current of carbon dioxide. It is a colourless liquid, slightly soluble in water, and is spontaneously inflammable. The stibonium iodide on treatment with moist silver oxide gives the corresponding tetramethyl stibonium hydroxide, $Sb(CH_3)_4OH$, which forms deliquescent crystals, of alkaline reaction, and absorbs carbon dioxide readily. On distilling trimethyl stibine with zinc methyl, antimony tetra-methyl and penta-methyl are formed. Corresponding antimony compounds containing the ethyl group are known, as is also a tri-phenyl stibine, $Sb(C_6H_5)_3$, which is prepared from antimony trichloride, sodium and monochlorbenzene. See Chung Yu Wang, *Antimony* (1909).

Antimony in Medicine.—So far back as Basil Valentine and Paracelsus, antimonial preparations were in great vogue as medicinal agents, and came to be so much abused that a prohibition was placed upon their employment by the Paris parlement in 1566. Metallic antimony was utilized to make goblets in which wine was allowed to stand so as to acquire emetic properties, and "everlasting" pills of the metal, supposed to act by contact merely, were administered and recovered for future use after they had fulfilled their purpose. Antimony compounds act as irritants both externally and internally. Tartar emetic (antimony tartrate) when swallowed, acts directly on the wall of the stomach, producing vomiting, and after absorption continues this effect by its action on the medulla. It is a powerful cardiac depressant, diminishing both the force and frequency of the heart's beat. It depresses respiration, and in large doses lowers temperature. It depresses the nervous system, especially the spinal cord. It is excreted by all the secretions and excretions of the body. Thus as it passes out by the bronchial mucous membrane it increases the amount of secretion and so acts as an expectorant. On the skin its action is that of a diaphoretic, and being also excreted by the bile it acts slightly as a cholagogue. Summed up, its action is that of an irritant, and a cardiac and nervous depressant. But on account of this depressant action it is to be avoided for women and children and rarely used for men.

Toxicology.—Antimony is one of the "protoplasmic" poisons, directly lethal to all living matter. In acute poisoning by it the symptoms are almost identical with those of arsenical poisoning, which is much commoner (See Arsenic). The post-mortem appearances are also very similar, but the gastro-intestinal irritation is much less marked and inflammation of the lungs is more commonly seen. If the patient is not already vomiting freely the treatment is to use the stomach-pump, or give sulphate of zinc (gr. 10-30) by the mouth or apomorphine (gr. $\frac{1}{20}$-$\frac{1}{10}$) subcutaneously. Frequent doses of a teaspoonful of tannin dissolved in water should be administered, together with strong tea and coffee and mucilaginous fluids. Stimulants may be given subcutaneously, and the patient should be placed in bed between warm blankets with hot-water bottles. Chronic poisoning by antimony is very rare, but resembles in essentials chronic poisoning by arsenic. In its medico-legal aspects antimonial poisoning is of little and lessening importance.

ANTINOMIANS (Gr. ἀντί, against, νόμος, law), a term apparently coined by Luther to stigmatize Johannes Agricola (*q.v.*) and his following, indicating an interpretation of the antithesis between law and gospel, recurrent from the earliest times. Christians being released, in important particulars, from conformity to the Old Testament polity as a whole, a real difficulty attended the settlement of the limits and the immediate authority of the remainder, known vaguely as the moral law. Indications are not wanting that St Paul's doctrine of justification by faith was, in his own day, mistaken or perverted in the interests of immoral licence. Gnostic sects approached the question in two ways. Marcionites, named

by Clement of Alexandria *Antitactae* (revolters against the Demiurge) held the Old Testament economy to be throughout tainted by its source; but they are not accused of licentiousness. Manichaeans, again, holding their spiritual being to be unaffected by the action of matter, regarded carnal sins as being, at worst, forms of bodily disease. Kindred to this latter view was the position of sundry sects of English fanatics during the Commonwealth, who denied that an elect person sinned, even when committing acts in themselves gross and evil. Different from either of these was the Antinomianism charged by Luther against Agricola. Its starting-point was a dispute with Melanchthon in 1527 as to the relation between repentance and faith. Melanchthon urged that repentance must precede faith, and that knowledge of the moral law is needed to produce repentance. Agricola gave the initial place to faith, maintaining that repentance is the work, not of law, but of the gospel-given knowledge of the love of God. The resulting Antinomian controversy (the only one within the Lutheran body in Luther's lifetime) is not remarkable for the precision or the moderation of the combatants on either side. Agricola was apparently satisfied in conference with Luther and Melanchthon at Torgau, December 1527. His eighteen *Positiones* of 1537 revived the controversy and made it acute. Random as are some of his statements, he was consistent in two objects: (1) in the interest of solifidian doctrine, to place the rejection of the Catholic doctrine of good works on a sure ground; (2) in the interest of the New Testament, to find all needful guidance for Christian duty in its principles, if not in its precepts. From the latter part of the 17th century charges of Antinomianism have frequently been directed against Calvinists, on the ground of their disparagement of "deadly doing" and of "legal preaching." The virulent controversy between Arminian and Calvinistic Methodists produced as its ablest outcome Fletcher's *Checks to Antinomianism* (1771-1775).

See G. Kawerau, in A. Hauck's *Realencyklopadie* (1896); Riess, in I. Goschler's *Dict. Encyclop. de la théol. cath.* (1858); J.H. Blunt *Dict. of Doct. and Hist. Theol.* (1872); J.C.L. Gieseler, *Ch. Hist.* (New York ed. 1868, vol. iv.).

ANTINOMY (Gr. ἀντί, against, νόμος, law), literally, the mutual incompatibility, real or apparent, of two laws. The term acquired a special significance in the philosophy of Kant, who used it to describe the contradictory results of applying to the universe of pure thought the categories or criteria proper to the universe of sensible perception (phenomena). These antinomies are four—two mathematical, two dynamical—connected with (1) the limitation of the universe in respect of space and time, (2) the theory that the whole consists of indivisible atoms (whereas, in fact, none such exist), (3) the problem of freedom in relation to universal causality, (4) the existence of a universal being—about each of which pure reason contradicts the empirical, as thesis and antithesis. Kant claimed to solve these contradictions by saying, that in no case is the contradiction real, however really it has been intended by the opposing partisans, or must appear to the mind without critical enlightenment. It is wrong, therefore, to impute to Kant, as is often done, the view that human reason is, on ultimate subjects, at war with itself, in the sense of being impelled by equally strong arguments towards alternatives contradictory of each other. The difficulty arises from a confusion between the spheres of phenomena and noumena. In fact no rational cosmology is possible.

See John Watson, *Selections from Kant* (trans. Glasgow, 1897), pp. 155 foll.; W. Windelband, *History of Philosophy* (Eng. trans. 1893); H. Sidgwick, *Philos. of Kant*, lectures x. and xi. (Lond., 1905); F. Paulsen, *I. Kant* (Eng. trans. 1902), pp. 216 foll.

ANTINOËS, a beautiful youth of Claudiopolis in Bithynia, was the favourite of the emperor Hadrian, whom he accompanied on his journeys. He committed suicide by drowning himself in the Nile (A.D. 130), either in a fit of melancholy or in order to prolong his patron's life by his voluntary sacrifice. After his death, Hadrian caused the most extravagant respect to be paid to his memory. Not only were cities called after him, medals struck with his effigy, and statues erected to him in all parts of the empire, but he was raised to the rank

of the gods, temples were built for his worship in Bithynia, Mantineia in Arcadia, and Athens, festivals celebrated in his honour and oracles delivered in his name. The city of Antinoöpolis was founded on the ruins of Besa where he died (Dio Cassius lix. 11; Spartianus, *Hadrian*). A number of statues, busts, gems and coins represented Antinoüs as the ideal type of youthful beauty, often with the attributes of some special god. We still possess a colossal bust in the Vatican, a bust in the Louvre, a bas-relief from the Villa Albani, a statue in the Capitoline museum, another in Berlin, another in the Lateran, and many more.

See Levezow, *Über den Antinous* (1808); Dietrich, *Antinoos* (1884); Laban, *Der Gemütsausdruck des Antinoos* (1891); *Antinoüs, A Romance of Ancient Rome*, from the German of A. Hausrath, by M. Saftord (New York, 1882); Ebers, *Der Kaiser* (1881).

ANTIOCH. There were sixteen cities known to have been founded under this name by Hellenistic monarchs; and at least twelve others were renamed Antioch. But by far the most famous and important in the list was Ἀντιόχεια ἡ ἐπὶ Δάφνῃ (mod. *Antakia*), situated on the left bank of the Orontes, about 20 m. from the sea and its port, Seleucia of Pieria (*Suedia*). Founded as a Greek city in 300 B.C. by Seleucus Nicator, as soon as he had assured his grip upon western Asia by the victory of Ipsus (301), it was destined to rival Alexandria in Egypt as the chief city of the nearer East, and to be the cradle of gentile Christianity. The geographical character of the district north and north-east of the elbow of Orontes makes it the natural centre of Syria, so long as that country is held by a western power; and only Asiatic, and especially Arab, dynasties have neglected it for the oasis of Damascus. The two easiest routes from the Mediterranean, lying through the Orontes gorge and the Beilan Pass, converge in the plain of the Antioch Lake (*Balük Geut* or *El Bahr*) and are met there by (1) the road from the Amanic Gates (Baghche Pass) and western Commagene, which descends the valley of the Kara Su, (2) the roads from eastern Commagene and the Euphratean crossings at Samosata (Samsat) and Apamea Zeugma (Birejik), which descend the valleys of the Afrin and the Kuwaik, and (3) the road from the Euphratean ford at Thapsacus, which skirts the fringe of the Syrian steppe. Travellers by all these roads must proceed south by the single route of the Orontes valley. Alexander is said to have camped on the site of Antioch, and dedicated an altar to Zeus Bottiaeus, which lay in the north-west of the future city. But the first western sovereign practically to recognize the importance of the district was Antigonus, who began to build a city, Antigonia, on the Kara Su a few miles north of the situation of Antioch; but, on his defeat, he left it to serve as a quarry for his rival Seleucus. The latter is said to have appealed to augury to determine the exact site of his projected foundation; but less fantastic considerations went far to settle it. To build south of the river, and on and under the last east spur of Casius, was to have security against invasion from the north, and command of the abundant waters of the mountain. One torrent, the Onopniktes (“donkey-drowner”), flowed through the new city, and many other streams came down a few miles west into the beautiful suburb of Daphne. The site appears not to have been found wholly uninhabited. A settlement, *Meroe*, boasting a shrine of Anait, called by the Greeks the “Persian Artemis,” had long been located there, and was ultimately included in the eastern suburbs of the new city; and there seems to have been a village on the spur (Mt. Silpius), of which we hear in late authors under the name *Io*, or *Iopolis*. This name was always adduced as evidence by Antiochenes (*e.g.* Libanius) anxious to affiliate themselves to the Attic Ionians—an anxiety which is illustrated by the Athenian types used on the city’s coins. At any rate, Io may have been a small early colony of trading Greeks (*Javan*). John Malalas mentions also a village, Bottia, in the plain by the river.

The original city of Seleucus was laid out in imitation of the “gridiron” plan of Alexandria by the architect, Xenarius. Libanius describes the first building and arrangement of this city (i. p. 300. 17). The citadel was on Mt. Silpius and the city lay mainly on the low ground to the north, fringing the river. Two great colonnaded streets intersected in the centre. Shortly afterwards a second quarter was laid out, probably on the east and by Antiochus I., which, from an expression of Strabo, appears to have been the native, as contrasted with the Greek, town. It was enclosed by a wall of its own. In the Orontes, north of the city, lay a large island, and on this Seleucus II. Callinicus began a third walled “city,” which was finished by Antiochus III. A fourth and last quarter was added by Antiochus IV. Epiphanes (175-164 B.C.); and thenceforth Antioch was known as *Tetrapolis*. From west to east the whole was

about 4 m. in diameter and little less from north to south, this area including many large gardens. Of its population in the Greek period we know nothing. In the 4th century A.D. it was about 200,000 according to Chrysostom, who probably did not reckon slaves. About 4 m. west and beyond the suburb, Heraclea, lay the paradise of Daphne, a park of woods and waters, in the midst of which rose a great temple to the Pythian Apollo, founded by Seleucus I. and enriched with a cult-statue of the god, as Musagetes, by Bryaxis. A companion sanctuary of Hecate was constructed underground by Diocletian. The beauty and the lax morals of Daphne were celebrated all over the western world; and indeed Antioch as a whole shared in both these titles to fame. Its amenities awoke both the enthusiasm and the scorn of many writers of antiquity.

Antioch became the capital and court-city of the western Seleucid empire under Antiochus I., its counterpart in the east being Seleucia-on-Tigris; but its paramount importance dates from the battle of Ancyra (240 B.C.), which shifted the Seleucid centre of gravity from Asia Minor, and led indirectly to the rise of Pergamum. Thenceforward the Seleucids resided at Antioch and treated it as their capital *par excellence*. We know little of it in the Greek period, apart from Syria (*q.v.*), all our information coming from authors of the late Roman time. Among its great Greek buildings we hear only of the theatre, of which substructures still remain on the flank of Silpius, and of the royal palace, probably situated on the island. It enjoyed a great reputation for letters and the arts (Cicero *pro Archia*, 3); but the only names of distinction in these pursuits during the Seleucid period, that have come down to us, are Apollophanes, the Stoic, and one Phoebus, a writer on dreams. The mass of the population seems to have been only superficially Hellenic, and to have spoken Aramaic in non-official life. The nicknames which they gave to their later kings were Aramaic; and, except Apollo and Daphne, the great divinities of north Syria seem to have remained essentially native, such as the “Persian Artemis” of Meroe and Atargatis of Hierapolis Bambyce. We may infer, from its epithet, “Golden,” that the external appearance of Antioch was magnificent; but the city needed constant restoration owing to the seismic disturbances to which the district has always been peculiarly liable. The first great earthquake is said by the native chronicler John Malalas, who tells us most that we know of the city, to have occurred in 148 B.C., and to have done immense damage. The inhabitants were turbulent, fickle and notoriously dissolute. In the many dissensions of the Seleucid house they took violent part, and frequently rose in rebellion, for example against Alexander Balas in 147 B.C., and Demetrius II. in 129. The latter, enlisting a body of Jews, punished his capital with fire and sword. In the last struggles of the Seleucid house, Antioch turned definitely against its feeble rulers, invited Tigranes of Armenia to occupy the city in 83, tried to unseat Antiochus XIII. in 65, and petitioned Rome against his restoration in the following year. Its wish prevailed, and it passed with Syria to the Roman Republic in 64 B.C., but remained a *civitas libera*.

The Romans both felt and expressed boundless contempt for the hybrid Antiochenes; but their emperors favoured the city from the first, seeing in it a more suitable capital for the eastern part of the empire than Alexandria could ever be, thanks to the isolated position of Egypt. To a certain extent they tried to make it an eastern Rome. Caesar visited it in 47 B.C., and confirmed its freedom. A great temple to Jupiter Capitolinus rose on Silpius, probably at the instance of Octavian, whose cause the city had espoused. A forum of Roman type was laid out. Tiberius built two long colonnades on the south towards Silpius. Agrippa and Tiberius enlarged the theatre, and Trajan finished their work. Antoninus Pius paved the great east to west artery with granite. A circus, other colonnades and great numbers of baths were built, and new aqueducts to supply them bore the names of Caesars, the finest being the work of Hadrian. The Roman client, King Herod, erected a long *stoa* on the east, and Agrippa encouraged the growth of a new suburb south of this. Under the empire we chiefly hear of the earthquakes which shook Antioch. One, in A.D. 37, caused the emperor Caligula to send two senators to report on the condition of the city. Another followed in the next reign; and in 115, during Trajan’s sojourn in the place with his army of Parthia, the whole site was convulsed, the landscape altered, and the emperor himself forced to take shelter in the circus for several days. He and his successor restored the city; but in 526, after minor shocks, the calamity returned in a terrible form, and thousands of lives were lost, largely those of Christians gathered to a great church assembly. We hear also of especially terrific earthquakes on the 29th of November 528 and the 31st of October 588.

At Antioch Germanicus died in A.D. 19, and his body was burnt in the forum. Titus set up the Cherubim, captured from the Jewish temple, over one of the gates. Commodus had Olympic games celebrated at Antioch, and in A.D. 266 the town was suddenly raided by the Persians, who slew many in the theatre. In 387 there was a great sedition caused by a new tax levied by order of Theodosius, and the city was punished by the loss of its metropolitan status. Zeno, who renamed it Theopolis, restored many of its public buildings just before the

great earthquake of 526, whose destructive work was completed by the Persian Chosroes twelve years later. Justinian made an effort to revive it, and Procopius describes his repairing of the walls; but its glory was past.

The chief interest of Antioch under the empire lies in its relation to Christianity. Evangelized perhaps by Peter, according to the tradition upon which the Antiochene patriarchate still rests its claim for primacy (cf. Acts xi.), and certainly by Barnabas and Saul, its converts were the first to be called "Christians." They multiplied exceedingly, and by the time of Theodosius were reckoned by Chrysostom at about 100,000 souls. Between 252 and 300 A.D. ten assemblies of the church were held at Antioch and it became the residence of the patriarch of Asia. When Julian visited the place in 362 the impudent population railed at him for his favour to Jewish and pagan rites, and to revenge itself for the closing of its great church of Constantine, burned down the temple of Apollo in Daphne. The emperor's rough and severe habits and his rigid administration prompted Antiochene lampoons, to which he replied in the curious satiric *apologia*, still extant, which he called *Misopogon*. His successor, Valens, who endowed Antioch with a new forum having a statue of Valentinian on a central column, reopened the great church, which stood till the sack of Chosroes in 538. Antioch gave its name to a certain school of Christian thought, distinguished by literal interpretation of the Scriptures and insistence on the human limitations of Jesus. Diodorus of Tarsus and Theodore of Mopsuestia were the leaders of this school. The principal local saint was Simeon Stylites, who performed his penance on a hill some 40 m. east. His body was brought to the city and buried in a building erected under the emperor Leo. In A.D. 635, during the reign of Heraclius, Antioch passed into Saracen hands, and decayed apace for more than 300 years; but in 969 it was recovered for Byzantium by Michael Burza and Peter the Eunuch. In 1084 the Seljuk Turks captured it but held it only fourteen years, yielding place to the crusaders, who besieged it for nine months, enduring frightful sufferings. Being at last betrayed, it was given to Bohemund, prince of Tarentum, and it remained the capital of a Latin principality for nearly two centuries. It fell at last to the Egyptian, Bibars, in 1268, after a great destruction and slaughter, from which it never revived. Little remains now of the ancient city, except colossal ruins of aqueducts and part of the Roman walls, which are used as quarries for modern Antakia; but no scientific examination of the site has been made. A statue in the Vatican and a silver statuette in the British Museum perpetuate the type of its great effigy of the civic Fortune of Antioch—a majestic seated figure, with Orontes as a youth issuing from under her feet.

ANTAKIA, the modern town, is still of considerable importance. Pop. about 25,000, including Ansarieh, Jews, and a large body of Christians of several denominations about 8000 strong. Though superseded by Aleppo (*q.v.*) as capital of N. Syria, it is still the centre of a large district, growing in wealth and productiveness with the draining of its central lake, undertaken by a French company. The principal cultures are tobacco, maize and cotton, and the mulberry for silk production. Liquorice also is collected and exported. In 1822 (as in 1872) Antakia suffered by earthquake, and when Ibrahim Pasha made it his headquarters in 1835, it had only some 5000 inhabitants. Its hopes, based on a Euphrates valley railway, which was to have started from its port of Suedia (Seleucia), were doomed to disappointment, and it has suffered repeatedly from visitations of cholera; but it has nevertheless grown rapidly and will resume much of its old importance when a railway is made down the lower Orontes valley. It is a centre of American mission enterprise, and has a British vice-consul.

See C.O. Miiller, *Antiquitates Antiochenae* (1839); A. Freund, *Beiträge zur antiochenischen ... Stadtchronik* (1882); R. Forster, in *Jahrbuch* of Berlin Arch. Institute, xii. (1897). Also authorities for SYRIA.

(D. G. H.)

SYNODS OF ANTIOCH. Beginning with three synods convened between 264 and 269 in the matter of Paul of Samosata, more than thirty councils were held in Antioch in ancient times. Most of these dealt with phases of the Arian and of the Christological controversies. The most celebrated took place in the summer of 341 at the dedication of the golden Basilica, and is therefore called *in encaeniis* (ἐν ἐγκαινίοις), *in dedicatione*. Nearly a hundred bishops were present, all from the Orient, but the bishop of Rome was not represented. The emperor Constantius attended in person. The council approved three creeds (Hahn, §§ 153-155). Whether or no the so-called "fourth formula" (Hahn, § 156) is to be ascribed to a continuation of this synod or to a subsequent but distinct assembly of the same year, its aim is like that of the first three; while repudiating certain Arian formulas it avoids the Athanasian shibboleth "homoousios." The somewhat colourless compromise doubtless proceeded from the party of Eusebius of Nicomedia, and proved not inacceptable to the more nearly orthodox members of the synod. The twenty-five canons adopted regulate the

so-called metropolitan constitution of the church. Ecclesiastical power is vested chiefly in the metropolitan (later called archbishop), and the semi-annual provincial synod (cf. Nicaea, canon 5), which he summons and over which he presides. Consequently the powers of country bishops (*chorepiscopi*) are curtailed, and direct recourse to the emperor is forbidden. The sentence of one judicatory is to be respected by other judicatories of equal rank; re-trial may take place only before that authority to whom appeal regularly lies (see canons 3, 4, 6). Without due invitation, a bishop may not ordain, or in any other way interfere with affairs lying outside his proper territory; nor may he appoint his own successor. Penalties are set on the refusal to celebrate Easter in accordance with the Nicene decree, as well as on leaving a church before the service of the Eucharist is completed. The numerous objections made by eminent scholars in past centuries to the ascription of these twenty-five canons to the synod *in encaeniis* have been elaborately stated and probably refuted by Hefele. The canons formed part of the *Codex canonum* used at Chalcedon in 451 and passed over into the later collections of East and West.

The canons are printed in Greek by Mansi ii. 1307 ff., Bruns i. 80 ff., Lauchert 43 ff., and translated by Hefele, *Councils*, ii. 67 ff. and by H.R. Percival in the *Nicene and Post-Nicene Fathers*, 2nd series, xiv. 108 ff. The four dogmatic formulas are given by G. Ludwig Hahn, *Bibliothek der Symbole*, 3rd edition (Breslau, 1897), 183 ff.; for translations compare the *Nicene and Post-Nicene Fathers*, 2nd series, iv. 461 ff., ii. 39 ff., ix. 12, ii. 44, and Hefele, ii. 76 ff. For full titles see Councils.

(W. W. R.*)

ANTIOCH IN PISIDIA, an ancient city, the remains of which, including ruins of temples, a theatre and a fine aqueduct, were found by Arundell in 1833 close to the modern Yalovach. It was situated on the lower southern slopes of the Sultan Dagh, in the Konia vilayet of Asia Minor, on the right bank of a stream, the ancient Anthius, which flows into the Hoiran Geul. It was probably founded on the site of a Phrygian sanctuary, by Seleucus Nicator, before 280 B.C. and was made a free city by the Romans in 189 B.C. It was a thoroughly Hellenized, Greek-speaking city, in the midst of a Phrygian people, with a mixed population that included many Jews. Before 6 B.C. Augustus made it a colony, with the title Caesarea, and it became the centre of civil and military administration in south Galatia, the romanization of which was progressing rapidly in the time of Claudius, A.D. 41-54, when Paul visited it (Acts xiii. 14, xiv. 21, xvi. 6, xviii. 23). In 1097 the crusaders found rest and shelter within its walls. The ruins are interesting, and show that Antioch was a strongly fortified city of Hellenic and Roman type.

ANTIOCHUS, the name of thirteen kings of the Seleucid dynasty in Nearer Asia. The most famous are Antiochus III. the Great (223-187 B.C.) who sheltered Hannibal and waged war with Rome, and his son Antiochus IV. Epiphanes (176-164 B.C.) who tried to suppress Judaism by persecution (see Seleucid Dynasty).

The name was subsequently borne by the kings of Commagene (69 B.C.-A.D. 72), whose house was affiliated to the Seleucid.

Antiochus I. of Commagene, who without sufficient reason has been identified with the Seleucid Antiochus XIII. Asiaticus, made peace on advantageous terms with Pompey in 64 B.C. Subsequently he fought on Pompey's side in the Civil War, and later still repelled an attack on Samosata by Marcus Antonius (Mark Antony.) He died before 31 B.C. and was succeeded by one Mithradates I. This Mithradates was succeeded by an Antiochus II., who was executed by Augustus in 29 B.C. After another Mithradates we know of an Antiochus III., on whose death in A.D. 17 Commagene became a Roman province. In 38 his son Antiochus IV. Epiphanes was made king by Caligula, who deposed him almost immediately. Restored by Claudius in 41, he reigned until 72 as an ally of Rome against Parthia. In that year he was deposed on suspicion of treason and retired to Rome. Several of his coins are extant.

On all the above see "Antiochos" in Pauly-Wissowa's *Realencyclopadie der classischen*

Altertumswissenschaft, i. part ii. (1894).

ANTIOCHUS OF ASCALON (1st century B.C.), Greek philosopher. His philosophy consisted in an attempt to reconcile the doctrines of his teachers Philo of Larissa and Mnesarchus the Stoic. Against the scepticism of the former, he held that the intellect has in itself a sufficient test of truth; against Mnesarchus, that happiness, though its main factor is virtue, depends also on outward circumstances. This electicism is known as the Fifth Academy (see ACADEMY, GREEK). His writings are lost, and we are indebted for information to Cicero (*Acad. Pr.* ii. 43), who studied under him at Athens, and Sextus Empiricus (*Pyrrh. hyp.* i. 235). Antiochus lectured also in Rome and Alexandria.

See R. Hoyer, *De Antiocho Ascalonita* (Bonn, 1883).

ANTIOCHUS OF SYRACUSE, Greek historian, flourished about 420 B.C. Nothing is known of his life, but his works, of which only fragments remain, enjoyed a high reputation. He wrote a *History of Sicily* from the earliest times to 424, which was used by Thucydides, and the *Colonizing of Italy*, frequently referred to by Strabo and Dionysius of Halicarnassus.

Müller, *Fragmenta Historicorum Graecorum*, i.; Wölfflin, *Antiochos von Syrakus*, 1872.

ANTIOPE. (1) In Greek legend, the mother of Amphion and Zethus, and, according to Homer (*Od.* xi. 260), a daughter of the Boeotian river-god Asopus. In later poems she is called the daughter of Nycteus or Lycurgus. Her beauty attracted Zeus, who, assuming the form of a satyr, took her by force (Apollodorus iii. 5). After this she was carried off by Epopeus, king of Sicyon, who would not give her up till compelled by her uncle Lycus. On the way home she gave birth, in the neighbourhood of Eleutherae on Mount Cithaeron, to the twins Amphion and Zethus, of whom Amphion was the son of the god, and Zethus the son of Epopeus. Both were left to be brought up by herdsmen. At Thebes Antiope now suffered from the persecution of Dirce, the wife of Lycus, but at last escaped towards Eleutherae, and there found shelter, unknowingly, in the house where her two sons were living as herdsmen. Here she was discovered by Dirce, who ordered the two young men to tie her to the horns of a wild bull. They were about to obey, when the old herdsman, who had brought them up, revealed his secret, and they carried out the punishment on Dirce instead (Hyginus, *Fab.* 8). For this, it is said, Dionysus, to whose worship Dirce had been devoted, visited Antiope with madness, which caused her to wander restlessly all over Greece till she was cured, and married by Phocus of Tithorca, on Mount Parnassus, where both were buried in one grave (Pausanias ix. 17, x. 32).

(2) A second Antiope, daughter of Ares, and sister of Hippolyte, queen of the Amazons, was the wife of Theseus. There are various accounts of the manner in which Theseus became possessed of her, and of her subsequent fortunes. Either she gave herself up to him out of love, when with Heracles he captured Themiscyra, the seat of the Amazons, or she fell to his lot as a captive (Diodorus iv. 16). Or again, Theseus himself invaded the dominion of the Amazons and carried her off, the consequence of which was a counter-invasion of Attica by the Amazons. After four months of war peace was made, and Antiope left with Theseus as a peace-offering. According to another account, she had joined the Amazons against him because he had been untrue to her in desiring to marry Phaedra. She is said to have been killed by another Amazon, Molpadia, a rival in her affection for Theseus. Elsewhere it was believed that he had himself killed her, and fulfilled an oracle to that effect (Hyginus, *Fab.* 241). By Theseus she had a son, the well-known Hippolytus (Plutarch, *Theseus*).

ANTIOQUIA, an interior department of the republic of Colombia, lying S. of Bolivar, W. of the Magdalena river, and E. of Cauca. Area, 22,870 sq. m.; pop. (est. 1899) 464,887. The greater part of its territory lies between the Magdalena and Cauca rivers and includes the northern end of the Central Cordillera. The country is covered with valuable forests, and its mineral wealth renders it one of the most important mining regions of the republic. The capital, Medellin (est. pop. 53,000 in 1902), is a thriving mining centre, 4822 ft. above sea-level, and 125 m. from Puerto Berrió on the Magdalena. Other important towns are Manizales (18,000) in the extreme south, the commercial centre of a rich gold and grazing region; Antioquia, the old capital, on the Cauca; and Puerto Berrió on the Magdalena, from which a railway has been started to the capital.

ANTIPAROS (anc. *Oliaros*), an island of the kingdom of Greece, in the modern eparchy of Naxos, separated by a strait (about 1½ m. wide at the narrowest point) from the west coast of Pares. It is 7 m. long by 3 broad, and contains about 700 inhabitants, most of whom live in Kastro, a village on the north coast, and are employed in agriculture and fishing. Formerly piracy was common. The only remarkable feature in the island is a stalactite cavern on the south coast, which is reached by a narrow passage broken by two steep and dangerous descents which are accomplished by the aid of rope-ladders. The grotto itself, which is about 150 ft. by 100, and 50 ft. high (not all can be seen from any part, and probably some portions are still unexplored), shows many remarkable examples of stalactite formations and incrustations of dazzling brilliance. It is not mentioned by ancient writers; the first western traveller to visit it was the marquis de Nointel (ambassador of Louis XIV. to the Porte) who descended it with a numerous suite and held high mass there on Christmas day 1673. There is, however, in the entrance of the cavern an inscription recording the names of visitors in ancient times.

See J.P. de Tournefort, *Relation d'un voyage au Levant* (1717); English edition, 1718, vol. i. p. 146, and guide-books to Greece.

ANTIPATER (398?-319 B.C.), Macedonian general, and regent of Macedonia during Alexander's Eastern expedition (334-323). He had previously (346) been sent as ambassador by Philip to Athens and negotiated peace after the battle of Chaeroneia (338). About 332 he set out against the rebellious tribes of Thrace; but before this insurrection was quelled, the Spartan king Agis had risen against Macedonia. Having settled affairs in Thrace as well as he could, Antipater hastened to the south, and in a battle near Megalopolis (331) gained a complete victory over the insurgents (Diodorus xvii. 62). His regency was greatly troubled by the ambition of Olympias, mother of Alexander, and he was nominally superseded by Craterus. But, on the death of Alexander in 323, he was, by the first partition of the empire, left in command of Macedonia, and in the Lamian War, at the battle of Crannon (322), crushed the Greeks who had attempted to re-assert their independence. Later in the same year he and Craterus were engaged in a war against the Aetolians, when the news arrived from Asia which induced Antipater to conclude peace with them; for Antigonus reported that Perdiccas contemplated making himself sole master of the empire. Antipater and Craterus accordingly prepared for war against Perdiccas, and allied themselves with Ptolemy, the governor of Egypt. Antipater crossed over into Asia in 321; and while still in Syria, he received information that Perdiccas had been murdered by his own soldiers. Craterus fell in battle against Eumenes (Diodorus xviii. 25-39). Antipater, now sole regent, made several new regulations, and having quelled a mutiny of his troops and commissioned Antigonus to continue the war against Eumenes and the other partisans of Perdiccas, returned to Macedonia, where he arrived in 320 (Justin xiii. 6). Soon after he was seized by an illness

which terminated his active career, 319. Passing over his son Cassander, he appointed the aged Polyperchon regent, a measure which gave rise to much confusion and ill-feeling (Diodorus xvii., xviii).

ANTIPHANES, the most important writer of the Middle Attic comedy with the exception of Alexis, lived from about 408 to 334 B.C. He was apparently a foreigner who settled in Athens, where he began to write about 387. He was extremely prolific: more than 200 of the 365 (or 260) comedies attributed to him are known to us from the titles and considerable fragments preserved in Athenaeus. They chiefly deal with matters connected with the table, but contain many striking sentiments.

Fragments in Koch, *Comicorum Atticorum Fragmenta*, ii. (1884); see also Clinton, *Philological Museum*, i. (1832); Meineke, *Historia Critica Comicorum Graecorum* (1839).

ANTIPHILUS, a Greek painter, of the age of Alexander. He worked for Philip of Macedon and Ptolemy I. of Egypt. Thus he was a contemporary of Apelles, whose rival he is said to have been, but he seems to have worked in quite another style. Quintilian speaks of his facility: the descriptions of his works which have come down to us show that he excelled in light and shade, in genre representations, and in caricature.

See Brunn, *Geschichte der griechischen Kunstler*, ii. p. 249.

ANTIPHON, of Rhamnus in Attica, the earliest of the "ten" Attic orators, was born in 480 B.C. He took an active part in political affairs at Athens, and, as a zealous supporter of the oligarchical party, was largely responsible for the establishment of the Four Hundred in 411 (see THERAMENES); on the restoration of the democracy he was accused of treason and condemned to death. Thucydides (viii. 68) expresses a very high opinion of him. Antiphon may be regarded as the founder of political oratory, but he never addressed the people himself except on the occasion of his trial. Fragments of his speech then delivered in defence of his policy (called Περὶ μεταστάσεως) have been edited by J. Nicole (1907) from an Egyptian papyrus. His chief business was that of a professional speech-writer (λογογράφος), for those who felt incompetent to conduct their own cases— as all disputants were obliged to do—without expert assistance. Fifteen of Antiphon's speeches are extant: twelve are mere school exercises on fictitious cases, divided into tetralogies, each consisting of two speeches for prosecution and defence—accusation, defence, reply, counter-reply; three refer to actual legal processes. All deal with cases of homicide (φονικαὶ δίκαι). Antiphon is also said to have composed a Τέχνη or art of Rhetoric.

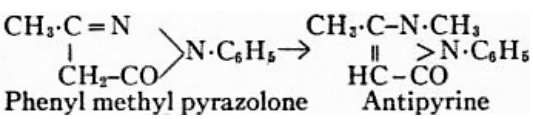
Edition, with commentary, by Maetzner (1838); text by Blass (1881); Jebb, *Attic Orators*; Plutarch, *Vitae X. Oratorum*; Philostratus, *Vit. Sophistarum*, i. 15; van Cleef, *Index Antiphonteus*, Ithaca, N.Y. (1895); see also RHETORIC.

ANTIPHONY (Gr. ἀντί, and φωνή, a voice), a species of psalmody in which the choir or congregation, being divided into two parts, sing alternately. The peculiar structure of the Hebrew psalms renders it probable that the antiphonal method originated in the service of the ancient Jewish Church. According to the historian Socrates, its introduction into

Christian worship was due to Ignatius (died 115 A.D.), who in a vision had seen the angels singing in alternate choirs. In the Latin Church it was not practised until more than two centuries later, when it was introduced by Ambrose, bishop of Milan, who compiled an antiphonary, or collection of words suitable for antiphonal singing. The antiphonary still in use in the Roman Catholic Church was compiled by Gregory the Great (590 A.D.).

ANTIPODES (Gr. ἀντί, opposed to, and πόδες, feet), a term applied strictly to any two peoples or places on opposite sides of the earth, so situated that a line drawn from the one to the other passes through the centre of the globe and forms a true diameter. Any two places having this relation—as London and, approximately, Antipodes Island, near New Zealand— must be distant from each other by 180° of longitude, and the one must be as many degrees to the north of the equator as the other is to the south, in other words, the latitudes are numerically equal, but one is *north* and the other *south*. Noon at the one place is midnight at the other, the longest day corresponds to the shortest, and mid-winter is contemporaneous with midsummer. In the calculation of days and nights, midnight on the one side may be regarded as corresponding to the noon either of the *previous* or of the *following* day. If a voyager sail eastward, and thus anticipate the sun, his dating will be twelve hours in advance, while the reckoning of another who has been sailing westward will be as much in arrear. There will thus be a difference of twenty-four hours between the two when they meet. To avoid the confusion of dates which would thus arise, it is necessary to determine a meridian at which dates should be brought into agreement, *i.e.* a line the crossing of which would involve the changing of the name of the day either forwards, when proceeding westwards, or backwards, when proceeding eastwards. Mariners have generally adopted the meridian 180° from Greenwich, situated in the Pacific Ocean, as a convenient line for co-ordinating dates. The so-called “International Date Line,” which is, however, practically only due to American initiative, is designed to remove certain objections to the meridian of 180° W., the most important of which is that groups of islands lying about this meridian differ in date by a day although only a few miles apart. Several forms have been suggested; these generally agree in retaining the meridian of 180° in the mid Pacific, with a bend in the north in order to make the Aleutian Islands and Alaska of the same time as America, and also in the south so as to bring certain of the South Sea islands into line with Australia and New Zealand.

ANTIPYRINE (phenyldimethyl pyrazolone) ($C_{11}H_{12}N_2O$), is prepared by the condensation of phenylhydrazine with aceto-acetic ester, the resulting phenyl methyl pyrazolone being heated with methyl iodide and methyl alcohol to 100-110° C.:



On the large scale phenylhydrazine is dissolved in dilute sulphuric acid, the solution warmed to about 40° C. and the aceto-acetic ester added. When the reaction is complete the acid is neutralized with soda, and the phenyl methyl pyrazolone extracted with ether and distilled *in vacuo*. The portion distilling at about 200° C. is then methylated by means of methyl alcohol and methyl iodide at 100-110° C., the excess of methyl alcohol removed and the product obtained decolorized by sulphuric acid. The residue is treated with a warm concentrated solution of soda, and the oil which separates is removed by shaking with benzene. The benzene layer on evaporation deposits the anti-pyrine as a colourless crystalline solid which melts at 113° C. and is soluble in water. It is basic in character, and gives a red coloration on the addition of ferric chloride. In medicine anti-pyrine (“phenazonum”) has been used as an analgesic and antipyretic. The dose is 5-20 grs., but on account of its depressant action on the heart, and the toxic effects to which it occasionally

gives rise, it is now but little used. It is more safely replaced by phenacetine.

ANTIQUARY, a person who devotes himself to the study of ancient learning and "antiques," *i.e.* ancient objects of art or science. The London Society of Antiquaries was formed in the 18th century to promote the study of antiquities. As early as 1572 a society had been founded by Bishop Matthew Parker, Sir Robert Cotton, William Camden and others for the preservation of national antiquities. This body existed till 1604, when it fell under suspicion of being political in its aims, and was abolished by James I. Papers read at their meetings are preserved in the Cottonian library and were printed by Thomas Hearne in 1720 under the title *A Collection of Curious Discourses*, a second edition appearing in 1771. In 1707 a number of English antiquaries began to hold regular meetings for the discussion of their hobby and in 1717 the Society of Antiquaries was formally reconstituted, finally receiving a charter from George II. in 1751. In 1780 George III. granted the society apartments in Somerset House, Strand. The society is governed by a council of twenty and a president who is *ex officio* a trustee of the British Museum. The present headquarters of the society are at Burlington House, Piccadilly.

The Society of Antiquaries of Scotland was founded in 1780, and has the management of a large national antiquarian museum in Edinburgh. In Ireland a society was founded in 1849 called the Kilkenny Archaeological Society, holding its meetings at Kilkenny. In 1869 its name was changed to the Royal Historical and Archaeological Association of Ireland, and in 1890 to the Royal Society of Antiquaries of Ireland, its office being transferred to Dublin. In France *La Société Nationale des Antiquaires de France* was formed in 1814 by the reconstruction of the *Acadêmie Celtique*, which had existed since 1805. The American Antiquarian Society was founded in 1812, with its headquarters at Worcester, Mass. It has a library of upwards of 100,000 volumes and its transactions have been published bi-annually since 1849. In Germany the *Gesamtverein der Deutschen Geschichtsund Altertumsvereine* was founded in 1852. *La Société Royale des Antiquaires du Nord* at Copenhagen is among the best known of European antiquarian societies.

ANTIQUE (Lat. *antiquus*, old), a term conventionally restricted to the remains of ancient art, such as sculptures, gems, medals, seals, &c. In a limited sense it applies only to Greek and Roman art, and includes neither the artistic remains of other ancient nations nor any product of classical art of a later date than the fall of the western empire.

ANTI-SEMITISM. In the political struggles of the concluding quarter of the 19th century an important part was played by a religious, political and social agitation against the Jews, known as "Anti-Semitism." The origins of this remarkable movement already threaten to become obscured by legend. The Jews contend that anti-Semitism is a mere atavistic revival of the Jew-hatred of the middle ages. The extreme section of the anti-Semites, who have given the movement its quasi-scientific name, declare that it is a racial struggle—an incident of the eternal conflict between Europe and Asia—and that the anti-Semites are engaged in an effort to prevent what is called the Aryan race from being subjugated by a Semitic immigration, and to save Aryan ideals from being modified by an alien and demoralizing oriental *Anschauung*. There is no essential foundation for either of these contentions. Religious prejudices reaching back to the dawn of history have been reawakened by the anti-Semitic agitation, but they did not originate it, and they have not entirely controlled it. The alleged racial divergence is, too, only a linguistic hypothesis on the physical evidence of which anthropologists are not agreed (Topinard, *Anthropologie*, p. 444; Taylor, *Origins of Aryans*, cap. i.), and, even if it were proved, it has existed in Europe for so many centuries,

and so many ethnic modifications have occurred on both sides, that it cannot be accepted as a practical issue. It is true that the ethnographical histories of the Jews and the nations of Europe have proceeded on widely diverging lines, but these lines have more than once crossed each other and become interlaced. Thus Aryan elements are at the beginning of both; European morals have been ineradicably semitized by Christianity, and the Jews have been Europeans for over a thousand years, during which their character has been modified and in some respects transformed by the ecclesiastical and civil polities of the nations among whom they have made their permanent home. Anti-Semitism is then exclusively a question of European politics, and its origin is to be found, not in the long struggle between Europe and Asia, or between the Church and the Synagogue, which filled so much of ancient and medieval history, but in the social conditions resulting from the emancipation of the Jews in the middle of the 19th century.

If the emancipated Jews were Europeans in virtue of the antiquity of their western settlements, and of the character impressed upon them by the circumstances of their European history, they none the less presented the appearance of a strange people to their Gentile fellow-countrymen. They had been secluded in their ghettos for centuries, and had consequently acquired a physical and moral physiognomy differentiating them in a measure from their former oppressors. This peculiar physiognomy was, on its moral side, not essentially Jewish or even Semitic. It was an advanced development of the main attributes of civilized life, to which Christendom in its transition from feudalism had as yet only imperfectly adapted itself. The ghetto, which had been designed as a sort of quarantine to safeguard Christendom against the Jewish heresy, had in fact proved a storage chamber for a portion of the political and social forces which were destined to sweep away the last traces of feudalism from central Europe. In the ghetto, the pastoral Semite, who had been made a wanderer by the destruction of his nationality, was steadily trained, through centuries, to become an urban European, with all the parasitic activities of urban economics, and all the democratic tendencies of occidental industrialism. Excluded from the army, the land, the trade corporations and the artisan gilds, this quondam oriental peasant was gradually transformed into a commercial middleman and a practised dealer in money. Oppressed by the Church, and persecuted by the State, his theocratic and monarchical traditions lost their hold on his daily life, and he became saturated with a passionate devotion to the ideals of democratic politics. Finally, this former bucolic victim of Phoenician exploitation had his wits preternaturally sharpened, partly by the stress of his struggle for life, and partly by his being compelled in his urban seclusion to seek for recreation in literary exercises, chiefly the subtle dialectics of the Talmudists (Loeb, *Juif de l'histoire*; Jellinek, *Der Jüdische Stamm*). Thus, the Jew who emerged from the ghetto was no longer a Palestinian Semite, but an essentially modern European, who differed from his Christian fellow-countrymen only in the circumstances that his religion was of the older Semitic form, and that his physical type had become sharply defined through a slightly more rigid exclusiveness in the matter of marriages than that practised by Protestants and Roman Catholics (Andree, *Volkskunde der Juden*, p. 58).

Unfortunately, these distinctive elements, though not very serious in themselves, became strongly accentuated by concentration. Had it been possible to distribute the emancipated Jews uniformly throughout Christian society, as was the case with other emancipated religious denominations, there would have been no revival of the Jewish question. The Jews, however, through no fault of their own, belonged to only one class in European society—the industrial *bourgeoisie*. Into that class all their strength was thrown, and owing to their ghetto preparation, they rapidly took a leading place in it, politically and socially. When the mid-century revolutions made the *bourgeoisie* the ruling power in Europe, the semblance of a Hebrew domination presented itself. It was the exaggeration of this apparent domination, not by the *bourgeoisie* itself, but by its enemies among the vanquished reactionaries on the one hand, and by the extreme Radicals on the other, which created modern anti-Semitism as a political force.

The movement took its rise in Germany and Austria. Here the concentration of the Jews in one class of the population was aggravated by their excessive numbers. While in France the proportion to the total population was, in the early'seventies, 0.14%, and in Italy, 0.12%, it was 1.22% in Germany, and 3.85% in Austria-Hungary; Berlin had 4.36% of Jews, and Vienna 6.62% (Andree, *Volkskunde*, pp. 287, 291, 294, 295). The activity of the Jews consequently manifested itself in a far more intense form in these countries than elsewhere. This was apparent even before the emancipations of 1848. Towards the middle of the 18th century, a limited number of wealthy Jews had been tolerated as *Schutz-Juden* outside the ghettos, and their sons, educated as Germans under the influence of Moses Mendelssohn and his school (see Jews), supplied a

Germany.

majority of the leading spirits of the revolutionary agitation. To this period belong the formidable names of Ludwig Börne (1786-1837), Heinrich Heine (1799-1854), Edward Ganz (1798-1839), Gabriel Riesser (1806-1863), Ferdinand Lassalle (1825-1864), Karl Marx (1818-1883), Moses Hess (1812-1875), Ignatz Kuranda (1811-1884), and Johann Jacobi (1805-1877). When the revolution was completed, and the Jews entered in a body the national life of Germany and Austria, they sustained this high average in all the intellectual branches of middle-class activity. Here again, owing to the accidents of their history, a further concentration became apparent. Their activity was almost exclusively intellectual. The bulk of them flocked to the financial and the distributive (as distinct from the productive) fields of industry to which they had been confined in the ghettos. The sharpened faculties of the younger generation at the same time carried everything before them in the schools, with the result that they soon crowded the professions, especially medicine, law and journalism (Nossig, *Statistik des Jüd. Stammes*, pp. 33-37; Jacobs, *Jew. Statistics*, pp. 41-69). Thus the "Semitic domination," as it was afterwards called, became every day more strongly accentuated. If it was a long time in exciting resentment and jealousy, the reason was that it was in no sense alien to the new conditions of the national life. The competition was a fair one. The Jews might be more successful than their Christian fellow-citizens, but it was in virtue of qualities which complied with the national standards of conduct. They were as law-abiding and patriotic as they were intelligent. Crime among them was far below the average (Nossig, p. 31). Their complete assimilation of the national spirit was brilliantly illustrated by the achievements in German literature, art and science of such men as Heinrich Heine and Berthold Auerbach (1812-1882), Felix Mendelssohn (-Bartholdy) (1809-1847), and Jacob Meyerbeer (1794-1864), Karl Gustav Jacobi the mathematician (1804-1851), Gabriel Gustav Valentin the physiologist (1810-1883), and Moritz Lazarus (1824-1903) and Heymann Steinthal (1823-1899) the national psychologists. In politics, too, Edward Lasker (1829-1884) and Ludwig Bamberger (1823-1899) had shown how Jews could put their country before party, when, at the turning-point of German imperial history in 1866, they led the secession from the *Fortschritts-Partei* and founded the National Liberal party, which enabled Prince Bismarck to accomplish German unity. Even their financiers were not behind their Christian fellow-citizens in patriotism. Prince Bismarck himself confessed that the money for carrying on the 1866 campaign was obtained from the Jewish banker Bleichroeder, in face of the refusal of the money-market to support the war. Hence the voice of the old Jew-hatred—for in a weak way it was still occasionally heard in obscurantist corners—was shamed into silence, and it was only in the European twilight—in Russia and Rumania—and in lands where medievalism still lingered, such as northern Africa and Persia, that oppression and persecution continued to dog the steps of the Jews.

The signal for the change came in 1873, and was given unconsciously by one of the most distinguished Jews of his time, Edward Lasker, the gifted lieutenant of Bennigsen in the leadership of the National Liberal party. The unification of Germany in 1870, and the rapid payment of the enormous French war indemnity, had given an unprecedented impulse to industrial and financial activity throughout the empire. Money became cheap and speculation universal. A company mania set in which was favoured by the government, who granted railway and other concessions with a prodigal hand. The inevitable result of this state of things was first indicated by Jewish politicians and economists. On the 14th of January 1873, Edward Lasker called the attention of the Prussian diet to the dangers of the situation, while his colleague, Ludwig Bamberger, in an able article in the *Preussischen Jahrbücher*, condemned the policy which had permitted the milliards to glut the country instead of being paid on a plan which would have facilitated their gradual digestion by the economic machinery of the nation. Deeply impressed by the gravity of the impending crisis, Lasker instituted a searching inquiry, with the result that he discovered a series of grave company scandals in which financial promoters and aristocratic directors were chiefly involved. Undeterred by the fact that the leading spirit in these abuses, Bethel Henry Strousberg (1823-1884), was a Jew, Lasker presented the results of his inquiry to the diet on the 7th of February 1873, in a speech of great power and full of sensational disclosures. The dramatic results of this speech need not be dwelt upon here (for details see Blum, *Das deutsche Reich zur Zelt Bismarcks*, pp. 153-181). It must suffice to say that in the following May the great Vienna "Krach" occurred, and the colossal bubble of speculation burst, bringing with it all the ruin foretold by Lasker and Bamberger. From the position occupied by the Jews in the commercial class, and especially in the financial section of that class, it was inevitable that a considerable number of them should figure in the scandals which followed. At this moment an obscure Hamburg journalist, Wilhelm Marr, who as far back as 1862 had printed a still-born tract against the Jews (*Judenspiegel*), published a sensational pamphlet entitled *Der Sieg des Judenthums uber das Germanthum* ("The Victory of Judaism over Germanism"). The book fell upon fruitful soil. It applied to the nascent controversy a

theory of nationality which, under the great sponsorship of Hegel, had seized on the minds of the German youth, and to which the stirring events of 1870 had already given a deep practical significance. The state, according to the Hegelians, should be rational, and the nation should be a unit comprising individuals speaking the same language and of the same racial origin. Heterogeneous elements might be absorbed, but if they could not be reduced to the national type they should be eliminated. This was the pseudo-scientific note of the new anti-Semitism, the theory which differentiated it from the old religious Jew-hatred and sought to give it a rational place in modern thought. Marr's pamphlet, which reviewed the facts of the Jewish social concentration without noticing their essentially transitional character, proved the pioneer of this teaching. It was, however, in the passions of party politics that the new crusade found its chief sources of vitality. The enemies of the *bourgeoisie* at once saw that the movement was calculated to discredit and weaken the school of Manchester Liberalism, then in the ascendant. Agrarian capitalism, which had been dethroned by industrial capitalism in 1848, and had burnt its fingers in 1873, seized the opportunity of paying off old scores. The clericals, smarting under the *Kutlturkampj*, which was supported by the whole body of Jewish liberalism, joined eagerly in the new cry. In 1876 another sensational pamphlet was published, Otto Glogau's *Die Börsen und Grundergeschwindel in Berlin* ("The Bourses and the Company Swindles in Berlin"), dealing in detail with the Jewish participation in the scandals first revealed by Lasker. The agitation gradually swelled, its growth being helped by the sensitiveness and *cacoëthes scribendi* of the Jews themselves, who contributed two pamphlets and a much larger proportion of newspaper articles for every one supplied by their opponents (Jacobs. *Bibliog. Jew. Question*, p. xi.). Up to 1879, however, it was more of a literary than a political agitation, and was generally regarded only as an ephemeral craze or a passing spasm of popular passion.

Towards the end of 1879 it spread with sudden fury over the whole of Germany. This outburst, at a moment when no new financial scandals or other illustrations of Semitic demoralization and domination were before the public, has never been fully explained. It is impossible to doubt, however, that the secret springs of the new agitation were more or less directly supplied by Prince Bismarck himself. Since 1877 the relations between the chancellor and the National Liberals had gradually become strained. The deficit in the budget had compelled the government to think of new taxes, and in order to carry them through the Reichstag the support of the National Liberals had been solicited. Until then the National Liberals had faithfully supported the chancellor in nursing the consolidation of the new empire, but the great dream of its leaders, especially of Lasker and Bamberger, who had learnt their politics in England, was to obtain a constitutional and economic *régime* similar to that of the British Isles. The organization of German unity was now completed, and they regarded the new overtures of Prince Bismarck as an opportunity for pressing their constitutional demands. These were refused, the Reichstag was dissolved and Prince Bismarck boldly came forward with a new fiscal policy, a combination of protection and state socialism. Lasker and Bamberger thereupon led a powerful secession of National Liberals into opposition, and the chancellor was compelled to seek a new majority among the ultra-Conservatives and the Roman Catholic Centre. This was the beginning of the famous "journey to Canossa." Bismarck did not hide his mortification. He began to recognize in anti-Semitism a means of "dishing" the Judaized liberals, and to his creatures who assisted him in his press campaigns he dropped significant hints in this sense (Busch, *Bismarck*, ii. 453-454, iii. 16). He even spoke of a new *Kulturkampf* against the Jews (*ibid*. ii. p. 484). How these hints were acted upon has not been revealed, but it is sufficiently instructive to notice that the final breach with the National Liberals took place in July 1879, and that it was immediately followed by a violent revival of the anti-Semitic agitation. Marr's pamphlet was reprinted, and within a few months ran through nine further editions. The historian Treitschke gave the sanction of his great name to the movement. The Conservative and Ultramontane press rang with the sins of the Jews. In October an anti-Semitic league was founded in Berlin and Dresden (for statutes of the league see *Nineteenth Century*, February 1881, p. 344).

The leadership of the agitation was now definitely assumed by a man who combined with social influence, oratorical power and inexhaustible energy, a definite scheme of social regeneration and an organization for carrying it out. This man was Adolf Stöcker (b. 1835), one of the court preachers. He had embraced the doctrines of Christian socialism which the Roman Catholics, under the guidance of Archbishop Ketteler, had adopted from the teachings of the Jew Lassalle (Nitti, *Catholic Socialism*, pp. 94-96, 122, 127), and he had formed a society called "The Christian Social Working-man's Union." He was also a conspicuous member of the Prussian diet, where he sat and voted with the Conservatives. He found himself in strong sympathy with Prince Bismarck's new economic policy, which,

although also of Lassallian origin (Kohut, *Ferdinand Lassalle*, pp. 144 et seq.), was claimed by its author as being essentially Christian (Busch, p. 483). Under his auspices the years 1880-1881 became a period of bitter and scandalous conflict with the Jews. The Conservatives supported him, partly to satisfy their old grudges against the Liberal *bourgeoisie* and partly because Christian Socialism, with its anti-Semitic appeal to ignorant prejudice, was likely to weaken the hold of the Social Democrats on the lower classes. The Lutheran clergy followed suit, in order to prevent the Roman Catholics from obtaining a monopoly of Christian Socialism, while the Ultramontanes readily adopted anti-Semitism, partly to maintain their monopoly, and partly to avenge themselves on the Jewish and Liberal supporters of the *Kulturkampf*. In this way a formidable body of public opinion was recruited for the anti-Semites. Violent debates took place in the Prussian diet. A petition to exclude the Jews from the national schools and universities and to disable them from holding public appointments was presented to Prince Bismarck. Jews were boycotted and insulted. Duels between Jews and anti-Semites, many of them fatal, became of daily occurrence. Even unruly demonstrations and street riots were reported. Pamphlets attacking every phase and aspect of Jewish life streamed by the hundred from the printing-press. On their side the Jews did not want for friends, and it was owing to the strong attitude adopted by the Liberals that the agitation failed to secure legislative fruition. The crown prince (afterwards Emperor Frederick) and crown princess boldly set themselves at the head of the party of protest. The crown prince publicly declared that the agitation was “a shame and a disgrace to Germany.” A manifesto denouncing the movement as a blot on German culture, a danger to German unity and a flagrant injustice to the Jews themselves, was signed by a long list of illustrious men, including Herr von Forckenbeck, Professors Mommsen, Gneist, Droysen, Virchow, and Dr Werner Siemens (*Times*, November 18, 1880). During the Reichstag elections of 1881 the agitation played an active part, but without much effect, although Stöcker was elected. This was due to the fact that the great Conservative parties, so far as their political organizations were concerned, still remained chary of publicly identifying themselves with a movement which, in its essence, was of socialistic tendency. Hence the electoral returns of that year supplied no sure guide to the strength of anti-Semitic opinion among the German people.

The first severe blow suffered by the German anti-Semites was in 1881, when, to the indignation of the whole civilized world, the barbarous riots against the Jews in Russia and the revival of the medieval Blood Accusation in Hungary (see *infra*) illustrated the liability of unreasoning mobs to carry into violent practice the incendiary doctrines of the new Jew-haters. From this blow anti-Semitism might have recovered had it not been for the divisions and scandals in its own ranks, and the artificial forms it subsequently assumed through factitious alliances with political parties bent less on persecuting the Jews than on profiting by the anti-Jewish agitation. The divisions showed themselves at the first attempt to form a political party on an anti-Semitic basis. Imperceptibly the agitators had grouped themselves into two classes, economic and ethnological anti-Semites. The impracticable racial views of Marr and Treitschke had not found favour with Stöcker and the Christian Socialists. They were disposed to leave the Jews in peace so long as they behaved themselves properly, and although they carried on their agitation against Jewish malpractices in a comprehensive form which seemed superficially to identify them with the root-and-branch anti-Semites, they were in reality not inclined to accept the racial theory with its scheme of revived Jewish disabilities (Huret, *La Question Sociale*—interview with Stöcker). This feeling was strengthened by a tendency on the part of an extreme wing of the racial anti-Semites to extend their campaign against Judaism to its offspring, Christianity. In 1879 Professor Sepp, arguing that Jesus was of no human race, had proposed that Christianity should reject the Hebrew Scriptures and seek a fresh historical basis in the cuneiform inscriptions. Later Dr Eugen Dübring, in several brochures, notably *Die Judenfrage als Frage des Rassencharakters* (1881, 5th ed. Berlin, 1901), had attacked Christianity as a manifestation of the Semitic spirit which was not compatible with the theological and ethical conceptions of the Scandinavian peoples. The philosopher Friedrich Nietzsche had also adopted the same view, without noticing that it was a *reductio ad absurdum* of the whole agitation, in his *Menschliches, Allzumenschliches* (1878), *Jenseits von Gut und Böse* (1886), *Genealogie der Moral* (1887). With these tendencies the Christian Socialists could have no sympathy, and the consequence was that when in March 1881 a political organization of anti-Semitism was attempted, two rival bodies were created, the “Deutsche Volksverein,” under the Conservative auspices of Herr Liebermann von Sonnenberg (b. 1848) and Herr Förster, and the “Sociale Reichsverein,” led by the racial and Radical anti-Semites, Ernst Henrici (b. 1854) and Otto Böckel (b. 1859). In 1886, at an anti-Semitic congress held at Cassel a reunion was effected under the name of the “Deutsche antisemitische Verein,” but this only lasted three years. In June 1889 the anti-Semitic Christian Socialists under Stöcker again seceded.

Meanwhile racial anti-Semitism with its wholesale radical proposals had been making considerable progress among the ignorant lower classes. It adapted itself better to popular passions and inherited prejudice than the more academic conceptions of the Christian Socialists. The latter, too, were largely Conservatives, and their points of contact with the proletariat were at best artificial. Among the Hessian peasantry the inflammatory appeals of Böckel secured many adherents. This paved the way for a new anti-Semitic leader, Herrmann Ahlwardt (b. 1846), who, towards the end of the 'eighties, eclipsed all the other anti-Semites by the sensationalism and violence with which he prosecuted the campaign. Ahlwardt was a person of evil notoriety. He was loaded with debt. In the Manché decoration scandals it was proved that he had acted first as a corrupt intermediary and afterwards as the betrayer of his confederates. His anti-Semitism was adopted originally as a means of *chantage*, and it was only when it failed to yield profit in this form that he came out boldly as an agitator. The wildness, unscrupulousness, and full-bloodedness of his propaganda enchanted the mob, and he bid fair to become a powerful democratic leader. His pamphlets, full of scandalous revelations of alleged malpractices of eminent Jews, were read with avidity. No fewer than ten of them were written and published during 1892. Over and over again he was prosecuted for libel and convicted, but this seemed only to strengthen his influence with his followers. The Roman Catholic clergy and newspapers helped to inflame the popular passions. The result was that anti-Jewish riots broke out. At Neustettin the Jewish synagogue was burnt, and at Xanten the Blood Accusation was revived, and a Jewish butcher was tried on the ancient charge of murdering a Christian child for ritual purposes. The man was, of course, acquitted, but the symptoms it revealed of reviving medievalism strongly stirred the liberal and cultured mind of Germany. All protest, however, seemed powerless, and the barbarian movement appeared destined to carry everything before it.

German politics at this moment were in a very intricate state. Prince Bismarck had retired, and Count Caprivi, with a programme of general conciliation based on Liberal principles, was in power. Alarmed by the non-renewal of the anti-Socialist law, and by the conclusion of commercial treaties which made great concessions to German industry, the landed gentry and the Conservative party became alienated from the new chancellor. In January 1892 the split was completed by the withdrawal by the government of the Primary Education bill, which had been designed to place primary instruction on a religious basis. The Conservatives saw their opportunity of posing as the party of Christianity against the Liberals and Socialists, who had wrecked the bill, and they began to look towards Ahlwardt as a possible ally. He had the advantages over Stöcker that he was not a Socialist, and that he was prepared to lead his apparently large following to assist the agrarian movement and weaken the Social Democrats. The intrigue gradually came to light. Towards the end of the year Herr Liebknecht, the Social Democratic leader, denounced the Conservatives to the Reichstag as being concerned "in using the anti-Semitic movement as a bastard edition of Socialism for the use of stupid people." (1st December). Two days later the charge was confirmed. At a meeting of the party held on the 3rd of December the following plank was added to the Conservative programme: "We combat the oppressive and disintegrating Jewish influence on our national life; we demand for our Christian people a Christian magistracy and Christian teachers for Christian pupils; we repudiate the excesses of anti-Semitism." In pursuance of the resolution Ahlwardt was returned to the Reichstag at a by-election by the Conservative district of Arnswalde-Friedeberg. The coalition was, however, not yet completed. The intransigeant Conservatives, led by Baron von Hammerstein, the editor of the *Kreuz-Zeitung*, justly felt that the concluding sentence of the resolution of the 3rd of December repudiating "the excesses of anti-Semitism" was calculated to hinder a full and loyal co-operation between the two parties. Accordingly on the 9th of December another meeting of the party was summoned. Twelve hundred members met at the Tivoli Hall in Berlin, and with only seven dissentients solemnly expunged the offending sentence from the resolution. The history of political parties may be searched in vain for a parallel to this discreditable transaction.

The capture of the Conservative party proved the high-water mark of German anti-Semitism. From that moment the tide began to recede. All that was best in German national life was scandalized by the cynical tactics of the Conservatives. The emperor, strong Christian though he was, was shocked at the idea of serving Christianity by a compact with unscrupulous demagogues and ignorant fanatics. Prince Bismarck growled out a stinging sarcasm from his retreat at Friedrichsruh. Even Stöcker raised his voice in protest against the "Ahlwardtismus" and "Böckelianismus," and called upon his Conservative colleagues to distinguish between "respectable and disreputable anti-Semitism." As for the Liberals and Socialists, they filled the air with bitter laughter, and declared from the housetops that the stupid party had at last been overwhelmed by its own stupidity. The Conservatives began to

suspect that they had made a false step, and they were confirmed in this belief by the conduct of their new ally in the Reichstag. His debut in parliament was the signal for a succession of disgraceful scenes. His whole campaign of calumny was transferred to the floor of the house, and for some weeks the Reichstag discussed little else than his so-called revelations. The Conservatives listened to his wild charges in uncomfortable silence, and refused to support him. Stöcker opposed him in a violent speech. The Radicals and Socialists, taking an accurate measure of the shallow vanity of the man, adopted the policy of giving him "enough rope." Shortly after his election he was condemned to five months' imprisonment for libel, and he would have been arrested but for the interposition of the Socialist party, including five Jews, who claimed for him the immunities of a member of parliament. When he moved for a commission to inquire into his revelations, it was again the Socialist party which supported him, with the result that all his charges, without exception, were found to be absolutely baseless. Ahlwardt was covered with ridicule, and when in May the Reichstag was dissolved, he was marched off to prison to undergo the sentence for libel from which his parliamentary privilege had up to that moment protected him.

His hold on the anti-Semitic populace was, however, not diminished. On the contrary, the action of the Conservatives at the Tivoli congress could not be at once eradicated from the minds of the Conservative voters, and when the electoral campaign began it was found impossible to explain to them that the party leaders had changed their minds. The result was that Ahlwardt, although in prison, was elected by two constituencies. At Arnswalde-Friedeberg he was returned in the teeth of the opposition of the official Conservatives, and at Neustettin he defeated no less a person than his anti-Semitic opponent Stöcker. Fifteen other anti-Semites, all of the Ahlwardtian school, were elected. This, however, represented little in the way of political influence; for henceforth the party had to stand alone as one of the many minor factions in the Reichstag, avoided by all the great parties, and too weak to exercise any influence on the main course of affairs.

During the subsequent seven years it became more and more discredited. The financial scandals connected with Förster's attempt to found a Christian Socialist colony in Paraguay, the conviction of Baron von Hammerstein, the anti-Semitic Conservative leader, for forgery and swindling (1895-1896), and several minor scandals of the same unsavoury character, covered the party with the very obloquy which it had attempted to attach to the Jews. At the same time the Christian Socialists who had remained with the Conservative party also suffered. After the elections of 1893, Stöcker was dismissed from his post of court preacher, and publicly reprimanded for speaking familiarly of the empress. Two years later the Christian Socialist, Pastor Neumann, observing the tendency of the Conservatives to coalesce with the moderate Liberals in antagonism to Social Democracy, declared against the Conservative party. The following year the emperor publicly condemned Christian Socialism and the "political pastors," and Stöcker was expelled from the Conservative party for refusing to modify the socialistic propanganda of his organ, *Das Volk*. His fall was completed by a quarrel with the Evangelical Social Union. He left the Union and appealed to the Lutheran clergy to found a new church social organization, but met with no response. Another blow to anti-Semitism came from the Roman Catholics. They had become alarmed by the unbridled violence of the Ahlwardtians, and when in 1894 Förster declared in an address to the German anti-Semitic Union that anarchical outrages like the murder of President Carnot were as much due to the "Anarchismus von oben" as the "Anarchismus von unten," the Ultramontane *Germania* publicly washed its hands of the Jew-baiters (1st of July 1894). Thus gradually German anti-Semitism became stripped of every adventitious alliance; and at the general election of 1898 it only managed to return twelve members to the Reichstag, and in 1903 its party strength fell to nine. A remarkable revival in its fortunes, however, took place between 1905 and 1907. Identifying itself with the extreme Chauvinists and Anglophobes it profited by the anti-national errors of the Clericals and Socialists, and won no fewer than twelve by-elections. At the general election of 1907 its jingoism and aggressive Protestantism were rewarded with twenty-five seats. It is clear, however, from the figures of the second ballots that these successes owed far more to the tendencies of the party in the field of general politics than to its anti-Semitism. Indeed the specifically anti-Semitic movement has shown little activity since 1893.

The causes of the decline of German anti-Semitism are not difficult to determine. While it remained a theory of nationality and a fad of the metaphysicians, it made considerable noise in the world, but without exercising much practical influence. When it attempted to play an active part in politics it became submerged by the ignorant and superstitious voters, who could not understand its scientific justification, but who were quite ready to declaim and riot against the Jew bogey. It thus became a sort of Jacquerie which, being exploited by unscrupulous demagogues, soon alienated all its respectable elements. Its moments of real

importance have been due not to inherent strength but to the uses made of it by other political parties for their own purposes. These coalitions are no longer of perilous significance so far as the Jews are concerned, chiefly because, in face of the menace of democratic socialism and its unholy alliance with the Roman Catholic Centrum, all supporters of the present organization of society have found it necessary to sink their differences. The new social struggle has eclipsed the racial theory of nationality. The Social Democrat became the enemy, and the new reaction counted on the support of the rich Jews and the strongly individualist Jewish middle class to assist it in preserving the existing social structure. Hence in Prince Billow's "Bloc" (1908) anti-Semites figured side by side with Judeophil Radicals.

Russia.

More serious have been the effects of German anti-Semitic teachings on the political and social life of the countries adjacent to the empire—Russia, Austria and France. In Russia these effects were first seriously felt owing to the fury of autocratic reaction to which the tragic death of the tsar Alexander II. gave rise. This, however, like the Strousberg *Krach* in Germany, was only the proximate cause of the outbreak. There were other elements which had created a *milieu* peculiarly favourable to the transplantation of the German craze. In the first place the medieval anti-Semitism was still an integral part of the polity of the empire. The Jews were cooped up in one huge ghetto in the western provinces, "marked out to all their fellow-countrymen as aliens, and a pariah caste set apart for special and degrading treatment" (*Persecution of the Jews in Russia*, 1891, p.5). In the next place, owing to the emancipation of the serfs which had half ruined the landowners, while creating a free but moneyless peasantry, the Jews, who could be neither nobles nor peasants, had found a vocation as money-lenders and as middlemen between the grain producers, and the grain consumers and exporters. There is no evidence that this function was performed, as a rule, in an exorbitant or oppressive way. On the contrary, the fall in the value of cereals on all the provincial markets, after the riots of 1881, shows that the Jewish competition had previously assured full prices to the farmers (Schwabacher, *Denkschrift*, 1882, p. 27). Nevertheless, the Jewish activity or "exploitation," as it was called, was resented, and the ill-feeling it caused among landowners and farmers was shared by non-Jewish middlemen and merchants who had thereby been compelled to be satisfied with small profits. Still there was but little thought of seeking a remedy in an organized anti-Jewish movement. On the contrary, the abnormal situation aggravated by the disappointments and depression caused by the Turkish war, had stimulated a widespread demand for constitutional changes which would enable the people to adopt a state-machinery more exactly suited to their needs. Among the peasantry this demand was promoted and fomented by the Nihilists, and among the landowners it was largely adopted as a means of checking what threatened to become a new Jacquerie (Walcker, *Gegertwärtige Lage Russlands*, 1873; *Innere Krisis Russlands*, 1876). The tsar, Alexander II., strongly sympathized with this movement, and on the advice of Count Loris-Melikov and the council of ministers a rudimentary scheme of parliamentary government had been drafted and actually signed when the emperor was assassinated. Meanwhile a nationalist and reactionary agitation, originating like its German analogue in the Hegelianism of a section of the lettered public, had manifested itself in Moscow. After some early vicissitudes, it had been organized, under the auspices of Alexis Kireiev, Chomyakov, Aksakov and Kochelev, into the Slavophil party, with a Romanticist programme of reforms based on the old traditions of the pre-Petrine epoch. This party gave a great impetus to Slav nationalism. Its final possibilities were sanguinarily illustrated by Muraviev's campaign in Poland in 1863, and in the war against Turkey in 1877, which was exclusively its handiwork (Statement by General Kireiev: Schütz, *Das heutige Russland*, p. 104). After the assassination of Alexander II. the Slavophil teaching, as expounded by Ignatiev and Pobêdonostsev, became paramount in the government, and the new tsar was persuaded to cancel the constitutional project of his father. The more liberal views of a section of the Slavophils under Aksakov, who had been in favour of representative institutions on traditional lines, were displaced by the reactionary system of Pobêdonostsev, who took his stand on absolutism, orthodoxy and the racial unity of the Russian people. This was the situation on the eve of Easter 1881. The hardening nationalism above, the increasing discontent below, the economic activity of the Hebrew heretics and aliens, and the echoes of anti-Semitism from over the western border were combining for an explosion.

A scuffle in a tavern at Elisabethgrad in Kherson sufficed to ignite this combustible material. The scuffle grew into a riot, the tavern was sacked, and the drunken mob, hounded on by agitators who declared that the Jews were using Christian blood for the manufacture of their Easter bread, attacked and looted the Jewish quarter. The outbreak spread rapidly. On the 7th of May there was a similar riot at Smiela, near Cherkasy, and the following day

there was a violent outbreak at Kiev, which left 2000 Jews homeless. Within a few weeks the whole of western Russia, from the Black Sea to the Baltic, was smoking with the ruins of Jewish homes. Scores of Jewish women were dishonoured, hundreds of men, women and children were slaughtered, and tens of thousands were reduced to beggary and left without a shelter. Murderous riots or incendiary outrages took place in no fewer than 167 towns and villages, including Warsaw, Odessa and Kiev. Europe had witnessed no such scenes of mob savagery since the Black Death massacres in the 14th century. As the facts gradually filtered through to the western capitals they caused a thrill of horror everywhere. An indignation meeting held at the Mansion House in London, under the presidency of the lord mayor, was the signal for a long series of popular demonstrations condemning the persecutions, held in most of the chief cities of England and the continent.

Except as stimulated by the Judeophobe revival in Germany the Russian outbreak in its earlier forms does not belong specifically to modern anti-Semitism. It was essentially a medieval uprising animated by the religious fanaticism, gross superstition and predatory instincts of a people still in the medieval stage of their development. This is proved by the fact that, although the Russian peasant was supposed to be a victim of unbearable Jewish "exploitation," he was not moved to riot until he had been brutalized by drink and excited by the old fable of the Blood Accusation. The modern anti-Semitic element came from above and followed closely on the heels of the riots. It has been freely charged against the Russian government that it promoted the riots in 1881 in order to distract popular attention from the Nihilist propaganda and from the political disappointments involved in the cancellation of the previous tsar's constitutional project (Lazare, *L'Antisémitisme*, p. 211). This seems to be true of General Ignatiev, then minister of the interior, and the secret police (Séménoff, *The Russian Government and the Massacres*, pp. 17, 32, 241). It is certain that the local authorities, both civil and military, favoured the outbreak, and took no steps to suppress it, and that the feudal bureaucracy who had just escaped a great danger were not sorry to see the discontented populace venting their passions on the Jews. In the higher circles of the government, however, other views prevailed. The tsar himself was at first persuaded that the riots were the work of Nihilists, and he publicly promised his protection to the Jews. On the other hand, his ministers, ardent Slavophils, thought they recognized in the outbreak an endorsement of the nationalist teaching of which they were the apostles, and, while reprobating the acts of violence, came to the conclusion that the most reasonable solution was to aggravate the legal disabilities of the persecuted aliens and heretics. To this view the tsar was won over, partly by the clamorous indignation of western Europe, which had wounded his national *amour propre* to the quick, and partly by the strongly partisan report of a commission appointed to inquire, not into the administrative complaisance which had allowed riot to run loose over the western and southern provinces, but into the "exploitation" alleged against the Jews, the reasons why "the former laws limiting the rights of the Jews" had been mitigated, and how these laws could be altered so as "to stop the pernicious conduct of the Jews" (Rescript of the 3rd of September 1881). The result of this report was the drafting of a "Temporary Order concerning the Jews" by the minister of the interior, which received the assent of the tsar on the 3rd of May 1882. This order, which was so little temporary that it has not yet been repealed, had the effect of creating a number of fresh ghettos within the pale of Jewish settlement. The Jews were cooped up within the towns, and their rural interests were arbitrarily confiscated. The doubtful incidence of the order gave rise to a number of judgments of the senate, by which all its persecuting possibilities were brought out, with the result that the activities of the Jews were completely paralysed, and they became a prey to unparalleled cruelty. As the gruesome effect of this legislation became known, a fresh outburst of horror and indignation swelled up from western Europe. It proved powerless. Count Ignatiev was dismissed owing to the protests of high-placed Russians, who were disgusted by the new *Kulturkampf*, but his work remained, and, under the influence of Pobêdonostsev, the procurator of the Holy Synod, the policy of the "May Laws," as they were significantly called, was applied to every aspect of Jewish life with pitiless rigour. The temper of the tsar may be judged by the fact that when an appeal for mercy from an illustrious personage in England was conveyed to him at Fredensborg through the gracious medium of the tsaritsa, he angrily exclaimed within the hearing of an Englishman in the ante-room who was the bearer of the message, "Never let me hear you mention the name of that people again!"

The Russian May Laws are the most conspicuous legislative monument achieved by modern anti-Semitism. It is true that they re-enacted regulations which resemble the oppressive statutes introduced into Poland through the influence of the Jesuits in the 16th century (Sternberg, *Gesch. d. Juden in Polen*, pp. 141 et seq.), but their Orthodox authors were as little conscious of this irony of history as they were of the Teutonic origins of the

whole Slavophil movement. These laws are an experimental application of the political principles extracted by Marr and his German disciples from the metaphysics of Hegel, and as such they afford a valuable means of testing the practical operation of modern anti-Semitism. Their result was a widespread commercial depression which was felt all over the empire. Even before the May Laws were definitely promulgated the passport registers showed that the anti-Semitic movement had driven 67,900 Jews across the frontier, and it was estimated that they had taken with them 13,000,000 roubles, representing a minimum loss of 60,000,000 roubles to the annual turnover of the country's trade. Towards the end of 1882 it was calculated that the agitation had cost Russia as much as the whole Turkish war of 1877. Trade was everywhere paralysed. The enormous increase of bankruptcies, the transfer of investments to foreign funds, the consequent fall in the value of the rouble and the prices of Russian stocks, the suspension of farming operations owing to advances on growing crops being no longer available, the rise in the prices of the necessaries of life, and lastly, the appearance of famine, filled half the empire with gloom. Banks closed their doors, and the great provincial fairs proved failures. When it was proposed to expel the Jews from Moscow there was a loud outcry all over the sacred city, and even the Orthodox merchants, realizing that the measure would ruin their flourishing trade with the south and west, petitioned against it. The Moscow Exhibition proved a failure. Nevertheless the government persisted with its harsh policy, and Jewish refugees streamed by tens of thousands across the western frontier to seek an asylum in other lands. In 1891 the alarm caused by this emigration led to further protests from abroad. The citizens of London again assembled at Guildhall, and addressed a petition to the tsar on behalf of his Hebrew subjects. It was handed back to the lord mayor by the Russian ambassador, with a curt intimation that the emperor declined to receive it. At the same time orders were defiantly given that the May Laws should be strictly enforced. Meanwhile the Russian minister of finance was at his wits' ends for money. Negotiations for a large loan had been entered upon with the house of Rothschild, and a preliminary contract had been signed, when, at the instance of the London firm, M. Wyshnigradski, the finance minister, was informed that unless the persecutions of the Jews were stopped the great banking-house would be compelled to withdraw from the operation. Deeply mortified by this attempt to deal with him *de puissance à puissance*, the tsar peremptorily broke off the negotiations, and ordered that overtures should be made to a non-Jewish French syndicate. In this way anti-Semitism, which had already so profoundly influenced the domestic politics of Europe, set its mark on the international relations of the powers, for it was the urgent need of the Russian treasury quite as much as the termination of Prince Bismarck's secret treaty of mutual neutrality which brought about the Franco-Russian alliance (Daudet, *Hist. Dipl. de l'Alliance Franco-Russe*, pp. 259 et. seq.).

For nearly three years more the persecutions continued. Elated by the success of his crusade against the Jews, Pobêdonostsev extended his persecuting policy to other non-Orthodox denominations. The legislation against the Protestant Stundists became almost as unbearable as that imposed on the Jews. In the report of the Holy Synod, presented to the tsar towards the end of 1893, the procurator called for repressive measures against Roman Catholics, Moslems and Buddhists, and denounced the rationalist tendency of the whole system of secular education in the empire (*Neue Freie Presse*, 31st January 1894). A year later, however, the tsar died, and his successor, without repealing any of the persecuting laws, let it gradually be understood that their rigorous application might be mitigated. The country was tired and exhausted by the persecution, and the tolerant hints which came from high quarters were acted upon with significant alacrity.

A new era of conflict dawned with the great constitutional struggle towards the end of the century. The conditions, however, were very different from those which prevailed in the 'eighties. The May Laws had avenged themselves with singular fitness. By confining the Jews to the towns at the very moment that Count Witte's policy of protection was creating an enormous industrial proletariat they placed at the disposal of the disaffected masses an ally powerful in numbers and intelligence, and especially in its bitter sense of wrong, its reckless despair and its cosmopolitan outlook and connexions. As early as 1885 the Jewish workmen assisted by Jewish university students led the way in the formation of trades unions. They also became the *colporteurs* of western European socialism, and they played an important part in the organization of the Russian Social Democratic Federation which their "Arbeiter Bund" joined in 1898 with no fewer than 30,000 members. The Jewish element in the new democratic movement excited the resentment of the government, and under the minister of the interior, M. Sipiaguine, the persecuting laws were once more rigorously enforced. The "Bund" replied in 1901 by proclaiming itself frankly political and revolutionary, and at once took a leading place in the revolutionary movement. The reactionaries were not slow to profit by this circumstance. With the support of M. Plehve,

the new minister of the interior, and the whole of the bureaucratic class they denounced the revolution as a Jewish conspiracy, engineered for exclusively Jewish purposes and designed to establish a Jewish domination over the Russian people. The government and even the intimates of the tsar became persuaded that only by the terrorization of the Jews could the revolutionary movement be effectually dealt with. For this purpose a so-called League of True Russians was formed. Under high patronage, and with the assistance of the secret police and a large number of the local authorities, it set itself to stir up the populace, chiefly the fanatics and the hooligans, against the Jews. Incendiary proclamations were prepared and printed in the ministry of the interior itself, and were circulated by the provincial governors and the police (Prince Urussov's speech in the Duma, June 8 (21), 1906). The result was another series of massacres which began at Kishinev in 1903 and culminated in wholesale butchery at Odessa and Bielostok in October 1905. An attempt was made to picture and excuse these outbreaks as a national upheaval against the Jew-made revolution but it failed. They only embittered the revolutionists and "intellectuals" throughout the country, and won for them a great deal of outspoken sympathy abroad. The artificiality of the anti-Jewish outbreak was illustrated by the first Duma elections. Thirteen Jews were elected and every constituency which had been the scene of a *pogrom* returned a liberal member. Unfortunately the Jews benefited little by the new parliamentary constitution. The privileges of voting for members of the Duma and of sitting in the new assembly were granted them, but all their civil and religious disabilities were maintained. Both the first and the second Duma proposed to emancipate them, but they were dissolved before any action could be taken. By the modification of the electoral law under which the third Duma was elected the voting power of the Jews was diminished and further restrictions were imposed upon them through official intimidation during the elections. The result was that only two Jews were elected, while the reactionary tendency of the new electorate virtually removed the question of their emancipation from the field of practical politics.

Rumania.

The only other country in Europe in which a legalized anti-Semitism exists is Rumania. The conditions are very similar to those which obtain in Russia, with the important difference that Rumania is a constitutional country, and that the Jewish persecutions are the work of the elected deputies of the nation. Like the *Bourgeois Gentilhomme* who wrote prose all his life without knowing it, the Rumanians practised the nationalist doctrines of the Hegelian anti-Semites unconsciously long before they were formulated in Germany. In the old days of Turkish domination the lot of the Rumanian Jews was not conspicuously unhappy. It was only when the nation began to be emancipated, and the struggle in the East assumed the form of a crusade against Islam that the Jews were persecuted. Rumanian politicians preached a nationalism limited exclusively to indigenous Christians, and they were strongly supported by all who felt the commercial competition of the Jews. Thus, although the Jews had been settled in the land for many centuries, they were by law declared aliens. This was done in defiance of the treaty of Paris of 1856 and the convention of 1858 which declared all Rumans to be equal before the law. Under the influence of this distinction the Jews became persecuted, and sanguinary riots were of frequent occurrence. The realization of a Jewish question led to legislation imposing disabilities on the Jews. In 1878 the congress of Berlin agreed to recognize the independence of Rumania on condition that all religious disabilities were removed. Rumania agreed to this condition, but ultimately persuaded the powers to allow her to carry out the emancipation of the Jews gradually. Persecutions, however, continued, and in 1902 they led to a great exodus of Jews. The United States addressed a strong remonstrance to the Rumanian government, but the condition of the Jews was in no way improved. Their emancipation was in 1908 as far off as ever, and their disabilities heavier than those of their brethren in Russia. For this state of things the example of the anti-Semites in Germany, Russia, Austria and France was largely to blame, since it had justified the intolerance of the Rumans. Owing, also, to the fact that of late years Rumania had become a sort of *annexe* of the Triple Alliance, it was found impossible to induce the signatories of the treaty of Berlin to take action to compel the state to fulfil its obligations under that treaty.

Austria-Hungary.

In Austria-Hungary the anti-Semitic impulses came almost simultaneously from the North and East. Already in the 'seventies the doctrinaire anti-Semitism of Berlin had found an echo in Budapest. Two members of the diet, Victor Istoczy and Geza Onody, together with a publicist named Georg Marczianyi, busied themselves in making known the doctrine of Marr in Hungary. Marczianyi, who translated the German Judeophobe pamphlets into Magyar, and the Magyar works of Onody into German, was the chief medium between the northern and southern schools. In 1880 Istoczy tried to establish a "Nichtjuden Bund" in Hungary, with statutes literally translated from those of the German anti-Semitic league. The movement, however, made no

progress, owing to the stalwart Liberalism of the predominant political parties, and of the national principles inherited from the revolution of 1848. The large part played by the Jews in that struggle, and the fruitful patriotism with which they had worked for the political and economic progress of the country, had created, too, a strong claim on the gratitude of the best elements in the nation. Nevertheless, among the ultramontane clergy, the higher aristocracy, the ill-paid minor officials, and the ignorant peasantry, the seeds of a tacit anti-Semitism were latent. It was probably the aversion of the nobility from anything in the nature of a demagogic agitation which for a time prevented these seeds from germinating. The news of the uprising in Russia and the appearance of Jewish refugees on the frontier, had the effect of giving a certain prominence to the agitation of Istoczy and Onody and of exciting the rural communities, but it did not succeed in impressing the public with the pseudo-scientific doctrines of the new anti-Semitism. It was not until the agitators resorted to the Blood Accusation—that never-failing decoy of obscurantism and superstition—that Hungary took a definite place in the anti-Semitic movement. The outbreak was short and fortunately bloodless, but while it lasted its scandals shocked the whole of Europe.

Dr August Rohling, professor of Hebrew at the university of Prague, a Roman Catholic theologian of high position but dubious learning, had for some years assisted the Hungarian anti-Semites with *réchauffés* of Eisenmenger's *Enidecktes Judenthum* (Frankfurt a/M. 1700). In 1881 he made a solemn deposition before the Supreme Court accusing the Jews of being bound by their law to work the moral and physical ruin of non-Jews. He followed this up with an offer to depose on oath that the murder of Christians for ritual purposes was a doctrine secretly taught among Jews. Professor Delitzsch and other eminent Hebraists, both Christian and Jewish, exposed and denounced the ignorance and malevolence of Rohling, but were unable to stem the mischief he was causing. In April 1882 a Christian girl named Esther Sobymossi was missed from the Hungarian village of Tisza Eszlar, where a small community of Jews were settled. The rumour got abroad that she had been kidnapped and murdered by the Jews, but it remained the burden of idle gossip, and gave rise to neither judicial complaint nor public disorders. At this moment the question of the Bosnian Pacification credits was before the diet. The unpopularity of the task assumed by Austria-Hungary, under the treaty of Berlin, which was calculated to strengthen the disaffected Croat element in the empire, had reduced the government majority to very small proportions, and all the reactionary factions in the country were accordingly in arms. The government was violently and unscrupulously attacked on all sides. On the 23rd of May there was a debate in the diet when M. Onody, in an incendiary harangue, told the story of the missing girl at Tisza Eszlar, and accused ministers of criminal indulgence to races alien to the national spirit. In the then excited state of the public mind on the Croat question, the manoeuvre was adroitly conceived. The government fell into the trap, and treated the story with lofty disdain. Thereupon the anti-Semites set to work on the case, and M. Joseph Bary, the magistrate at Nyiregyhaza, and a noted anti-Semite, was induced to go to Tisza Eszlar and institute an inquiry. All the anti-liberal elements in the country now became banded together in this effort to discredit the liberal government, and for the first time the Hungarian anti-Semites found themselves at the head of a powerful party. Fifteen Jews were arrested and thrown into prison. No pains were spared in preparing the case for trial. Perjury and even forgery were freely resorted to. The son of one of the accused, a boy of fourteen, was taken into custody by the police, and by threats and cajoleries prevailed upon to give evidence for the prosecution. He was elaborately coached for the terrible *rôle* he was to play. The trial opened at Nyiregyhaza on the 19th of June, and lasted till the 3rd of August. It was one of the most dramatic *causes celèbres* of the century. Under the brilliant cross-examination of the advocates for the defence the whole of the shocking conspiracy was gradually exposed. The public prosecutor thereupon withdrew from the case, and the four judges—the chief of whom held strong anti-Semitic opinions—unanimously acquitted all the prisoners. The case proved the death-blow of Hungarian anti-Semitism. Although another phase of the Jewish question, which will be referred to presently, had still to occupy the public mind, the shame brought on the nation by the Tisza Eszlar conspiracy effectually prevented the anti-Semites from raising their voices with any effect again.

Meanwhile a more formidable and complicated outburst was preparing in Austria itself. Here the lines of the German agitation were closely followed, but with far more dramatic results. It was exclusively political—that is to say, it appealed to anti-Jewish prejudices for party purposes while it sought to rehabilitate them on a pseudo-scientific basis, racial and economic. At first it was confined to sporadic pamphleteers. By their side there gradually grew up a school of Christian Socialists, recruited from the ultra-Clericals, for the study and application of the doctrines preached at Mainz by Archbishop Ketteler. This constituted a complete Austrian analogue to the Evangelical-Socialist movement started in Germany by

Herr Stöcker. For some years the two movements remained distinct, but signs of approximation were early visible. Thus one of the first complaints of the anti-Semites was that the Jews were becoming masters of the soil. This found an echo in the agrarian principles of the Christian Socialists, as expounded by Rudolph Meyer, in which individualism in landed property was admitted on the condition that the landowners were “the families of the nation” and not “cosmopolitan financiers.” A further indication of anti-Semitism is found in a speech delivered in 1878 by Prince Alois von Liechtenstein (b. 1846), the most prominent disciple of Rudolph Meyer, who denounced the national debt as a tribute paid by the state to cosmopolitan rentiers (Nitti, *Catholic Socialism*, pp. 200, 201, 211, 216). The growing disorder in parliament, due to the bitter struggle between the German and Czech parties, served to bring anti-Semitism into the field of practical politics. Since 1867 the German Liberals had been in power. They had made enemies of the Clericals by tampering with the concordat, and they had split up their own party by the federalist policy adopted by Count Taaffe. The Radical secessionists in their turn found it difficult to agree, and an ultra-national German wing formed itself into a separate party under the leadership of Ritter von Schonerer (b. 1842), a Radical nationalist of the most violent type. In 1882 two anti-Semitic leagues had been founded in Vienna, and to these the Radical nationalists now appealed for support. The growing importance of the party led the premier, Count Taaffe, to angle for the support of the Clericals by accepting a portion of the Christian Socialist programme. The hostility this excited in the liberal press, largely written by Jews, served to bring the feudal Christian Socialists and Radical anti-Semites together. In 1891 these strangely assorted factions became consolidated, and during the elections of that year Prince Liechtenstein came forward as an anti-Semitic candidate and the acknowledged leader of the party. The elections resulted in the return of fifteen anti-Semites to the Reichsrath, chiefly from Vienna.

Although Prince Liechtenstein and the bulk of the Christian Socialists had joined the anti-Semites with the support of the Clerical organ, the *Vaterland*, the Clerical party as a whole still held aloof from the Jew-baiters. The events of 1892-1895 put an end to their hesitation. The Hungarian government, in compliance with long-standing pledges to the liberal party, introduced into the diet a series of ecclesiastical reform bills providing for civil marriage, freedom of worship, and the legal recognition of Judasim on an equality with other denominations. These proposals, which synchronized with Ahlwardt’s turbulent agitation in Germany, gave a great impulse to anti-Semitism and served to drive into its ranks a large number of Clericals. The agitation was taken in hand by the Roman Catholic clergy, and the pulpits resounded with denunciations of the Jews. One clergyman, Father Deckert, was prosecuted for preaching the Blood Accusation and convicted (1894). Cardinal Schlauch, bishop of Grosswardein, declared in the Hungarian House of Magnates that the Liberals were in league with “cosmopolitans” for the ruin of the country. In October 1894 the magnates adopted two of the ecclesiastical bills with amendments, but threw out the Jewish bill by a majority of six. The crown sided with the magnates, and the ministry resigned, although it had a majority in the Lower House. An effort was made to form a Clerical cabinet, but it failed. Baron Banffy was then entrusted with the construction of a fresh Liberal ministry. The announcement that he would persist with the ecclesiastical bills lashed the Clericals and anti-Semites into a fury, and the agitation broke out afresh. The pope addressed a letter to Count Zichy encouraging the magnates to resist, and once more two of the bills were amended, and the third rejected. The papal nuncio, Mgr. Agliardi, now thought proper to pay a visit to Budapest, where he allowed himself to be interviewed on the crisis. This interference in the domestic concerns of Hungary was deeply resented by the Liberals, and Baron Banffy requested Count Kalnoky, the imperial minister of foreign affairs, to protest against it at the Vatican. Count Kalnoky refused and tendered his resignation to the emperor. Clerical sympathies were predominant in Vienna, and the emperor was induced for a moment to decline the count’s resignation. It soon became clear, however, that the Hungarians were resolved to see the crisis out, and that in the end Vienna would be compelled to give way. The emperor accordingly retraced his steps, Count Kalnoky’s resignation was accepted, the papal nuncio was recalled, a batch of new magnates were created, and the Hungarian ecclesiastical bills passed.

Simultaneously with this crisis another startling phase of the anti-Semitic drama was being enacted in Vienna itself. Encouraged by the support of the Clericals the anti-Semites resolved to make an effort to carry the Vienna municipal elections. So far the alliance of the Clericals with the anti-Semites had been unofficial, but on the eve of the elections (January 1895) the pope, influenced partly by the Hungarian crisis and partly by an idea of Cardinal Rampolla that the best antidote to democratic socialism would be a clerically controlled fusion of the Christian Socialists and anti-Semites, sent his blessing to Prince Liechtenstein

and his followers. This action alarmed the government and a considerable body of the higher episcopate, who felt assured that any permanent encouragement given to the anti-Semites would in the end strengthen the parties of sedition and disorder. Cardinal Schönborn was despatched in haste to Rome to expostulate with the pontiff, and his representations were strongly supported by the French and Belgian bishops. The mischief was however, done, and although the pope sent a verbal message to Prince Liechtenstein excluding the anti-Semites from his blessing, the elections resulted in a great triumph for the Jew-haters. The municipal council was immediately dissolved by the government, and new elections were ordered, but these only strengthened the position of the anti-Semites, who carried 92 seats out of a total of 138. A cabinet crisis followed, and the premiership was entrusted to the Statthalter of Galicia, Count Badeni, who assumed office with a pledge of war to the knife against anti-Semitism. In October the new municipal council elected as burgomaster of Vienna Dr Karl Lueger (b. 1844), a vehement anti-Semite, who had displaced Prince Liechtenstein as leader of the party. The emperor declined to sanction the election, but the council repeated it in face of the imperial displeasure. Once more a dissolution was ordered, and for three months the city was governed by administrative commissioners. In February 1896 elections were again held, and the anti-Semites were returned with an increased majority. The emperor then capitulated, and after a temporary arrangement, by which for one year Dr Lueger acted as vice-burgomaster and handed over the burgomastership to an inoffensive nominee, permitted the municipal council to have its way. The growing anarchy in parliament at this moment served still further to strengthen the anti-Semites, and their conquest of Vienna was speedily followed by a not less striking conquest of the Landtag of Lower Austria (November 1896).

Since then a reaction of sanity has slowly but surely asserted itself. In 1908 the anti-Semites had governed Vienna twelve years, and, although they had accomplished much mischief, the millennium of which they were supposed to be the heralds had not dawned. On the contrary, the commercial interests of the city had suffered and the rates had been enormously increased (*Neue Freie Presse*, 29th March 1901), while the predatory hopes which secured them office had only been realized on a small and select scale. The spectacle of a Clerico-anti-Semitic tammany in Vienna had strengthened the resistance of the better elements in the country. Time had also shown that Christian Socialism is only a disguise for high Toryism, and that the German Radicals who were originally induced to join the anti-Semites had been victimized by the Clericals. The fruits of this disillusion began to show themselves in the general elections of 1900-1901, when the anti-Semites lost six seats in the Reichsrath. The elections were followed (26th January 1901) by a papal encyclical on Christian democracy, in which Christian Socialism was declared to be a term unacceptable to the Church, and the faithful were adjured to abstain from agitation of a demagogic and revolutionary character, and “to respect the rights of others.” Nevertheless, in 1907 the Christian Socialists trebled their representation in the Reichsrath. This, however, was due more to their alliance with the German national parties than to any large increase of anti-Semitism in the electorate.

France.

The last country in Europe to make use of the teachings of German anti-Semitism in its party politics was France. The fact that the movement should have struck root in a republican country, where the ideals of democratic freedom have been so passionately cultivated, has been regarded as one of the paradoxes of our latter-day history. As a matter of fact, it is more surprising that it was not adopted earlier. All the social and political conditions which produced anti-Semitism in Germany were present in France, but in an aggravated form due primarily to the very republican *régime* which at first sight seemed to be a guarantee against it. In the monarchical states the dominance of the *bourgeoisie* was tempered in a measure by the power of the crown and the political activity of the aristocracy, which carried with them a very real restraining influence in the matter of political honour and morality. In France these restraining influences were driven out of public life by the republic. The nobility both of the *ancien régime* and the empire stood aloof, and politics were abandoned for the most part to professional adventurers, while the *bourgeoisie* assumed the form of an omnipotent plutocracy. This naturally attracted to France all the financial adventurers in Europe, and in the train of the immigration came not a few German Jews, alienated from their own country by the agitation of Marr and Stöcker. Thus the *bourgeoisie* was not only more powerful in France than in other countries, but the obnoxiousness of its Jewish element was accentuated by a tinge of the national enemy. The anti-clericalism of the *bourgeois* republic and its unexampled series of financial scandals, culminating in the Panama “Krach,” thus sufficed to give anti-Semitism a strong hold on the public mind.

Nevertheless, it was not until 1882 that the anti-Jewish movement was seriously heard of

in France. Paul Bontoux (b. 1820), who had formerly been in the employ of the Rothschilds, but had been obliged to leave the firm in consequence of his disastrous speculations, had joined the Legitimist party, and had started the Union Générale with funds obtained from his new allies. Bontoux promised to break up the alleged financial monopoly of the Jews and Protestants and to found a new plutocracy in its stead, which should be mainly Roman Catholic and aristocratic. The bait was eagerly swallowed. For five years the Union Générale, with the blessing of the pope, pursued an apparently prosperous career. Immense schemes were undertaken, and the 123-fr. shares rose gradually to 3200 francs. The whole structure, however, rested on a basis of audacious speculation, and in January 1882 the Union Générale failed, with liabilities amounting to 312,000,000 francs. The cry was at once raised that the collapse was due to the manoeuvres of the Jews, and a strong anti-Semitic feeling manifested itself in clerical and aristocratic circles. In 1886 violent expression was given to this feeling in a book since become famous, *La France juive*, by Edouard Drumont (b. 1844). The author illustrated the theories of German anti-Semitism with a *chronique scandaleuse* full of piquant personalities, in which the corruption of French national life under Jewish influences was painted in alarming colours. The book was read with avidity by the public, who welcomed its explanations of the obviously growing debauchery. The Wilson scandals and the suspension of the Panama Company in the following year, while not bearing out Drumont's anti-Semitism, fully justified his view of the prevailing corruption. Out of this condition of things rose the Boulangist movement, which rallied all the disaffected elements in the country, including Drumont's following of anti-Semites. It was not, however, until the flight of General Boulanger and the ruin of his party that anti-Semitism came forward as a political movement.

The chief author of the rout of Boulangism was a Jewish politician and journalist, Joseph Reinach (b. 1856), formerly private secretary to Gambetta, and one of the ablest men in France. He was a Frenchman by birth and education, but his father and uncles were Germans, who had founded an important banking establishment in Paris. Hence he was held to personify the alien Jewish domination in France, and the ex-Boulangists turned against him and his co-religionists with fury. The Boulangist agitation had for a second time involved the Legitimists in heavy pecuniary losses, and under the leadership of the marquis de Morès they now threw all their influence on the side of Drumont. An anti-Semitic league was established, and with Royalist assistance branches were organized all over the country. The Franco-Russian alliance in 1891, when the persecutions of the Jews by Pobêdonostsev were attracting the attention of Europe, served to invest Drumont's agitation with a fashionable and patriotic character. It was a sign of the spiritual approximation of the two peoples. In 1892 Drumont founded a daily anti-Semitic newspaper, *La Libre Parole*. With the organization of this journal a regular campaign for the discovery of scandals was instituted. At the same time a body of aristocratic swashbucklers, with the marquis de Morès and the comte de Lamase at their head, set themselves to terrorize the Jews and provoke them to duels. At a meeting held at Neuilly in 1891, Jules Guérin, one of the marquis de Morès's lieutenants, had demanded rhetorically *un cadavre de Juif*. He had not long to wait. Anti-Semitism was most powerful in the army, which was the only branch of the public service in which the reactionary classes were fully represented. The republican law compelling the seminarists to serve their term in the army had strengthened its Clerical and Royalist elements, and the result was a movement against the Jewish officers, of whom 500 held commissions. A series of articles in the *Libre Parole* attacking these officers led to a number of ferocious duels, and these culminated in 1892 in the death of an amiable and popular Jewish officer, Captain Armand Mayer, of the Engineers, who fell, pierced through the lungs by the marquis de Morès. This tragedy, rendered all the more painful by the discovery that Captain Mayer had chivalrously fought to shield a friend, aroused a great deal of popular indignation against the anti-Semites, and for a moment it was believed that the agitation had been killed with its victim.

Towards the end of 1892, the discovery of the widespread corruption practised by the Panama Company gave a fresh impulse to anti-Semitism. The revelations were in a large measure due to the industry of the *Libre Parole*; and they were all the more welcome to the readers of that journal since it was discovered that three Jews were implicated in the scandals, one of whom, baron de Reinach, was uncle and father-in-law to the hated destroyer of Boulangism. The escape of the other two, Dr Cornelius Herz and M. Arton, and the difficulties experienced in obtaining their extradition, deepened the popular conviction that the authorities were implicated in the scandals, and kept the public eye for a long time absorbed by the otherwise restricted Jewish aspects of the scandals. In 1894 the military side of the agitation was revived by the arrest of a prominent Jewish staff officer, Captain Alfred Dreyfus, on a charge of treason. From the beginning the hand of the anti-Semite was

flagrant in the new sensation. The first hint of the arrest appeared in the *Libre Parole*; and before the facts had been officially communicated to the public that journal was busy with a campaign against the war minister, based on the apprehension that, in conspiracy with the *Juiverie* and his republican colleagues, he might exert himself to shield the traitor. Anti-Semitic feeling was now thoroughly aroused. Panama had prepared the people to believe anything; and when it was announced that a court-martial, sitting in secret, had convicted Dreyfus, there was a howl of execration against the Jews from one end of the country to the other, although the alleged crime of the convict and the evidence by which it was supported were quite unknown. Dreyfus was degraded and transported for life amid unparalleled scenes of public excitement.

The Dreyfus Case registers the climax not only of French, but of European anti-Semitism. It was the most ambitious and most unscrupulous attempt yet made to prove the nationalist hypothesis of the anti-Semites, and in its failure it afforded the most striking illustration of the dangers of the whole movement by bringing France to the verge of revolution. For a few months after the Dreyfus court-martial there was a comparative lull; but the highly strung condition of popular passion was illustrated by a violent debate on “The Jewish Peril” in the Chamber of Deputies (25th April 1895), and by two outrages with explosives at the Rothschild bank in Paris. Meanwhile the family of Dreyfus, absolutely convinced of his innocence, were casting about for the means of clearing his character and securing his liberation. They were wealthy, and their activity unsettled the public mind and aroused the apprehensions of the conspirators. Had the latter known how to preserve silence, the mystery would perhaps have been yet unsolved; but in their anxiety to allay all suspicions they made one false step, which proved the beginning of their ruin. Through their friends in the press they secured the publication of a facsimile of a document known as the *Bordereau* —a list of documents supposed to be in Dreyfus’s handwriting and addressed apparently to the military attaché of a foreign power, which was alleged to constitute the chief evidence against the convict. It was hoped by this publication to put an end to the doubts of the so-called Dreyfusards. The result, however, was only to give them a clue on which they worked with remarkable ingenuity. To prove that the *Bordereau* was not in Dreyfus’s handwriting was not difficult. Indeed, its authorship was recognized almost on the day of publication; but the Dreyfusards held their hands in order to make assurance doubly sure by further evidence. Meanwhile one of the officers of the general staff, Colonel Picquart, had convinced himself by an examination of the *dossier* of the trial that a gross miscarriage of justice had taken place. On mentioning his doubts to his superiors, who were animated partly by anti-Semitic feeling and partly by reluctance to confess to a mistake, he was ordered to the Tunisian hinterland on a dangerous expedition. Before leaving Paris, however, he took the precaution to confide his discovery to his legal adviser. Harassed by their anxieties, the conspirators made further communications to the newspapers; and the government, questioned and badgered in parliament, added to the revelations. The new disclosures, so far from stopping the Dreyfusards, proved to them, among other things, that the conviction had been partially based on documents which had not been communicated to the counsel for the defence, and hence that the judges had been tampered with by the ministry of war behind the prisoner’s back. So far, too, as these documents related to correspondence with foreign military attachés, it was soon ascertained that they were forgeries. In this way a terrible indictment was gradually drawn up against the ministry of war. The first step was taken towards the end of 1897 by a brother of Captain Dreyfus, who, in a letter to the minister of war, denounced Major Esterhazy as the real author of the *Bordereau*. The authorities, supported by parliament, declined to reopen the Dreyfus Case, but they ordered a court-martial on Esterhazy, which was held with closed doors and resulted in his acquittal. It now became clear that nothing short of an appeal to public opinion and a full exposure of all the iniquities that had been perpetrated would secure justice at the hands of the military chiefs. On behalf of Dreyfus, Émile Zola, the eminent novelist, formulated the case against the general staff of the army in an open letter to the president of the republic, which by its dramatic accusations startled the whole world. The letter was denounced as wild and fantastic even by those who were in favour of revision. Zola was prosecuted for libel and convicted, and had to fly the country; but the agitation he had started was taken in hand by others, notably M. Clémenceau, M. Reinach and M. Yves Guyot. In August 1898 their efforts found their first reward. A re-examination of the documents in the case by M. Cavaignac, then minister of war, showed that one was undoubtedly forged. Colonel Henry, of the intelligence department of the war office, then confessed that he had fabricated the document, and, on being sent to Mont Valérien under arrest, cut his throat.

In spite of this damaging discovery the war office still persisted in believing Dreyfus guilty, and opposed a fresh inquiry. It was supported by three successive ministers of war, and

apparently an overwhelming body of public opinion. By this time the question of the guilt or innocence of Dreyfus had become an altogether subsidiary issue. As in Germany and Austria, the anti-Semitic crusade had passed into the hands of the political parties. On the one hand the Radicals and Socialists, recognizing the anti-republican aims of the agitators and alarmed by the clerical predominance in the army, had thrown in their lot with the Dreyfusards; on the other the reactionaries, anxious to secure the support of the army, took the opposite view, denounced their opponents as *sans patrie*, and declared that they were conspiring to weaken and degrade the army in the face of the national enemy. The controversy was, consequently, no longer for or against Dreyfus, but for or against the army, and behind it was a life-or-death struggle between the republic and its enemies. The situation became alarming. Rumours of military plots filled the air. Powerful leagues for working up public feeling were formed and organized; attempts to discredit the republic and intimidate the government were made. The president was insulted; there were tumults in the streets, and an attempt was made by M. Déroulède to induce the military to march on the Elysée and upset the republic. In this critical situation France, to her eternal honour, found men with sufficient courage to do the right. The Socialists, by rallying to the Radicals against the reactionaries, secured a majority for the defence of the republic in parliament. Brisson's cabinet transmitted to the court of cassation an application for the revision of the case against Dreyfus; and that tribunal, after an elaborate inquiry, which fully justified Zola's famous letter, quashed and annulled the proceedings of the court-martial, and remitted the accused to another court-martial, to be held at Rennes. Throughout these proceedings the military party fought tooth and nail to impede the course of justice; and although the innocence of Dreyfus had been completely established, it concentrated all its efforts to secure a fresh condemnation of the prisoner at Rennes. Popular passion was at fever heat, and it manifested itself in an attack on M. Labori, one of the counsel for the defence, who was shot and wounded on the eve of his cross-examination of the witnesses for the prosecution. To the amazement and indignation of the whole world outside France, the Rennes court-martial again found the prisoner guilty; but all reliance on the conscientiousness of the verdict was removed by a rider, which found "extenuating circumstances," and by a reduction of the punishment to ten years' imprisonment, to which was added a recommendation to mercy. The verdict was evidently an attempt at a compromise, and the government resolved to advise the president of the republic to pardon Dreyfus. This lame conclusion did not satisfy the accused; but his innocence had been so clearly proved, and on political grounds there were such urgent reasons for desiring a termination of the affair, that it was accepted without protest by the majority of moderate men.

The rehabilitation of Dreyfus, however, did not pass without another effort on the part of the reactionaries to turn the popular passions excited by the case to their own advantage. After the failure of Déroulède's attempt to overturn the republic, the various Royalist and Boulangist leagues, with the assistance of the anti-Semites, organized another plot. This was discovered by the government, and the leaders were arrested. Jules Guérin, secretary of the anti-Semitic league, shut himself up in the league offices in the rue Chabrol, Paris, which had been fortified and garrisoned by a number of his friends, armed with rifles. For more than a month these anti-Semites held the authorities at bay, and some 5000 troops were employed in the siege. The conspirators were all tried by the senate, sitting as a high court, and Guérin was sentenced to ten years' imprisonment. The evidence showed that the anti-Semitic organization had taken an active part in the anti-republican plot (see the report of the Commission d'Instruction in the *Petit Temps*, 1st November 1899).

The government now resolved to strike at the root of the mischief by limiting the power of the religious orders, and with this view a drastic Association bill was introduced into the chambers. This anti-clerical move provoked the wildest passions of the reactionaries, but it found an overwhelming support in the elections of 1902 and the bill became law. The war thus definitely reopened soon led to a revival of the Dreyfus controversy. The nationalists flooded the country with incendiary defamations of "the government of national treason," and Dreyfus on his part loudly demanded a fresh trial. It was clear that conciliation and compromise were useless. Early in 1905 M. Jaurès urged upon the chamber that the demand of the Jewish officer should be granted if only to tranquillize the country. The necessary *faits nouveaux* were speedily found by the minister of war, General André, and having been examined by a special commission of revision were ordered to be transmitted to the court of cassation for final adjudication. On the 12th of July 1906, the court, all chambers united, gave its judgment. After a lengthy review of the case it declared unanimously that the whole accusation against Dreyfus had been disproved, and it quashed the judgment of the Rennes court-martial *sans renvoi*. The explanation of the whole case is that Esterhazy and Henry

were the real culprits; that they had made a trade of supplying the German government with military documents; and that once the *Bordereau* was discovered they availed themselves of the anti-Jewish agitation to throw suspicion on Dreyfus.

Thus ended this famous case, to the relief of the whole country and with the approval of the great majority of French citizens. Except a knot of anti-Semitic monomaniacs all parties bowed loyally to the judgment of the court of cassation. The government gave the fullest effect to the judgment. Dreyfus and Picquart were restored to the active list of the army with the ranks respectively of major and general of brigade. Dreyfus was also created a knight of the Legion of Honour, and received the decoration in public in the artillery pavilion of the military school. Zola, to whose efforts the triumph of truth was chiefly due, had not been spared to witness the final scene, but the chambers decided to give his remains a last resting-place in the Pantheon. When three months later M. Clémenceau formed his first cabinet he appointed General Picquart minister of war. Nothing indeed was left undone to repair the terrible series of wrongs which had grown out of the Dreyfus case. Nevertheless its destructive work could not be wholly healed. For over ten years it had been a nightmare to France, and it now modified the whole course of French history. In the ruin of the French Church, which owed its disestablishment very largely to the Dreyfus conspiracy, may be read the most eloquent warning against the demoralizing madness of anti-Semitism.

In sympathy with the agitation in France there has been a similar movement in Algeria, where the European population have long resented the admission of the native Jews to the rights of French citizenship. The agitation has been marked by much violence, and most of the anti-Semitic deputies in the French parliament, including M. Drumont, have found constituencies in Algeria. As the local anti-Semites are largely Spaniards and Levantine riff-raff, the agitation has not the peculiar nationalist bias which characterizes continental anti-Semitism. Before the energy of the authorities it has lately shown signs of subsiding.

Great Britain, &c.

While the main activity of anti-Semitism has manifested itself in Germany, Russia, Rumania, Austria-Hungary and France, its vibratory influences have been felt in other countries when conditions favourable to its extension have presented themselves. In England more than one attempt to acclimatize the doctrines of Marr and Treitschke has been made. The circumstance that at the time of the rise of German anti-Semitism a premier of Hebrew race, Lord Beaconsfield, was in power first suggested the Jewish bogey to English political extremists. The Eastern crisis of 1876-1878, which was regarded by the Liberal party as primarily a struggle between Christianity, as represented by Russia, and a degrading Semitism, as represented by Turkey, accentuated the anti-Jewish feeling, owing to the anti-Russian attitude adopted by the government. Violent expression to the ancient prejudices against the Jews was given by Sir J.G. Tollemache Sinclair (*A Defence of Russia*, 1877). Mr T.P. O’Connor, in a life of Lord Beaconsfield (1878), pictured him as the instrument of the Jewish people, “moulding the whole policy of Christendom to Jewish aims.” Professor Goldwin Smith, in several articles in the *Nineteenth Century* (1878, 1881 and 1882), sought to synthetize the growing anti-Jewish feeling by adopting the nationalist theories of the German anti-Semites. This movement did not fail to find an equivocal response in the speeches of some of the leading Liberal statesmen; but on the country generally it produced no effect. It was revived when the persecutions in Russia threatened England with a great influx of Polish Jews, whose mode of life was calculated to lower the standard of living in the industries in which they were employed, and it has left its trace in the anti-alien legislation of 1905. In 1883 Stöcker visited London, but received a very unflattering reception. Abortive attempts to acclimatize anti-Semitism have also been made in Switzerland, Belgium, Greece and the United States.

Anti-Semitism made a great deal of history during the thirty years up to 1908, but has left no permanent mark of a constructive kind on the social and political evolution of Europe. It is the fruit of a great ethnographic and political error, and it has spent itself in political intrigues of transparent dishonesty. Its racial doctrine is at best a crude hypothesis: its nationalist theory has only served to throw into striking relief the essentially economic bases of modern society, while its political activity has revealed the vulgarity and ignorance which constitute its main sources of strength. So far from injuring the Jews, it has really given Jewish racial separatism a new lease of life. Its extravagant accusations, as in the Tisza Eszlar and Dreyfus cases, have resulted in the vindication of the Jewish character. Its agitation generally, coinciding with the revival of interest in Jewish history, has helped to transfer Jewish solidarity from a religious to a racial basis. The bond of a common race, vitalized by a new pride in Hebrew history and spurred on to resistance by the insults of the anti-Semites, has given a new spirit and a new source of strength to Judaism at a moment

when the approximation of ethical systems and the revolt against dogma were sapping its essentially religious foundations. In the whole history of Judaism, perhaps, there have been no more numerous or remarkable instances of reversions to the faith than in the period in question. The reply of the Jews to anti-Semitism has taken two interesting practical forms. In the first place there is the so-called Zionist movement, which is a kind of Jewish nationalism and is vitiated by the same errors that distinguish its anti-Semitic analogue (see Zionism). In the second place, there is a movement represented by the Maccabaeans' Society in London, which seeks to unite the Jewish people in an effort to raise the Jewish character and to promote a higher consciousness of the dignity of the race. It lays no stress on orthodoxy, but welcomes all who strive to render Jewish conduct an adequate reply to the theories of the anti-Semites. Both these movements are elements of fresh vitality to Judaism, and they are probably destined to produce important fruit in future years. A splendid spirit of generosity has also been displayed by the Jewish community in assisting and relieving the victims of the Jew-haters. Besides countless funds raised by public subscription, Baron de Hirsch founded a colossal scheme for transplanting persecuted Jews to new countries under new conditions of life, and endowed it with no less a sum than £9,000,000 (see Hirsch, Maurice de).

Though anti-Semitism has been unmasked and discredited, it is to be feared that its history is not yet at an end. While there remain in Russia and Rumania over six millions of Jews who are being systematically degraded, and who periodically overflow the western frontier, there must continue to be a Jewish question in Europe; and while there are weak governments, and ignorant and superstitious elements in the enfranchized classes of the countries affected, that question will seek to play a part in politics.

Literature.—No impartial history of modern anti-Semitism has yet been written. The most comprehensive works on the subject, *Israel among the Nations*, by A. Leroy-Beaulieu (1895), and *L'Antisémitisme, son histoire et ses causes*, by Bernard Lazare (1894), are collections of studies rather than histories. M. Lazare's work will be found most useful by the student on account of its detached standpoint and its valuable bibliographical notes. A good list of works relating to Jewish ethnography will be found at the end of M. Isidor Loeb's valuable article, "Juifs," in the *Dictionnaire universel de géographie* (1884). To these should be added, Adolf Jellinek, *Der Jüdische Stamm* (1869); Chwolson, *Die semitischen Volker* (1872); Nossig, *Materialien zur Statistik* (1887); Jacobs, *Jewish Statistics* (1891); and Andree, *Zur Volkskunde der Juden* (1881). A bibliography of the Jewish question from 1875 to 1884 has been published by Mr Joseph Jacobs (1885). Useful additions and rectifications will be found in the *Jewish World*, 11th September 1885. During the period since 1885 the anti-Semitic movement has produced an immense pamphlet literature. Some of these productions have already been referred to; others will be found in current bibliographies under the names of the personages mentioned, such as Stöcker, Ahlwardt, &c. On the Russian persecutions, besides the works quoted by Jacobs, see the pamphlet issued by the Russo-Jewish Committee in 1890, and the annual reports of the Russo-Jewish Mansion House Fund; *Les Juifs de Russie* (Paris, 1891); *Report of the Commissioners of Immigration upon the Causes which incite Immigration to the United States* (Washington, 1892); *The New Exodus*, by Harold Frederic (1892); *Les Juifs russes*, by Leo Errera (Brussels, 1893). The most valuable collection of facts relating to the persecutions of 1881-1882 are to be found in the *Feuilles Jaunes* (52 nos.), compiled and circulated for the information of the European press by the Alliance Israélite of Paris. Complete collections are very scarce. For the struggle during the past decade the *Russische Correspondenz* of Berlin should be consulted, together with its French and English editions. See also the publications of the *Bund* (Geneva; Imprimerie Israélite); Séménoff, *The Russian Government and the Massacres*, and *Quarterly Review*, October 1906. On the Rumanian question, see Bluntschli, *Roumania and the Legal Status of the Jews* (London, 1879); *Wir Juden* (Zürich, 1883); Schloss, *The Persecution of the Jews in Roumania* (London, 1885); Schloss, *Notes of Information* (1886); Sincerus, *Juifs en Roumanie* (London, 1901); Plotke, *Die rumanischen Juden unter dem Fürsten u. Konig Karl* (1901); Dehn, *Diplomatic u. Hochfinanz in der rumanischen Judenfrage* (1901); Conybeare, "Roumania as a Persecuting Power," *Nat. Rev.*, February 1901. On Hungary and the Tisza Eszlar Case, see (besides the references in Jacobs) Nathan, *Der Prozess van Tisza Eszlar* (Berlin, 1892). On this case and the Blood Accusation generally, see Wright, "The Jews and the Malicious Charge of Human Sacrifice," *Nineteenth Century*, 1883. The origins of the Austrian agitation are dealt with by Nitti, *Catholic Socialism* (1895). This work, though inclining to anti-Semitism, should be consulted for the Christian Socialist elements in the whole continental agitation. The most valuable source of information on the Austrian movement is the *Österreichische Wochenschrift*, edited by Dr Bloch. See also pamphlets and speeches by the anti-Semitic leaders, Liechtenstein, Lueger, Schoenerer, &c. The case of the French anti-Semites is stated by E. Drumont in his *France juive*. and other works; the other side by Isidor Loeb, Bernard Lazare, Leonce Reynaud, &c. Of the Dreyfus Case there is an enormous literature: see especially the reports of the Zola and Picquart trials, the revision

case before the Court of Cassation, the proceedings of the Rennes court-martial, and the final judgment of the Court of Cassation printed in full in the *Figaro*, July 15, 1906; also Reinach, *Histoire de l'affaire Dreyfus* (Paris, 1908, 6 vols.), and the valuable series of volumes by Captain Paul Marin, MM. Clémenceau, Lazare, Yves Guyot, Paschal Grousset, Urbain Gohier, de Haime, de Pressensé, and the remarkable letters of Dreyfus (*Lettres d'un innocent*). An English history of the case was published by F.C. Conybeare (1898), whose articles and those of Sir Godfrey Lushington and L.J. Maxse in the *National Review*, 1897-1900, will be found invaluable by the student. On the Algerian question, see M. Wahl in the *Revue des études juives*; L. Forest, *Naturalisation des Israélites algériens*; and E. Audinet in the *Revue générale de droit international publique*, 1897, No. 4. On the history of the anti-Semitic movement generally, see the annual reports of the Alliance Israélite of Paris and the Anglo-Jewish Association of London, also the annual summaries published at the end of the Jewish year by the *Jewish Chronicle* of London. The connexion of the movement with general party politics must be followed in the newspapers. The present writer has worked with a collection of newspaper cuttings numbering several thousands and ranging over thirty years.

(L. W.)

ANTISEPTICS (Gr. ἀντὶ, against, and σηπτικὸς, putrefactive), the name given to substances which are used for the prevention of bacterial development in animal or vegetable matter. Some are true germicides, capable of destroying the bacteria, whilst others merely prevent or inhibit their growth. The antiseptic method of treating wounds (see Surgery) was introduced by Lord Lister, and was an outcome of Pasteur's germ theory of putrefaction. For the growth of bacteria there must be a certain food supply, moisture, in most cases oxygen, and a certain minimum temperature (see Bacteriology). These conditions have been specially studied and applied in connexion with the preserving of food (see Food Preservation) and in the ancient practice of embalming the dead, which is the earliest illustration of the systematic use of antiseptics (see Embalming). In early inquiries a great point was made of the prevention of putrefaction, and work was done in the way of finding how much of an agent must be added to a given solution, in order that the bacteria accidentally present might not develop. But for various reasons this was an inexact method, and to-day an antiseptic is judged by its effects on pure cultures of definite pathogenic microbes, and on their vegetative and spore forms. Their standardization has been effected in many instances, and a water solution of carbolic acid of a certain fixed strength is now taken as the standard with which other antiseptics are compared. The more important of those in use to-day are carbolic acid, the perchloride and biniodide of mercury, iodoform, formalin, salicylic acid, &c. Carbolic acid is germicidal in strong solution, inhibitory in weaker ones. The so-called "pure" acid is applied to infected living tissues, especially to tuberculous sinuses or wounds, after scraping them, in order to destroy any part of the tuberculous material still remaining. A solution of 1 in 20 is used to sterilize instruments before an operation, and towels or lint to be used for the patient. Care must always be taken to avoid absorption (see Carbolic Acid). The perchloride of mercury is another very powerful antiseptic used in solutions of strength 1 in 2000, 1 in 1000 and 1 in 500. This or the biniodide of mercury is the last antiseptic applied to the surgeon's and assistants' hands before an operation begins. They are not, however, to be used in the disinfection of instruments, nor where any large abraded surface would favour absorption. Boracic acid receives no mention here; though it is popularly known as an antiseptic, it is in reality only a soothing fluid, and bacteria will flourish comfortably in contact with it. Of the dry antiseptics iodoform is constantly used in septic or tuberculous wounds, and it appears to have an inhibitory action on *Bacillus tuberculosis*. Its power depends on the fact that it is slowly decomposed by the tissues, and free iodine given off. Among the more recently introduced antiseptics, chinosol, a yellow substance freely soluble in water, and lysol, another coal-tar derivative, are much used. But every antiseptic, however good, is more or less toxic and irritating to a wounded surface. Hence it is that the "antiseptic" method has been replaced in the surgery of to-day by the "aseptic" method (see Surgery), which relies on keeping free from the invasion of bacteria rather than destroying them when present.

ANTISTHENES (*c.* 444-365 B.C.), the founder of the Cynic school of philosophy, was born at Athens of a Thracian mother, a fact which may account for the extreme boldness of his attack on conventional thought. In his youth he studied rhetoric under Gorgias, perhaps also under Hippias and Prodicus. Gomperz suggests that he was originally in good circumstances, but was reduced to poverty. However this may be, he came under the influence of Socrates, and became a devoted pupil. So eager was he to hear the words of Socrates that he used to walk daily from Peiraeus to Athens, and persuaded his friends to accompany him. Filled with enthusiasm for the Socratic idea of virtue, he founded a school of his own in the Cynosarges, the hall of the bastards (νόθοι). Thither he attracted the poorer classes by the simplicity of his life and teaching. He wore a cloak and carried a staff and a wallet, and this costume became the uniform of his followers. Diogenes Laertius says that his works filled ten volumes, but of these fragments only remain. His favourite style seems to have been the dialogue, wherein we see the effect of his early rhetorical training. Aristotle speaks of him as uneducated and simple-minded, and Plato describes him as struggling in vain with the difficulties of dialectic. His work represents one great aspect of Socratic philosophy, and should be compared with the Cyrenaic and Megarian doctrines.

BIBLIOGRAPHY.—Charles Chappuis, *Antisthène* (Paris, 1854); A. Müller, *De Antisthenis cynici vita et scriptis* (Dresden, 1860); T. Gomperz, *Greek Thinkers* (Eng. trans., 1905), vol. ii. pp. 142 ff., 150 ff. For his philosophy see CYNICS, and for his pupils, Diogenes and Crates, see articles under these headings.

ANTISTROPHE, the portion of an ode which is sung by the chorus in its returning movement from west to east, in response to the strophe, which was sung from east to west. It is of the nature of a reply, and balances the effect of the strophe. Thus, in Gray's ode called "The Progress of Poesy," the strophe, which dwelt in triumphant accents on the beauty, power and ecstasy of verse, is answered by the antistrophe, in a depressed and melancholy key—

> "Man's feeble race what ills await,
> Labour, and Penury, the racks of Pain,
> Disease and Sorrow's weeping Train,
> And Death, sad refuge from the storms of Fate," &c.

When the sections of the chorus have ended their responses, they unite and close in the epode, thus exemplifying the triple form in which the ancient sacred hymns of Greece were composed, from the days of Stesichorus onwards. As Milton says, "strophe, antistrophe and epode were a kind of stanza framed only for the music then used with the chorus that sang."

ANTITHESIS (the Greek for "setting opposite"), in rhetoric, the bringing out of a contrast in the meaning by an obvious contrast in the expression, as in the following:—"When there is need of silence, you speak, and when there is need of speech, you are dumb; when present, you wish to be absent, and when absent, you desire to be present; in peace you are for war, and in war you long for peace; in council you descant on bravery, and in the battle you tremble." Antithesis is sometimes double or alternate, as in the appeal of Augustus: —"Listen, young men, to an old man to whom old men were glad to listen when he was young." The force of the antithesis is increased if the words on which the beat of the contrast falls are alliterative, or otherwise similar in sound, as—"The fairest but the falsest of her sex." There is nothing that gives to expression greater point and vivacity than a judicious employment of this figure; but, on the other hand, there is nothing more tedious and trivial than a pseudo-antithetical style. Among English writers who have made the most abundant use of antithesis are Pope, Young, Johnson, and Gibbon; and especially Lyly in his *Euphues*. It is, however, a much more common feature in French than in English; while in German, with some striking exceptions, it is conspicuous by its absence.

ANTITYPE (Gr. ἀντίτυπος), the correlative of "type," to which it corresponds as the stamp to the die, or vice versa. In the sense of copy or likeness the word occurs in the Greek New Testament (Heb. ix. 24; 1 Peter iii. 21), English "figure." By theological writers antitype is employed to denote the reality of which a type is the prophetic symbol. Thus, Christ is the antitype of many of the types of the Jewish ritual. By the fathers of the Greek church (*e.g.* Gregory Nazianzen) antitype is employed as a designation of the bread and wine in the sacrament of the Lord's Supper.

ANTIUM (mod. *Anzio*), an ancient Volscian city on the coast of Latium, about 33 m. S. of Rome. The legends as to its foundation, and the accounts of its early relations with Rome, are untrustworthy; but Livy's account of wars between Antium and Rome, early in the 4th century B.C., may perhaps be accepted. Antium is named with Ardea, Laurentum and Circeii, as under Roman protection, in the treaty with Carthage in 348 B.C. In 341 it lost its independence after a rising with the rest of Latium against Rome, and the beaks (*rostra*) of the six captured Antiatine ships decorated and gave their name to the orators' tribunal in the Roman Forum. At the end of the Republican period it became a resort of wealthy Romans, and the Julian and Claudian emperors frequently visited it; both Caligula and Nero were born there. The latter founded a colony of veterans and built a new harbour, the projecting moles of which are still extant. In the middle ages it was deserted in favour of Nettuno: at the end of the 17th century Innocent XII. and Clement XI. restored the harbour, not on the old site but to the east of it, with the opening to the east, a mistake which leads to its being frequently silted up; it has a depth of about 15 ft. Remains of Roman villas are conspicuous all along the shore, both to the east and to the north-west of the town. That of Nero cannot be certainly identified, but is generally placed at the so-called Arco Muto, where remains of a theatre (discovered in 1712 and covered up again) also exist. Many works of art have been found. Of the famous temple of Fortune (Horace, *Od.* i. 35) no remains are known. The sea is encroaching slightly at Anzio, but some miles farther north-west the old Roman coast-line now lies slightly inland (see TIBER). The Volscian city stood on higher ground and somewhat away from the shore, though it extended down to it. It was defended by a deep ditch, which can still be traced, and by walls, a portion of which, on the eastern side, constructed of rectangular blocks of tufa, was brought to light in 1897. The modern place is a summer resort and has several villas, among them the Villa Borghese.

See A. Nibby, *Dintorni di Roma*, i. 181; *Notizie degli scavi, passim*.

(T. As.)

ANTIVARI (Montenegrin *Bar*, so called by the Venetians from its position opposite Bari in Italy), a seaport of Montenegro which until 1878 belonged to Turkey. Pop. (1900) about 2500. The old town is built inland, on a strip of country running between the Adriatic Sea and the Sutorman range of mountains, overshadowed by the peak of Rumiya (5148 ft.). At a few hundred yards' distance it is invisible, hidden among dense olive groves. Within, there is a ruinous walled village, and the shell of an old Venetian fortress, surrounded by mosques and bazaars; for Antivari is rather Turkish than Montenegrin. The fine bay of Antivari, with Prstan, its port, is distant about one hour's drive through barren and forbidding country, shut in by mountains. At the northern horn of the bay stands Spizza, an Austrian military station. Antivari contains the residence of its Roman Catholic archbishop, and, in the centre of the shore, Topolitsa, the square undecorated palace of the crown prince. Antivari is the name applied both to Prstan and the old town. The Austrian Lloyd steamers call at times, and the "Puglia" S.S. Company runs a regular service of steamers to and from Bari. As an outlet for Montenegrin commerce, however, Antivari cannot compete with the Austrian

Cattaro, the harbour being somewhat difficult of access in stormy weather. Fishing and olive-oil refining are the main industries.

ANT-LION, the name given to neuropterous insects of the family *Myrmeleonidae*, with relatively short and apically clubbed antennae and four large densely reticulated wings in which the apical veins enclose regular oblong spaces. The perfect insects are for the most part nocturnal and are believed to be carnivorous. The best-known species, *Myrmeleon formicarius*, which may be found adult in the late summer, occurs in many countries on the European continent, though like the rest of this group it is not indigenous in England. Strictly speaking, however, the term ant-lion applies to the larval form, which has been known scientifically for over two hundred years, on account of its peculiar and forbidding appearance and its skilful and unique manner of entrapping prey by means of a pitfall. The abdomen is oval, sandy-grey in hue and beset with warts and bristles; the prothorax forms a mobile neck for the large square head, which carries a pair of long and powerful toothed mandibles. It is in dry and sandy soil that the ant-lion lays its trap. Having marked out the chosen site by a circular groove, it starts to crawl backwards, using its abdomen as a plough to shovel up the soil. By the aid of one front leg it places consecutive heaps of loosened particles upon its head, then with a smart jerk throws each little pile clear of the scene of operations. Proceeding thus it gradually works its way from the circumference towards the centre. When the latter is reached and the pit completed, the larva settles down at the bottom, buried in the soil with only the jaws projecting above the surface. Since the sides of the pit consist of loose sand they afford an insecure foothold to any small insect that inadvertently ventures over the edge. Slipping to the bottom the prey is immediately seized by the lurking ant-lion; or if it attempt to scramble again up the treacherous walls of the pit, is speedily checked in its efforts and brought down by showers of loose sand which are jerked at it from below by the larva. By means of similar head-jerks the skins of insects sucked dry of their contents are thrown out of the pit, which is then kept clear of refuse. A full-grown larva digs a pit about 2 in. deep and 3 in. wide at the edge. The pupa stage of the ant-lion is quiescent. The larva makes a globular case of sand stuck together with fine silk spun, it is said, from a slender spinneret at the posterior end of the body. In this it remains until the completion of the transformation into the sexually mature insect, which then emerges from the case, leaving the pupal integument behind. In certain species of *Myrmeleonidae*, such as *Dendroleon pantheormis*, the larva, although resembling that of *Myrmeleon* structurally, makes no pitfall, but seizes passing prey from any nook or crevice in which it shelters.

The exact meaning of the name ant-lion (Fr. *fourmilion*) is uncertain. It has been thought that it refers to the fact that ants form a large percentage of the prey of the insect, the suffix “lion” merely suggesting destroyer or eater. Perhaps, however, the name may only signify a large terrestrial biting apterous insect, surpassing the ant in size and predatory habits.

(R. I. P.)

ANTOFAGASTA, a town and port of northern Chile and capital of the Chilean province of the same name, situated about 768 m. N. of Valparaiso in 23° 38′ 39″ S. lat. and 70° 24′ 39″ W. long. Pop. (est. 1902) 16,084. Antofagasta is the seaport for a railway running to Oruro, Bolivia, and is the only available outlet for the trade of the south-western departments of that republic. The smelting works for the neighbouring silver mines are located here, and a thriving trade with the inland mining towns is carried on. The town was founded in 1870 as a shipping port for the recently discovered silver mines of that vicinity, and belonged to Bolivia until 1879, when it was occupied by a Chilean military force.

The province of Antofagasta has an area of 46,611 sq. m. lying within the desert of Atacama and between the provinces of Tarapacá and Atacama. It is rich in saline and other mineral deposits, the important Caracoles silver mines being about 90 m. north-east of the port of Antofagasta. Like the other provinces of this region, Antofagasta produces for export

copper, silver, silver ores, lead, nitrate of soda, borax and salt. Iron and manganese ores are also found. Besides Antofagasta the principal towns are Taltal, Mejillones, Cobija (the old capital) and Tocopilla. Up to 1879 the province belonged to Bolivia, and was known as the department of Atacama, or the Litoral. It fell into the possession of Chile in the war of 1879-82, and was definitely ceded to that republic in 1885.

ANTOINE, ANDRÉ (1858-), French actor-manager, was born at Limoges, and in his early years was in business. But he was an enthusiastic amateur actor, and in 1887 he founded in Paris the Théâtre Libre, in order to realize his ideas as to the proper development of dramatic art. For an account of his work, which had enormous influence on the French stage, see DRAMA: *France*. In 1894 he gave up the direction of this theatre, and became connected with the Gymnase, and later (1896) with the Odéon.

ANTONELLI, GIACOMO (1806-1876), Italian cardinal, was born at Sonnino on the 2nd of April 1806. He was educated for the priesthood, but, after taking minor orders, gave up the idea of becoming a priest, and chose an administrative career. Created secular prelate, he was sent as apostolic delegate to Viterbo, where he early manifested his reactionary tendencies in an attempt to stamp out Liberalism. Recalled to Rome in 1841, he entered the office of the papal secretary of state, but four years later was appointed pontifical treasurer-general. Created cardinal (11th June 1847), he was chosen by Pius IX. to preside over the council of state entrusted with the drafting of the constitution. On the 10th of March 1848 Antonelli became premier of the first constitutional ministry of Pius IX., a capacity in which he displayed consummate duplicity. Upon the fall of his cabinet Antonelli created for himself the governorship of the sacred palaces in order to retain constant access to and influence over the pope. After the assassination of Pellegrino Rossi (15th November 1848) he arranged the flight of Pius IX. to Gaeta, where he was appointed secretary of state. Notwithstanding promises to the powers, he restored absolute government upon returning to Rome (12th April 1850) and violated the conditions of the surrender by wholesale imprisonment of Liberals. In 1855 he narrowly escaped assassination. As ally of the Bourbons of Naples, from whom he had received an annual subsidy, he attempted, after 1860, to facilitate their restoration by fomenting brigandage on the Neapolitan frontier. To the overtures of Ricasoli in 1861, Pius IX., at Antonelli's suggestion, replied with the famous "*Non possumus*," but subsequently (1867) accepted, too late, Ricasoli's proposal concerning ecclesiastical property. After the September Convention (1864) Antonelli organized the Legion of Antibes to replace French troops in Rome, and in 1867 secured French aid against Garibaldi's invasion of papal territory. Upon the reoccupation of Rome by the French after Mentana, Antonelli again ruled supreme, but upon the entry of the Italians in 1870 was obliged to restrict his activity to the management of foreign relations. He wrote, with papal approval, the letter requesting the Italians to occupy the Leonine city, and obtained from the Italians payment of the Peter's pence (5,000,000 lire) remaining in the papal exchequer, as well as 50,000 scudi—the first and only instalment of the Italian allowance (subsequently fixed by the Law of Guarantees, March 21, 1871) ever accepted by the Holy See. At Antonelli's death the Vatican finances were found to be in disorder, with a deficit of 45,000,000 lire. His personal fortune, accumulated during office, was considerable, and was bequeathed almost entirely to members of his family. To the Church he left little and to the pope only a trifling souvenir. From 1850 until his death he interfered little in affairs of dogma and church discipline, although he addressed to the powers circulars enclosing the Syllabus (1864) and the acts of the Vatican Council (1870). His activity was devoted almost exclusively to the struggle between the papacy and the Italian *Risorgimento*, the history of which is comprehensible only when the influence exercised by his unscrupulous, grasping and sinister personality is fully taken into account. He died on the 6th of November 1876.

ANTONELLO DA MESSINA (*c.* 1430-1479), Italian painter, was probably born at Messina about the beginning of the 15th century, and laboured at his art for some time in his native country. Happening to see at Naples a painting in oil by Jan Van Eyck, belonging to Alphonso of Aragon, he was struck by the peculiarity and value of the new method, and set out for the Netherlands to acquire a knowledge of the process from Van Eyck's disciples. He spent some time there in the prosecution of his art; returned with his secret to Messina about 1465; probably visited Milan; removed to Venice in 1472, where he painted for the Council of Ten; and died there in the middle of February 1479 (see Venturi's article in Thieme-Becker, *Kunstlerlexikon*, 1907). His style is remarkable for its union—not always successful—of Italian simplicity with Flemish love of detail. His subjects are frequently single figures, upon the complete representation of which he bestows his utmost skill. There are extant—besides a number more or less dubious—twenty authentic productions, consisting of renderings of "Ecce Homo," Madonnas, saints, and half-length portraits, many of them painted on wood. The finest of all is said to be the nameless picture of a man in the Berlin museum. The National Gallery, London, has three works by him, including the "St Jerome in his Study." Antonello exercised an important influence on Italian painting, not only by the introduction of the Flemish invention, but also by the transmission of Flemish tendencies.

ANTONINI ITINERARIUM, a valuable register, still extant, of the stations and distances along the various roads of the Roman empire, seemingly based on official documents, which were probably those of the survey organized by Julius Caesar, and carried out under Augustus. Nothing is known with certainty as to the date or author. It is considered probable that the date of the original edition was the beginning of the 3rd century, while that which we possess is to be assigned to the time of Diocletian. If the author or promoter of the work is one of the emperors, it is most likely to be Antoninus Caracalla.

Editions by Wesseling, 1735, Parthey and Pindar, 1848. The portion relating to Britain was published under the title *Iter Britanniarum*, with commentary by T. Reynolds, 1799.

ANTONINUS, SAINT [Antonio Pierozzi, also called de Forciglioni] (1389-1459), archbishop of Florence, was born at that city on the 1st of March 1389. He entered the Dominican order in his 16th year, and was soon entrusted, in spite of his youth, with the government of various houses of his order at Cortona, Rome, Naples and Florence, which he laboured zealously to reform. He was consecrated archbishop of Florence in 1446, and won the esteem and love of his people, especially by his energy and resource in combating the effects of the plague and earthquake in 1448 and 1453. He died on the 2nd of May 1459, and was canonized by Pope Adrian VI. in 1523. His feast is annually celebrated on the 13th of May. Antoninus had a great reputation for theological learning, and sat as papal theologian at the council of Florence (1439). Of his various works, the list of which is given in Quétif-Echard, *De Scriptoribus Ord. Praedicat.*, i. 818, the best-known are his *Summa theologica* (Venice, 1477; Verona, 1740) and the *Summa confessionalis* (Mondovi, 1472), invaluable to confessors.

See Bolland, *Acta Sanctorum*, i., and U. Chevalier, *Rep. des. s. hist.* (1905), pp. 285-286.

ANTONINUS LIBERALIS, Greek grammarian, probably flourished about a.d. 150. He wrote a collection of forty-one tales of mythical metamorphoses (Μεταμορφώσεων Συναγωγὴ), chiefly valuable as a source of mythological knowledge.

Westermann, *Mythographi Graeci* (1843); Oder, *De Antonino Liberali* (1886).

ANTONINUS PIUS [Titus Aurelius Fulvus Boionius Arrius Antoninus], (a.d. 86-161), Roman emperor a.d. 138-161, the son of Aurelius Fulvus, a Roman consul whose family had originally belonged to Nemausus (Nîmes), was born near Lanuvium on the 19th of September 86. After the death of his father, he was brought up under the care of Arrius Antoninus, his maternal grandfather, a man of integrity and culture, and on terms of friendship with the younger Pliny. Having filled with more than usual success the offices of quaestor and praetor, he obtained the consulship in 120; he was next chosen one of the four consulars for Italy, and greatly increased his reputation by his conduct as proconsul of Asia. He acquired much influence with the emperor Hadrian, who adopted him as his son and successor on the 25th of February 138, after the death of his first adopted son Aelius Verus, on condition that he himself adopted Marcus Annius Verus, his wife's brother's son, and Lucius, son of Aelius Verus, afterwards the emperors Marcus Aurelius and Lucius Aelius Verus (colleague of Marcus Aurelius). A few months afterwards, on Hadrian's death, he was enthusiastically welcomed to the throne by the Roman people, who, for once, were not disappointed in their anticipation of a happy reign. For Antoninus came to his new office with simple tastes, kindly disposition, extensive experience, a well-trained intelligence and the sincerest desire for the welfare of his subjects. Instead of plundering to support his prodigality, he emptied his private treasury to assist distressed provinces and cities, and everywhere exercised rigid economy (hence the nickname κυμινοπρίστης, "cummin-splitter"). Instead of exaggerating into treason whatever was susceptible of unfavourable interpretation, he turned the very conspiracies that were formed against him into opportunities of signalizing his clemency. Instead of stirring up persecution against the Christians, he extended to them the strong hand of his protection throughout the empire. Rather than give occasion to that oppression which he regarded as inseparable from an emperor's progress through his dominions, he was content to spend all the years of his reign in Rome, or its neighbourhood. Under his patronage the science of jurisprudence was cultivated by men of high ability, and a number of humane and equitable enactments were passed in his name. Of the public transactions of this period we have but scant information, but, to judge by what we possess, those twenty-two years were not remarkably eventful. One of his first acts was to persuade the senate to grant divine honours to Hadrian, which they had at first refused; this gained him the title of Pius (dutiful in affection). He built temples, theatres, and mausoleums, promoted the arts and sciences, and bestowed honours and salaries upon the teachers of rhetoric and philosophy. His reign was comparatively peaceful. Insurrections amongst the Moors, Jews, and Brigantes in Britain were easily put down. The one military result which is of interest to us now is the building in Britain of the wall of Antoninus from the Forth to the Clyde. In his domestic relations Antoninus was not so fortunate. His wife, Faustina, has almost become a byword for her lack of womanly virtue; but she seems to have kept her hold on his affections to the last. On her death he honoured her memory by the foundation of a charity for orphan girls, who bore the name of *Alimentariae Faustinianae*. He had by her two sons and two daughters; but they all died before his elevation to the throne, except Annia Faustina, who became the wife of Marcus Aurelius. Antoninus died of fever at Lorium in Etruria, about 12 m. from Rome, on the 7th of March 161, giving the keynote to his life in the last word that he uttered when the tribune of the night-watch came to ask the password—*aequanimitas*.

The only account of his life handed down to us is that of Julius Capitolinus, one of the *Scriptores Historiae Augustae*. See Bossart-Mueller, *Zur Geschichte des Kaisers A.* (1868); Lacour-Gayet, *A. le Pieux et son Temps* (1888); Bryant, *The Reign of Antonine* (Cambridge Historical Essays, 1895); P.B. Watson, *Marcus Aurelius Antoninus* (London, 1884), chap. ii.

ANTONIO, known as "The Prior of Crato" (1531-1595), claimant of the throne of Portugal, was the natural son of Louis (Luis), duke of Beja, by Yolande (Violante) Gomez, a Jewess, who is said to have died a nun. His father was a younger son of Emanuel, king of Portugal (1495-1521). Antonio was educated at Coimbra, and was placed in the order of St John. He was endowed with the wealthy priory of Crato. Little is known of his life till 1578. In that

year he accompanied King Sebastian (1557-1578) in his invasion of Morocco, and was taken prisoner by the Moors at the battle of Alcazar-Kebir, in which the king was slain. Antonio is said to have secured his release on easy terms by a fiction. He was asked the meaning of the cross of St John which he wore on his doublet, and replied that it was the sign of a small benefice which he held from the pope, and would lose if he were not back by the 1st of January. His captor, believing him to be a poor man, allowed him to escape for a small ransom. On his return to Portugal he found that his uncle, the cardinal Henry, only surviving son of King John III. (1521-1557), had been recognized as king. The cardinal was old, and was the last legitimate male representative of the royal line (see PORTUGAL: *History*). The succession was claimed by Philip II. of Spain. Antonio, relying on the popular hostility to a Spanish ruler, presented himself as a candidate. He had endeavoured to prove that his father and mother had been married after his birth. There was, however, no evidence of the marriage. Antonio's claim, which was inferior not only to that of Philip II., but to that of the duchess of Braganza, was not supported by the nobles or gentry. His partisans were drawn exclusively from the inferior clergy, the peasants and workmen. The prior endeavoured to resist the army which Philip II. marched into Portugal to enforce his pretensions, but was easily routed by the duke of Alva, the Spanish commander, at Alcantara, on the 25th of August 1580. At the close of the year, or in the first days of 1581, he fled to France carrying with him the crown jewels, which included many valuable diamonds. He was well received by Catherine de' Medici, who had a claim of her own on the crown of Portugal, and looked upon him as a convenient instrument to be used against Philip II. By promising to cede the Portuguese colony of Brazil to her, and by the sale of part of his jewels, Antonio secured means to fit out a fleet manned by Portuguese exiles and French and English adventurers. As the Spaniards had not yet occupied the Azores he sailed to them, but was utterly defeated at sea by the marquis of Santa Cruz off Saint Michael's on the 27th of July 1582. He now returned to France, and lived for a time at Ruel near Paris. Peril from the assassins employed by Philip II. to remove him drove Antonio from one refuge to another, and he finally came to England. Elizabeth favoured him for much the same reasons as Catherine de' Medici. In 1589, the year after the Armada, he accompanied an English expedition under the command of Drake and Norris to the coast of Spain and Portugal. The force consisted partly of the queen's ships, and in part of privateers who went in search of booty. Antonio, with all the credulity of an exile, believed that his presence would provoke a general rising against Philip II., but none took place, and the expedition was a costly failure. In 1590 the pretender left England and returned to France, where he fell into poverty. His remaining diamonds were disposed of by degrees. The last and finest was acquired by M. de Sancy, from whom it was purchased by Sully and included in the jewels of the crown. During his last days he lived as a private gentleman on a small pension given him by Henry IV., and he died in Paris on the 26th of August 1595. He left two illegitimate sons, and his descendants can be traced till 1687. In addition to papers published to defend his claims Antonio was the author of the *Panegyrus Alphonsi Lusitanorum Regis* (Coimbra, 1550), and of a cento of the Psalms, *Psalmi Confessionales* (Paris 1592), which was translated into English under the title of *The Royal Penitent* by Francis Chamberleyn (London, 1659), and into German as *Heilige Betrachtungen* (Marburg, 1677).

AUTHORITIES.—Antonio is frequently mentioned in the French, English, and Spanish state papers of the time. A life of him, attributed to Gomes Vasconcellos de Figueredo, was published in a French translation by Mme de Sainctonge at Amsterdam (1696). A modern account of him, *Un prétendant portugais au XVI. siècle*, by E. Fournier (Paris, 1852), is based on authentic sources. See also *Dom Antonio Prior de Crato—notas de bibliographia*, by J. de Aranjo (Lisbon, 1897).

(D. H.)

ANTONIO, NICOLAS (1617-1684), Spanish bibliographer, was born at Seville on the 31st of July 1617. After taking his degree at Salamanca (1636-1639), he returned to his native city, wrote his treatise *De Exilio* (which was not printed till 1659), and began his monumental register of Spanish writers. The fame of his learning reached Philip IV., who conferred the order of Santiago on him in 1645, and sent him as general agent to Rome in 1654. Returning to Spain in 1679, Antonio died at Madrid in the spring of 1684. His *Bibliotheca Hispana nova*, dealing with the works of Spanish authors who flourished after 1500, appeared at Rome in 1672; the *Bibliotheca Hispana vetus*, a literary history of Spain

from the time of Augustus to the end of the 15th century, was revised by Manuel Martí, and published by Antonio's friend, Cardinal José Saenz de Aguirre at Rome in 1696. A fine edition of both parts, with additional matter found in Antonio's manuscripts, and with supplementary notes by Francisco Perez Bayer, was issued at Madrid in 1787-1788. This great work, incomparably superior to any previous bibliography, is still unsuperseded and indispensable.

Of Antonio's miscellaneous writings the most important is the posthumous *Censura de historias fabulosas* (Valencia, 1742), in which erudition is combined with critical insight. His *Bibliotheca Hispana rabinica* has not been printed; the manuscript is in the national library at Madrid.

ANTONIO DE LEBRIJA [Antonius Nebrissensis], (1444-1522), Spanish scholar, was born at Lebrija in the province of Andalusia. After studying at Salamanca he resided for ten years in Italy, and completed his education at Bologna University. On his return to Spain (1473), he devoted himself to the advancement of classical learning amongst his countrymen. After holding the professorship of poetry and grammar at Salamanca, he was transferred to the university of Alcalá de Henares, where he lectured until his death in 1522, at the age of seventy-eight. His services to the cause of classical literature in Spain have been compared with those rendered by Valla, Erasmus and Budaeus to Italy, Holland and France. He produced a large number of works on a variety of subjects, including a Latin and Spanish dictionary, commentaries on Sedulius and Persius, and a Compendium of Rhetoric, based on Aristotle, Cicero and Quintilian. His most ambitious work was his chronicle entitled *Rerum in Hispania Gestarum Decades* (published in 1545 by his son as an original work by his father), which twenty years later was found to be merely a Latin translation of the Spanish chronicle of Pulgar, which was published at Saragossa in 1567. De Lebrija also took part in the production of the Complutense polyglot Bible published under the patronage of Cardinal Jimenes.

Antonio, *Bibliotheca Hispana Nova*, i. 132 (1888); Prescott, *History of Ferdinand and Isabella*, i. 410 (note); MacCrie, *The Reformation in Spain in the Sixteenth Century* (1829).

ANTONIUS, the name of a large number of prominent citizens of ancient Rome, of the gens Antonia. Antonius the triumvir claimed that his family was descended from Anton, son of Heracles. Of the Antonii the following are important.

1. Marcus Antonius (143-87 b.c.), one of the most distinguished Roman orators of his time, was quaestor in 113, and praetor in 102 with proconsular powers, the province of Cilicia being assigned to him. Here he was so successful against the pirates that a naval triumph was awarded him. He was consul in 99, censor 97, and held a command in the Marsic War in 90. An adherent of Sulla, he was put to death by Marius and Cinna when they obtained possession of Rome (87). Antonius's reputation for eloquence rests on the authority of Cicero, none of his orations being extant. He is one of the chief speakers in Cicero's *De Oratore*.

Velleius Paterculus ii. 22; Appian, *Bell. Civ.* i. 72; Dio Cassius xlv. 47; Plutarch, *Marius*, 44; Cicero, *Orator*, 5, *Brutus*, 37; Quintilian, *Instit.* iii. 1, 19; O. Enderlein, *De M. Antonio oratore* (Leipzig, 1882).

2. Marcus Antonius, nicknamed Creticus in derision, elder son of Marcus Antonius, the "orator," and father of the triumvir. He was praetor in 74 b.c., and received an extraordinary command (similar to that bestowed upon Pompey by the Gabinian law) to clear the sea of pirates, and thereby assist the operations against Mithradates VI. He failed in the task, and made himself unpopular by plundering the provinces (Sallust, *Hist.* iii., fragments ed. B. Maurenbrecher, p. 108; Velleius Paterculus ii. 31; Cicero, *In Verrem*, iii. 91). He attacked the Cretans, who had made an alliance with the pirates, but was totally defeated, most of his ships being sunk. Diodorus Siculus (xl. 1) states that he only saved himself by a disgraceful

treaty. He died soon afterwards (72-71) in Crete. All authorities are agreed as to his avarice and incompetence.

3. Gaius Antonius, nicknamed Hybrida from his half-savage disposition (Pliny, *Nat. Hist.* viii. 213), second son of Marcus Antonius, the "orator," and uncle of the triumvir. He was one of Sulla's lieutenants in the Mithradatic War, and, after Sulla's return, remained in Greece to plunder with a force of cavalry. In 76 he was tried for his malpractices, but escaped punishment; six years later he was removed from the senate by the censors, but soon afterwards reinstated. In spite of his bad reputation, he was elected tribune in 71, praetor in 66, and consul with Cicero in 63. He secretly supported Catiline, but Cicero won him over by promising him the rich province of Macedonia. On the outbreak of the Catilinarian conspiracy, Antonius was obliged to lead an army into Etruria, but handed over the command on the day of battle to Marcus Petreius on the ground of ill-health. He then went to Macedonia, where he made himself so detested by his oppression and extortions that he left the province, and was accused in Rome (59) both of having taken part in the conspiracy and of extortion in his province. It was said that Cicero had agreed with Antonius to share his plunder. Cicero's defence of Antonius two years before in view of a proposal for his recall, and also on the occasion of his trial, increased the suspicion. In spite of Cicero's eloquence, Antonius was condemned, and went into exile at Cephallenia. He seems to have been recalled by Caesar, since he was present at a meeting of the senate in 44, and was censor in 42.

Cicero, *In Cat.* iii. 6, *pro Flacco*, 38; Plutarch, *Cicero*, 12; Dio Cassius xxxvii. 39, 40; xxxviii. 10. On his trial see article in Pauly-Wissowa's *Realencyclopadie*.

4. Marcus Antonius, commonly called Mark Antony, the Triumvir, grandson of Antonius the "orator" and son of Antonius Creticus, related on his mother's side to Julius Caesar, was born about 83 B.C. Under the influence of his stepfather, Cornelius Lentulus Sura, he spent a profligate youth. For a time he co-operated with P. Clodius Pulcher, probably out of hostility to Cicero, who had caused Lentulus Sura to be put to death as a Catilinarian; the connexion was severed by a disagreement arising from his relations with Clodius's wife, Fulvia. In 58 he fled to Greece to escape his creditors. After a short time spent in attendance on the philosophers at Athens, he was summoned by Aulus Gabinius, governor of Syria, to take part in the campaigns against Aristobulus in Palestine, and in support of Ptolemy Auletes in Egypt. In 54 he was with Caesar in Gaul. Raised by Caesar's influence to the offices of quaestor, augur, and tribune of the plebs, he supported the cause of his patron with great energy, and was expelled from the senate-house when the Civil War broke out. Deputy-governor of Italy during Caesar's absence in Spain (49), second in command in the decisive battle of Pharsalus (48), and again deputy-governor of Italy while Caesar was in Africa (47), Antony was second only to the dictator, and seized the opportunity of indulging in the most extravagant excesses, depicted by Cicero in the *Philippics*. In 46 he seems to have taken offence because Caesar insisted on payment for the property of Pompey which Antony professedly had purchased, but had in fact simply appropriated. The estrangement was not of long continuance; for we find Antony meeting the dictator at Narbo the following year, and rejecting the suggestion of Trebonius that he should join in the conspiracy that was already on foot. In 44 he was consul with Caesar, and seconded his ambition by the famous offer of the crown at the festival of Lupercalia (February 15). After the murder of Caesar on the 15th of March, Antony conceived the idea of making himself sole ruler. At first he seemed disposed to treat the conspirators leniently, but at the same time he so roused the people against them by the publication of Caesar's will and by his eloquent funeral oration, that they were obliged to leave the city. He surrounded himself with a bodyguard of Caesar's veterans, and forced the senate to transfer to him the province of Cisalpine Gaul, which was then administered by Decimus Junius Brutus, one of the conspirators. Brutus refused to surrender the province, and Antony set out to attack him in October 44, But at this time Octavian, whom Caesar had adopted as his son, arrived from Illyria, and claimed the inheritance of his "father." Octavian obtained the support of the senate and of Cicero; and the veteran troops of the dictator flocked to his standard. Antony was denounced as a public enemy, and Octavian was entrusted with the command of the war against him. Antony was defeated at Mutina (43) where he was besieging Brutus. The consuls Aulus Hirtius and C. Vibius Pansa, however, fell in the battle, and the senate became suspicious of Octavian, who, irritated at the refusal of a triumph and the appointment of Brutus to the command over his head, entered Rome at the head of his troops, and forced the senate to bestow the consulship upon him (August 19th). Meanwhile, Antony escaped to Cisalpine Gaul, effected a junction with Lepidus and marched towards Rome with a large force of infantry and cavalry. Octavian betrayed his party, and came to terms with Antony and Lepidus. The three leaders met at Bononia and adopted the title of *Triumviri reipublicae constituendae* as joint rulers.

Gaul was to belong to Antony, Spain to Lepidus, and Africa, Sardinia and Sicily to Octavian. The arrangement was to last for five years. A reign of terror followed; proscriptions, confiscations, and executions became general; some of the noblest citizens were put to death, and Cicero fell a victim to Antony's revenge. In the following year (42) Antony and Octavian proceeded against the conspirators Cassius and Brutus, and by the two battles of Philippi annihilated the senatorial and republican parties. Antony proceeded to Greece, and thence to Asia Minor, to procure money for his veterans and complete the subjugation of the eastern provinces. On his passage through Cilicia in 41 he fell a victim to the charms of Cleopatra, in whose company he spent the winter at Alexandria. At length he was aroused by the Parthian invasion of Syria and the report of an outbreak between Fulvia his wife and Lucius his brother on the one hand and Octavian on the other. On arriving in Italy he found that Octavian was already victorious; on the death of Fulvia, a reconciliation was effected between the triumvirs, and cemented by the marriage of Antony with Octavia, the sister of his colleague. A new division of the Roman world was made at Brundusium, Lepidus receiving Africa, Octavian the west, and Antony the east. Returning to his province Antony made several attempts to subdue the Parthians, without any decided success. In 39 he visited Athens, where he behaved in a most extravagant manner, assuming the attributes of the god Dionysus. In 37 he crossed over to Italy, and renewed the triumvirate for five years at a meeting with Octavian. Returning to Syria, he resumed relations with Cleopatra. His treatment of Octavia, her brother's desire to get rid of him, and the manner in which he disposed of kingdoms and provinces in favour of Cleopatra alienated his supporters. In 32 the senate deprived him of his powers and declared war against Cleopatra. After two years spent in preparations, Antony was defeated at the battle of Actium (2nd September 31). Once more he sought refuge in the society of Cleopatra, who had escaped with sixty ships to Egypt. He was pursued by his enemies and his troops abandoned him. Thereupon he committed suicide in the mistaken belief that Cleopatra had already done so (30 B.C.). Antony had been married in succession to Fadia, Antonia, Fulvia and Octavia, and left behind him a number of children.

See ROME, *History*, II. "The Republic" (*ad fin.*); Caesar, *De Bella Gallico, De Bella Civili*; Plutarch, Lives of *Antony, Brutus, Cicero, Caesar*; Cicero, *Letters* (ed. Tyrrell and Purser) and *Philippics*; Appian, *Bell. Civ.* i.-v.; Dio Cassius xli.-liii. In addition to the standard histories, see V. Gardthausen, *Augustus und seine Zeit* (Leipzig, 1891-1904); W. Drumann, *Geschichte Roms* (2nd ed. P. Groebe, 1899), i. pp. 46-384; article by Groebe in Pauly-Wissowa's *Realencyclopadie*; and a short but vivid sketch by de Quincey in his *Essay on the Caesars*.

5. LUCIUS ANTONIUS, youngest son of Marcus Antonius Creticus, and brother of the triumvir. In 44, as tribune of the people, he brought forward a law authorizing Caesar to nominate the chief magistrates during his absence from Rome. After the murder of Caesar, he supported his brother Marcus. He proposed an agrarian law in favour of the people and Caesar's veterans, and took part in the operations at Mutina (43). In 41 he was consul, and had a dispute with Octavian, which led to the so-called Perusian War, in which he was supported by Fulvia (Mark Antony's wife), who was anxious to recall her husband from Cleopatra's court. Later, observing the bitter feelings that had been evoked by the distribution of land among the veterans of Caesar, Antonius and Fulvia changed their attitude, and stood forward as the defenders of those who had suffered from its operation. Antonius marched on Rome, drove out Lepidus, and promised the people that the triumvirate should be abolished. On the approach of Octavian, he retired to Perusia in Etruria, where he was besieged by three armies, and compelled to surrender (winter of 41). His life was spared, and he was sent by Octavian to Spain as governor. Nothing is known of the circumstances or date of his death. Cicero, in his *Philippics*, actuated in great measure by personal animosity, gives a highly unfavourable view of his character.

Appian, *Bellum Civile*, v. 14 ff.; Dio Cassius xlviii. 5-14.

6. GAIUS ANTONIUS, second son of Marcus Antonius Creticus, and brother of the triumvir. In 49 he was legate of Caesar and, with P. Cornelius Dolabella, was entrusted with the defence of Illyricum against the Pompeians. Dolabella's fleet was destroyed; Antonius was shut up in the island of Curicta and forced to surrender. In 44 he was city praetor, his brothers Marcus and Lucius being consul and tribune respectively in the same year. Gaius was appointed to the province of Macedonia, but on his way thither fell into the hands of M. Junius Brutus on the coast of Illyria. Brutus at first treated him generously, but ultimately put him to death (42).

Plutarch, *Brutus*, 28; Dio Cassius xlvii. 21-24. On the whole family, see the articles in Pauly-Wissowa's *Realencyclopadie*, i. pt. 2 (1894).

ANTONOMASIA, in rhetoric, the Greek term for a substitution of any epithet or phrase for a proper name; as “Pelides,” or “the son of Peleus,” for Achilles; “the Stagirite” for Aristotle; “the author of *Paradise Lost*” for Milton; “the little corporal” for Napoleon I.; “Macedonia’s madman” for Alexander the Great, &c. &c. The opposite substitution of a proper name for some generic term is also sometimes called antonomasia; as “a Cicero” for an orator.

ANTRAIGUES, EMMANUEL HENRI LOUIS ALEXANDRE DE LAUNAY, Comte D’ (*c.* 1755-1812), French publicist and political adventurer, was a nephew of François Emmanuel de Saint-Priest (1735-1821), one of the last ministers of Louis XVI. He was a cavalry captain, but, having little taste for the army, left it and travelled extensively, especially in the East. On his return to Paris, he sought the society of philosophers and artists, visited Voltaire at Ferney for three months, but was more attracted by J.J. Rousseau, with whom he became somewhat intimate. He published a *Mémoire sur les états-généraux*, supported the Revolution enthusiastically when it broke out, was elected deputy, and took the oath to the constitution; but he suddenly changed his mind completely, became a defender of the monarchy and emigrated in 1790. He was the secret agent of the comte de Provence (Louis XVIII.) at different courts of Europe, and at the same time received money from the courts he visited. He published a number of pamphlets, *Des monstres ravagent partout*, *Point d’accommodement*, &c. At Venice, where he was attaché to the Russian legation, he was arrested in 1797, but escaped to Russia. Sent as Russian attaché to Dresden, he published a violent pamphlet against Napoleon I., and was expelled by the Saxon government. He then went to London, and it was universally believed that he betrayed the secret articles of the treaty of Tilsit to the British cabinet, but his recent biographer, Pingaud, contests this. In 1812 he and his wife Madame Saint-Huberty, an operatic singer, were assassinated by an Italian servant whom they had dismissed. It has never been known whether the murder was committed from private or political motives.

See H. Vaschalde, *Notice bibliographique sur Louis Alexandre de Launay, comte d’Antraigues, sa vie et ses oeuvres*; Léonce Pingaud, *Un Agent secret sous la révolution et l’empire, le comte d’Antraigues* (Paris, 1893); Édouard de Goncourt, *La Saint-Huberty et l’opéra au XVIII^e siècle*.

ANTRIM, RANDAL MACDONNELL, 1st Earl of (d. 1636), called “Arranach,” having been brought up in the Scottish island of Arran by the Hamiltons, was the 4th son of Sorley Boy MacDonnell (*q.v.*), and of Mary, daughter of Conn O’Neill, 1st earl of Tyrone. He fought at first against the English government, participating in his brother James’s victory over Sir John Chichester at Carrickfergus in November 1597, and joining in O’Neill’s rebellion in 1600. But on the 16th of December he signed articles with Sir Arthur Chichester and was granted protection; in 1601 he became head of his house by his elder brother’s death, his pardon being confirmed to him; and in 1602 he submitted to Lord Mountjoy and was knighted. On the accession of James I. in 1603 he obtained a grant of the Route and the Glynns (Glens) districts, together with the island of Rathlin, and remained faithful to the government in spite of the unpopularity he thereby incurred among his kinsmen, who conspired to depose him. In 1607 he successfully defended himself against the charge of disloyalty on the occasion of the flight of the earls of Tyrone and Tyrconnell, and rendered services to the government by settling and civilizing his districts, being well received the following year by James in London. In 1618 he was created Viscount Dunluce, and subsequently he was appointed a privy councillor and lord-lieutenant of the county of Antrim. On the 12th of December 1620 he was created earl of Antrim. In 1621 he was

charged with harbouring Roman Catholic priests, confessed his offence and was pardoned. He offered his assistance in 1625 during the prospect of a Spanish invasion, but was still regarded as a person that needed watching. His arbitrary conduct in Ireland in 1627 was suggested as a fit subject for examination by the Star Chamber, but his fidelity to the government was strictly maintained to the last. In 1631 he was busy repairing Protestant churches, and in 1634 he attended the Irish parliament. He made an important agreement in 1635 for the purchase from James Campbell, Lord Cantire, of the lordship of Cantire, or Kintyre, of which the MacDonnells had been dispossessed in 1600 by Argyll; but his possession was successfully opposed by Lord Lorne. He died on the 10th of December 1636. Antrim married Alice, daughter of Hugh O'Neill, earl of Tyrone, by whom, besides six daughters, he had Randal, 2nd earl and 1st marquess of Antrim (*q.v.*), and Alexander, 3rd earl. Three other sons, Maurice, Francis and James, were probably illegitimate. The earldom has continued in the family down to the present day, the 11th earl (b. 1851) succeeding in 1869.

See also *An Historical Account of the MacDonnells of Antrim*, by G. Hill (1873).

ANTRIM, RANDAL MACDONNELL, 1ST MARQUESS of (1609-1683), son of the 1st earl of Antrim, was born in 1609 and educated as a Roman Catholic. He travelled abroad, and on his return in 1634 went to court, next year marrying Katherine Manners, widow of the 1st duke of Buckingham, and living on her fortune for some years in great splendour. In 1639, on the outbreak of the Scottish war, he initiated a scheme of raising a force in Ireland to attack Argyll in Scotland and recover Kintyre (or Cantire), a district formerly possessed by his family; but the plan, discouraged and ridiculed by Strafford, miscarried.[1] Soon afterwards he returned to Ireland, and sought in 1641 to create a diversion, together with Ormonde, for Charles I. against the parliament. He joined in his schemes Lord Slane and Sir Phelim O'Neill, later leaders of the rebellion, but on the outbreak of the rebellion in the autumn he dissociated himself from his allies and retired to his castle at Dunluce. His suspicious conduct, however, and his Roman Catholicism, caused him to be regarded as an enemy by the English party. In May 1642 he was captured at Dunluce Castle by the parliamentary general Robert Munro, and imprisoned at Carrickfergus. Escaping thence he joined the queen at York; and subsequently, having proceeded to Ireland to negotiate a cessation of hostilities, he was again captured with his papers in May 1643 and confined at Carrickfergus, thence once more escaping and making his way to Kilkenny, the headquarters of the Roman Catholic confederation. He returned to Oxford in December with a scheme for raising 10,000 Irish for service in England and 2000 to join Montrose in Scotland, which through the influence of the duchess of Buckingham secured the consent of the king. On the 26th of January 1644 Antrim was created a marquess. He returned to Kilkenny in February, took the oath of association, and was made a member of the council and lieutenant-general of the forces of the Catholic confederacy. The confederacy, however, giving him no support in his projects, he threw up his commission, and with Ormonde's help despatched about 1600 men in June to Montrose's assistance in Scotland, subsequently returning to Oxford and being sent by the king in 1645 with letters for the queen at St Germains. He proceeded thence to Flanders and fitted out two frigates with military stores, which he brought to the prince of Wales at Falmouth. He visited Cork and afterwards in July 1646 joined his troops in Scotland, with the hope of expelling Argyll from Kintyre; but he was obliged to retire by order of the king, and returning to Ireland threw himself into the intrigues between the various factions. In 1647 he was appointed with two others by the confederacy to negotiate a treaty with the prince of Wales in France, and though he anticipated his companions by starting a week before them, he failed to secure the coveted lord-lieutenancy, which was confirmed to Ormonde. He now ceased to support the Roman Catholics or the king's cause; opposed the treaty between Ormonde and the confederates; supported the project of union between O'Neill and the parliament; and in 1649 entered into communications with Cromwell, for whom he performed various services, though there appears no authority to support Carte's story that Antrim was the author of a forged agreement for the betrayal of the king's army by Lord Inchiquin.[2] Subsequently he joined Ireton, and was present at the siege of Carlow. He returned to England in December 1650, and in lieu of his confiscated estate received a pension of £500 and later of £800, together with lands in Mayo. At the Restoration Antrim was excluded from the Act of Oblivion on account of his religion, and on presenting himself at court was imprisoned in the Tower,

subsequently being called before the lords justices in Ireland. In 1663 he succeeded, in spite of Ormonde's opposition, in securing a decree of innocence from the commissioners of claims. This raised an outcry from the adventurers who had been put in possession of his lands, and who procured a fresh trial; but Antrim appealed to the king, and through the influence of the queen mother obtained a pardon, his estates being restored to him by the Irish, Act of Explanation in 1665.[3] Antrim died on the 3rd of February 1683. He is described by Clarendon as of handsome appearance but "of excessive pride and vanity and of a marvellous weak and narrow understanding." He married secondly Rose, daughter of Sir Henry O'Neill, but had no children, being succeeded in the earldom by his brother Alexander, 3rd earl of Antrim.

See *Hibernia Anglicana*, by R. Cox (1689-1690) esp. app. xlix. vol. ii. 206; *History of the Irish Confederation*, by J.T. Gilbert (1882-1891); *Aphorismical Discovery* (Irish Archaeological Society, 1879-1880); *Thomason Tracts* (Brit. Mus.), E 59 (18), 149 (12), 138 (7), 153 (19), 61 (23); *Murder will out, or the King's Letter justifying the Marquess of Antrim* (1689); *Hist. MSS. Comm. Series—MSS. of Marq. of Ormonde.*

(P. C. Y.)

1 Strafford's *Letters*, ii. 300.

2 *Life of Ormonde*, iii. 509; see also *Cal. of State Papers, Ireland, 1660-1662*, pp. 294, 217; *Cal. of Clarendon St. Pap.*, ii. 69, and Gardiner's *Commonwealth*, i. 153.

3 Hallam, *Const. Hist.*, iii. 396 (ed. 1855).

ANTRIM, a county in the north-east corner of Ireland, in the province of Ulster. It is bounded N. and E. by the narrow seas separating Ireland from Scotland, the Atlantic Ocean and Irish Sea, S. by Belfast Lough and the Lagan river dividing it from the county Down, W. by Lough Neagh, dividing it from the counties Armagh and Tyrone, and by county Londonderry, the boundary with which is the river Bann.

The area is 751,965 acres or about 1175 sq. m. A large portion of the county is hilly, especially in the east, where the highest elevations are attained, though these are nowhere great. The range runs north and south, and, following this direction the highest points are 153
Knocklayd (1695 ft.), Slieveanorra (1676), Trostan (1817), Slemish (1457), and Divis (1567). The inland slope is gradual, but on the northern shore the range terminates in abrupt and almost perpendicular declivities, and here, consequently, some of the finest coast scenery in the island is found, widely differing, with its unbroken lines of cliffs, from the indented coast-line of the west. The most remarkable cliffs are those formed of perpendicular basaltic columns, extending for many miles, and most strikingly displayed in Fair Head and the celebrated Giant's Causeway. From the eastern coast the hills rise instantly but less abruptly, and the indentations are wider and deeper. On both coasts there are several frequented watering-places, of which may be mentioned on the north Portrush (with well-known golf links), Port Ballintrae and Ballycastle; on the east Cushendun, Cushendall and Milltown on Red Bay, Carn Lough and Glenarm, Larne, and Whitehead on Belfast Lough. All are somewhat exposed to the easterly winds prevalent in spring. The only island of size is Rathlin, off Ballycastle, 6½ m. in length by 1½ in breadth, 7 m. from the coast, and of similar basaltic and limestone formation to that of the mainland. It is partially arable, and supports a small population. The so-called Island Magee is a peninsula separating Larne Lough from the Irish Channel.

The valleys of the Bann and Lagan, with the intervening shores of Lough Neagh, form the fertile lowlands. These two rivers, both rising in county Down, are the only ones of importance. The latter flows to Belfast Lough, the former drains Lough Neagh, which is fed by a number of smaller streams, among them the Crumlin, whose waters have petrifying powers. The fisheries of the Bann and of Lough Neagh (especially for salmon) are of value both commercially and to sportsmen, the small town of Toome, at the outflow of the river, being the centre. Immediately below this point lies Lough Beg, the "Small Lake," about 15 ft. lower than Lough Neagh, which it excels in the pleasant scenery of its banks. The smaller streams are of great use in working machinery.

Geology.—On entering the county at the south, a scarped barrier of hills is seen beyond the Lagan valley, marking the edge of the basaltic plateaus, and running almost

continuously round the coast to Red Bay. Below it, Triassic beds are exposed from Lisburn to Island Magee, giving sections of red sands and marls. Above these, marine Rhaetic beds appear at intervals, notably near Larne, where they are succeeded by Lower Lias shales and limestones. At Portrush, the Lower Lias is seen on the shore, crowded with ammonites, but silicified and metamorphosed by invading dolerite. The next deposits, as the scarps are approached, are greensands of “Selbornian” age, succeeded by Cenomanian, and locally by Turonian, sands. The Senonian series is represented by the White Limestone, a hardened chalk with flints, which is often glauconitic and conglomeratic at the base. Denudation in earliest Eocene times has produced flint gravels above the chalk, and an ancient stream deposit of chalk pebbles occurs at Ballycastle. The volcanic fissures that allowed of the upwelling of basalt are represented by numerous dykes, many cutting the earlier lava-flows as well as all the beds below them. The accumulations of lava gave rise to the plateaus which form almost the whole interior of the county. In a quiet interval, the Lower Eocene plant-beds of Glenarm and Ballypalady were formed in lakes, where iron-ores also accumulated. Rhyolites were erupted locally near Tardree, Ballymena and Glenarm. The later basalts are especially marked by columnar jointing, which determines the famous structures of the Giant’s Causeway and the coast near Bengore Head. Volcanic necks may be recognized at Carrick-a-rede, in the intrusive mass of dolerite at Slemish, at Carnmoney near Belfast, and a few other points. Fair Head is formed of intrusive dolerite, presenting a superb columnar seaward face. Faulting, probably in Pliocene times, lowered the basaltic plateaus to form the basin of Lough Neagh, leaving the eastern scarp at heights ranging up to 1800 ft. The glens of Antrim are deep notches cut by seaward-running streams through the basalt scarp, their floors being formed of Triassic or older rocks. Unlike most Irish counties, Antrim owes its principal features to rocks of Mesozoic and Cainozoic age. At Cushendun, however, a coarse conglomerate is believed to be Devonian, while Lower Carboniferous Sandstones, with several coal-seams, form a small productive basin at Ballycastle. The dolerite of Fair Head sends off sheets along the bedding-planes of these carboniferous strata. “Dalradian” schists and gneisses, with some dark limestones, come out in the north-east of the county, forming a moorland-region between Cushendun and Ballycastle. The dome of Knocklayd, capped by an outlier of chalk and basalt, consists mostly of this far more ancient series. Glacial gravels are well seen near Antrim town, and as drumlins between Ballymena and Ballycastle. The drift-phenomena connected with the flow of ice from Scotland are of special interest. Recently elevated marine clays, of post-glacial date, fringe the south-eastern coast, while gravels with marine shells, side by side with flint implements chipped by early man, have been lifted some 20 ft. above sea-level near Larne.

Rock-salt some 80 ft. thick is mined in the Trias near Carrickfergus. The Keuper clays yield material for bricks. Bauxite, probably derived from the decay of lavas, is found between Glenarm and Broughshane, associated with brown and red pisolitic iron-ores; both these materials are worked commercially. Bauxite occurs also near Ballintoy. The Ballycastle coal is raised and sold locally.

Industries.—The climate is very temperate. The soil varies greatly according to the district, being in some cases a rich loam, in others a chalky marl, and elsewhere showing a coating of peat. The proportion of barren land to the total area is roughly as 1 to 9; and of tillage to pasture as 2 to 3. Tillage is therefore, relatively to other counties, well advanced, and oats and potatoes are largely, though decreasingly, cultivated. Flax is a less important crop than formerly. The numbers of cattle, sheep, pigs and poultry are generally increasing. Dutch, Ayrshire and other breeds are used to improve the breed of cattle by crossing. Little natural wood remains in the county, but plantations flourish on the great estates, and orchards have proved successful.

The linen manufacture is the most important industry. Cotton-spinning by jennies was first introduced by Robert Joy and Thomas M‘Cabe of Belfast in 1777; and an estimate made twenty-three years later showed upwards of 27,000 hands employed in this industry within 10 m. of Belfast, which remains the centre for it. Women are employed in the working of patterns on muslin. There are several paper-mills at Bushmills in the north; whisky-distilling is carried on; and there are valuable sea-fisheries divided between the district of Ballycastle and Carrickfergus, while the former is the headquarters of a salmon-fishery district. The workings at the Ballycastle collieries are probably the oldest in Ireland. In 1770 the miners accidentally discovered a complete gallery, which has been driven many hundred yards into the bed of coal, branching into thirty-six chambers dressed quite square, and in a workman-like manner. No tradition of the mine having been formerly worked remained in the neighbourhood. The coal of some of the beds is bituminous, and of others anthracite.

Communications.—Except that the Great Northern railway line from Belfast to the south

and west runs for a short distance close to the southern boundary of the county, with a branch from Lisburn to the town of Antrim, the principal lines of communication are those of the Northern Counties system, under the control of the Midland railway of England. The chief routes are:—Belfast, Antrim, Ballymena (and thence to Coleraine and Londonderry); a line diverging from this at White Abbey to Carrickfergus and Larne, the port for Stranraer in Scotland; branches from Ballymena to Larne and to Parkmore; and from Coleraine to Portrush. The Ballycastle railway runs from Ballymoney to Ballycastle on the north coast; and the Giant's Causeway and Portrush is an electric railway (the first to be worked in the United Kingdom). The Lagan Canal connects Lough Neagh with Belfast Lough.

Population and Administration.—The population in 1891 was 208,010, and in 1901, 196,090. The county is among those least seriously affected by emigration. Of the total about 50% are Presbyterians, about 20% each Protestant Episcopalians and Roman Catholics; Antrim being one of the most decidedly Protestant counties in Ireland. Of the Presbyterians the greater part are in connexion with the General Synod of Ulster, and the other are Remonstrants, who separated from the Synod in 1829, or United Presbyterians. The principal towns are Antrim (pop. 1826), Ballymena (10,886), Ballymoney (2952), Carrickfergus (4208), Larne (6670), Lisburn (11,461) and Portrush (1941). Belfast though constituting a separate county ranks as the metropolis of the district. Ballyclare, Bushmills, Crumlin, Portglenone and Randalstown are among the lesser towns. Belfast and Larne are the chief ports. The county comprises 14 baronies and 79 civil parishes and parts of parishes. The constabulary force has its headquarters at Ballymena. The assize town is Belfast, and quarter sessions are held at Ballymena, Ballymoney, Belfast, Larne and Lisburn. The county is divided between the Protestant dioceses of Derry and Down, and the Roman Catholic dioceses of Down and Connor, and Dromore. It is divided into north, mid, east and south parliamentary divisions, each returning one member.

History and Antiquities.—At what date the county of Antrim was formed is not known, but it appears that a certain district bore this name before the reign of Edward II. (early 14th century), and when the shiring of Ulster was undertaken by Sir John Perrot in the 16th century, Antrim and Down were already recognized divisions, in contradistinction to the remainder of the province. The earliest known inhabitants were of Celtic origin, and the names of the townlands or subdivisions, supposed to have been made in the 13th century, are pure Celtic. Antrim was exposed to the inroads of the Danes, and also of the northern Scots, who ultimately effected permanent settlements. The antiquities of the county consist of cairns, mounts or forts, remains of ecclesiastical and military structures, and round towers. The principal cairns are: one on Colin mountain, near Lisburn; one on Slieve True, near Carrickfergus; and two on Colinward. The cromlechs most worthy of notice are: one near Cairngrainey, to the north-east of the old road from Belfast to Templepatrick; the large cromlech at Mount Druid, near Ballintoy; and one at the northern extremity of Island Magee. The mounts, forts and intrenchments are very numerous. There are three round towers: one at Antrim, one at Armoy, and one on Ram Island in Lough Neagh, only that at Antrim being perfect. There are some remains of the ecclesiastic establishments at Bonamargy, where the earls of Antrim are buried, Kells, Glenarm, Glynn, Muckamore and White Abbey. The noble castle of Carrickfergus is the only one in perfect preservation. There are, however, remains of other ancient castles, as Olderfleet, Cam's, Shane's, Glenarm, Garron Tower, Redbay, &c., but the most interesting of all is the castle of Dunluce, remarkable for its great extent and romantic situation. Mount Slemish, about 8 m. east of Ballymena, is notable as being the scene of St Patrick's early life. Island Magee had, besides antiquarian remains, a notoriety as a home of witchcraft, and was the scene of an act of reprisal for the much-disputed massacre of Protestants about 1641, by the soldiery of Carrickfergus.

ANTRIM, a market-town in the west of the county Antrim, Ireland, in the south parliamentary division, on the banks of the Six-Mile Water, half a mile from Lough Neagh, in a beautiful and fertile valley. Pop. (1901) 1826. It is 21¾ m. north-west of Belfast by the Northern Counties (Midland) railway, and is also the terminus of a branch of the Great Northern railway from Lisburn. There is nothing in the town specially worthy of notice, but the environs, including Shane's Castle and Antrim Castle, possess features of considerable interest. About a mile from the town is one of the most perfect of the round towers of Ireland, 93 ft. high and 50 in circumference at the base. It stands in the grounds of Steeple,

a neighbouring seat, where is also the “Witches’ Stone,” a prehistoric monument. A battle was fought near Antrim between the English and Irish in the reign of Edward III.; and in 1642 a naval engagement took place on Lough Neagh, for Viscount Massereene and Ferrard (who founded Antrim Castle in 1662) had a right to maintain a fighting fleet on the lough. On the 7th of June 1798 there was a smart action in the town between the king’s troops and a large body of rebels, in which the latter were defeated, and Lord O’Neill mortally wounded. Before the Union Antrim returned two members to parliament by virtue of letters patent granted in 1666 by Charles II. There are manufactures of paper, linen, and woollen cloth. The government is in the hands of town commissioners.

ANTRUSTION, the name of the members of the bodyguard or military household of the Merovingian kings. The word, of which the formation has been variously explained, is derived from the O.H.Germ. *trost*, comfort, aid, fidelity, trust, through the latinized form *trustis*. Our information about the antrustions is derived from one of the *formulae* of Marculfus (i. 18, ed. Zeumer, p. 55) and from various provisions of the Salic law (see du Cange, *Glossarium, s.* “trustis”). Any one desiring to enter the body of Antrustions had to present himself armed at the royal palace, and there, with his hands in those of the king, take a special oath or *trustis* and *fidelitas*, in addition to the oath of fidelity sworn by every subject at the king’s accession. This done, he was considered to be *in truste dominica* and bound to the discharge of all the services this involved. In return for these, the antrustion enjoyed certain valuable advantages, as being specially entitled to the royal assistance and protection; his *wergeld* is three times that of an ordinary Frank; the slayer of a Frank paid compensation of 200 *solidi*, that of an antrustion had to find 600. The antrustion was always of Frankish descent, and only in certain exceptional cases were Gallo-Romans admitted into the king’s bodyguard. These Gallo-Romans then took the name of *convivae regis*, and the *wergeld* of 300 *solidi* was three times that of a *homo romanus*. The antrustions, belonging as they did to one body, had strictly defined duties towards one another; thus one antrustion was forbidden to bear witness against another under penalty of 15 *solidi* compensation.

The antrustions seem to have played an important part at the time of Clovis. It was they, apparently, who formed the army which conquered the land, an army composed chiefly of Franks, and of a few Gallo-Romans who had taken the side of Clovis. After the conquest, the role of the antrustions became less important. For each of their expeditions, the kings raised an army of citizens in which the Gallo-Romans mingled more and more with the Franks; they only kept one small permanent body which acted as their bodyguard (*trustis dominica*), some members of which were from time to time told off for other tasks, such as that of forming garrisons in the frontier towns. The institution seems to have disappeared during the anarchy with which the 8th century opened. It has wrongly been held to be the origin of vassalage. Only the king had antrustions; every lord could have vassals. The antrustions were a military institution; vassalage was a social institution, the origins of which are very complex.

All historians of Merovingian institutions and law have treated of the antrustions, and each one has his different system. The principal authorities are:—Waitz, *Deutsche Verfassungsgeschichte*, 3rd ed. vol. ii. pp. 335 et seq.; Brunner, *Deutsche Rechtsgeschichte*, vol. ii. p. 97 et seq.; Fustel de Coulanges, *La Monarchie franque*, p. 80 et seq.; Maxirne Deloche, *La Trustis et Vantrustion royal sous les deux premieres races* (Paris, 1873), collecting and discussing the principal texts; Guilhermoz, *Les Origines de la noblesse* (Paris, 1902), suggesting a system which is new in part.

(C. Pf.)

ANTWERP, the most northern of the nine provinces of Belgium. It is conterminous with the Dutch frontier on the north. Malines, Lierre and Turnhout are among the towns of the province. Its importance, however, is derived from the fact that it contains the commercial metropolis of Belgium. It is divided into three administrative districts (*arrondissements*), viz. Antwerp, Malines and Turnhout. These are subdivided into 25 cantons and 152 communes.

The area is 707,932 acres or 1106 sq. m. Pop. (1904) 888,980, showing an average of 804 inhabitants to the square mile.

ANTWERP (Fr. *Anvers*), capital of the above province, an important city on the right bank of the Scheldt, Belgium's chief centre of commerce and a strong fortified position. 155

Modern Antwerp is a finely laid out city with a succession of broad avenues which mark the position of the first enceinte. There are long streets and terraces of fine houses belonging to the merchants and manufacturers of the city which amply testify to its prosperity, and recall the 16th century distich that Antwerp was noted for its moneyed men ("Antwerpia nummis"). Despite the ravages of war and internal disturbances it still preserves some memorials of its early grandeur, notably its fine cathedral. This church was begun in the 14th century, but not finished till 1518. Its tower of over 400 ft. is a conspicuous object to be seen from afar over the surrounding flat country. A second tower which formed part of the original plan has never been erected. The proportions of the interior are noble, and in the church are hung three of the masterpieces of Rubens, viz. "The Descent from the Cross," "The Elevation of the Cross," and "The Assumption." Another fine church in Antwerp is that of St James, far more ornate than the cathedral, and containing the tomb of Rubens, who devoted himself to its embellishment. The Bourse or exchange, which claims to be the first distinguished by the former name in Europe, is a fine new building finished in 1872, on the site of the old Bourse erected in 1531 and destroyed by fire in 1858. Fire has destroyed several other old buildings in the city, notably in 1891 the house of the Hansa League on the northern quays. A curious museum is the Maison Plantin, the house of the great printer C. Plantin (*q.v.*) and his successor Moretus, which stands exactly as it did in the time of the latter. The new picture gallery close to the southern quays is a fine building divided into ancient and modern sections. The collection of old masters is very fine, containing many splendid examples of Rubens, Van Dyck, Titian and the chief Dutch masters. Antwerp, famous in the middle ages and at the present time for its commercial enterprise, enjoyed in the 17th century a celebrity not less distinct or glorious in art for its school of painting, which included Rubens, Van Dyck, Jordaens, the two Teniers and many others.

Commerce.—Since 1863, when Antwerp was opened to the trade of the outer world by the purchase of the Dutch right to levy toll, its position has completely changed, and no place in Europe has made greater progress in this period than the ancient city on the Scheldt. The following figures for the years 1904 and 1905 show that its trade is still rapidly increasing:—

Year.	Exports.		Imports	
	Tonnage.	Value.	Tonnage.	Value.
1904	6,578,558	£71,349,678	8,427,894	£79,539,100
1905	7,153,655	£80,032,355	9,061,781	£91,194,517

The growth of its commerce in recent times may be measured by a comparison of the following figures. In 1888, 4272 ships entered the port and 4302 sailed from it. In 1905, 6095 entered the port and 6065 sailed from it—an increase of nearly 50%. In 1888 the total tonnage was 7,800,000; in 1905 it had risen to 19,662,000. These figures explain how and why Antwerp has outgrown its dock accommodation. The eight principal basins or docks already existing in 1908 were (1) the Little or Bonaparte dock; (2) the Great dock, also constructed in Napoleon's time; (3) the Kattendijk, built in 1860 and enlarged in 1881; (4) the Wood dock; (5) the Campine dock, used especially for minerals; (6) the Asia dock, which is in direct communication with the Meuse by a canal as well as with the Scheldt; (7) the Lefebvre dock; and (8) the America dock, which was only opened in 1905. Two new docks, called "intercalary" because they would fit into whatever scheme might be adopted for the rectification of the course of the Scheldt, were still to be constructed, leading out of the Lefebvre dock and covering 70 acres. With the completion of the new maritime lock, ships drawing 30 ft. of water would be able to enter these new docks and also the Lefebvre and America docks. In connexion with the projected *grande coupure* (that is, a cutting through the neck of the loop in the river Scheldt immediately below Antwerp), the importance of these four docks would be greatly increased because they would then flank the new main

channel of the river. When the Belgian Chambers voted in February 1906 the sums necessary for the improvement of the harbour of Antwerp no definite scheme was sanctioned, the question being referred to a special mixed commission. The improvements at Antwerp are not confined to the construction of new docks. The quays flanking the Scheldt are 3½ m. in length. They are constructed of granite, and no expense has been spared in equipping them with hydraulic cranes, warehouses, &c.

Fortifications.—Besides being the chief commercial port of Belgium, Antwerp is the greatest fortress of that country. Nothing, however, remains of the former enceinte or even of the famous old citadel defended by General Chassé in 1832, except the *Steen*, which has been restored and contains a museum of arms and antiquities. After the establishment of Belgian independence Antwerp was defended only by the citadel and an enceinte of about 2½ m. round the city. No change occurred till 1859, when the system of Belgian defence was radically altered by the dismantlement of seventeen of the twenty-two fortresses constructed under Wellington's supervision in 1815-1818. At Antwerp the old citadel and enceinte were removed. A new enceinte 8 m. in length was constructed, and the villages of Berchem and Borgerhout, now parishes of Antwerp, were absorbed within the city. This enceinte still exists, and is a fine work of art. It is protected by a broad wet ditch (plans in article FORTIFICATION), and in the caponiers are the magazines and store chambers of the fortress. The enceinte is pierced by nineteen openings or gateways, but of these seven are not used by the public. As soon as the enceinte was finished eight detached forts from 2 to 2½ m. distant from the enceinte were constructed. They begin on the north near Wyneghem and the zone of inundation, and terminate on the south at Hoboken. In 1870 Fort Merxem and the redoubts of Berendrecht and Oorderen were built for the defence of the area to be inundated north of Antwerp. In 1878, in consequence of the increased range of artillery and the more destructive power of explosives, it was recognized that the fortifications of Antwerp were becoming useless and out of date. It was therefore decided to change it from a fortress to a fortified position by constructing an outer line of forts and batteries at a distance varying from 6 to 9 m. from the enceinte. This second line was to consist of fifteen forts, large and small. Up to 1898 only five had been constructed, but in that and the two following years five more were finished, leaving another five to complete the line. A mixed commission selected the points at which they were to be placed. With the completion of this work, which in 1908 was being rapidly pushed on, Antwerp might be regarded as one of the best fortified positions in Europe, and so long as its communications by sea are preserved intact it will be practically impregnable.

Two subsidiary or minor problems remained over. (1) The much-discussed removal of the existing enceinte in order to give Antwerp further growing space. If it were removed there arose the further question, should a new enceinte be made at the first line of outer forts, or should an enceinte be dispensed with? An enceinte following the line of those forts would be 30 m. in length. Then if the city grew up to this extended enceinte the outer forts would be too near. To screen the city from bombardment they would have to be carried 3 m. further out, and the whole Belgian army would scarcely furnish an adequate garrison for this extended position. A new enceinte, or more correctly a rampart of a less permanent character, connecting the eight forts of the inner line and extending from Wyneghem to a little south of Hoboken, was decided upon in 1908. (2) The second problem was the position on the left bank of the Scheldt. All the defences enumerated are on the right bank. On the left bank the two old forts Isabelle and Marie alone defend the Scheldt. It is assumed (probably rightly) that no enemy could get round to this side in sufficient strength to deliver any attack that the existing forts could not easily repel. The more interesting question connected with the left bank is whether it does not provide, as Napoleon thought, the most natural outlet for the expansion of Antwerp. Proposals to connect the two banks by a tunnel under the Scheldt have been made from time to time in a fitful manner, but nothing whatever had been done by 1908 to realize what appears to be a natural and easy project.

Population.—The following statistics show the growth of population in and since the 19th century. In 1800 the population was computed not to exceed 40,000. At the census of 1846 the total was 88,487; of 1851, 95,501; of 1880, 169,100; of 1900, 272,830; and of 1904, 291,949. To these figures ought to be added the populations (1904) of Borgerhout (43,391) and Berchem (26,383), as they are part of the city, which would give Antwerp a total population of 361,723.

History.—The suggested origin of the name Antwerp from *Hand-werpen* (hand-throwing), because a mythical robber chief indulged in the practice of cutting off his prisoners' hands and throwing them into the Scheldt, appeared to Motley rather far-fetched, but it is less reasonable to trace it, as he inclines to do, from *an t werf* (on the wharf), seeing that the

form *Andhunerbo* existed in the 6th century on the separation of Austrasia and Neustria. Moreover, hand-cutting was not an uncommon practice in Europe. It was perpetuated from a savage past in the custom of cutting off the right hand of a man who died without heir, and sending it as proof of *main-morte* to the feudal lord. Moreover, the two hands and a castle, which form the arms of Antwerp, will not be dismissed as providing no proof by any one acquainted with the scrupulous care that heralds displayed in the golden age of chivalry before assigning or recognizing the armorial bearings of any claimant.

In the 4th century Antwerp is mentioned as one of the places in the second Germany, and in the 11th century Godfrey of Bouillon was for some years best known as marquis of Antwerp. Antwerp was the headquarters of Edward III. during his early negotiations with van Artevelde, and his son Lionel, earl of Cambridge, was born there in 1338.

It was not, however, till after the closing of the Zwyn and the decay of Bruges that Antwerp became of importance. At the end of the 15th century the foreign trading gilds or houses were transferred from Bruges to Antwerp, and the building assigned to the English nation is specifically mentioned in 1510. In 1560, a year which marked the highest point of its prosperity, six nations, viz. the Spaniards, the Danes and the Hansa together, the Italians, the English, the Portuguese and the Germans, were named at Antwerp, and over 1000 foreign merchants were resident in the city. Guicciardini, the Venetian envoy, describes the activity of the port, into which 500 ships sometimes passed in a day, and as evidence of the extent of its land trade he mentioned that 2000 carts entered the city each week. Venice had fallen from its first place in European commerce, but still it was active and prosperous. Its envoy, in explaining the importance of Antwerp, states that there was as much business done there in a fortnight as in Venice throughout the year.

The religious troubles that marked the second half of the 16th century broke out in Antwerp as in every other part of Belgium excepting Liége. In 1576 the Spanish soldiery plundered the town during what was called “the Spanish Fury,” and 6000 citizens were massacred. Eight hundred houses were burnt down, and over two millions sterling of damage was wrought in the town on that occasion.

In 1585 a severe blow was struck at the prosperity of Antwerp when Parma captured it after a long siege and sent all its Protestant citizens into exile. The recognition of the independence of the United Provinces by the treaty of Munster in 1648 carried with it the death-blow to Antwerp’s prosperity as a place of trade, for one of its clauses stipulated that the Scheldt should be closed to navigation. This impediment remained in force until 1863, although the provisions were relaxed during French rule from 1795 to 1814, and also during the time Belgium formed part of the kingdom of the Netherlands (1815 to 1830). Antwerp had reached the lowest point of its fortunes in 1800, and its population had sunk under 40,000, when Napoleon, realizing its strategical importance, assigned two millions for the construction of two docks and a mole.

One other incident in the chequered history of Antwerp deserves mention. In 1830 the city was captured by the Belgian insurgents, but the citadel continued to be held by a Dutch garrison under General Chasse. For a time this officer subjected the town to a periodical bombardment which inflicted much damage, and at the end of 1832 the citadel itself was besieged by a French army. During this attack the town was further injured. In December 1832, after a gallant defence, Chasse made an honourable surrender.

See J.L. Motley’s *Rise of the Dutch Republic*; C. Scribanii, *Origines Antwerpiensium*; Gens, *Hist. de la ville d’Anvers*; Mertens and Torfs, *Geschiedenis van Antwerp*; Genard, *Anvers a travers les ages*; *Annuaire statisgue de la Belgigue*.

(D. C. B.)

ANU, a Babylonian deity, who, by virtue of being the first figure in a triad consisting of Anu, Bel and Ea, came to be regarded as the father and king of the gods. Anu is so prominently associated with the city of Erech in southern Babylonia that there are good reasons for believing this place to have been the original seat of the Anu cult. If this be correct, then the goddess Nana (or Ishtar) of Erech was presumably regarded as his consort. The name of the god signifies the “high one” and he was probably a god of the atmospheric region above the earth— perhaps a storm god like Adad (*q.v.*), or like Yahweh among the

ancient Hebrews. However this may be, already in the old-Babylonian period, *i.e.* before Khammurabi, Anu was regarded as the god of the heavens and his name became in fact synonymous with the heavens, so that in some cases it is doubtful whether, under the term, the god or the heavens is meant. It would seem from this that the grouping of the divine powers recognized in the universe into a triad symbolizing the three divisions, heavens, earth and the watery-deep, was a process of thought which had taken place before the third millennium. To Anu was assigned the control of the heavens, to Bel the earth, and to Ea the waters. The doctrine once established remained an inherent part of the Babylonian-Assyrian religion and led to the more or less complete disassociation of the three gods constituting the triad from their original local limitations. An intermediate step between Anu viewed as the local deity of Erech (or some other centre), Bel as the god of Nippur, and Ea as the god of Eridu is represented by the prominence which each one of the centres associated with the three deities in question must have acquired, and which led to each one absorbing the qualities of other gods so as to give them a controlling position in an organized pantheon. For Nippur we have the direct evidence that its chief deity, En-lil or Bel, was once regarded as the head of an extensive pantheon. The sanctity and, therefore, the importance of Eridu remained a fixed tradition in the minds of the people to the latest days, and analogy therefore justifies the conclusion that Anu was likewise worshipped in a centre which had acquired great prominence. The summing-up of divine powers manifested in the universe in a threefold division represents an outcome of speculation in the schools attached to the temples of Babylonia, but the selection of Anu, Bel and Ea for the three representatives of the three spheres recognized, is due to the importance which, for one reason or the other, the centres in which Anu, Bel and Ea were worshipped had acquired in the popular mind. Each of the three must have been regarded in his centre as the most important member in a larger or smaller group, so that their union in a triad marks also the combination of the three distinctive pantheons into a harmonious whole.

In the astral theology of Babylonia and Assyria, Anu, Bel and Ea became the three zones of the ecliptic, the northern, middle and southern zone respectively. The purely theoretical character of Anu is thus still further emphasized, and in the annals and votive inscriptions as well as in the incantations and hymns, he is rarely introduced as an active force to whom a personal appeal can be made. His name becomes little more than a synonym for the heavens in general and even his title as king or father of the gods has little of the personal element in it. A consort Antum (or as some scholars prefer to read, Anatum) is assigned to him, on the theory that every deity must have a female associate, but Antum is a purely artificial product —a lifeless symbol playing even less of a part in what may be called the active pantheon than Anu.

For works of reference see BABYLONIAN AND ASSYRIAN RELIGION.

(M. JA.)

ANUBIS (in Egyptian *Anūp*, written *Ỉnpw* in hieroglyphs), the name of one of the most important of the Egyptian gods. There were two types of canine divinities in Egypt, their leading representatives being respectively Anubis and Ophois (Wp-w,'-wt, "opener of the ways"): the former type is symbolized by the recumbent animal  , the other by a similar animal (in a stiff standing attitude), carried as an emblem on a standard  in war or in religious processions. The former comprised two beneficent gods of the necropolis; the latter also were beneficent, but warlike, divinities. They thus corresponded, at any rate in some measure, respectively to the fiercer and milder aspects of the dog-tribe. In late days the Greeks report that κύνες (dogs) were the sacred animals of Anubis while those of Ophois were λύκοι (wolves). The above figure  is coloured black as befits a funerary and nocturnal animal: it is more attenuated than even a greyhound, but it has the bushy tail of the fox or the jackal. Probably these were the original genii of the necropolis, and in fact the same lean animal figured *passant*  is s,'b "jackal" or "fox." The domestic dog would be brought into the sacred circle through the increased veneration for animals, and the more pronounced view in later times of Anubis as servant, messenger and custodian of the gods.

Anubis was the principal god in the capitals of the XVIIth and XVIIIth nomes of Upper Egypt, and secondary god in the XIIIth and probably in the XIIth nome; but his cult was universal. To begin with, he was the god of the dead, of the cemetery, of all supplies for the dead, and therefore of embalming when that became customary. In very early inscriptions the funerary prayers in the tombs are addressed to him almost exclusively, and he always took a leading place in them. In the scene of the weighing of the soul before Osiris, dating from the New kingdom onwards, Anubis attends to the balance while Thoth registers the result. Anubis was believed to have been the embalmer of Osiris: the mummy of Osiris, or of the deceased, on a bier, tended by this god, is a very common subject on funerary tablets of the late periods. Anubis came to be considered especially the attendant of the gods and conductor of the dead, and hence was commonly identified with Hermes (cf. the name Hermanubis); but the role of Hermes as the god of eloquence, inventor of arts and recorder of the gods was taken by Thoth. In those days Anubis was considered to be son of Osiris by Nephthys; earlier perhaps he was son of Re, the sun-god. In the 2nd century A.D. his aid was "compelled" by the magicians and necromancers to fetch the gods and entertain them with food (especially in the ceremony of gazing into the bowl of oil), and he is invoked by them sometimes as the "Good Ox-herd." The cult of Anubis must at all times have been very popular in Egypt, and, belonging to the Isis and Serapis cycle, was introduced into Greece and Rome.

See Erman, *Egyptian Religion*; Budge, *Gods of the Egyptians*; Meyer, in *Zeits. f. Aeg. Spr.* 41-97.

(F. Ll. G.)

ANURADHAPURA, a ruined city of Ceylon, famous for its ancient monuments. It is situated in the North-central province. Anuradhapura became the capital of Ceylon in the 5th century B.C., and attained its highest magnificence about the commencement of the Christian era. In its prime it ranked beside Nineveh and Babylon in its colossal proportions—its four walls, each 16 m. long, enclosing an area of 256 sq. m.,—in the number of its inhabitants, and the splendour of its shrines and public edifices. It suffered much during the earlier Tamil invasions, and was finally deserted as a royal residence in A.D. 769. It fell completely into decay, and it is only of recent years that the jungle has been cleared away, the ruins laid bare, and some measure of prosperity brought back to the surrounding country by the restoration of hundreds of village tanks. The ruins consist of three classes of buildings, *dagobas*, monastic buildings, and *pokunas*. The *dagobas* are bell-shaped masses of masonry, varying from a few feet to over 1100 in circumference. Some of them contain enough masonry to build a town for twenty-five thousand inhabitants. Remains of the monastic buildings are to be found in every direction in the shape of raised stone platforms, foundations and stone pillars. The most famous is the Brazen Palace erected by King Datagamana about 164 B.C. The *pokunas* are bathing-tanks or tanks for the supply of drinking-water, which are scattered everywhere through the jungle. The city also contains a sacred Bo-tree, which is said to date back to the year 245 B.C. The railway was extended from Matale to Anuradhapura in 1905. Population: town, 3672; province, 79,110.

ANVIL (from Anglo-Saxon *anfilt* or *onfilti*, either that on which something is "welded" or "folded," cf. German *falzen*, to fold, or connected with other Teutonic forms of the word, cf. German *amboss*, in which case the final syllable is from "beat," and the meaning is "that on which something is beaten"), a mass of iron on which material is supported while being shaped under the hammer (see Forging). The common blacksmith's anvil is made of wrought iron, often in America of cast iron, with a smooth working face of hardened steel. It has at one end a projecting conical *beak* or *bick* for use in hammering curved pieces of metal; occasionally the other end is also provided with a bick, which is then partly rectangular in section. There is also a square hole in the face, into which tools, such as the anvil-cutter or chisel, can be dropped, cutting edge uppermost. For power hammers the anvil proper is supported on an anvil block which is of great massiveness, sometimes weighing over 200

tons for a 12-ton hammer, and this again rests on a strong foundation of timber and masonry or concrete. In anatomy the term anvil is applied to one of the bones of the middle ear, the *incus*, which is articulated with the *malleus*.

ANVILLE, JEAN BAPTISTE BOURGUIGNON D' (1697-1782), perhaps the greatest geographical author of the 18th century, was born at Paris on the 11th of July 1697. His passion for geographical research displayed itself from early years: at the age of twelve he was already amusing himself by drawing maps for Latin authors. Later, his friendship with the antiquarian, Abbé Longuerue, greatly aided his studies. His first serious map, that of Ancient Greece, was published when he was fifteen, and at the age of twenty-two he was appointed one of the king's geographers, and began to attract the attention of the first authorities. D'Anville's studies embraced everything of geographical nature in the world's literature, as far as he could master it: for this purpose he not only searched ancient and modern historians, travellers and narrators of every description, but also poets, orators and philosophers. One of his cherished objects was to reform geography by putting an end to the blind copying of older maps, by testing the commonly accepted positions of places through a rigorous examination of all the descriptive authority, and by excluding from cartography every name inadequately supported. Vast spaces, which had before been covered with countries and cities, were thus suddenly reduced almost to a blank.

D'Anville was at first employed in the humbler task of illustrating by maps the works of different travellers, such as Marchais, Charlevoix, Labat and Duhalde. For the history of China by the last-named writer he was employed to make an atlas, which was published separately at the Hague in 1737. In 1735 and 1736 he brought out two treatises on the figure of the earth; but these attempts to solve geometrical problems by literary material were, to a great extent, refuted by Maupertuis' measurements of a degree within the polar circle. D'Anville's historical method was more successful in his 1743 map of Italy, which first indicated numerous errors in the mapping of that country, and was accompanied by a valuable memoir (a novelty in such work), showing in full the sources of the design. A trigonometrical survey which Benedict XIV. soon after had made in the papal states strikingly confirmed the French geographer's results. In his later years d'Anville did yeoman service for ancient and medieval geography, accomplishing something like a revolution in the former; mapping afresh all the chief countries of the pre-Christian civilizations (especially Egypt), and by his *Mémoire et abrégé de géographie ancienne et générale* and his *États formés en Europe après la chute de l'empire romain en occident* (1771) rendering his labours still more generally useful. In 1754, at the age of fifty-seven, he became a member of the Académie des Inscriptions et Belles Lettres, whose transactions he enriched with many papers. In 1775 he received the only place in the Académie des Sciences which is allotted to geography; and in the same year he was appointed, without solicitation, first geographer to the king. His last employment consisted in arranging his collection of maps, plans and geographical materials. It was the most extensive in Europe, and had been purchased by the king, who, however, left him the use of it during his life. This task performed, he sank into a total imbecility both of mind and body, which continued for two years, till his death in January 1782.

D'Anville's published memoirs and dissertations amounted to 78, and his maps to 211. A complete edition of his works was announced in 1806 by de Manne in 6 vols. quarto, only two of which had appeared when the editor died in 1832. See Dacier's *Éloge de d'Anville* (Paris, 1802). Besides the separate works noticed above, d'Anville's maps executed for Rollin's *Histoire ancienne* and *Histoire romaine*, and his *Traité des mesures anciennes et modernes* (1769), deserve special notice.

ANWARI [Auhad-uddin Ali Anwari], Persian poet, was born in Khorasan early in the 12th century. He enjoyed the especial favour of the sultan Sinjar, whom he attended in all his warlike expeditions. On one occasion, when the sultan was besieging the fortress of

Hazarasp, a fierce poetical conflict was maintained between Anwari and his rival Rashidi, who was within the beleaguered castle, by means of verses fastened to arrows. Anwari died at Balkh towards the end of the 12th century. The *Diwan*, or collection of his poems, consists of a series of long poems, and a number of simpler lyrics. His longest piece, *The Tears of Khorassan*, was translated into English verse by Captain Kirkpatrick (see also PERSIA. *Literature*).

ANWEILER, or ANNWEILER, a town of Germany, in the Bavarian Palatinate, on the Queich, 8 m. west of Landau, and on the railway from that place to Zweibrücken. Pop. 3700. It is romantically situated in the part of the Haardt called the Pfälzer Schweiz (Palatinate Switzerland), and is surrounded by high hills which yield a famous red sandstone. On the Sonnenberg (1600 ft.) lie the ruins of the castle of Trifels, in which Richard Coeur de Lion was imprisoned in 1193. The industries include cloth-weaving, tanning, dyeing and saw mills. There is also a considerable trade in wine.

ANZENGRUBER, LUDWIG (1839-1889), Austrian dramatist and novelist, was born at Vienna on the 29th of November 1839. He was educated at the *Realschule* of his native town, and then entered a bookseller's shop; from 1860 to 1867 he was an actor, without, however, displaying any marked talent, although his stage experience later stood him in good stead. In 1869 he became a clerk in the Viennese police department, but having in the following year made a success with his anti-clerical drama, *Der Pfarrer von Kirchfeld*, he gave up his appointment and devoted himself entirely to literature. He died at Vienna on the both of December 1889. Anzengruber was exceedingly fertile in ideas, and wrote a great many plays. They are mostly of Austrian peasant life, and although somewhat melancholy in tone are interspersed with bright and witty scenes. Among the best known are *Der Meineidbauer* (1871), *Die Kreuzelschreiber* (1872), *Der G'wissenswurm* (1874), *Hand und Herz* (1875), *Doppelselbstmord* (1875), *Das vierte Gebot* (1877), and *Der Fleck auf der Ehr'* (1889). Anzengruber also published a novel of considerable merit, *Der Schandfleck* (1876; remodelled 1884); and various short stories and tales of village life collected under the title *Wolken und Sunn'schein* (1888).

Anzengruber's collected works, with a biography, were published in 10 vols. in 1890 (3rd ed. 1897); his correspondence has been edited by A. Bettelheim (1902). See A. Bettelheim, *L. Anzengruber* (1890); L. Rosner, *Erinnerungen an L. Anzengruber* (1890): H. Sittenberger, *Studien zur Dramaturgie der Gegenwart* (1899); S. Friedmann, *L. Anzengruber* (1902).

ANZIN, a town of northern France, in the department of Nord, on the Scheldt, 1½ m. N.W. of Valenciennes, of which it is a suburb. Pop. (1906) 14,077. Anzin is the centre of important coal-mines of the Valenciennes basin belonging to the Anzin Company, the formation of which dates to 1717. The metallurgical industries of the place are extensive, and include iron and copper founding and the manufacture of steam-engines, machinery, chain-cables and a great variety of heavy iron goods. There are also glass-works and breweries.

AONIA, a district of ancient Boeotia, containing the mountains Helicon and Cithaeron,

and thus sacred to the Muses, who are called by Pope the “Aonian maids.”

AORIST (from Gr. ἀόριστος, indefinite), the name given in Greek grammar to certain past tenses of verbs (first aorist, second aorist).

AOSTA (anc. *Augusta Praetoria Salassorum*), a town and episcopal see of Piedmont, Italy, in the province of Turin, 80 m. N.N.W. by rail of the town of Turin, and 48 m. direct, situated 1910 ft. above sea-level, at the confluence of the Buthier and the Dora Baltea, and at the junction of the Great and Little St Bernard routes. Pop. (1901) 7875. The cathedral, reconstructed in the 11th century (to which one of its campanili and some architectural details belong), was much altered in the 14th and 17th; it has a rich treasury including an ivory diptych of 406 with a representation of Honorius. The church of St Ours, founded in 425, and rebuilt in the 12th century, has good cloisters (1133); the 15th-century priory is picturesque. The castle of Bramafam (11th century) is interesting. Cretinism is common in the district.

After the fall of the Roman empire the valley of Aosta fell into the hands of the Burgundian kings; and after many changes of masters, it came under the rule of Count Humbert I. of Savoy (Biancamano) in 1032. The privilege of holding the assembly of the states-general was granted to the inhabitants in 1189. An executive council was nominated from this body in 1536, and continued to exist until 1802. After the restoration of the rule of Savoy it was reconstituted and formally recognized by Charles Albert, king of Sardinia, at the birth of his grandson Prince Amedeo, who was created duke of Aosta. Aosta was the birthplace of Anselm. For ancient remains see Augusta Praetoria Salassorum.

APACHE (apparently from the Zuni name, = “enemy,” given to the Navaho Indians), a tribe of North American Indians of Athapascan stock. The Apaches formerly ranged over south-eastern Arizona and south-western Mexico. The chief divisions of the Apaches were the Arivaipa, Chiricahua, Coyotero, Faraone Gileno, Llanero, Mescalero, Mimbreno, Mogollon, Naisha, Tchikun and Tchishi. They were a powerful and warlike tribe, constantly at enmity with the whites. The final surrender of the tribe took place in 1886, when the Chiricahuas, the division involved, were deported to Florida and Alabama, where they underwent military imprisonment. The Apaches are now in reservations in Arizona, New Mexico and Oklahoma, and number between 5000 and 6000.

For details see *Handbook of American Indians*, ed. F.W. Hodge, (Washington, 1907); also Indians, North American.

APALACHEE (apparently a Choctaw name, = “people on the other side”), a tribe of North American Indians of Muskhogean stock. They have been known since the 16th century, and formerly ranged the country around Apalachee Bay, Florida. About 1600 the Spanish Franciscans founded a successful mission among them, but early in the 18th century the tribe suffered defeat at the hands of the British, the mission churches were burnt, the priests killed, and the tribe practically annihilated, more than one thousand of them being sold as slaves.

See *Handbook of American Indians*, ed. F.W. Hodge (Washington, 1907).

APALACHICOLA, a city, port of entry, and the county-seat of Franklin county, Florida, U.S.A., in the N.W. part of the state, on Apalachicola Bay and at the mouth of the Apalachicola river. Pop. (1890) 2727; (1900) 3077, of whom 1589 were of negro descent; (1905, state census) 3244. It is served by the Apalachicola Northern railway (to Chattahoochee, Florida), and by river steamers which afford connexion with railways at Carrabelle about 25 m. distant, at Chatahoochee (or River Junction), and at Columbus and Bainbridge, Georgia, and by ocean-going vessels with American and foreign ports. The city has a monument (1900) to John Gorrie (1803-1855), a physician who discovered the cold-air process of refrigeration in 1849 (and patented an ice-machine in 1850), as the result of experiments to lower the temperatures of fever patients. The bay is well protected by St Vincent, Flag, Sand, and St George's islands; and the shipping of lumber, naval stores and cotton, which reach the city by way of the river, forms the principal industry. Before the development of railways in the Gulf states, Apalachicola was one of the principal centres of trade in the southern states, ranking third among the Gulf ports in 1835. In 1907 the Federal government projected a channel across the harbour bar 100 ft. wide and 10 ft. deep and a channel 150 ft. wide and 18 ft. deep for Link Channel and the West Pass. In 1907 the exports were valued at $317,838; the imports were insignificant. The value of the total domestic and foreign commerce of the port for the year ending on the 30th of June 1907 was estimated at $1,240,000 (76,000 tons). The fishery products, including oysters, tarpon, sturgeon, caviare and sponges, are also important.

APAMEA, the name of several towns in western Asia.

1. A treasure city and stud-depot of the Seleucid kings in the valley of the Orontes. It was so named by Seleucus Nicator, after Apama, his wife. Destroyed by Chosroes in the 7th century A.D. it was partially rebuilt and known as *Famia* by the Arabs; and overthrown by an earthquake in 1152. It kept its importance down to the time of the Crusades. The acropolis hill is now occupied by the ruins of Kalat el-Mudik.

See R.F. Burton and T. Drake, *Unexplored Syria*; E. Sachau, *Reise in Syrien*, 1883.

2. A city in Phrygia, founded by Antiochus Soter (from whose mother, Apama, it received its name), near, but on lower ground than, Celaenae. It was situated where the Marsyas leaves the hills to join the Maeander, and it became a seat of Seleucid power, and a centre of Graeco-Roman and Graeco-Hebrew civilization and commerce. There Antiochus the Great collected the army with which he met the Romans at Magnesia, and there two years later the treaty between Rome and the Seleucid realm was signed. After Antiochus' departure for the East, Apamea lapsed to the Pergamenian kingdom and thence to Rome in 133, but it was resold to Mithradates V., who held it till 120. After the Mithradatic wars it became and remained a great centre for trade, largely carried on by resident Italians and by Jews. In 84 Sulla made it the seat of a *conventus* of the Asian province, and it long claimed primacy among Phrygian cities. Its decline dates from the local disorganization of the empire in the 3rd century A.D.; and though a bishopric, it was not an important military or commercial centre in Byzantine times. The Turks took it first in 1070, and from the 13th century onwards it was always in Moslem hands. For a long period it was one of the greatest cities of Asia Minor, commanding the Maeander road; but when the trade routes were diverted to Constantinople it rapidly declined, and its ruin was completed by an earthquake. A Jewish tradition, possibly arising from a name *Cibotus* (ark), which the town bore, identified a neighbouring mountain with Ararat. The famous "Noah" coins of the emperor Philip commemorate this belief. The site is now partly occupied by *Dineir* (*q.v.*, sometimes locally known also as *Geiklar*, "the gazelles," perhaps from a tradition of the Persian hunting-park, seen by Xenophon at Celaenae), which is connected with Smyrna by railway; there are considerable remains, including a great number of important Graeco-Roman inscriptions.

See W.M. Ramsay, *Cities and Bishoprics of Phrygia*, vol. ii.; G. Weber, *Dineir-Celènes* (1892); D.G. Hogarth in *Journ, Hell. Studies* (1888); O. Hirschfeld in *Trans. Berlin Academy* (1875).

(D. G. H.)

3. A town on the left bank of the Euphrates, at the end of a bridge of boats (*zeugma*); the Til-Barsip of the Assyrian inscriptions, now Birejik (*q.v.*).

4. The earlier Myrlea of Bithynia, now Mudania (*q.v.*), the port of Brusa. The name was given it by Prusias I., who rebuilt it.

5. A city mentioned by Stephanus and Pliny as situated near the Tigris, the identification of which is still uncertain.

6. A Greek city in Parthia, near Rhagae.

APARRI, a town of the province of Cagayán, Luzon, Philippine Islands, on the Grande de Cagayán river near, its mouth, about 55 m. N. of Tuguegarao, the capital. Pop. (1903) 18,252. The valley is one of the largest tobacco-producing sections in the Philippines; and the town has a considerable coastwise trade. Here, too, is a meteorological station.

APATITE, a widely distributed mineral, which, when found in large masses, is of considerable economic value as a phosphate. As a mineral species it was first recognized by A.G. Werner in 1786 and named by him from the Greek ἀπατᾶν, to deceive, because it had previously been mistaken for other minerals, such as beryl, tourmaline, chrysolite, amethyst, &c. Although long known to consist mainly of calcium phosphate, it was not until 1827 that G. Rose found that fluorine or chlorine is an essential constituent. Two chemical varieties of apatite are to be distinguished, namely a fluor-apatite, $(CaF)Ca_4P_3O_{12}$, and a chlor-apatite, $(CaCl)Ca_4P_3O_{12}$: the former, which is much the commoner, contains 42.3% of phosphorus pentoxide (P_2O_5) and 3.8% fluorine, and the latter 4.10 P_2O_5 and 6.8% chlorine. Fluorine and chlorine replace each other in indefinite proportions, and they may also be in part replaced by hydroxyl, so that the general formula becomes $[Ca\ (F, Cl, OH)]\ Ca_4P_3O_{12}$, in which the univalent group Ca(F, Cl, OH) takes the place of one hydrogen atom in orthophosphoric acid H_3PO_4. The formula is sometimes written in the form $3Ca_3(PO_4)_2 + CaF_2$. Mangan-apatite is a variety in which calcium is largely replaced by manganese (up to 10% MnO). Cerium, didymium, yttrium, &c., oxides may also sometimes be present, in amounts up to 5%.

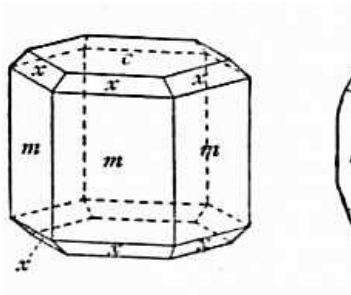


FIG. 1.

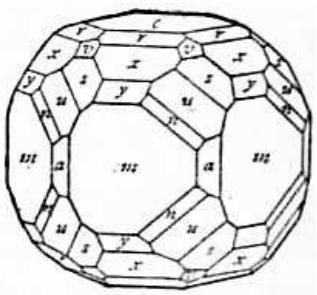


FIG. 2.

Apatite frequently occurs as beautifully developed crystals, sometimes a foot or more in length, belonging to that division of the hexagonal system in which there is pyramidal hemihedrism. In this type of symmetry, of which apatite is the best example, there is only one plane of symmetry, which is perpendicular to the hexad axis. The arrangement of the pyramidal faces *n* and *u* in fig. 2 show the hemihedral character and absence of the full number of planes and axes of symmetry. Fig. 2 represents a highly modified crystal from St Gotthard; a more common form is shown in fig. 1, which is bounded by the hexagonal prism

m, hexagonal bipyramid *x* and basal pinacoid *c*.

In its general appearance, apatite exhibits wide variations. Crystals may be colourless and transparent or white and opaque, but are often coloured, usually some shade of green or brown, occasionally violet, sky-blue, yellow, &c. The lustre is vitreous, inclining to sub-resinous. There is an imperfect cleavage parallel to the basal pinacoid, and the fracture is conchoidal. Hardness 5, specific gravity 3.2.

Yellowish-green prismatic crystals from Jumilla in Murcia in Spain have long been known under the name asparagus-stone. Lazurapatite is a sky-blue variety found as crystals with lapis-lazuli in Siberia; and moroxite is the name given to dull greenish-blue crystals from Norway and Canada. Francolite, from Wheal Franco, near Tavistock in Devonshire, and also from several Cornish mines, occurs as crystallized stalactitic masses. In addition to these crystallized varieties, there are massive varieties, fibrous, concretionary, stalactitic, or earthy in form, which are included together under the name phosphorite (*q.v.*), and it is these massive varieties, together with various rock-phosphates (phosphatic nodules, coprolites, guano, &c.) which are of such great economic importance: crystallized apatite is mined for phosphates only in Norway and Canada.

With regard to its mode of occurrence, apatite is found under a variety of conditions. In igneous rocks of all kinds it is invariably present in small amounts as minute acicular crystals, and was one of the first constituents of the rock to crystallize out from the magma. The extensive deposits of chlor-apatite near Kragerö and Bamle, near Brevik, in southern Norway, are in connexion with gabbro, the felspar of which has been altered, by emanations containing chlorine, to scapolite, and titanium minerals have been developed. The apatite occurring in connexion with granite and veins of tin-stone is, on the other hand, a fluor-apatite, and, like the other fluorine-bearing minerals characteristic of tin-veins, doubtless owes its origin to the emanations of tin fluoride which gave rise to the tin-ore. Special mention may be here made of the beautiful violet crystals of fluor-apatite which occur in the veins of tin-ore in the Erzgebirge, and of the brilliant bluish-green crystals encrusting cavities in the granite of Luxullian in Cornwall. Another common mode of occurrence of apatite is in metamorphic crystalline rocks, especially in crystalline limestones: in eastern Canada extensive beds of apatite occur in the limestones associated with the Laurentian gneisses. Still another mode of occurrence is presented by beautifully developed and transparent crystals found with crystals of felspar and quartz lining the crevices in the gneiss of the Alps. Crystallized apatite is also occasionally found in metalliferous veins, other than those of tin, and in beds of iron ore; whilst if the massive varieties (phosphorite) be considered many other modes of occurrence might be cited.

(L. J. S.)

APATURIA (Ἀπατούρια), an ancient Greek festival held annually by all the Ionian towns except Ephesus and Colophon (Herodotus i. 147). At Athens it took place in the month of Pyanepsion (October to November), and lasted three days, on which occasion the various phratries (*i.e.* clans) of Attica met to discuss their affairs. The name is a slightly modified form of ἀπατόρια = ἀμαπατόρια, ὁμοπατόρια, the festival of “common relationship.” The ancient etymology associated it with ἀπάτη (deceit), a legend existing that the festival originated in 1100 B.C. in commemoration of a single combat between a certain Melanthus, representing King Thymoetes of Attica, and King Xanthus of Boeotia, in which Melanthus successfully threw his adversary off his guard by crying that a man in a black goat’s skin (identified with Dionysus) was helping him (Schol. Aristophanes, *Acharnians*, 146). On the first day of the festival, called Dorpia or Dorpeia, banquets were held towards evening at the meeting-place of the phratries or in the private houses of members. On the second, Anarrhysis (from ἀναρρύειν, to draw back the victim’s head), a sacrifice of oxen was offered at the public cost to Zeus Phratrius and Athena. On the third day, Cureotis (κουρεῶτις), children born since the last festival were presented by their fathers or guardians to the assembled phratores, and, after an oath had been taken as to their legitimacy and the sacrifice of a goat or a sheep, their names were inscribed in the register. The name κουρεῶτις is derived either from κοῦρος, that is, the day of the young, or less probably from κείρω, because on this occasion young people cut their hair and offered it to the gods. The victim was called μεῖον. On this day also it was the custom for boys still at school to declaim pieces of poetry, and to receive prizes (Plato, *Timaeus*, 21 B). According to Hesychius these

three days of the festival were followed by a fourth, called ἐπίβδα, but this is merely a general term for the day after any festival.

APE (Old Eng. *apa*; Dutch *aap*; Old Ger. *affo*; Welsh *epa*; Old Bohemian *op*; a word of uncertain origin, possibly an imitation of the animal's chatter), the generic English name, till the 16th century, for animals of the monkey tribe, and still used specifically for the tailless, manlike representatives of the order Primates (*q.v.*). The word is now generally a synonym for "monkey," but the common verb for both (as transferred figuratively to human beings) is "to ape," *i.e.* to imitate.

APELDOORN, a town in the province of Gelderland, Holland, and a junction station 26½ m. by rail W. of Amersfoort. It is connected by canal north and south with Zwolle and Zutphen respectively. Pop. (1900) 25,834. The neighbourhood of Apeldoorn is very picturesque and well wooded. The Protestant church was restored after a fire in 1890. Close by is the favourite country-seat of the royal family of Holland called the Loo. It was originally a hunting-lodge of the dukes of Gelderland, but in its present form dates chiefly from the time of the Stadtholder William III., king of England. Apeldoorn possesses large paper-mills.

APELLA, the official title of the popular assembly at Sparta, corresponding to the ecclesia in most other Greek states. Every full citizen who had completed his thirtieth year was entitled to attend the meetings, which, according to Lycurgus's ordinance, must be held at the time of each full moon within the boundaries of Sparta. They had in all probability taken place originally in the Agora, but were later transferred to the neighbouring building known as the Skias (Paus. iii. 12. 10). The presiding officers were at first the kings, but in historical times the ephors, and the voting was conducted by shouts; if the president was doubtful as to the majority of voices, a division was taken and the votes were counted. Lycurgus had ordained that the apella must simply accept or reject the proposals submitted to it, and though this regulation fell into neglect, it was practically restored by the law of Theopompus and Polydorus which empowered the kings and elders to set aside any "crooked" decision of the people (Plut. *Lycurg.* 6). In later times, too, the actual debate was almost, if not wholly, confined to the kings, elders, ephors and perhaps the other magistrates. The apella voted on peace and war, treaties and foreign policy in general: it decided which of the kings should conduct a campaign and settled questions of disputed succession to the throne: it elected elders, ephors and other magistrates, emancipated helots and perhaps voted on legal proposals. There is a single reference (Xen. *Hell.* iii. 3. 8) to a "small assembly" (ἡ μικρὰ καλουμένη ἐκκλησία) at Sparta, but nothing is known as to its nature or competence. The term apella does not occur in extant Spartan inscriptions, though two decrees of Gythium belonging to the Roman period refer to the μεγάλαι ἀπέλλαι (Le Bas-Foucart, *Voyage archéologique*, ii., Nos. 242*a*, 243).

See G. Gilbert, *Constitutional Antiquities of Sparta and Athens* (Eng, trans., 1895), pp. 49 ff.; *Studien zur altspartanischen Geschichte* (Göttingen, 1872), pp. 131 ff.; G.F. Schömann, *Antiquities of Greece: The State* (Eng. trans., 1880), pp. 234 ff.; *De ecdesiis Lacedaemoniorum* (Griefswald, 1836) [= *Opusc. academ.* i. pp. 87 ff.]; C.O. Müller, *History and Antiquities of the Doric Race* (Eng. trans., 2nd ed. 1839), book iii. ch. 5, §§ 8-10; G. Busolt, *Die griechischen Staats- und Rechtsaltertümer*, 1887 (in Iwan Müller's *Handbuch der klassischen Altertumsiuissenschaft*, iv. 1), § 90; *Griechische Geschichte* (2nd ed.), i. p. 552 ff.

(M. N. T.)

APELLES, probably the greatest painter of antiquity. He lived from the time of Philip of Macedon till after the death of Alexander. He was of Ionian origin, but after he had attained some celebrity he became a student at the celebrated school of Sicyon, where he worked under Pamphilus. He thus combined the Dorian thoroughness with the Ionic grace. Attracted to the court of Philip, he painted him and the young Alexander with such success that he became the recognized court painter of Macedon, and his picture of Alexander holding a thunderbolt ranked with the Alexander with the spear of the sculptor Lysippus. Other works of Apelles had a great reputation in antiquity, such as the portraits of the Macedonians Clitus, Archelaus and Antigonus, the procession of the high priest of Artemis at Ephesus, Artemis amid a chorus of maidens, a great allegorical picture representing Calumny, and the noted painting representing Aphrodite rising out of the sea. Of none of these works have we any copy, unless indeed we may consider a painting of Alexander as Zeus in the house of the Vettii at Pompeii as a reminiscence of his work; but some of the Italian artists of the Renaissance repeated the subjects, in a vain hope of giving some notion of the composition of them.

Few things are more hopeless than the attempt to realize the style of a painter whose works have vanished. But a great wealth of stories, true or invented, clung to Apelles in antiquity; and modern archaeologists have naturally tried to discover what they indicate. We are told, for example, that he attached great value to the drawing of outlines, practising every day. The tale is well known of his visit to Protogenes, and the rivalry of the two masters as to which could draw the finest and steadiest line. The power of drawing such lines is conspicuous in the decoration of red-figured vases of Athens. Apelles is said to have treated his rival with generosity, for he increased the value of his pictures by spreading a report that he meant to buy them and sell them as his own. Apelles allowed the superiority of some of his contemporaries in particular matters: according to Pliny he admired the *dispositio* of Melanthius, *i.e.* the way in which he spaced his figures, and the *mensurae* of Asclepiodorus, who must have been a great master of symmetry and proportion. It was especially in that undefinable quality “grace” that Apelles excelled. He probably used but a small variety of colours, and avoided elaborate perspective: simplicity of design, beauty of line and charm of expression were his chief merits. When the naturalism of some of his works is praised— for example, the hand of his Alexander is said to have stood out from the picture—we must remember that this is the merit always ascribed by ignorant critics to works which they admire. In fact the age of Alexander was one of notable idealism, and probably Apelles succeeded in a marked degree in imparting to his figures a beauty beyond nature.

Apelles was also noted for improvements which he introduced in technique. He had a dark glaze, called by Pliny *atramentum*, which served both to preserve his paintings and to soften their colour. There can be little doubt that he was one of the most bold and progressive, of artists.

(P. G.)

APELLICON, a wealthy native of Teos, afterwards an Athenian citizen, a famous book collector. He not only spent large sums in the acquisition of his library, but stole original documents from the archives of Athens and other cities of Greece. Being detected, he fled in order to escape punishment, but returned when Athenion (or Aristion), a bitter opponent of the Romans, had made himself tyrant of the city with the aid of Mithradates. Athenion sent him with some troops to Delos, to plunder the treasures of the temple, but he showed little military capacity. He was surprised by the Romans under the command of Orobius (or Orbius), and only saved his life by flight. He died a little later, probably in 84 B.C.

Apellicon’s chief pursuit was the collection of rare and important books. He purchased from the family of Neleus of Skepsis in the Troad manuscripts of the works of Aristotle and Theophrastus (including their libraries), which had been given to Neleus by Theophrastus himself, whose pupil Neleus had been. They had been concealed in a cellar to prevent their falling into the hands of the book-collecting princes of Pergamum, and were in a very dilapidated condition. Apellicon filled in the lacunae, and brought out a new, but faulty, edition. In 84 Sulla removed Apellicon’s library to Rome (Strabo xiii. p. 609; Plutarch, *Sulla*, 26). Here the MSS. were handed over to the grammarian Tyrannion, who took copies of them, on the basis of which the peripatetic philosopher Andronicus of Rhodes prepared an

edition of Aristotle's works. Apellicon's library contained a remarkable old copy of the *Iliad*. He is said to have published a biography of Aristotle, in which the calumnies of other biographers were refuted.

APENNINES (Gr. Ἀπέννινος, Lat. *Appenninus*—in both cases used in the singular), a range of mountains traversing the entire peninsula of Italy, and forming, as it were, the backbone of the country. The name is probably derived from the Celtic *pen*, a mountain top: it originally belonged to the northern portion of the chain, from the Maritime Alps to Ancona; and Polybius is probably the first writer who applied it to the whole chain, making, indeed, no distinction between the Apennines and the Maritime Alps, and extending the former name as far as Marseilles. Classical authors do not differentiate the various parts of the chain, but use the name as a general name for the whole. The total length is some 800 m. and the maximum width 70 to 80 m.

Divisions.—Modern geographers divide the range into three parts, northern, central and southern.

1. The northern Apennines are generally distinguished (though there is no real solution of continuity) from the Maritime Alps at the Bocchetta dell' Altare, some 5 m. W. of Savona on the high road to Turin.[1] They again are divided into three parts— the Ligurian, Tuscan and Umbrian Apennines. The Ligurian Apennines extend as far as the pass of La Cisa in the upper valley of the Magra (anc. *Macra*) above Spezia; at first they follow the curve of the Gulf of Genoa, and then run east-south-east parallel to the coast. On the north and north-east lie the broad plains of Piedmont and Lombardy, traversed by the Po, the chief tributaries of which from the Ligurian Apennines are the Scrivia (*Olumbria*), Trebbia (*Trebia*) and Taro (*Tarus*). The Tanaro (*Tanarus*), though largely fed by tributaries from the Ligurian Apennines, itself rises in the Maritime Alps, while the rivers on the south and south-west of the range are short and unimportant. The south side of the range rises steeply from the sea, leaving practically no coast strip: its slopes are sheltered and therefore fertile and highly cultivated, and the coast towns are favourite winter resorts (see Riviera). The highest point (the Monte Bue) reaches 5915 ft. The range is crossed by several railways—the line from Savona to Turin (with a branch at Ceva for Acqui), that from Genoa to Ovada and Acqui, the main lines from Genoa to Novi, the junction for Turin and Milan (both of which[2] pass under the Monte dei Giovi, the ancient Mons loventius, by which the ancient Via Postumia ran from Genua to Dertona), and that from Spezia to Parma under the pass of La Cisa.[3] All these traverse the ridge by long tunnels—that on the new line from Genoa to Honco is upwards of 5 m. in length.

The Tuscan Apennines extend from the pass of La Cisa to the sources of the Tiber. The main chain continues to run in an east-south-east direction, but traverses the peninsula, the west coast meanwhile turning almost due south. From the northern slopes many rivers and streams run north and north-north-east into the Po, the Secchia (*Secia*) and Panaro (*Scultenna*) being among the most important, while farther east most of the rivers are tributaries of the Reno (anc. *Rhenus*). Other small streams, *e.g.* the Ronco (*Bedesis*) and Montone (*Utis*), which flow into the sea together east of Ravenna, were also tributaries of the Po; and the Savio (*Sapis*) and the Rubicon seem to be the only streams from this side of the Tuscan Apennines that ran directly into the sea in Roman days. From the south-west side of the main range the Arno (*q.v.*) and Serchio run into the Mediterranean. This section of the Apennines is crossed by two railways, from Pistoia to Bologna and from Florence to Faenza, and by several good high roads, of which the direct road from Florence to Bologna over the Futa pass is of Roman origin; and certain places in it are favourite summer resorts. The highest point of the chain is Monte Cimone (7103 ft.). The so-called Alpi Apuane (the *Apuani* were an ancient people of Liguria), a detached chain south-west of the valley of the Serchio, rise to a maximum height of 6100 ft. They contain the famous marble quarries of Carrara. The greater part of Tuscany, however, is taken up by lower hills, which form no part of the Apennines, being divided from the main chain by the valleys of the Arno, Chiana (*Clanis*) and Paglia (*Pallia*), Towards the west they are rich in minerals and chemicals, which the Apennines proper do not produce.

The Umbrian Apennines extend from the sources of the Tiber to (or perhaps rather beyond) the pass of Scheggia near Cagli, where the ancient Via Flaminia crosses the range.

The highest point is the Monte Nerone (5010 ft.). The chief river is the Tiber itself: the others, among which the Foglia (*Pisaurus*), Metauro (*Metaurus*) and Esino[4] may be mentioned, run north-east into the Adriatic, which is some 30 m. from the highest points of the chain. This portion of the range is crossed near its southern termination by a railway from Foligno to Ancona (which at Fabriano has a branch to Macerata and Porto Civitanova, on the Adriatic coast railway), which may perhaps be conveniently regarded as its boundary.[5] By some geographers, indeed, it is treated as a part of the central Apennines.

2. The central Apennines are the most extensive portion of the chain, and stretch as far as the valley of the Sangro (*Sangrus*). To the north are the Monti Sibillini, the highest point of which is the Monte Vettore (8128 ft.). Farther south three parallel chains may be traced, the westernmost of which (the Monti Sabini) culminates to the south in the Monte Viglio (7075 ft.), the central chain in the Monte Terminillo (7260 ft.), and farther south in the Monte Velino (8160 ft.), and the eastern in the Gran Sasso d'Italia (9560 ft.), the highest summit of the Apennines, and the Maiella group (Monte Amaro, 9170 ft.). Between the western and central ranges are the plain of Rieti, the valley of the Salto (*Himella*), and the Lago Fucino; while between the central and eastern ranges are the valleys of Aquila and Sulmona. The chief rivers on the west are the Nera (*Nar*), with its tributaries the Velino (*Velinus*) and Salto, and the Anio, both of which fall into the Tiber. On the east there is at first a succession of small rivers which flow into the Adriatic, from which the highest points of the chain are some 25 m. distant, such as the Potenza (*Flosis*), Chienti (*Cluentus*), Tenna (*Tinna*), Tronto (*Truentus*), Tordino (*Helvinus*), Vomano (*Vomanus*), &c. The Pescara (*Aternus*), which receives the Aterno from the north-west and the Gizio from the south-east, is more important; and so is the Sangro.

The central Apennines are crossed by the railway from Rome to Castelammare Adriatico via Avezzano and Sulmona: the railway from Orte to Terni (and thence to Foligno) follows the Nera valley; while from Terni a line ascends to the plain of Rieti, and thence crosses the central chain to Aquila, whence it follows the valley of the Aterno to Sulmona. In ancient times the Via Salaria, Via Caecilia and Via Valeria-Claudia all ran from Rome to the Adriatic coast. The volcanic mountains of the province of Rome are separated from the Apennines by the Tiber valley, and the Monti Lepini, or Volscian mountains, by the valleys of the Sacco and Liri.

3. In the southern Apennines, to the south of the Sangro valley, the three parallel chains are broken up into smaller groups; among them may be named the Matese, the highest point of which is the Monte Miletto (6725 ft.). The chief rivers on the south-west are the Liri or Garigliano (anc. *Liris*) with its tributary the Sacco (*Trerus*), the Volturno (*Volturnus*), Sebeto (*Sabatus*), Sarno (*Sarnus*), on the north the Trigno (*Trinius*), Biferno (*Tifernus*), and Fortore (*Frento*). The promontory of Monte Gargano, on the east, is completely isolated, and so are the volcanic groups near Naples. The district is traversed from north-west to south-east by the railway from Sulmona to Benevento and on to Avellino, and from south-west to north-east by the railways from Caianello via Isernia to Campobasso and Termoli, from Caserta to Benevento and Foggia, and from Nocera and Avellino to Rocchetta S. Antonio, the junction for Foggia, Spinazzola (for Barletta, Bari, and Taranto) and Potenza. Roman roads followed the same lines as the railways: the Via Appia ran from Capua to Benevento, whence the older road went to Venosa and Taranto and so to Brindisi, while the Via Traiana ran nearly to Foggia and thence to Bari.

The valley of the Ofanto (*Aufidus*), which runs into the Adriatic close to Barletta, marks the northern termination of the first range of the Lucanian Apennines (now Basilicata), which runs from east to west, while south of the valleys of the Sele (on the west) and Basiento (on the east)-which form the line followed by the railway from Battipaglia via Potenza to Metaponto—the second range begins to run due north and south as far as the plain of Sibari (*Sybaris*). The highest point is the Monte Pollino (7325 ft.). The chief rivers are the Sele (*Silarus*)—joined by the Negro (*Tanager*) and Calore (*Calor*)— on the west, and the Bradano (*Bradanus*), Basiento (*Casuentus*), Agri (*Aciris*), Sinni (*Siris*) on the east, which flow into the gulf of Taranto; to the south of the last-named river there are only unimportant streams flowing into the sea east and west, inasmuch as here the width of the peninsula diminishes to some 40 m. The railway running south from Sicignano to Lagonegro, ascending the valley of the Negro, is planned to extend to Cosenza, along the line followed by the ancient Via Popilia, which beyond Cosenza reached the west coast at Terina and thence followed it to Reggio. The Via Herculia, a branch of the Via Traiana, ran from Aequum Tuticum to the ancient Nerulum. At the narrowest point the plain of Sibari, through which the rivers Coscile (*Sybaris*) and Crati (*Crathis*) flow to the sea, occurs on the east coast, extending halfway across the peninsula. Here the limestone Apennines proper cease and the granite mountains

of Calabria (anc. *Bruttii*) begin. The first group extends as far as the isthmus formed by the gulfs of S. Eufemia and Squillace; it is known as the Sila, and the highest point reached is 6330 ft. (the Botte Donato). The forests which covered it in ancient times supplied the Greeks and Sicilians with timber for shipbuilding. The railway from S. Eufemia to Catanzaro and Catanzaro Marina crosses the isthmus, and an ancient road may have run from Squillace to Monteleone. The second group extends to the south end of the Italian peninsula, culminating in the Aspromonte (6420 ft.) to the east of Reggio di Calabria. In both groups the rivers are quite unimportant.

Character.-The Apennines are to some extent clothed with forests, though these were probably more extensive in classical times (Pliny mentions especially pine, oak and beech woods, *Hist. Nat*. xvi. 177); they have indeed been greatly reduced in comparatively modern times by indiscriminate timber-felling, and though serious attempts at reafforestation have been made by the government, much remains to be done. They also furnish considerable summer pastures, especially in the Abruzzi: Pliny (*Hist. Nat*. xi. 240) praises the cheese of the Apennines. In the forests wolves were frequent, and still are found, the flocks being protected against them by large sheep-dogs; bears, however, which were known in Roman times, have almost entirely disappeared. Nor are the wild goats called *rotae*, spoken of by Varro (*R. R.* II. i. 5), which may have been either chamois or steinbock, to be found. Brigandage appears to have been prevalent in Roman times in the remoter parts of the Apennines, as it was until recently: an inscription found near the Furlo pass was set up in A.D. 246 by an *evocatus Augusti* (a member of a picked corps) on special police duty with a detachment of twenty men from the Ravenna fleet (G. Henzen in *Römische Mitteilungen*, 1887, 14). Snow lies on the highest peaks of the Apennines for almost the whole year. The range produces no minerals, but there are a considerable number of good mineral springs, some of which are thermal (such as Bagni di Lucca, Monte Catini, Monsummano, Porretta, Telese, &c.), while others are cool (such as Nocera, Sangemini, Cinciano, &c.), the water of which is both drunk on the spot and sold as table water elsewhere.

(T. As.)

Geology.—The Apennines are the continuation of the Alpine chain, but the individual zones of the Alps cannot be traced into the Apennines. The zone of the Brianconnais (see Alps) may be followed as far as the Gulf of Genoa, but scarcely beyond, unless it is represented by the Trias and older beds of the Apuan Alps. The inner zone of crystalline and schistose rocks which forms the main chain of the Alps, is absent in the Apennines except towards the southern end. The Apennines, indeed, consist almost entirely of Mesozoic and Tertiary beds, like the outer zones of the Alps. Remnants of a former inner zone of more ancient rocks may be seen in the Apuan Alps, in the islands off the Tuscan coast; in the Catena Metallifera, Cape Circeo and the island of Zannone, as well as in the Calabrian peninsula. These remnants lie at a comparatively low level, and excepting the Apuan Alps and the Calabrian peninsula they do not now form any part of the Apennine chain. But that in Tertiary times there was a high interior zone of crystalline rocks is indicated by the character of the Eocene beds in the southern Apennines. These are formed to a large extent of thick conglomerates which are full of pebbles and boulders of granite and schist. Many of the boulders are of considerable size and they are often still angular. There is now no crystalline region from which they could reach their present position; and this and other considerations have led the followers of E. Suess to conclude that even in Tertiary times a large land mass consisting of ancient rocks occupied the space which is now covered by the southern portion of the Tyrrhenian Sea. This old land mass has been called Tyrrhenis, and probably extended from Sicily into Latium and as far west as Sardinia. On the Italian border of this land there was raised a mountain chain with an inner crystalline zone and an outer zone of Mesozoic and Tertiary beds. Subsequent faulting has caused the subsidence of the greater part of Tyrrhenis, including nearly the whole of the inner zone of the mountain chain, and has left only the outer zones standing as the present Apennines.

Be this as it may, the Apennines, excepting in Calabria, are formed chiefly of Triassic, Jurassic, Cretaceous, Eocene and Miocene beds. In the south the deposits, from the Trias to the middle Eocene, consist mainly of limestones, and were laid down, with a few slight interruptions, upon a quietly subsiding sea-floor. In the later part of the Eocene period began the folding which gave rise to the existing chain. The sea grew shallow, the deposits became conglomeratic and shaly, volcanic eruptions began, and the present folds of the Apennines were initiated. The folding and consequent elevation went on until the close of the Miocene period when a considerable subsidence took place and the Pliocene sea overspread the lower portions of the range. Subsequent elevation, without folding, has raised these Pliocene deposits to a considerable height—in some cases over 3000 ft. and they now lie almost undisturbed upon the older folded beds. This last elevation led to the

formation of numerous lakes which are now filled up by Pleistocene deposits. Both volcanic eruptions and movements of elevation and depression continue to the present day on the shores of the Tyrrhenian Sea. In the northern Apennines the elevation of the sea floor appears to have begun at an earlier period, for the Upper Cretaceous of that part of the chain consists largely of sandstones and conglomerates. In Calabria the chain consists chiefly of crystalline and schistose rocks; it is the Mesozoic and Tertiary zone which has here been sunk beneath the sea. Similar rocks are found beneath the Trias farther north, in some of the valleys of Basilicata. Glaciers no longer exist in the Apennines, but Post-Pliocene moraines have been observed in Basilicata.

REFERENCES.—G. de Lorenzo, "Studi di geologia nell' Appennino Meridionale," *Atti d. R. Accad. d. Sci, Fis. e Mat.*, Napoli, ser. 2, vol. viii., no. 7 (1896); F. Sacco, "L' Appennino settentrionale," *Boll. Soc. geol. Ital.* (1893-1899).

(P. LA.)

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1 The ancient Via Aemilia, built in 109 B.C., led over this pass, but originally turned east to Dertona (mod. *Tortona*).

2 There are two separate lines from Sampierdarena to Ronco.

3 This pass was also traversed by a nameless Roman road.

4 This river (anc. Aesis) was the boundary of Italy proper in the 3rd and 2nd centuries B.C.

5 The Monte Conero, to the south of Ancona, was originally an island of the Pliocene sea.

APENRADE, a town of Germany in the Prussian province of Schleswig, beautifully situated on the Apenrade Fjord, an arm of the Little Belt, 38 m. N. of the town of Schleswig. Pop. (1900) 5952. It is connected by a branch line with the main railway of Schleswig, and possesses a good harbour, which affords shelter for a large carrying trade. Fishing, shipbuilding and various small factories provide occupation for the population. The town is a bathing resort, as is Elisenlund close by.

APERTURE (from Lat. *aperire*, to open), an opening. In optics, it is that portion of the diameter of an object-glass or mirror through which light can pass free from obstruction. It is equal to the actual diameter of the cylinder of rays admitted by a telescope.

APEX, the Latin word (pl. *apices*) for the top, tip or peak of anything. A diminutive "apiculus" is used in botany.

APHANITE, a name given (from the Gr. ἀφανής, invisible) to certain dark-coloured igneous rocks which are so fine-grained that their component minerals are not detected by the unaided eye. They consist essentially of plagioclase felspar, with hornblende or augite, and may contain also biotite, quartz and a limited amount of orthoclase. Although a few authorities still recognize the aphanites as a distinct class, most systematic petrologists, at the present time, have discarded it, and regard these rocks as merely structural facies of other species. Those which contain hornblende are uniform, fine-grained diorites, vogesites,

&c., while when pyroxene predominates they are ascribed to the dolerites, quartz-dolerites, &c. Hence, any rock which is compact, crystalline and fine grained, is frequently said to be *aphanitic*, without implying exactly to which of the principal rock groups it really belongs.

APHASIA[1] (from Gr. α, privative, and φάσις, speech), a term which means literally inability to speak, and is used to denote various defects in the comprehension and expression of both spoken and written language which result from lesions of the brain. Aphasic disorders may be classed in two groups:—first, receptive or sensory aphasia, which comprises (*a*) inability to understand spoken language (auditory aphasia), and (*b*) inability to read (visual aphasia, or *alexia*); second, emissive or motor aphasia, under which category are included (*a*) inability to speak (motor vocal aphasia, or *aphemia*), and (*b*) inability to write (motor graphic aphasia, or *agraphia*). It has been shown that each of these defects is produced by destruction of a special region of the cortex of the brain. These regions, which are termed the speech centres, are, in right-handed people, situated in the left cerebral hemisphere; this is the reason why aphasia is so commonly associated with paralysis of the right side of the body.

A study of the acquisition of the faculty of speech throws light upon the education of the speech centres, and helps to elucidate their physiological interaction and the phenomena of aphasia. The auditory speech centre is the first to show signs of functional activity, for within a few months of birth the child begins to *understand* spoken language. Some months later the motor vocal speech centre begins to functionate. The memories of the auditory word images which are stored up in the auditory speech centre play a most important part in the process of learning to speak. The child born deaf grows up mute. The visual speech centre comes into activity when the child is taught to read. Again, when he learns to write and thus begins to educate his graphic centre, he is constantly calling upon his visual speech centre for the visual images of the words he wishes to produce. From these remarks it will be seen that there is a very intimate association between the auditory speech centre and the motor vocal speech centre, also between the visual speech centre and the graphic centre.

Auditory Aphasia.—The auditory speech centre is situated in the posterior part of the first and second temporo-sphenoidal convolutions on the left side of the brain. Destruction of this centre causes “auditory aphasia.” Hearing is unimpaired but spoken language is quite unintelligible. The subject of auditory aphasia may be compared to an individual who is listening to a foreign language of which he does not understand a word. Word deafness, a term often used as synonymous with auditory aphasia, is misleading and should be abandoned. Auditory aphasia commonly interferes with vocal expression, for the majority of 164
people when they speak do so by recalling the auditory memories of words stored up in the auditory speech centre. *Amnesia verbalis* is employed to designate failure to call up in the memory the images of words which are needed for purposes of vocal expression or silent thought.

Visual Aphasia or Alexia.—The visual speech centre, which is located in the left angular gyrus, is connected with the two centres for vision which are situated one in either occipital lobe. Destruction of the visual speech centre produces visual aphasia or alexia. Word blindness, sometimes used as the equivalent of visual aphasia, is, like word deafness, a misleading term. The individual is not blind, he sees the words and letters perfectly, but they appear to him as unintelligible cyphers. When the visual speech centre is destroyed, the memories of the visual images of words are obliterated and interference with writing, a consequence of *amnesia verbalis*, results. On the other hand, when the lesion is situated deeply in the occipital lobe, and does not implicate the cortex, but merely cuts off the connexions of the angular gyrus with both visual centres, agraphia is not produced, for the visual word centre and its connexion with the graphic centre are still intact (pure, or sub-cortical word blindness).

Motor Vocal Aphasia or Aphemia.—The centre for motor vocal speech is situated in the posterior part of the third left frontal convolution and extends on to the foot of the left ascending frontal convolution (Broca’s convolution). Complete destruction of this region produces loss of speech, although it often happens that a few words, such as “yes” and “no,” and, it may be, emotional exclamations such as “Oh! dear!” and the like are retained. The utterance of unintelligible sounds is still possible, however, and there is neither defective

voice production (*aphonia*) nor paralysis of the mechanism of articulation. The individual can recall the auditory and visual images of the words which he wishes to use, but his memory for the complicated, co-ordinated movements which he acquired in the process of learning to speak, and which are necessary for vocal expression, has been blotted out. In the great majority of cases of motor vocal aphasia there is associated agraphia, a circumstance which is perhaps to be accounted for by the proximity of the graphic centre. When the lesion is situated below the cortex of Broca's convolution but destroys the fibres which pass from it towards the internal capsule, agraphia is not produced (sub-cortical or pure motor vocal aphasia). Destruction of the auditory speech centre is, as we have seen, commonly accompanied by more or less interference with vocal speech, a consequence of *amnesia verbalis*.

Agraphia.—Discussion still rages as to the presence of a special writing centre. Those who favour the separate existence of a graphic centre locate it in the second left frontal convolution. It may be that the want of unanimity as to the graphic centre is to be explained by an anatomical relationship so close between the graphic centre and that for the fine movement of the hand that a lesion in this situation which produces agraphia must at the same time cause a paralysis of the hand. Destruction of the visual speech centre by obliterating the visual memories of words (*amnesia verbalis*) produces agraphia. Further, several instances are on record in which agraphia has followed destruction of the commissure between the visual speech centre and the graphic centre. As already mentioned, agraphia is very often associated with motor vocal aphasia.

A number of aphasic defects are met with in addition to those already mentioned. Thus *paraphasia* is a condition in which the patient makes use of words other than those he intends. He may mix up his words so that his conversation is quite unintelligible. In the most pronounced forms he gabbles away, employing unrecognizable sounds in place of words (*jargon and gibberish aphasia*). *Paragraphia* is a similar defect which occurs in writing. Both paraphasia and paragraphia may be produced by partial lesions of the sensory speech centres or of the commissures which connect these with the motor centres. *Object blindness* (syn. mind-blindness) refers to an inability to recognize an object or its uses by the aid of sight alone. The probable explanation would seem to be that the ordinary centre for vision has been isolated from the other sensory centres with which it is connected. Not uncommonly there is associated visual aphasia. *Optic aphasia* was introduced to designate a somewhat similar state in which, although the uses of an object are recognized, the patient cannot name it at sight, yet, if it is of such a nature that it appeals directly to one of the other senses, he may at once be able to name it. *Tactile aphasia*, is a rare defect in which there exists an inability to recognize an object by touch alone although the qualities which, under normal circumstances, suffice for its detection can be accurately described. *Amusia*, or loss of the musical faculty, may occur in association with or independent of aphasia. There is reason for believing that special receptive and emissive centres exist for the musical sense exactly analogous to those for speech.

The speech centres are all supplied by the left middle cerebral artery. When this artery is blocked close to its origin by an *embolus* or *thrombus*, total aphasia results. It may be, however, that only one of the smaller branches of the artery is obstructed, and, according to the region of the brain to which this branch is distributed, one or more of the speech centres may be destroyed. Occlusion of the left posterior cerebral artery causes extensive softening of the occipital lobe and produces pure word blindness. Further, a tumour, abscess, haemorrhage or meningitis may be so situated as to damage or destroy the individual speech centres or their connecting commissures. The amount of recovery to be expected in any given case depends upon the nature, situation and extent of the lesion, and upon the age of the patient. Even after complete destruction of the speech centres, perfect recovery may take place, for the centres in the right hemisphere of the brain are capable of education. This is only possible in young individuals. In the great majority of instances the nature of the lesion is such as to render futile all treatment directed towards its removal. In suitable cases, however, the education of the right side of the brain may be very greatly assisted by an intelligent application of scientific methods.

BIBLIOGRAPHY.—Broca, *Bulletin de la Société anatomique* (1861); Wernicke, *Der Aphasische Symptomen-complex* (Breslau, 1874); Kussmaul, *Ziemssen's Cyclopaedia*, vol. xiv. p. 759; Wyllie, *The Disorders of Speech* (1895); Elder, *Aphasia and the Cerebral Speech Mechanism* (1897); Collins, *The Faculty of Speech* (1897); Bastian, *Aphasia and other Speech Defects* (1898); Byrom Bramwell, "Will-making and Aphasia," *British Medical Journal* (1897); "The Morison Lectures on Aphasia," *The Lancet* (1906). See also the works of Charcot, Hughlings Jackson, Dejerine, Lichtheim, Pitres, Grasset, Ross, Broadbent, Mills, Bateman, Mirallié, Exner, Marie and others.

(J. B. T.)

1 In 1906 Pierre Marie of Paris expressed views (*La Semaine medicale*, May 23 and October 17, and elsewhere) upon the question of aphasia which have given rise to much animated controversy, since they are in many respects at complete variance with the classical conception which has been represented in the present article. Marie holds that Broca's convolution plays no special role in the function of speech. He admits that a lesion in the region of the lenticular nucleus is followed by inability to speak, but this defect is, in his opinion, to be regarded as an anarthria. He further admits the production of sensory aphasia—the aphasia of Wernicke, as he prefers to call it after its discoverer—by lesions which destroy the angular and supramarginal gyri, and the upper two temporo-sphenoidal convolutions, but he regards the essential foundation of sensory aphasia as a diminution of intelligence. There are, in his opinion, no sensory images of language. Motor aphasia is, he believes, nothing more than a combination of sensory aphasia and anarthria. These conclusions have been vigorously attacked, more especially by Dejerine of Paris (*La Presse medicale*, July 1906 and elsewhere).

APHELION (from Gr. ἀπό, from, and ἥλιος, sun), in astronomy, that point of the orbit of a planet at which it is most distant from the sun. Apogee, Apocentre, Aposaturnium, &c. are terms applied to those points of the orbit of a body moving around a centre of force—as the Earth, Saturn, &c.—at which it is farthest from the central body.

APHEMIA (from Gr. ἀ, without, and φήμη, speech), in pathology, the loss of the power of speech (see Aphasia).

APHIDES (pl. of Aphis), minute insects, also known as "plant-lice," "blight," and "green-fly," belonging to the homopterous division of the order Hemiptera, with long antennae and legs, two-jointed, two-clawed tarsi, and usually a pair of abdominal tubes through which a waxy secretion is exuded. These tubes were formerly supposed to secrete the sweet substance known as "honey-dew" so much sought after by ants; but this is now known to come from the alimentary canal. Both winged and wingless forms of both sexes occur, and the wings when present are normal in number, that is to say two pairs. Apart from their importance from the economic standpoint, Aphides are chiefly remarkable for the phenomena connected with the propagation of the species. The following brief summary of what takes place in the plant-louse of the rose (*Aphis rosae*), may be regarded as typical of the family, though exceptions occur in other species: Eggs produced in the autumn by fertilized females remain on the plant through the winter and hatching in the spring give rise to female individuals which may be winged or wingless. From these females are born 165
parthenogenetically, that is to say without the intervention of males, and by a process that has been compared to internal budding, large numbers of young resembling their parents in every particular except size, which themselves reproduce their kind in the same way. This process continues throughout the summer, generation after generation being produced until the number of descendants from a single individual of the spring-hatched brood may amount to very many thousands. In the autumn winged males appear, union between the sexes takes place and the females lay the fertilized eggs which are destined to carry the species through the cold months of winter. If, however, the food-plant is grown in a conservatory where protection against cold is afforded, the aphides may go on reproducing agamogenetically without cessation for many years together. Not the least interesting features connected with this strange life-history are the facts that the young may be born by the oviparous or viviparous methods and either gamogenetically or agamogenetically, and may develop into winged forms or remain wingless, and that the males only appear in any number at the close

of the season. Although the factors which determine these phenomena are not clearly understood, it is believed that the appearance of the males is connected with the increasing cold of autumn and the growing scarcity of food, and that the birth of winged females is similarly associated with decrease in the quantity or vitiation of the quality of the nourishment imbibed. Sometimes the winged females migrate from the plant they were born on to start fresh colonies on others often of quite a different kind. Thus the apple blight (*Aphis mali*) after producing many generations of apterous females on its typical food-plant gives rise to winged forms which fly away and settle upon grass or corn-stalks.

Closely related to the typical aphides is *Phylloxera vastatrix*, the insect which causes enormous loss by attacking the leaves and roots of vines. Its life-history is somewhat similar to that of *Aphis rosae* summarized above. In the autumn a single fertile egg is laid by apterous females in a crevice of the bark of the vine where it is protected during the winter. From this egg in the spring emerges an apterous female who makes a gall in the new leaf and lays therein a large number of eggs. Some of the apterous young that are hatched from these form fresh galls and continue to multiply in the leaves, others descend to the root of the plant, becoming what are known as root-forms. These, like the parent form of spring, reproduce parthenogenetically, giving rise to generation after generation of egg-laying individuals. In the course of the summer, from some of these eggs are hatched females which acquire wings and lay eggs from which wingless males and females are born. From the union of the sexes comes the fertile egg from which the parent form of spring is hatched.

See generally G.B. Buckton, *British Aphides* (Ray Soc. 1876-1883); also ECONOMIC ENTOMOLOGY.

(R. I. P.)

APHORISM (from the Gr. ἀφορίζειν, to define), literally a distinction or a definition, a term used to describe a principle expressed tersely in a few telling words or any general truth conveyed in a short and pithy sentence, in such a way that when once heard it is unlikely to pass from the memory. The name was first used in the *Aphorisms* of Hippocrates, a long series of propositions concerning the symptoms and diagnosis of disease and the art of healing and medicine. The term came to be applied later to other sententious statements of physical science, and later still to statements of all kinds of principles. Care must be taken not to confound *aphorisms* with *axioms*. Aphorisms came into being as the result of experience, whereas axioms are self-evident truths, requiring no proof, and appertain to pure reason. Aphorisms have been especially used in dealing with subjects to which no methodical or scientific treatment was applied till late, such as art, agriculture, medicine, jurisprudence and politics. The *Aphorisms* of Hippocrates form far the most celebrated as well as the earliest collection of the kind, and it may be interesting to quote a few examples. “Old men support abstinence well: people of a ripe age less well: young folk badly, and children less well than all the rest, particularly those of them who are very lively.” “Those who are very fat by nature are more exposed to die suddenly than those who are thin.” “Those who eject foaming blood, eject it from the lung.” “When two illnesses arrive at the same time, the stronger silences the weaker.” The first aphorism, perhaps the best known of all, which serves as a kind of introduction to the book, runs as follows:—“Life is short, art is long, opportunity fugitive, experimenting dangerous, reasoning difficult: it is necessary not only to do oneself what is right, but also to be seconded by the patient, by those who attend him, by external circumstances.” Another famous collection of aphorisms is that of the school of Salerno in Latin verse, in which Joannes de Meditano, one of the most celebrated doctors of the school of medicine of Salerno, has summed up the precepts of this school. The book was dedicated to a king of England. It is a disputed point as to which king, some authorities dating the publication as at 1066, others assigning a later date. The dedication gives the following excellent advice:—

“Anglorum regi scribit schola tota Salernae.
Si vis incolumem, si vis te reddere sanum,
Curas tolle graves: irasci crede profanum:
Parce mero: coenato parum; non sit tibi vanum
Surgere post epulas: somnum fuge meridianum:
Ne mictum retine, nec comprime fortiter anum:

Haec bene si serves, tu longo tempore vives.”

Another collection of aphorisms, also medical and also in Latin, is that of the Dutchman Hermann Boerhaave, published at Leiden in the year 1709; it gives a terse summary of the medical knowledge prevailing at the time, and is of great interest to the student of the history of medicine.

APHRAATES (a Greek form of the Persian name Aphrahaṭ or Pharhadh), a Syriac writer belonging to the middle of the 4th century A.D., who composed a series of twenty-three expositions or homilies on points of Christian doctrine and practice. The first ten were written in 337, the following twelve in 344, and the last in 345.[1] The author was early known as *ḥakkīmā phārsāyā* (“the Persian sage”), was a subject of Sapor II., and was probably of heathen parentage and himself a convert from heathenism. He seems at some time in his life to have assumed the name of Jacob, and is so entitled in the colophon to a MS. of A.D. 512 which contains twelve of his homilies. Hence he was already by Gennadius of Marseilles (before 496) confused with Jacob, bishop of Nisibis; and the ancient Armenian version of nineteen of the homilies has been published under this latter name. But (1) Jacob of Nisibis, who attended the council of Nicaea, died in 338; and (2) our author, being a Persian subject, cannot have lived at Nisibis, which became Persian only by Jovian’s treaty of 363. That his name was Aphrahat or Pharhadh we learn from comparatively late writers—Bar Bahlul (10th century), Elias of Nisibis (11th), Bar-Hebraeus, and ‘Abhd-īshō’. George, bishop of the Arabs, writing in A.D. 714 to a friend who had sent him a series of questions about the “Persian sage,” confesses ignorance of his name, home and rank, but infers from his homilies that he was a monk, and of high esteem among the clergy. The fact that in 344 he was selected to draw up a circular letter from a council of bishops and other clergy to the churches of Seleucia and Ctesiphon and elsewhere—included in our collection as homily 14—is held by Dr W. Wright and others to prove that he was a bishop. According to a marginal note in a 14th-century MS. (B.M. Orient. 1017), he was “bishop of Mar Mattai,” a famous monastery near Mosul, but it is unlikely that this institution existed so early. The homilies of Aphraates are intended to form, as Professor Burkitt has shown, “a full and ordered exposition of the Christian faith.” The standpoint is that of the Syriac-speaking church, before it was touched by the Arian controversy. Beginning with faith as the foundation, the writer proceeds to build up the Structure of doctrine and duty. The first ten homilies, which form one division completed in 337, are without polemical reference; their subjects are faith, love, fasting, 166
prayer, wars (a somewhat mysterious setting forth of the conflict between Rome and Persia under the imagery of Daniel), the sons of the covenant (monks or ascetics), penitents, the resurrection, humility, pastors. Those numbered 11-22, written in 344, are almost all directed against the Jews; the subjects are circumcision, passover, the sabbath, persuasion (the encyclical letter referred to above), distinction of meats, the substitution of the Gentiles for the Jews, that Christ is the Son of God, virginity and holiness, whether the Jews have been finally rejected or are yet to be restored, provision for the poor, persecution, death and the last times. The 23rd homily, on the “grape kernel” (Is. lxv. 8), written in 344, forms an appendix on the Messianic fulfilment of prophecy, together with a treatment of the chronology from Adam to Christ. Aphraates impresses a reader favourably by his moral earnestness, his guilelessness, his moderation in controversy, the simplicity of his style and language, his saturation with the ideas and words of Scripture. On the other hand, he is full of cumbrous repetition, he lacks precision in argument and is prone to digression, his quotations from Scripture are often inappropriate, and he is greatly influenced by Jewish exegesis. He is particularly fond of arguments about numbers. How wholly he and his surroundings were untouched by the Arian conflict may be judged from the 17th homily —“that Christ is the Son of God.” He argues that, as the name “God” or “Son of God” was given in the O.T. to men who were worthy, and as God does not withhold from men a share in His attributes—such as sovereignty and fatherhood—it was fitting that Christ who has wrought salvation for mankind should obtain this highest name. From the frequency of his quotations, Aphraates is a specially important witness to the form in which the Gospels were read in the Syriac church in his day; Zahn and others have shown that he—mainly at least—used the *Diatessaron*. Finally, he bears important contemporary witness to the sufferings of the Christian church in Persia under Sapor (Shapur) II. as well as the moral evils which had infected the church, to the sympathy of Persian Christians with the cause of the Roman

empire, to the condition of early monastic institutions, to the practice of the Syriac church in regard to Easter, &c.

Editions by W. Wright (London, 1869), and J. Parisot (with Latin translation, Paris, 1894); the ancient Armenian version of 19 homilies edited, translated into Latin, and annotated by Antonelli (Rome, 1756). Besides translations of particular homilies by G. Bickell and E.W. Budge, the whole have been translated by G. Bert (Leipzig, 1888). Cf. also C.J.F. Sasse, *Proleg, in Aphr. Sapientis Persae sermones homileticos* (Leipzig, 1879); J. Forget, *De Vita et Scriptis Aphraatis* (Louvain, 1882); F.C. Burkitt, *Early Eastern Christianity* (London, 1904); J. Labourt, *Le Christianisme dans l'empire perse* (Paris, 1904); J. Zahn, *Forschungen* I.; "Aphraates and the Diatessaron," vol. ii. pp. 180-186 of Burkitt's *Evangelion Da-Mepharreshe* (Cambridge, 1904); articles on "Aphraates and Monasticism," by R.H. Connolly and Burkitt in *Journal of Theological Studies* (1905) pp. 522-539; (1906) pp. 10-15.

(N. M.)

1 Hom. 1-22 begin with the letters of the Syriac alphabet in succession. Their present order in the Syriac MSS. is therefore right. The ancient Armenian version, published by Antonelli in 1756, has only 19 of the homilies, and those in a somewhat different order.

APHRODITE,[1] the Greek goddess of love and beauty, counterpart of the Roman Venus. Although her myth and cult were essentially Semitic, she soon became Hellenized and was admitted to a place among the deities of Olympus. Some mythologists hold that there already existed in the Greek system an earlier goddess of love, of similar attributes, who was absorbed by the Asiatic importation; and one writer (A. Enmann) goes so far as to deny the oriental origin of Aphrodite altogether. It is therefore necessary first to examine the nature and characteristics of her Eastern prototype, and then to see how far they reappear in the Greek Aphrodite.

Among the Semitic peoples (with the notable exception of the Hebrews) a supreme female deity was worshipped under different names—the Assyrian Ishtar, the Phoenician Ashtoreth (Astarte), the Syrian Atargatis (Derketo), the Babylonian Belit (Mylitta), the Arabian Ilat (Al-ilat). The article "Aphrodite" in Roscher's *Lexikon der Mythologie* is based upon the theory that all these were originally moon-goddesses, on which assumption all their functions are explained. This view, however, has not met with general acceptance, on the ground that, in Semitic mythology, the moon is always a male divinity; and that the full moon and crescent, found as attributes of Astarte, are due to a misinterpretation of the sun's disk and cow's horns of Isis, the result of the dependence of Syrian religious art upon Egypt. On the other hand, there is some evidence in ancient authorities (Herodian v. 6, 10; Lucian, *De Dea Syria*, 4) that Astarte and the moon were considered identical.

This oriental Aphrodite was worshipped as the bestower of all animal and vegetable fruitfulness, and under this aspect especially as a goddess of women. This worship was degraded by repulsive practices (*e.g.* religious prostitution, self-mutilation), which subsequently made their way to centres of Phoenician influence, such as Corinth and Mount Eryx in Sicily. In this connexion may be mentioned the idea of a divinity, half male, half female, uniting in itself the active and passive functions of creation, a symbol of luxuriant growth and productivity. Such was the bearded Aphrodite of Cyprus, called Aphrodites by Aristophanes according to Macrobius, who mentions a statue of the androgynous divinity in his *Saturnalia* (iii. 8. 2; see also Hermaphroditus). The moon, by its connexion with menstruation, and as the cause of the fertilizing dew, was regarded as exercising an influence over the entire animal and vegetable creation.

The Eastern Aphrodite was closely related to the sea and the element of moisture; in fact, some consider that she made her first appearance on Greek soil rather as a marine divinity than as a nature goddess. According to Syrian ideas, as a fish goddess, she represented the fructifying power of water. At Ascalon there was a lake full of fish near the temple of Atargatis-Derketo, into which she was said to have been thrown together with her son Ichthys (fish) as a punishment for her arrogance, and to have been devoured by fishes; according to another version, ashamed of her amour with a beautiful youth, which resulted in the birth of Semiramis, she attempted to drown herself, but was changed into a fish with human face (see Atargatis). At Hierapolis (Bambyce) there was a pool with an altar in the middle, sacred to the goddess, where a festival was held, at which her images were carried

into the water. Her connexion with the sea is explained by the influence of the moon on the tides, and the idea that the moon, like the sun and the stars, came up from the ocean.

The oriental Aphrodite is connected with the lower world, and came to be looked upon as one of its divinities. Thus, Ishtar descends to the kingdom of Ilat the queen of the dead, to find the means of restoring her favourite Tammuz (Adon, Adonis) to life. During her stay all animal and vegetable productivity ceases, to begin again with her return to earth—a clear indication of the conception of her as a goddess of fertility. This legend, which strikingly resembles that of Persephone, probably refers to the decay of vegetation in winter, and the reawakening of nature in spring (cf. HYACINTHUS). The lunar theory connects it with the disappearance of the moon at the time of change or during an eclipse.

Another aspect of her character is that of a warlike goddess, armed with spear or bow, sometimes wearing a mural crown, as sovereign lady and protectress of the locality where she was worshipped. The spear and arrows are identified with the beams of the sun and moon.

The attributes of the goddess were the ram, the he-goat, the dove, certain fish, the cypress, myrtle and pomegranate, the animals being symbolical of fertility, the plants remedies against sterility.

The worship of Aphrodite at an early date was introduced into Cyprus, Cythera and Crete by Phoenician colonists, whence it spread over the whole of Greece, and as far west as Italy and Sicily. In Crete she has been identified with Ariadne, who, according to one version of her story, was put ashore in Cyprus, where she died and was buried in a grove called after the name of Ariadne-Aphrodite (L.R. Farnell, *Cults of the Greek States*, ii. p. 663). Cyprus 167
was regarded as her true home by the Greeks, and Cythera was one of the oldest seats of her worship (cf. her titles Cytherea, Cypris, Paphia, Amathusia, Idalia—the last three from places in Cyprus). In both these islands there lingered a definite tradition of a connexion with the cult of the oriental Aphrodite Urania, an epithet which will be referred to later. The oriental features of her worship as practised at Corinth are due to its early commercial relations with Asia Minor; the fame of her temple worship on Mount Eryx spread to Carthage, Rome and Latium.

In the *Iliad*, Aphrodite is the daughter of Zeus and Dione, a name by which she herself is sometimes called. This has been supposed to point to a confusion between Aphrodite and Hebe, the daughter of Zeus and Hera, Dione being an Epirot name for the last-named goddess. In the *Odyssey*, she is the wife of Hephaestus, her place being taken in the *Iliad* by Charis, the personification of grace and divine skill, possibly supplanted by Aphrodite, the goddess of love and beauty. Her amour with Ares, by whom she became the mother of Harmonia, the wife of Cadmus, is famous (*Od.* viii. 266). From her relations with these acknowledged Hellenic divinites it is argued that there once existed a primitive Greek goddess of love. This view is examined in detail and rejected by Farnell (*Cults*, ii. pp. 619-626).

It is admitted that few traces remain of direct relations of the Greek goddess to the moon, although such possibly survive in the epithets πασιφαής, ἀστερία, οὐρανία. It is suggested that this is due to the fact that, at the time of the adoption of the oriental goddess, the Greeks already possessed lunar divinities in Hecate, Selene, Artemis. But, although her connexion with the moon has practically disappeared, in all other aspects a development from the Semitic divinity is clearly manifest.

Aphrodite as the goddess of all fruitfulness in the animal and vegetable world is especially prominent. In the Homeric hymn to Aphrodite she is described as ruling over all living things on earth, in the air, and in the water, even the gods being subject to her influence. She is the goddess of gardens, especially worshipped in spring and near lowlands and marshes, favourable to the growth of vegetation. As such in Crete she is called Antheia (“the flower-goddess”), at Athens ἐν κήποις (“in the gardens”), and ἐν καλάμοις (“in the reed-beds”) or ἐν ἕλει (“in the marsh”) at Samos. Her character as a goddess of vegetation is clearly shown in the cult and ritual of Adonis (*q.v.*; also Farnell, ii. p. 644) and Attis (*q.v.*). In the animal world she is the goddess of sexual impulse; amongst men, of birth, marriage, and family life. To this aspect may be referred the names Genetyllis (“bringing about birth”), Arma (ἅρω, “to join,” *i.e.*, in marriage, cf. Harmonia), Nymphia (“bridal goddess”), Kourotrophos (“rearer of boys”). Aphrodite Apaturus (see G.M. Hirst in *Journal of Hellenic Studies*, xxiii., 1903) refers to her connexion with the clan and the festival Apaturia, at which children were admitted to the *phratria*. It is pointed out by Farnell that this cult of Aphrodite, as the patroness of married life, is probably a native development of the Greek religion, the oriental legends representing her by no means as an upholder of the purer

relations of man and woman. As the goddess of the grosser form of love she inspires both men and women with passion (ἐπιστροφία, “turning them to” thoughts of love), or the reverse (ἀποστροφία, “turning them away”). Upon her male favourites (Paris, Theseus) she bestows the fatal gift of seductive beauty, which generally leads to disastrous results in the case of the woman (Helen, Ariadne). As μηχανῖτις (“contriver”) she acts as an intermediary for bringing lovers together, a similar idea being expressed in πρᾶξις (of “success” in love, or=*creatrix*). The two epithets ἀνδροφόνος (“man-slayer”) and σώσανδρα (“man-preserver”) find an illustration in the pseudo-Plautine (in the *Mercator*) address to Astarte, who is described as the life and death, the saviour and destroyer of men and gods. It was natural that a personality invested with such charms should be regarded as the ideal of womanly beauty, but it is remarkable that the only probable instance in which she appears as such is as Aphrodite μορφώ (“form”) at Sparta (O. Gruppe suggests the meaning “ghost,” C. Tumpel the “dark one,” referring to Aphrodite’s connexion with the lower world). The function of Aphrodite as the patroness of courtesans represents the most degraded form of her worship as the goddess of love, and is certainly of Phoenician or Eastern origin. In Corinth there were more than a thousand of these ἱερόδουλοι (“temple slaves”), and wealthy men made it a point of honour to dedicate their most beautiful slaves to the service of the goddess.

Like her oriental prototype, the Greek Aphrodite was closely connected with the sea. Thus, in the Hesiodic account of her birth, she is represented as sprung from the foam which gathered round the mutilated member of Uranus, and her name has been explained by reference to this. Further proof may be found in many of her titles—ἀναδυομένη (“rising from the sea”), εὔπλοια (“giver of prosperous voyages”), γαληναία (“goddess of fair weather”), κατασκοπία (“she who keeps a look-out from the heights”)—in the attribute of the dolphin, and the veneration in which she was held by seafarers. Aphrodite Aineias, the protectress of the Trojan hero, is probably also another form of the maritime goddess of the East (see E. Worner, article “Aineias” in Roscher’s *Lexikon*, and Farnell, ii. p. 638), which originated in the Troad, where Aphrodite Aineias may have been identical with the earth-goddess Cybele. The title ἔφιππος is connected with the legend of Aeneas, who is said to have dedicated to his mother a statue that represented her on horseback. Remembering the importance of the horse in the cult of the sea-god Poseidon, it is natural to associate it with Aphrodite as the sea-goddess, although it may be explained with reference to her character as a goddess of vegetation, the horse being an embodiment of the corn-spirit (see J.G. Frazer, *The Golden Bough*, ii., 1900, p. 281).

Like Ishtar, Aphrodite was connected with the lower world. Thus, at Delphi there was an image of Aphrodite ἐπιτυμβία (“Aphrodite of the tomb”), to which the dead were summoned to receive libations; the epithets τυμβώρυχος (“grave-digger”), μυχία (“goddess of the depths”), μελαινίς (“the dark one”), the grave of Ariadne-Aphrodite at Amathus, and the myth of Adonis, point in the same direction.

The cult of the armed Aphrodite probably belongs to the earlier period of her worship in Greece, and down to the latest period of Greek history she retained this character in some of the Greek states. The cult is found not only where oriental influence was strongest, but in places remote from it, such as Sparta, where she was known by the name of Areia (“the warlike”), and there are numerous references in the *Anthology* to an Aphrodite armed with helmet and spear. It is possible that the frequent association of Aphrodite with Ares is to be explained by an armed Aphrodite early worshipped at Thebes, the most ancient seat of the worship of Ares.

The most distinctively oriental title of the Greek Aphrodite is Urania, the Semitic “queen of the heavens.” It has been explained by reference to the lunar character of the goddess, but more probably signifies “she whose seat is in heaven,” whence she exercises her sway over the whole world—earth, sea, and air alike. Her cult was first established in Cythera, probably in connexion with the purple trade, and at Athens it is associated with the legendary Porphyrion, the purple king. At Thebes, Harmonia (who has been identified with Aphrodite herself) dedicated three statues, of Aphrodite Urania, Pandemos, and Apostrophia. A few words must be added on the second of these titles. There is no doubt that Pandemos was originally an extension of the idea of the goddess of family and city life to include the whole people, the political community. Hence the name was supposed to go back to the time of Theseus, the reputed author of the reorganization of Attica and its demes. Aphrodite Pandemos was held in equal regard with Urania; she was called σεμνή (“holy”), and was served by priestesses upon whom strict chastity was enjoined. In time, however, the meaning of the term underwent a change, probably due to the philosophers and moralists, by whom a radical distinction was drawn between Aphrodite Urania and Pandemos. According to Plato (*Symposium*, 180), there are two Aphrodites, “the elder,

having no mother, who is called the heavenly Aphrodite—she is the daughter of Uranus; the younger, who is the daughter of Zeus and Dione—her we call common." The same distinction is found in Xenophon's *Symposium* (viii. 9), although the author is doubtful whether there are two goddesses, or whether Urania and Pandemos are two names for the same goddess, just as Zeus, although one and the same, has many titles; but in any case, he says, the ritual of Urania is purer, more serious, than that of Pandemos. The same idea is expressed in the statement (quoted by Athenaeus, 569*d*, from Nicander of Colophon) that after Solon's time courtesans were put under the protection of Aphrodite Pandemos. But there is no doubt that the cult of Aphrodite was on the whole as pure as that of any other divinities, and although a distinction may have existed in later times between the goddess of legal marriage and the goddess of free love, these titles do not express the idea. Aphrodite Urania was represented in Greek art on a swan, a tortoise or a globe; Aphrodite Pandemos as riding on a goat, symbolical of wantonness. (For the legend of Theseus and Aphrodite hepitagia, "on the goat," see Farnell, *Cults*, ii. p. 633.)

To her oriental attributes the following may be added: the sparrow and hare (productivity), the wry-neck (as a love-charm, of which Aphrodite was considered the inventor), the swan and dolphin (as a marine divinity), the tortoise (explained by Plutarch as a symbol of domesticity, but connected by Gruppe with the marine deity), the rose, the poppy, and the lime tree.

In ancient art Aphrodite was at first represented clothed, sometimes seated, but more frequently standing; then naked, rising from the sea, or after the bath. Finally, all idea of the divine vanished, and the artists merely presented her as the type of a beautiful woman, with oval face, full of grace and charm, languishing eyes, and laughing mouth, which replaced the dignified severity and repose of the older forms. The most famous of her statues in ancient times was that at Cnidus, the work of Praxiteles, which was imitated on the coins of that town, and subsequently reproduced in various copies, such as the Vatican and Munich. Of existing statues the most famous is the Aphrodite of Melos (Venus of Milo), now in the Louvre, which was found on the island in 1820 amongst the ruins of the theatre; the Capitoline Venus at Rome and the Venus of Capua, represented as a goddess of victory (these two exhibit a lofty conception of the goddess); the Medicean Venus at Florence, found in the porticus of Octavia at Rome and (probably wrongly) attributed to Cleomenes; the Venus stooping in the bath, in the Vatican; and the Callipygos at Naples, a specimen of the most sensual type.

For the oriental Aphrodite, see E. Meyer, article "Astarte" in W.H. Roscher's *Lexikon der Mythologie*, and Wolf Baudissin, articles "Astarte" and "Atargatis" in Herzog-Hauck's *Realencyklopadie für protestantische Theologie*; for the Greek, articles m Roscher's *Lexikon* and Pauly-Wissowa's *Realencyclopadie*; L. Preller, *Griechische Mythologie* (4th ed. by C. Robert); L.R. Farnell, *Cults of the Greek States*, ii. (1896); O. Gruppe, *Griechische Mythologie und Religionsgeschichte*, ii. (1906); L. Dyer, *The Gods in Greece* (1891); A. Enmann, *Kypros und der Ursprung des Aphrodite-Kults* (1886). W.H. Engel, *Kypros*, ii. (1841), and J.B. Lajard, *Recherches sur le culte de Venus* (1837), may still be consulted with advantage. For Aphrodite in art see J.J. Bernoulli, *Aphrodite* (1873); W.J. Stillman, *Venus and Apollo in Painting and Sculpture* (1897). In the article Greek Art, figs. 71 (pl. v.) and 77 (pi. vi.) represent Aphrodite of Cridus and Melos respectively.

(J. H. F.)

1 No satisfactory etymology of the name has been given; although the first part is usually referred to ἀφρός ("the sea foam"), it is equally probable that it is of Eastern origin. F. Homoll (*Jahrbücher für classische Philologie*, cxxv., 1882) explains it as a corruption of Ashtoreth; for other derivations see O. Gruppe, *Griechische Mythologie*, ii. p. 1348, note 2.

APHTHONIUS, of Antioch, Greek sophist and rhetorician, flourished in the second half of the 4th century A.D., or even later. Nothing is known of his life, except that he was a friend of Libanius and of a certain Eutropius, perhaps the author of the epitome of Roman history. We possess by him Προγυμνάσματα, a text-book on the elements of rhetoric, with exercises for the use of the young before they entered the regular rhetorical schools. They apparently formed an introduction to the Τέχνη of Hermogenes. His style is pure and simple, and ancient critics praise his "Atticism." The book maintained its popularity as late as the 17th century, especially in Germany. A collection of forty fables by Aphthonius, after the style of

Aesop, is also extant.

Spengel, *Rhetores Graeci*, ii.; Finckh, *Aphthonii Progytnnasmata* (1865); Hoppichler, *De Theone, Hermogene, Aphthonioque Pro-gymnasmatum Scriptoribus* (1884); edition of the fables by Furia (1810).

APHTHONIUS, AELIUS FESTUS, Latin grammarian, possibly of African origin, lived in the 4th century A.D. He wrote a metrical handbook in four books, which has been incorporated by Marius Victorinus in his system of grammar.

Keil, *Gratnmatici Latini*, vi.; Schultz, *Quibus Auctoribus Aelius Festus Aphthonius usus sit* (1885).

APICIUS, the name of three celebrated Roman epicures. The second of these, M. Gavius Apicius, who lived under Tiberius, is the most famous (Seneca, Consol. ad Helviam, 10). He invented various cakes and sauces, and is said to have written on cookery. The extant *De Re Coquinaria* (ed. Schuch, 1874), a collection of receipts, ascribed to one Caelius Apicius, is founded on Greek originals, and belongs to the 3rd century A.D. It is probable that the real title was Caelii *Apicius*, Apicius being the name of the work (cp. Taciti *Agricola*), and *De Re Coquinaria* a sub-title.

APICULTURE (from Lat. *apis*, a bee), bee-keeping (see BEE). So also other compounds of *api-*. *Apiarium* or apiary, a bee-house or hive, is used figuratively by old writers for a place of industry, *e.g.* a college.

APION, Greek grammarian and commentator on Homer, born at Oasis in Libya, flourished in the first half of the 1st century A.D. He studied at Alexandria, and headed a deputation sent to Caligula (in 38) by the Alexandrians to complain of the Jews: his charges were answered by Josephus in his *Contra Apionem*. He settled at Rome—it is uncertain when—and taught rhetoric till the reign of Claudius. Apion was a man of great industry and learning, but extremely vain. He wrote several works, which are lost. The well-known story of Androclus and the lion, preserved in Aulus Gellius, is from his Αἰγυπτιακὰ; fragments of his Γλῶσσαι Ὁμηρικαὶ are printed in the *Etymologicum Gudianum*, ed. Sturz, 1818.

APIS or HAPIS, the sacred bull of Memphis, in Egyptian *Hp, Hope, Hope*. By Manetho his worship is said to have been instituted by Kaiechos of the Second Dynasty. Hape is named on very early monuments, but little is known of the divine animal before the New Kingdom. He was entitled “the renewal of the life” of the Memphite god Ptah: but after death he became Osorapis, *i.e.* the Osiris Apis, just as dead men were assimilated to Osiris, the king of the underworld. This Osorapis was identified with Serapis, and may well be really

identical with him (see SERAPIS): and Greek writers make the Apis an incarnation of Osiris, ignoring the connexion with Ptah. Apis was the most important of all the sacred animals in Egypt, and, like the others, its importance increased as time went on. Greek and Roman authors have much to say about Apis, the marks by which the black bull-calf was recognized, the manner of his conception by a ray from heaven, his house at Memphis with court for disporting himself, the mode of prognostication from his actions, the mourning at his death, his costly burial and the rejoicings throughout the country when a new Apis was found. Mariette's excavation of the Serapeum at Memphis revealed the tombs of over sixty animals, ranging from the time of Amenophis III. to that of Ptolemy Alexander. At first each animal was buried in a separate tomb with a chapel built above it. Khamuis, the priestly son of Rameses II. (*c.* 1300 B.C.), excavated a great gallery to be lined with the tomb chambers; another similar gallery was added by Psammetichus I. The careful statement of the ages of the animals in the later instances, with the regnal dates for their birth, enthronization and death have thrown much light on the chronology from the XXIInd dynasty onwards. The name of the mother-cow and the place of birth are often recorded. The sarcophagi are of immense size, and the burial must have entailed enormous expense. It is therefore remarkable that the priests contrived to bury one of the animals in the fourth year of Cambyses.

See Jablonski, *Pantheon*, ii.; Budge, *Gods of the Egyptians*, ii. 350; Mariette-Maspero, *Le Sérapéum de Memphis*.

(F. LL. G.)

APLITE, in petrology, the name given to intrusive rock in which quartz and felspar are the dominant minerals. Aplites are usually very fine-grained, white, grey or flesh-coloured, and their constituents are visible only with the help of a magnifying lens. Dykes and threads of aplite are very frequently to be observed traversing granitic bosses; they occur also, though in less numbers, in syenites, diorites, quartz-diabases and gabbros. Without doubt they have usually a genetic affinity to the rocks they intersect. The aplites of granite areas, for example, are the last part of the magma to crystallize, and correspond in composition to the quartzo-felspathic aggregates which fill up the interspaces between the early minerals in the main body of the rock. They bear a considerable resemblance to the eutectic mixtures which are formed on the cooling of solutions of mineral salts, and remain liquid till the excess of either of the components has separated out, finally solidifying *en masse* when the proper proportions of the constituents and a suitable temperature are reached. The essential components of the aplites are quartz and alkali felspar (the latter usually orthoclase or microperthite). Crystallization has been apparently rapid (as the rocks are so fine-grained), and the ingredients have solidified almost at the same time. Hence their crystals are rather imperfect and fit closely to one another in a sort of fine mosaic of nearly equi-dimensional grains. Porphyritic felspars occur occasionally and quartz more seldom; but the relation of the aplites to quartz-porphyries, granophyres and felsites is very close, as all these rocks have nearly the same chemical composition. Yet the aplites associated with diorites and quartz-diabases differ in minor respects from the common aplites, which accompany granites. The accessory minerals of these rocks are principally oligoclase, muscovite, apatite and zircon. Biotite and all ferromagnesian minerals rarely appear in them, and never are in considerable amount. Riebeckite-granites (paisanites) have close affinities to aplites, shown especially in the prevalence of alkali felspars. Tourmaline also occurs in some aplites. The rocks of this group are very frequent in all areas where masses of granite are known. They form dykes and irregular veins which may be only a few inches or many feet in diameter. Less frequently aplite forms stocks or bosses, or occupies the edges or irregular portions of the interior of outcrops of granite. The syenite-aplites consist mainly of alkali felspar; the diorite-aplites of plagioclase; there are nepheline-bearing aplites which intersect some elaeolite-syenites. In all cases they bear the same relation to the parent masses. By increase of quartz aplites pass gradually, in a few localities, through highly quartzose modifications (beresite, &c.) into quartz veins.

(J. S. F.)

APNOEA (Gr. ἄπνοια, from ἀ-, privative, πνέειν, to breathe), a technical term for suspension of breathing.

APOCALYPSE (Gr. ἀποκάλυψις, disclosure), a term applied to the disclosure to certain privileged persons of something hidden from the mass of men. The Greek root corresponds in the Septuagint to the Heb. *gālāh*, to reveal. The last book of the New Testament bears in Greek the title Ἀποκάλυψις Ἰωάννου, and is frequently referred to as the Apocalypse of John, but in the English Bible it appears as the Revelation of St John the Divine (see REVELATION). Earlier among the hellenistic Jews the term was used of a number of writings which depicted in a prophetic and parabolic way the end or future state of the world (*e.g. Apocalypse of Baruch*), the whole class is now commonly known as Apocalyptic Literature (*q.v.*).

APOCALYPSE, KNIGHTS OF THE, a secret society founded in Italy in 1693 to defend the church against the expected Antichrist. Agostino Gabrino, the son of a merchant of Brescia, was its founder. On Palm Sunday 1693, when the choir of St Peter's was chanting *Quis est iste Rex Gloriae?* Gabrino sword in hand, rushed to the altar crying *Ego sum Rex Gloriae.* Though Gabrino was treated as a madman, the society flourished, until a member denounced it to the Inquisition, who arrested the knights. Though chiefly mechanics they always carried swords even when at work, and wore on their breasts a star with seven rays. Gabrino styled himself monarch of the Holy Trinity. He was credited by his enemies with a desire to introduce polygamy.

APOCALYPTIC LITERATURE. The Apocalyptic literature of Judaism and Christianity embraces a considerable period, from the centuries following the exile down to the close of the middle ages. In the present survey we shall limit ourselves to the great formative periods in this literature—in Judaism to 200 B.C. to A.D. 100, and in Christianity to A.D. 50 to 350 or thereabouts.

The transition from prophecy to apocalyptic (ἀποκαλύπτειν, to reveal something hidden) was gradual and already accomplished within the limits of the Old Testament. Beginning in the bosom of prophecy, and steadily differentiating itself from it in its successive developments, it never came to stand in absolute contrast to it. Apocalyptical elements disclose themselves in the prophetical books of Ezekiel, Joel, Zechariah, while in Isaiah xxiv.-xxvii. and xxxiii. we find well-developed apocalypses; but it is not until we come to Daniel that we have a fully matured and classical example of this class of literature. The way, however, had in an especial degree been prepared for the apocalyptic type of thought and literature by Ezekiel, for with him the word of God had become identical with a written book (ii. 9-iii. 3) by the eating of which he learnt the will of God, just as primitive man conceived that the eating of the tree in Paradise imparted spiritual knowledge. When the divine word is thus conceived as a written message, the sole office of the prophet is to communicate what is written. Thus the human element is reduced to zero, and the conception of prophecy becomes mechanical. And as the personal element disappears in the conception of the prophetic calling, so it tends to disappear in the prophetic view of history, and the future comes to be conceived not as the organic result of the present under the divine guidance, but as mechanically determined from the beginning in the counsels of God, and arranged under artificial categories of time. This is essentially the apocalyptic conception of history, and Ezekiel may be justly represented as in certain essential aspects its founder in Israel.

We shall now consider (I.) Apocalyptic, its origin and general characteristics; (II.) Old

Testament Apocalyptic; (III.) New Testament Apocalyptic.

I. Apocalyptic—its Origin and General Characteristics

i. *Sources of Apocalyptic.*—The origin of Apocalyptic is to be sought in (*a*) unfulfilled prophecy and in (*b*) traditional elements drawn from various sources.

(*a*) The origin of Apocalyptic is to be sought in *unfulfilled prophecy*. That certain prophecies relating to the coming kingdom of God had clearly not been fulfilled was a matter of religious difficulty to the returned exiles from Babylon. The judgments predicted by the pre-exilic prophets had indeed been executed to the letter, but where were the promised glories of the renewed kingdom and Israel's unquestioned sovereignty over the nations of the earth? One such unfulfilled prophecy Ezekiel takes up and reinterprets in such a way as to show that its fulfilment is still to come. The prophets Jeremiah (iv.-vi.) and Zephaniah had foretold the invasion of Judah by a mighty people from the north. But as this northern foe had failed to appear Ezekiel re-edited this prophecy in a new form as a final assault of Gog and his hosts on Jerusalem, and thus established a permanent dogma in Jewish apocalyptic, which in due course passed over into Christian.

But the non-fulfilment of prophecies relating to this or that individual event or people served to popularize the methods of apocalyptic in a very slight degree in comparison with the non-fulfilment of the greatest of all prophecies—the advent of the Messianic kingdom. Thus, though Jeremiah had promised that after seventy years (xxv. 11., xxix. 10) Israel should be restored to their own land (xxiv. 5, 6), and then enjoy the blessings of the Messianic kingdom under the Messianic king (xxiii. 5, 6), this period passed by and things remained as of old. Haggai and Zechariah explained the delay by the failure of Judah to rebuild the temple, and so generation after generation the hope of the kingdom persisted, sustained most probably by ever-fresh reinterpretations of ancient prophecy, till in the first half of the 2nd century the delay is explained in the Books of Daniel and Enoch as due not to man's shortcomings but to the counsels of God. The 70 years of Jeremiah are interpreted by the angel in Daniel (ix. 25-27) as 70 weeks of years, of which 69½ have already expired, while the writer of Enoch (lxxxv.-xc.) interprets the 70 years of Jeremiah as the 70 successive reigns of the 70 angelic patrons of the nations, which are to come to a close in his own generation.

But the above periods came and passed by, and again the expectations of the Jews were disappointed. Presently the Greek empire of the East was overthrown by Rome, and in due course this new phenomenon, so full of meaning for the Jews, called forth a new interpretation of Daniel. The fourth and last empire which, according to Daniel vii. 10-25, was to be Greek, was now declared to be Roman by the Apocalypse of Baruch (xxxvi.-xl.) and 4 Ezra (x. 60-xii. 35). Once more such ideas as those of "the day of Yahweh" and the "new heavens and a new earth" were constantly re-edited with fresh nuances in conformity with their new settings. Thus the inner development of Jewish apocalyptic was always conditioned by the historical experiences of the nation.

(*b*) Another source of apocalyptic was *primitive mythological and cosmological traditions*, in which the eye of the seer could see the secrets of the future no less surely than those of the past. Thus the six days of the world's creation, followed by a seventh of rest, were regarded as at once a history of the past and a forecasting of the future. As the world was made in six days its history would be accomplished in six thousand years, since each day with God was as a thousand years and a thousand years as one day; and as the six days of creation were followed by one of rest, so the six thousand years of the world's history would be followed by a rest of a thousand years (2 Enoch xxxii. 2-xxxiii. 2). Of primitive mythological traditions we might mention the primeval serpent, leviathan, behemoth, while to ideas native to or familiar in apocalyptic belong those of the seven archangels, the angelic patrons of the nations (Deut. xxxii. 8, in LXX.; Isaiah xxiv. 21; Dan. x. 13, 20, &c.), the mountain of God in the north (Isaiah xiv. 13; Ezek. i. 4, &c.), the garden of Eden.

ii. *Object and Contents of Apocalyptic.*—The object of this literature in general was to solve the difficulties connected with the righteousness of God and the suffering condition of His righteous servants on earth. The righteousness of God postulated according to the law the temporal prosperity of the righteous and the *temporal* prosperity of necessity; for as yet there was no promise of life or recompense beyond the grave. But this connexion was not found to obtain as a rule in life, and the difficulties arising from this conflict between promise and experience centred round the lot of the righteous as a community and the lot of the righteous man as an individual. Old Testament prophecy had addressed itself to both

these problems, though it was hardly conscious of the claims of the latter. It concerned itself essentially with the present, and with the future only as growing organically out of the present. It taught the absolute need of personal and national righteousness, and foretold the ultimate blessedness of the righteous nation on the present earth. But its views were not systematic and comprehensive in regard to the nations in general, while as regards the individual it held that God's service here was its own and adequate reward, and saw no need of postulating another world to set right the evils of this. But later, with the growing claims of the individual and the acknowledgment of these in the religious and intellectual life, both problems, and especially the latter, pressed themselves irresistibly on the notice of religious thinkers, and made it impossible for any conception of the divine rule and righteousness to gain acceptance, which did not render adequate satisfaction to the claims of both problems. To render such satisfaction was the task undertaken by apocalyptic, as well as to vindicate the righteousness of God alike in respect of the individual and of the nation. To justify their contention they sketched in outline the history of the world and mankind, the origin of evil and its course, and the final consummation of all things. Thus they presented in fact a theodicy, a rudimentary philosophy of religion. The righteous as a nation should yet possess the earth, even in this world the faithful community should attain its rights in an eternal Messianic kingdom on earth, or else in temporary blessedness here and eternal blessedness hereafter. So far as regards the righteous community. It was, however, in regard to the destiny of the individual that apocalyptic rendered its chief service. Though the individual might perish amid the disorders of this world, he would not fail, apocalyptic taught, to attain through resurrection the recompense that was his due in the Messianic kingdom or in heaven itself. Apocalyptic thus forms the indispensable preparation for the religion of the New Testament.

iii. *Form of Apocalyptic.*—The form of apocalyptic is a literary form; for we cannot suppose that the writers experienced the voluminous and detailed visions we find in their books. On the other hand the reality of the visions is to some extent guaranteed by the writer's intense earnestness and by his manifest belief in the divine origin of his message. But the difficulty of regarding the visions as actual experiences, or as in any sense actual, is intensified, when full account is taken of the artifices of the writer; for the major part of his visions consists of what is to him really past history dressed up in the guise of prediction. Moreover, the writer no doubt intended that his reader should take the accuracy of the prediction (?) already accomplished to be a guarantee for the accuracy of that which was still unrealized. How, then, it may well be asked, can this be consistent with reality of visionary experience? Are we not here obliged to assume that the visions are a literary invention and nothing more?

However we may explain the inconsistency, we are precluded by the moral earnestness of the writer from assuming the visions to be pure inventions. But the inconsistency has in part been explained by Gunkel, who has rightly emphasized that the writer did not freely invent his materials but derived them in the main from tradition, as he held that these mysterious traditions of his people were, if rightly expounded, forecasts of the time to come. Furthermore, the visionary who is found at most periods of great spiritual excitement was forced by the prejudice of his time, which refused to acknowledge any inspiration in the present, to ascribe his visionary experiences and reinterpretations of the mysterious traditions of his people to some heroic figure of the past. Moreover, there will always be a difficulty in determining what belongs to his actual vision and what to the literary skill or free invention of the author, seeing that the visionary must be dependent on memory and past experience for the forms and much of the matter of the actual vision.

iv. *Apocalyptic as distinguished from Prophecy.*—We have already dwelt on certain notable differences between apocalyptic and prophecy; but there are certain others that call for attention.

(*a*) *In the Nature of its Message.*—The message of the prophets was primarily a preaching of repentance and righteousness if the nation would escape judgment; the message of the apocalyptic writers was of patience and trust for that deliverance and reward were sure to come.

(*b*) *By its dualistic Theology.*—Prophecy believes that this world is God's world and that in this world His goodness and truth will yet be vindicated. Hence the prophet prophesies of a definite future arising out of and organically connected with the present. The apocalyptic writer on the other hand despairs of the present, and directs his hopes absolutely to the future, to a new world standing in essential opposition to the present. (*Non fecit Altissimus unum saeculum sed duo*, 4 Ezra vii. 50.) Here we have essentially a dualistic principle, which, though it can largely be accounted for by the interaction of certain inner tendencies and outward sorrowful experience on the part of Judaism, may ultimately be derived from

Mazdean influences. This principle, which shows itself clearly at first in the conception that the various nations are under angelic rulers, who are in a greater or less degree in rebellion against God, as in Daniel and Enoch, grows in strength with each succeeding age, till at last Satan is conceived as “the ruler of this world” (John xii. 31) or “the god of this age” (2 Cor. iv. 4). Under the guidance of such a principle the writer naturally expected the world’s culmination in evil to be the immediate precursor of God’s intervention on behalf of the righteous, and every fresh growth in evil to be an additional sign that the time was at hand. The natural concomitant in conduct of such a belief is an uncompromising asceticism. He that would live to the next world must shun this. Visions are vouchsafed only to those who to prayer have added fasting.

(*c*) *By pseudonymous Authorship.*—We have already touched on this characteristic of apocalyptic. The prophet stood in direct relations with his people; his prophecy was first spoken and afterwards written. The apocalyptic writer could obtain no hearing from his contemporaries, who held that, though God spoke in the past, “there was no more any prophet.” This pessimism and want of faith limited and defined the form in which religious enthusiasm should manifest itself, and prescribed as a condition of successful effort the adoption of pseudonymous authorship. The apocalyptic writer, therefore, professedly addressed his book to future generations. Generally directions as to the hiding and sealing of the book (Dan. xii. 4, 9; 1 Enoch i. 4; Ass. Mos. i. 16-18) were given in the text in order to explain its publication so long after the date of its professed period. Moreover, there was a sense in which such books were not wholly pseudonymous. Their writers were students of ancient prophecy and apocalyptical tradition, and, though they might recast and reinterpret them, they could not regard them as their own inventions. Each fresh apocalypse would in the eyes of its writer be in some degree but a fresh edition of the traditions naturally attaching themselves to great names in Israel’s past, and thus the books named respectively Enoch, Noah, Ezra would to some slight extent be not pseudonymous.

(*d*) *By its comprehensive and deterministic Conception of History.*—Apocalyptic took an indefinitely wider view of the world’s history than prophecy. Thus, whereas prophecy had to deal with temporary reverses at the hands of some heathen power, apocalyptic arose at a time when Israel had been subject for generations to the sway of one or other of the great world-powers. Hence to harmonize such difficulties with belief in God’s righteousness, it had to take account of the rôle of such empires in the counsels of God, the rise, duration and downfall of each in turn, till finally the lordship of the world passed into the hands of Israel, or the final judgment arrived. These events belonged in the main to the past, but the writer represented them as still in the future, arranged under certain artificial categories of time definitely determined from the beginning in the counsels of God and revealed by Him to His servants the prophets. Determinism thus became a leading characteristic of Jewish apocalyptic, and its conception of history became severely mechanical.

II. Old Testament Apocalyptic

i. Canonical:—

Isaiah xxiv.-xxvii.; xxxiii.; xxxiv.-xxxv.
(Jeremiah xxxiii. 14-26?)
Ezekiel ii. 8; xxxviii.-xxxix.
Joel iii. 9-17.
Zech. xii—xiv.
Daniel.

We cannot enter here into a discussion of the above passages and books.[1] All are probably pseudepigraphic except the passages from Ezekiel and Joel. Of the remaining passages and books Daniel belongs unquestionably to the Maccabean period, and the rest possibly to the same period. Isaiah xxxiii. was probably written about 163 B.C. (Duhm and Marti); Zech. xii.-xiv. about 160 B.C., Isaiah xxiv.-xxvii. about 128 B.C., and xxxiv.-xxxv. sometime in the reign of John Hyrcanus. Jeremiah xxxiii. 14-26 is assigned by Marti to Maccabean times, but this is highly questionable.

ii. Extra-canonical:—

(a) *Palestinian*:—

(200-100 B.C.)

Book of Noah.

1 Enoch vi.-xxxvi.; lxxii.-xc.
Testaments of the XII. Patriarchs.

(100 B.C. to 1 B.C.)

1 Enoch i.-v.; xxxvii.-lxxi.; xci.-civ.
Testaments of the XII. Patriarchs, *i.e.* T. Lev. x., xiv.-xvi., T. Jud. xxi. 6-xxiii, T. Zeb. ix., T. Dan. v. 6, 7.
Psalms of Solomon.

(A.D. 1-100 and later.)

Assumption of Moses.
Apocalypse of Baruch.
4 Ezra.
Greek Apocalypse of Baruch.
Apocalypse of Zephaniah.
Apocalypse of Abraham.
Prayer of Joseph.
Book of Eldad and Modad.
Apocalypse of Elijah.

(b) *Hellenistic*:—

2 Enoch.
Oracles of Hystaspes.
Testament of Job.
Testaments of the III. Patriarchs.
Sibylline Oracles (excluding Christian portions).

Book of Noah.—Though this book has not come down to us independently, it has in large measure been incorporated in the Ethiopic Book of Enoch, and can in part be reconstructed from it. The Book of Noah is mentioned in Jubilees x. 13, xxi. 10. Chapters lx., lxv.-lxix. 25 of the Ethiopic Enoch are without question derived from it. Thus lx. 1 runs: "In the year 500, in the seventh month ... in the life of Enoch." Here the editor simply changed the name Noah in the context before him into Enoch, for the statement is based on Gen. v. 32, and Enoch lived only 365 years. Chapters vi.-xi. are clearly from the same source; for they make no reference to Enoch, but bring forward Noah (x. 1) and treat of the sin of the angels that led to the flood, and of their temporal and eternal punishment. This section is compounded of the Semjaza and Azazel myths, and in its present composite form is already presupposed by 1 Enoch lxxxviii.-xc. Hence these chapters are earlier than 166 B.C. Chapters cvi.-cvii. of the same book are probably from the same source; likewise liv. 7-lv. 2, and Jubilees vii. 20-39, x. 1-15. In the former passage of Jubilees the subject-matter leads to this identification, as well as the fact that Noah is represented as speaking in the first person, although throughout Jubilees it is the angel that speaks. Possibly Eth. En. xli. 3-8, xliii.-xliv., lix. are from the same work. The book may have opened with Eth. En. cvi.-cvii. On these chapters may have followed Eth. En. vi.-xi., lxv.-lxix. 25, lx., xli. 3-8, xliii.-xliv., liv. 7-lv. 2; Jubilees vii. 26-39, x. 1-15.

The Hebrew Book of Noah, a later work, is printed in Jellinek's *Bet ha-Midrasch*, iii. 155-156, and translated into German in Rönsch, *Das Buch der Jubiläen*, 385-387. It is based on the part of the above Book of Noah which is preserved in the *Book of Jubilees*. The portion of this Hebrew work which is derived from the older work is reprinted in Charles's *Ethiopic Version of the Hebrew Book of Jubilees*, p. 179.

1 Enoch, or the Ethiopic Book of Enoch.—This is the most important of all the apocryphal writings for the history of religious thought. Like the Pentateuch, the Psalms, the Megilloth and the Pirke Aboth, this work was divided into five parts, which, as we shall notice presently, spring from five different sources. Originally written partly in Aramaic (*i.e.* vi.-xxxvi.) and partly in Hebrew (i.-vi., xxxvii.-cviii.), it was translated into Greek, and from Greek into Ethiopic and possibly Latin. Only one-fifth of the Greek version in two forms survives. The various elements of the book were written by different authors at different dates, vi.-xxxvi. was written before 166 B.C., lxxii.-lxxxii. before the *Book of Jubilees*, *i.e.* before 120 B.C. or thereabouts, lxxxiii.-xc. about 166 B.C., i.-v., xci.-civ. before 95 B.C., and xxxvii.-lxxi. before 64 B.C. There are many interpolations drawn mainly from the Book of Noah.

Testaments of the XII. Patriarchs.—This book, in some respects the most important of Old Testament apocryphs, has only recently come into its own. Till a few years ago, owing to

Christian interpolations, it was taken to be a Christian apocryph, written originally in Greek in the 2nd century A.D. Now it is acknowledged by Christian and Jewish scholars alike to have been written in Hebrew in the 2nd century B.C. From Hebrew it was translated into Greek and from Greek into Armenian and Slavonic. The versions have come down in their entirety, and small portions of the Hebrew text have been recovered from later Jewish writings. The Testaments were written about the same date as the *Book of Jubilees*. These two books form the only Apology in Jewish literature for the religious and civil hegemony of the Maccabees from the Pharisaic standpoint. To the Jewish interpolation of the 1st century B.C. (about 60-40), *i.e.* T. Lev. x., xiv.-xvi.; T. Jud. xxii.-xxiii., &c., a large interest attaches; for these, like I Enoch xci.-civ. and the Psalms of Solomon, constitute an unmeasured attack on every office— prophetic, priestly and kingly—administered by the Maccabees. The ethical character of the book is of the highest type, and its profound influence on the writers of the New Testament is yet to be appreciated. (See TESTAMENTS OF THE XII. PATRIARCHS.)

Psalms of Solomon.—These psalms, in all eighteen, enjoyed but small consideration in early times, for only six direct references to them are found in early literature. Their ascription to Solomon is due solely to the copyists or translators, for no such claim is made in any of the psalms. On the whole, Ryle and James are no doubt right in assigning 70-40 B.C. as the limits within which the psalms were written. The authors were Pharisees. They divide their countrymen into two classes— "the righteous," ii. 38-39, iii. 3-5, 7, 8, &c., and "the sinners," ii. 38, iii. 13, iv. 9, &c.; "the saints," iii. 10, &c., and "the transgressors," iv. II, &c. The former are the Pharisees; the latter the Sadducees. They protest against the Asmonaean house for usurping the throne of David, and laying violent hands on the high priesthood (xvii. 5, 6, 8), and proclaim the coming of the Messiah, the Son of David, who is to set all things right and establish the supremacy of Israel. Pss. xvii.-xviii. and i.-xvi. cannot be assigned to the same authorship. The hopes of the Messiah are confined to the former, and a somewhat different eschatology underlies the two works. Since the Psalms were written in Hebrew, and intended for public worship in the synagogues, it is most probable that they were composed in Palestine. (See SOLOMON, THE PSALMS OF.)

The Assumption of Moses.—This book was lost for many centuries till a large fragment of it was discovered by Ceriani in 1861 (*Monumenta Sacra*, I. i. 55-64) from a palimpsest of the 6th century. Very little was known about the contents of this book prior to this discovery. The present book is possibly the long-lost Διαθήκη Μωυσέως mentioned in some ancient lists, for it never speaks of the assumption of Moses, but always of his natural death. About a half of the original Testament is preserved in the Latin version. The latter half probably dealt with questions about the creation. With this "Testament" the "Assumption," to which almost all the patristic references and that of Jude are made, was subsequently edited. The book was written between 4 B.C. and A.D. 7. As for the author, he was no Essene, for he recognizes animal sacrifices and cherishes the Messianic hope; he was not a Sadducee, for he looks forward to the establishment of the Messianic kingdom (x.); nor a Zealot, for the quietistic ideal is upheld (ix.), and the kingdom is established by God Himself (x.). He is therefore a Chasid of the ancient type, and glorifies the ideals which were cherished by the old Pharisaic party, but which were now being fast disowned in favour of a more active role in the political life of the nation. He pours his most scathing invectives on the Sadducees, who are described in vii. in terms that recall the anti-Sadducean Psalms of Solomon. His object, therefore, is to protest against the growing secularization of the Pharisaic party through its adoption of popular Messianic beliefs and political ideals. (See also MOSES, ASSUMPTION OF.)

Apocalypse of Baruch—The Syriac.—This apocalypse has survived only in the Syriac version. The Syriac is a translation from the Greek, and the Greek in turn from the Hebrew. The book treats of the Messiah and the Messianic kingdom, the woes of Israel in the past and the destruction of Jerusalem in the present, as well as of theological questions relating to original sin, free will, works, &c. The views expressed on several of these subjects are often conflicting. We must, therefore, assume a number of independent sources put together by an editor or else that the book is on the whole the work of one author who made use of independent writings but failed to blend them into one harmonious whole. In its present form the book was written soon after A.D. 70. For fuller treatment see BARUCH.

4 Ezra.—This apocryph is variously named. In the first Arabic and Ethiopic versions it is called I Ezra; in some Latin MSS. and in the English authorized version it is 2 Ezra, and in the Armenian 3 Ezra. With the majority of the Latin MSS. we designate the book 4 Ezra. In its fullest form this apocryph consists of sixteen chapters, but i.-ii. and xv.-xvi. are of different authorship from each other and from the main work iii.-xiv. The book was written originally in Hebrew. There are Latin, Syriac, Ethiopic, Arabic (two), and Armenian versions.

The Greek version is lost. This apocalypse is of very great importance, on account of its very full treatment of the theological questions rife in the latter half of the 1st century of the Christian era. The book, even if written by one author, was based on a variety of already existing works. It springs from the same school of thought as the *Apocalypse of Baruch*, and its affinities with the latter are so numerous and profound that scholars have not yet come to any consensus as to the relative priority of either. In its present form it was composed A.D. 80-100. For fuller treatment see EZRA.

Apocalypse of Baruch—The Greek.—This work is referred to by Origen (*de Princip.* II. iii. 6): "Denique etiam Baruch prophetae librum in assertionis hujus' testimonium vocant, quod ibi de septem mundis vel caelis evidentius indicatur." This book survives in two forms in Slavonic and Greek. The former was translated by Bonwetsch in 1896, in the *Nachrichten von der königl. Ges. der Wiss. zu, Gött.* pp. 91-101; the latter by James in 1897 in *Anecdota*, ii. 84-94, with an elaborate introduction (pp. li.-lxxi.). The Slavonic is only of secondary value, as it is merely an abbreviated form of the Greek. Even the Greek cannot claim to be the original work, but only to be a recension of it; for, whereas Origen states that this apocalypse contained an account of the seven heavens, the existing Greek work describes only five, and the Slavonic only two. As the original, work presupposes 2 Enoch and the Syriac *Apocalypse of Baruch* and was known to Origen, it was written between A.D. 80 and 200, and nearer the earlier date than the later, as it would otherwise be hard to understand how it came to circulate among Christians. The superscription shows points of connexion with the *Rest of the Words of Baruch*, but little weight can be attached to the fact, since titles and superscriptions were so frequently transformed and expanded in ancient times. As James and Kohler have pointed out, part of section 4 on the Vine is a Christian addition. A German translation of the Greek appears in Kautzsch's *Apok. u. Pseud*, ii. 448-457, and a strong article by Kohler on the Jewish authorship of the book in the *Jewish Encyclopedia*, ii. 549-551. (See BARUCH.)

Apocalypse of Abraham.—This book is found only in the Slavonic (edited by Bonwetsch, *Studien zur Geschichte d. Theologie und Kirche*, 1897), a translation from the Greek. It is of Jewish origin, but in part worked over by a Christian reviser. The first part treats of Abraham's conversion, and the second forms an apocalyptic expansion of Gen. xv. This book was possibly known to the author of the *Clem. Recognitions*, i. 32, a passage, however, which may refer to Jubilees. It is most probably distinct from the Ἀποκάλυψις Ἀβραάμ used by the gnostic Sethites (Epiphanius, *Haer.* xxxix. 5), which was very heretical. On the other hand, it is probably identical with the apocryphal book Ἀβραάμ mentioned in the Stichometry of Nicephorus, and the Synopsis Athanasii, together with the Apocalypses of Enoch, &c.

Lost Apocalypses: Prayer of Joseph.—The *Prayer of Joseph* is quoted by Origen [*In Joann.* II. xxv, (Lommatzsch, i. 147, 148); *in Gen.* III. ix. (Lommatzsch, viii. 30-31)]. The fragments in Origen represent Jacob as speaking and claiming to be "the first servant in God's presence," "the first-begotten of every creature animated by God," and declaring that the angel who wrestled with Jacob (and was identified by Christians with Christ) was only eighth in rank. The work was obviously anti-Christian. (See Schürer[3], iii. 265-266.)

Book of Eldad and Modad.—This book was written in the name of the two prophets mentioned in Num. xi. 26-29. It consisted, according to the Targ. Jon. on Num. xi. 26-20, mainly of prophecies on Magog's last attack on Israel. The Shepherd of Hermas quotes it *Vis.* ii. 3. (See Marshall in Hastings' *Bible Dictionary*, i. 677.)

Apocalypse of Elijah.—This apocalypse is mentioned in two of the lists of books. Origen, Ambrosiaster, and Euthalius ascribe to it I Cor. ii. 9. If they are right, the apocalypse is pre-Pauline. The peculiar form in which I Cor. ii. 9 appears in Clemens Alex. *Protrept.* x. 94, and the *Const. Apost.* vii. 32, shows that both have the same source, probably this apocalypse. Epiphanius (*Haer.* xlii., ed. Oehler, vol. ii. 678) ascribes to this work Eph. v. 14. Isr. Lévi (*Revue des études juives*, 1880, i. 108 sqq.) argues for the existence of a Hebrew apocalypse of Elijah from two Talmudic passages. A late work of this name has been published by Jellinek, *Bet ha-Midrasch*, 1855, iii. 65-68, and Buttenwieser in 1897. Zahn, *Gesch. des N.T. Kanons*, ii. 801-810, assigns this apocalypse to the 2nd century A.D. (See Schürer[3], iii. 267-271.)

Apocalypse of Zephaniah.—Apart from two of the lists this work is known to us in its original form only through a citation in Clem. Alex. *Strom.* v. II, 77. A Christian revision of it is probably preserved in the two dialects of Coptic. Of these the Akhmim text is the original of the Sahidic. These texts and their translations have been edited by Steindorff, *Die Apokalypse des Elias, eine unbekannte Apokalypse und Bruchstucke der Sophonias-*

Apokalypse (1809). As Schürer (*Theol. Literaturzeitung*, 1899, No. I. 4-8) has shown, these fragments belong most probably to the Zephaniah apocalypse. They give descriptions of heaven and hell, and predictions of the Antichrist. In their present form these Christianized fragments are not earlier than the 3rd century. (See Schürer, *Gesch. des jüd. Volkes*^{3}, iii. 271-273.)

2 *Enoch*, or the *Slavonic Enoch*, or the *Book of the Secrets of Enoch.*—This new fragment of the Enochic literature was recently brought to light through five MSS. discovered in Russia and Servia. The book in its present form was written before A.D. 70 in Greek by an orthodox Hellenistic Jew, who lived in Egypt. For a fuller account see ENOCH.

Oracles of Hystaspes.—See under *N. T. Apocalypses*, below.

Testament of Job.—This book was first printed from one MS. by Mai, *Script. Vet. Nov. Coll.* (1833), VII. i. 180, and translated into French in Migne's *Dict. des Apocryphes*, ii. 403. An excellent edition from two MSS. is given by M.R. James, *Apocrypha Anecdota*, ii. pp. lxxii.-cii., 104-137, who holds that the book in its present form was written by a Christian Jew in Egypt on the basis of a Hebrew Midrash on Job in the 2nd or 3rd century A.D. Kohler (*Kohut Memorial Volume*, 1897, pp. 264-338) has given good grounds for regarding the whole work, with the exception of some interpolations, as "one of the most remarkable productions of the pre-Christian era, explicable only when viewed in the light of Hasidean practice." See *Jewish Encycl.* vii. 200-202.

Testaments of the III. Patriarchs.—For an account of these three Testaments (referred to in the *Apost. Const.* vi. 16), the first of which only is preserved in the Greek and is assigned by James to the 2nd century A.D., see that scholar's "Testament of Abraham," *Texts and Studies*, ii. 2 (1892), which appears in two recensions from six and three MSS. respectively, and Vassiliev's *Anecdota Graeco-Byzantina*, (1893), pp. 292-308, from one MS. already used by James. This work was written in Egypt, according to James, and survives also in Slavonic, Rumanian, Ethiopic, and Arabic versions. It deals with Abraham's reluctance to die and the means by which his death was brought about. James holds that this book is referred to by Origen (*Hom. in Luc.* xxxv.), but this is denied by Schürer, who also questions its Jewish origin. With the exception of chaps. x.-xi., it is really a legend and not an apocalypse. An English translation of James's texts will be found in the *Ante-Nicene Christian Library* (Clark, 1897), pp. 185-201. The Testaments of Isaac and Jacob are still preserved in Arabic and Ethiopic (see James, *op. cit.* 140-161). See TESTAMENTS OF THE III. PATRIARCHS.

Sibylline Oracles.—Of the books which have come down to us the main part is Jewish, and was written at various dates, iii. 97-829, iv.-v. are decidedly of Jewish authorship, and probably xi.-xii., xiv. and parts of i.-ii. The oldest portions are in iii., and belong to the 2nd century B.C.

III. NEW TESTAMENT APOCALYPTIC

When we pass from Jewish literature to that of the New Testament, we enter into a new and larger atmosphere at once recalling and transcending what had been best in the prophetic periods of the past. Again the heavens had opened and the divine teaching come to mankind, no longer merely in books bearing the names of ancient patriarchs, but on the lips of living men, who had taken courage to appear in person as God's messengers before His people. But though Christianity was in spirit the descendant of ancient Jewish prophecy, it was no less truly the child of that Judaism which had expressed its highest aspirations and ideals in pseudepigraphic and apocalyptic literature. Hence we shall not be surprised to find that the two tendencies are fully represented in primitive Christianity, and, still more strange as it may appear, that New Testament apocalyptic found a more ready hearing amid the stress and storm of the 1st century than the prophetic side of Christianity, and that the type of the forerunner on the side of its declared asceticism appealed more readily to primitive Christianity than that of Him who came "eating and drinking," declaring both worlds good and both God's.

Early Christianity had thus naturally a special fondness for this class of literature. It was Christianity that preserved Jewish apocalyptic, when it was abandoned by Judaism as it sank into Rabbinism, and gave it a Christian character either by a forcible exegesis or by a systematic process of interpolation. Moreover, it cultivated this form of literature and made it the vehicle of its own ideas. Though apocalyptic served its purpose in the opening centuries of the Christian era, it must be confessed that in *many* of its aspects its office is transitory, as they belong not to the essence of Christian thought. When once it had taught

men that the next world was God's world, though it did so at the cost of relinquishing the present to Satan, it had achieved its real task, and the time had come for it to quit the stage of history, when Christianity appeared as the heir of this true spiritual achievement. But Christianity was no less assuredly the heir of ancient prophecy, and thus as spiritual representative of what was true in prophecy and apocalyptic; its essential teaching was as that of its Founder that both worlds were of God and that both should be made God's.

(i.) Canonical:—

Apocalypse in Mark xiii. (Matthew xxiv., Luke xxi.).
2 Thessalonians ii.
Revelation.

(ii.) Extra-Canonical:—

Apocalypse of Peter.
Testament of Hezekiah.
Testament of Abraham.
Oracles of Hystaspes.
Vision of Isaiah.
Shepherd of Hermas.
5 Ezra.
6 Ezra.
Christian Sibyllines.
Apocalypses of Paul, Thomas and Stephen.
Apocalypses of Esdras, Paul, John, Peter, The Virgin, Sedrach, Daniel.
Revelations of Bartholomew.
Questions of Bartholomew.

Apocalypse in Mark xiii.—According to the teaching of the Gospels the second advent was to take the world by surprise. Only one passage (Mark xiii. = Matt. xxiv. = Luke xxi.) conflicts with this view, and is therefore suspicious. This represents the second advent as heralded by a succession of signs which are unmistakable precursors of its appearance, such as wars, earthquakes, famines, the destruction of Jerusalem and the like. Our suspicion is justified by a further examination of Mark xiii. For the words "let him that *readeth* understand" (ver. 14) indicate that the prediction referred to appeared first not in a spoken address but in a written form, as was characteristic of apocalypses. Again, in ver. 30, it is declared that this generation shall not pass away until all these things be fulfilled, whereas in 32 we have an undoubted declaration of Christ "Of that day or of that hour knoweth no one, not even the angels in heaven, neither the Son, but the Father." On these and other grounds verses 7, 8, 14-20, 24-27, 30, 31 should be removed from their present context. Taken together they constitute a Christian adaptation of an originally Jewish work, written A.D. 67-68, during the troubles preceding the fall of Jerusalem. The apocalypse consists of three Acts: Act i. consisting of verses 7, 8, enumerating the woes heralding the parusia, Act ii. describing the actual tribulation, and Act iii. the parusia itself. (See Wendt, *Lehre Jesu*, i. 12-21; Charles, *Eschatology*, 325 sqq.; H.S. Holtzmann, *N. T. Theol.* 1-325 sqq. with literature there given.)

2 Thessalonians ii.—The earliest form of Pauline eschatology is essentially Jewish. He starts from the fundamental thought of Jewish apocalyptic that the end of the world will be brought about by the direct intervention of God when evil has reached its climax. The manifestation of evil culminates in the Antichrist whose parusia (2 Thess. ii. 9) is the Satanic counterfeit of that of the true Messiah. But the climax of evil is the immediate herald of its destruction; for thereupon Christ will descend from heaven and destroy the Antichrist (ii. 8). Nowhere in his later epistles does this forecast of the future reappear. Rather under the influence of the great formative Christian conceptions he parted gradually with the eschatology he had inherited from Judaism, and entered on a progressive development, in the course of which the heterogeneous elements were for the most part silently dropped.

Revelation.—Since this book is discussed separately we shall content ourselves here with indicating a few of the conclusions now generally accepted. The apocalypse was written about A.D. 96. Its object, like other Jewish apocalypses, was to encourage faith under persecution; its burden is not a call to repentance but a promise of deliverance. It is derived from one author, who has made free use of a variety of elements, some of which are Jewish and consort but ill with their new context. The question of the pseudonymity of the book is still an open one.

Apocalypse of Peter.—Till 1892 only some five or more fragments of this book were known

to exist. These are preserved in Clem. Alex. and in Macarius Magnes (see Hilgenfeld, *N.T. extra Can.* iv. 74 sqq.; Zahn, *Gesch. Kanons* ii. 818-819). It is mentioned in the Muratorian Canon, and according to Eusebius (*H.E.* vi. 14. i) was commented on by Clement of Alexandria. In the fragment found at Akhmim there is a prediction of the last things, and a vision of the abode and blessedness of the righteous, and of the abode and torments of the wicked.

Testament of Hezekiah.—This writing is fragmentary, and has been preserved merely as a constituent of the Ascension of Isaiah. To it belongs iii. 13b-iv. 18 of that book. It is found under the above name, Διαθήκη Ἐζεκίου, only in Cedrenus i. 120-121, who quotes partially iv. 12. 14 and refers to iv. 15-18. For a full account see Isaiah, Ascension of.

Testament of Abraham.—This work in two recensions was first published by James, *Texts and Studies*, ii. 2. Its editor is of opinion that it was written by a Jewish Christian in Egypt in the 2nd century A.D., but that it embodies legends of an earlier date, and that it received its present form in the 9th or 10th century. It treats of Michael being sent to announce to Abraham his death: of the tree speaking with a human voice (iii.), Michael's sojourn with Abraham (iv.-v.) and Sarah's recognition of him as one of the three angels, Abraham's refusal to die (vii.), and the vision of judgment (x.-xx.).

Oracles of Hystaspes.—This eschatological work (Χρήσεις Ὑστάσπου: so named by the anonymous 5th-century writer in Buresch, *Klaros*, 1889, p. 95) is mentioned in conjunction with the Sibyllines by Justin (*Apol.* i. 20), Clement of Alexandria (*Strom.* vi. 5), and Lactantius (*Inst.* VII. xv. 19; xviii. 2-3). According to Lactantius, it prophesied the overthrow of Rome and the advent of Zeus to help the godly and destroy the wicked, but omitted all reference to the sending of the Son of God. According to Justin, it prophesied the destruction of the world by fire. According to the *Apocryph of Paul*, cited by Clement, Hystaspes foretold the conflict of the Messiah with many kings and His advent. Finally, an unknown 5th-century writer (see Buresch, *Klaros*, 1889, pp. 87-126) says that the *Oracles of Hystaspes* dealt with the incarnation of the Saviour. The work referred to in the last two writers has Christian elements, which were absent from it in Lactantius's copy. The lost oracles were therefore in all probability originally Jewish, and subsequently re-edited by a Christian.

Vision of Isaiah.—This writing has been preserved in its entirety in the *Ascension of Isaiah*, of which it constitutes chaps, vi.-xi. Before its incorporation in the latter work it circulated independently in Greek. There are independent versions of these chapters in Latin and Slavonic. (See Isaiah, Ascension of.)

Shepherd of Hermas.—In the latter half of the 2nd century this book enjoyed a respect bordering on that paid to the writings of the New Testament. Irenaeus, Clement of Alexandria and Origen quote it as Scripture, though in Africa it was not held in such high consideration, as Tertullian speaks slightingly of it. The writer belongs really to the prophetic and not to the apocalyptic school. His book is divided into three parts containing visions, commands, similitudes. In incidental allusions he lets us know that he had been engaged in trade, that his wife was a termagant, and that his children were ill brought up. Various views have been held as to the identity of the author. Thus some have made him out to be the Hermas to whom salutation is sent at the end of the Epistle to the Romans, others that he was the brother of Pius, bishop of Rome in the middle of the 2nd century, and others that he was a contemporary of Clement, bishop of Rome at the close of the ist century. Zahn fixes the date at 97, Salmon a few years later, Lipsius 142. The literature of this book (see Hermas, Shepherd of) is very extensive. Among the chief editions are those of Zahn, *Der Hirt des Hermas* (1868); Gebhardt and Harnack, *Patres Apostolici* (1877, with full bibliographical material); Funk, *Patres Apost.* (1878). Further see Harnack, *Gesch. d. altchristl. Literatur*, i. 49-58; II. i. 257-267, 437 f.

5 Ezra.—This book, which constitutes in the later MSS. the first two chapters to 4 Ezra, falls obviously into two parts. The first (i. 5-ii. 9) contains a strong attack on the Jews whom it regards as the people of God; the second (ii. 10-47) addresses itself to the Christians as God's people and promises them the heavenly kingdom. It is not improbable that these chapters are based on an earlier Jewish writing. In its present form it may have been written before A.D. 200, though James and other scholars assign it to the 3rd century. Its tone is strongly anti-Jewish. The style is very vigorous and the materials of a strongly apocalyptic character. See Hilgenfeld, *Messias Judaeorum* (1869); James in Bensly's edition of 4 Ezra, pp. xxxviii.-lxxx.; Weinel in Hennecke's *N.T. Apokryphen*, 331-336.

6 Ezra.—This work consists of chapters xv.-xvi. of 4 Ezra. It may have been written as an appendix to 4 Ezra, as it has no proper introduction. Its contents relate to the destruction of

the world through war and natural catastrophes—for the heathen a source of menace and fear, but for the persecuted people of God one of admonition and comfort. There is nothing specifically Christian in the book, which represents a persecution which extends over the whole eastern part of the Empire. Moreover, the idiom is particularly Semitic. Thus we have xv. 8 *nec sustinebo in his quae inique exercent*, that is ב אשנ: in 9 *vindicans vindicabo*: in 22 *non parcet dextera mea super peccatores* = φείσεται ... ἐπί = לומחי ... לע. In verses 9, 19 the manifest corruptions may be explicable from a Semitic background. There are other Hebraisms in the text. It is true that these might have been due to the writer's borrowings from earlier Greek works ultimately of Hebrew origin. The date of the book is also quite uncertain, though several scholars have ascribed it to the 3rd century.

Christian Sibyllines.—Critics are still at variance as to the extent of the Christian Sibyllines. It is practically agreed that vi.-viii. are of Christian origin. As for i.-ii., xi.-xiv. most writers are in favour of Christian authorship; but not so Geffcken (ed. *Sibyll.*, 1902), who strongly insists on the Jewish origin of large sections of these books.

Apocalypses of Paul, Thomas and Stephen.—These are mentioned in the Gelasian decree. The first may possibly be the Ἀναβατικὸν Παύλου mentioned by Epiphanius (*Haer*. xxxviii. 2) as current among the Cainites. It is not to be confounded with the apocalypse mentioned two sections later.

Apocalypse of Esdras.—This Greek production resembles the more ancient fourth book of Esdras in some respects. The prophet is perplexed about the mysteries of life, and questions God respecting them. The punishment of the wicked especially occupies his thoughts. Since they have sinned in consequence of Adam's fall, their fate is considered worse than that of the irrational creation. The description of the tortures suffered in the infernal regions is tolerably minute. At last the prophet consents to give up his spirit to God, who has prepared for him a crown of immortality. The book is a poor imitation of the ancient Jewish one. It may belong, however, to the 2nd or 3rd centuries of the Christian era. See Tischendorf, *Apocalypses Apocryphae*, pp. 24-33.

Apocalypse of Paul.—This work (referred to by Augustine, *Tractat. in Joan.* 98) contains a description of the things which the apostle saw in heaven and hell. The text, as first published in the original Greek by Tischendorf (*Apocalypses Apocr.* 34-69), consists of fifty-one chapters, but is imperfect. Internal evidence assigns it to the time of Theodosius, *i.e.* about A.D. 388. Where the author lived is uncertain. Dr Perkins found a Syriac MS. of this apocalypse, which he translated into English, and printed in the *Journal of the American Oriental Society*, 1864, vol. viii. This was republished by Tischendorf below the Greek version in the above work. In 1893 the Latin version from one MS. was edited by M.R. James, *Texts and Studies*, ii. 1-42, who shows that the Latin version is the completest of the three, and that the Greek in its present form is abbreviated.

Apocalypse of John (Tischendorf, *Apocalypses Apocr.* 70 sqq.) contains a description of the future state, the general resurrection and judgment, with an account of the punishment of the wicked, as well as the bliss of the righteous. It appears to be the work of a Jewish Christian. The date is late, for the writer speaks of the "venerable and holy images," as well as "the glorious and precious crosses and the sacred things of the churches" (xiv.), which points to the 5th century, when such things were first introduced into churches. It is a feeble imitation of the canonical apocalypse.

Arabic Apocalypse of Peter contains a narrative of events from the foundation of the world till the second advent of Christ. The book is said to have been written by Clement, Peter's disciple. This Arabic work has not been printed, but a summary of the contents is given by Nicoll in his catalogue of the Oriental MSS. belonging to the Bodleian (p. 49, xlviii.). There are eighty-eight chapters. It is a late production; for Ishmaelites are spoken of, the Crusades, and the taking of Jerusalem. See Tischendorf, *Apocalypses Apocr.* pp. xx.-xxiv.

The Apocalypse of the Virgin, containing her descent into hell, is not published entire, but only several portions of it from Greek MSS. in different libraries, by Tischendorf in his *Apocalypses Apocryphae*, pp. 95 sqq.; James, *Texts and Studies*, ii. 3. 109-126.

Apocalypse of Sedrach.—This late apocalypse, which M.R. James assigns to the 10th or 11th century, deals with the subject of intercession for sinners and Sedrach's unwillingness to die. See James, *Texts and Studies*, ii. 3. 127-137.

Apocalypse of Daniel.—See Vassiliev's *Anecdota Graeco-Byzantina* (Moscow, 1893), pp. 38-44; *Uncanonical Books of the Old Testament* (Venice, 1901), pp. 237 sqq., 387 sqq.

The Revelations of Bartholomew.—Dulaurier published from a Parisian Sahidic MS.,

subjoining a French translation, what is termed a fragment of the apocryphal revelations of St Bartholomew (*Fragment des révélations apocryphes de Saint Barthélemy, &c.*, Paris, 1835), and of the history of the religious communities founded by St Pachomius. After narrating the pardon obtained by Adam, it is said that the Son ascending from Olivet prays the Father on behalf of His apostles; who consequently receive consecration from the Father, together with the Son and Holy Spirit—Peter being made archbishop of the universe. The late date of the production is obvious.

Questions of St Bartholomew.—See Vassiliev, *Anec. Graeco-Byzantina* (1893), pp. 10-22. The introduction, which is wanting in the Greek MS., has been supplied by a Latin translation from the Slavonic version (see pp. vii.-ix.). The book contains disclosures by Christ, the Virgin and Beliar and much of the subject-matter is ancient.

(R. H. C.)

1 See the separate headings for the various apocalyptic books mentioned in this article.

APOCATASTASIS, a Greek word, meaning “re-establishment,” used as a technical scientific term for a return to a previous position or condition.

APOCRYPHAL LITERATURE. The history of the earlier usage of the term “Apocrypha” (from ἀποκρύπτειν, to hide) is not free from obscurity. We shall therefore enter at once on a short account of the origin of this literature in Judaism, of its adoption by early Christianity, of the various meanings which the term “apocryphal” assumed in the course of its history, and having so done we shall proceed to classify and deal with the books that belong to this literature. The word most generally denotes writings which claimed to be, or were by certain sects regarded as, sacred scriptures although excluded from the canonical scriptures.

Apocrypha in Judaism.—Certain circles in Judaism, as the Essenes in Palestine (Josephus, *B.J.* ii. 8. 7) and the Therapeutae (Philo, *De Vita Contempl.* ii. 475, ed. Mangey) in Egypt possessed a secret literature. But such literature was not confined to the members of these communities, but had been current among the Chasids and their successors the Pharisees.[1] To this literature belong essentially the apocalypses which were published in fast succession from Daniel onwards. These works bore, perforce, the names of ancient Hebrew worthies in order to procure them a hearing among the writers’ real contemporaries. To reconcile their late appearance with their claims to primitive antiquity the alleged author is represented as “shutting up and sealing” (Dan. xii. 4, 9) the book, until the time of its fulfilment had arrived; for that it was not designed for his own generation but for far-distant ages (1 Enochi. 2, cviii. 1.; Ass. Mos. i. 16, 17). It is not improbable that with many Jewish enthusiasts this literature was more highly treasured than the canonical scriptures. Indeed, we have a categorical statement to this effect in 4 Ezra xiv. 44 sqq., which tells how Ezra was inspired to dictate the sacred scriptures which had been destroyed in the overthrow of Jerusalem: “In forty days they wrote ninety-four books: and it came to pass when the forty days were fulfilled that the Highest spake, saying: the first that thou hast written publish openly that the worthy and unworthy may read it; but keep the seventy last that thou mayst deliver them only to such as be wise among the people; for in them is the spring of understanding, the fountain of wisdom and the stream of knowledge.” Such esoteric books are apocryphal in the original conception of the term. In due course the Jewish authorities were forced to draw up a canon or book of sacred scriptures, and mark them off from those which claimed to be such without justification. The true scriptures, according to the Jewish canon (Yad. iii. 5; Toseph. Yad. ii. 3), were those which defiled the hands of such as touched them. But other scholars, such as Zahn, Schürer, Porter, state that the secret books with which we have been dealing formed a class by themselves and were called “Genuizim” מיזנג, and that this name and idea passed from Judaism over into the Greek, and that ἀπόκρυφα βιβλία is a translation of מיזונג מירפס. But the Hebrew verb does not mean “to bide” but “to store away,” and is only used of things in themselves precious. Moreover, the phrase is unknown in

Talmudic literature. The derivation of this idea from Judaism has therefore not yet been established. Whether the Jews had any distinct name for these esoteric works we do not know. For writings that stood wholly without the pale of sacred books such as the books of heretics or Samaritans they used the designation Hisonim, Sanh. x. 1 (חינוצח חירפס and חינימה ירפס). To this class in later times even Sirach was relegated, and indeed all books not included in the canon (Midr. r. Num. 14 and on Koheleth xii. 12; cf. Jer. Sabb. 16).[2] In Aqiba's time Sirach and other apocryphal books were not reckoned among the Hisonim; for Sirach was largely quoted by rabbis in Palestine till the 3rd century A.D.

Apocrypha in Christianity.—Christianity as it springs from its Founder had no secret or esoteric teaching. It was essentially the revelation or manifestation of the truth of God. But as Christianity took its origin from Judaism, it is not unnatural that a large body of Jewish ideas was incorporated in the system of Christian thought. The bulk of these in due course underwent transformation either complete or partial, but there was always a residuum of incongruous and inconsistent elements existing side by side with the essential truths of Christianity. This was no isolated phenomenon; for in every progressive period of the history of religion we have on the one side the doctrine of God advancing in depth and fulness: on the other we have cosmological, eschatological and other survivals, which, however justifiable in earlier stages, are in unmistakable antagonism with the theistic beliefs of the time. The eschatology of a nation—and the most influential portion of Jewish and Christian apocrypha are eschatological—is always the last part of their religion to experience the transforming power of new ideas and new facts.

Now the current religious literature of Judaism outside the canon was composed of apocryphal books, the bulk of which bore an apocalyptic character, and dealt with the coming of the Messianic kingdom. These naturally became the popular religious books of the rising Jewish-Christian communities, and were held by them in still higher esteem, if possible, than by the Jews. Occasionally these Jewish writings were re-edited or adapted to their new readers by Christian additions, but on the whole it was found sufficient to submit them to a system of reinterpretation in order to make them testify to the truth of Christianity and foreshadow its ultimate destinies. Christianity, moreover, moved by the same apocalyptic tendency as Judaism, gave birth to new Christian apocryphs, though, in the case of most of them, the subject matter was to a large extent traditional and derived from Jewish sources.

Another prolific source of apocryphal gospels, acts and apocalypses was Gnosticism. While the characteristic features of apocalyptic literature were derived from Judaism, those of Gnosticism sprang partly from Greek philosophy, partly from oriental religions. They insisted on an allegorical interpretation of the apostolic writings: they alleged themselves to be the guardians of a secret apostolic tradition and laid claim to prophetic inspiration. With them, as with the bulk of the Christians of the 1st and 2nd centuries, apocryphal books as such were highly esteemed. They were so designated by those who valued them. It was not till later times that the term became one of reproach.

We have remarked above that the Jewish apocrypha—especially the apocalyptic section and the host of Christian apocryphs—became the ordinary religious literature of the early Christians. And this is not strange seeing that of the former such abundant use was made by the writers of the New Testament.[3] Thus Jude quotes the Book of Enoch by name, while undoubted use of this book appears in the four gospels and 1 Peter. The influence of the Testaments of the Twelve Patriarchs is still more apparent in the Pauline Epistles and the Gospels, and the same holds true of Jubilees and the Assumption of Moses, though in a very slight degree. The genuineness and inspiration of Enoch were believed in by the writer of the Ep. of Barnabas, Irenaeus, Tertullian and Clement of Alexandria. But the high position which apocryphal books occupied in the first two centuries was undermined by a variety of influences. All claims to the possession of a secret tradition were denied (Irenaeus ii. 27. 2, iii. 2. 1, 3. 1; Tertullian, *Praescript.* 22-27): true inspiration was limited to the apostolic age, and universal acceptance by the church was required as a proof of apostolic authorship. Under the action of such principles apocryphal books tended to pass into the class of spurious and heretical writings.

The Term "Apocryphal."—Turning now to the consideration of the word "apocryphal" itself, we find that in its earliest use it was applied in a laudatory sense to writings,'(1) which were kept secret because they were the vehicles of esoteric knowledge which was too profound or too sacred to be imparted to any save the initiated. Thus it occurs in a magical book of Moses, which has been edited from a Leiden papyrus of the 3rd or 4th century by Dieterich (Abraxas, 109). This book, which may be as old as the 1st century, is entitled: "A holy and secret Book of Moses, called eighth, or holy" (Μωυσέως ἱερὰ βιβλος ἀπόκρυφος

ἐπικαλουμένη ὀγδόη ᾗ ἁγία). The disciples of the Gnostic Prodicus boasted (Clem. Alex. *Strom.* i. 15. 69) that they possessed the secret (ἀποκρύφους) books of Zoroaster. 4 Ezra is in its author's view a secret work whose value was greater than that of the canonical scriptures (xiv. 44 sqq.) because of its transcendent revelations of the future. It is in a like laudatory meaning that Gregory reckons the New Testament apocalypse as ἐν ἀποκρύφοις (*Orátio in suam ordinationem*, iii. 549, ed. Migne; cf. Epiphanius, *Haer.* li. 3). The word enjoyed high consideration among the Gnostics (cf. Acts of Thomas, 10, 27, 44). (2) But the word was applied to writings that were kept from public circulation not because of their transcendent, but of, their secondary or questionable value. Thus Origen distinguishes between writings which were read by the churches and apocryphal writings; γραφῇ μὴ φερομένῃ μέν ἐν τοῖς κοινοῖς καὶ δεδημοσιευμένοις βιβλίοις εἰκὸς δ᾽ ὅτι ἐν ἀποκρύφοις φερομένῃ (Origen's *Comm. in Matt.*, x. 18, on Matt. xiii. 57, ed. Lommatzsch iii. 49 sqq.). Cf. *Epist. ad Africam*, ix. (Lommatzsch xvii. 31): Euseb. *H.E.* ii. 23, 25; iii. 3, 6. See Zahn, *Gesch. Kanons*, i. 126 sqq. Thus the meaning of ἀπόκρυφος is here practically equivalent to "excluded from the public use of the church," and prepares the way for the third and unfavourable sense of this word. (3) The word came finally to mean what is false, spurious, bad, heretical. If we may trust the text, this meaning appears in Origen (*Prolog, in Cant. Cantic.*, Lommatzsch xiv. 325): "De scripturis his, quae appellantur apocryphae, pro eo quod multa in iis corrupta et contra fidem veram inveniuntur a majoribus tradita non placuit iis dari locum nec admitti ad auctoritatem."

In addition to the above three meanings strange uses of the term appear in the western church. Thus the Gelasian Decree includes the works of Eusebius, Tertullian and Clement of Alexandria, under this designation. Augustine (*De Civ. Dei*, xv. 23) explains it as meaning obscurity of origin, while Jerome (*Protogus Galeatus*) declares that all books outside the Hebrew canon belong to this class of apocrypha. Jerome's practice, however, did not square with his theory. The western church did not accept Jerome's definition of apocrypha, but retained the word in its original meaning, though great confusion prevailed. Thus the degree of estimation in which the apocryphal books have been held in the church has varied much according to place and time. As they stood in the Septuagint or Greek canon, along with the other books, and with no marks of distinction, they were practically employed by the Greek Fathers in the same way as the other books; hence Origen, Clement and others often cite them as "scripture," "divine scripture," "inspired," and the like. On the other hand, teachers connected with Palestine, and familiar with the Hebrew canon, rigidly exclude all but the books contained there. This view is reflected, for example, in the canon of Melito of Sardis, and in the prefaces and letters of Jerome. Augustine, however (*De Doct. Christ*. ii. 8), attaches himself to the other side. Two well-defined views in this way prevailed, to which was added a third, according to which the books, though not to be put in the same rank as the canonical scriptures of the Hebrew collection, yet were of value for moral uses and to be read in congregations,—and hence they were called "ecclesiastical"—a designation first found in Rufinus (*ob*. 410). Notwithstanding the decisions of some councils held in Africa, which were in favour of the view of Augustine, these diverse opinions regarding the apocryphal books continued to prevail in the church down through the ages till the great dogmatic era of the Reformation. At that epoch the same three opinions were taken up and congealed into dogmas, which may be considered characteristic of the churches adopting them. In 1546 the council of Trent adopted the canon of Augustine, declaring "He is also to be anathema who does not receive these entire books, with all their parts, as they have been accustomed to be read in the Catholic Church, and are found in the ancient editions of the Latin Vulgate, as sacred and canonical." The whole of the books in question, with the exception of 1st and 2nd Esdras, and the Prayer of Manasses, were declared canonical at Trent. On the other hand, the Protestants universally adhered to the opinion that only the books in the Hebrew collection are canonical. Already Wycliffe had declared that "whatever book is in the Old Testament besides these twenty-five (Hebrew) shall be set among the apocrypha, that is, without authority or belief." Yet among the churches of the Reformation a milder and a severer view prevailed regarding the apocrypha. Both in the German and English translations (Luther's, 1537; Coverdale's, 1535, &c.) these books are separated from the others and set by themselves; but while in some confessions, *e.g.* the Westminster, a decided judgment is passed on them, that they are not "to be any otherwise approved or made use of than other human writings," a milder verdict is expressed regarding them in many other quarters, *e.g.* in the "argument" prefixed to them in the Geneva Bible; in the Sixth Article of the Church of England, where it is said that "the other books the church doth read for example of life and instruction of manners," though not to establish doctrine; and elsewhere.

We shall now proceed to enumerate the apocryphal books: first the Apocrypha Proper, and next the rest of the Old and New Testament apocryphal literature.

1. *The Apocrypha Proper*, or the apocrypha of the Old Testament as used by English-speaking Protestants, consists of the following books: 1 Esdras, 2 Esdras, Tobit, Judith, Additions to Esther, Wisdom of Solomon, Ecclesiasticus, Baruch, Epistle of Jeremy, Additions to Daniel (Song of the Three Holy Children, History of Susannah, and Bel and the Dragon), Prayer of Manasses, 1 Maccabees, 2 Maccabees. Thus the Apocrypha Proper constitutes the surplusage of the Vulgate or Bible of the Roman Church over the Hebrew Old Testament. Since this surplusage is in turn derived from the Septuagint, from which the old Latin version was translated, it thus follows that the difference between the Protestant and the Roman Catholic Old Testament is, roughly speaking, traceable to the difference between the Palestinian and the Alexandrian canons of the Old Testament. But this is only true with certain reservations; for the Latin Vulgate was revised by Jerome according to the Hebrew, and, where Hebrew originals were wanting, according to the Septuagint. Furthermore, the Vulgate rejects 3 and 4 Maccabees and Psalm cli., which generally appear in the Septuagint, while the Septuagint and Luther's Bible reject 4 Ezra, which is found in the Vulgate and the Apocrypha Proper. Luther's Bible, moreover, rejects also 3 Ezra. It should further be observed that the Vulgate adds the Prayer of Manasses and 3 and 4 Ezra after the New Testament as apocryphal.

It is hardly possible to form any classification which is not open to some objection. In any case the classification must be to some extent provisional, since scholars are still divided as to the original language, date and place of composition of some of the books which must come under our classification.[4] We may, however, discriminate (i.) the Palestinian and (ii.) the Hellenistic literature of the Old Testament, though even this distinction is open to serious objections. The former literature was generally written in Hebrew or Aramaic, and seldom in Greek; the latter naturally in Greek. Next, within these literatures we shall distinguish three or four classes according to the nature of the subject with which they deal. Thus the books of which we have to treat will be classed as: (*a*) Historical, (*b*) Legendary (Haggadic), (*c*) Apocalyptic, (*d*) Didactic or Sapiential.

The Apocrypha Proper then would be classified as follows:—

i. Palestinian Jewish Literature:—

(*a*) *Historical*.

1 (*i.e.* 3) Ezra.
1 Maccabees.

(*b*) *Legendary*.

Book of Baruch (see Baruch).
Judith.

(*c*) *Apocalyptic*.

2 (*i.e.* 4) Ezra (see also under separate article on Apocalyptic Literature).

(*d*) *Didactic*.

Sirach (see Ecclesiasticus).
Tobit.

ii. Hellenistic Jewish Literature:—

Historical and Legendary.

Additions to Daniel (*q.v.*).
Additions to Esther (*q.v.*).
Epistle of Jeremy (*q.v.*).
2 Maccabees (*q.v.*).
Prayer of Manasses (see Manasses).

Didactic.

Book of Wisdom (see Wisdom, Book of.)

Since all these books are dealt with in separate articles, they call for no further notice here.

LITERATURE.—Texts:—Holmes and Parsons, *Vet. Test. Graecum cum var. lectionibus* (Oxford, 1798-1827); Swete, *Old Testament in Greek*, i.-iii. (Cambridge, 1887-1894); Fritzsche, *Libri Apocryphi V.T. Graece* (1871). Commentaries:—O.F. Fritzsche and Grimm, *Kurzgef. exeget. Handbuch zu den Apok. des A.T.* (Leipzig, 1851-1860); E.C. Bissell, *Apocrypha of the Old Testament* (Edinburgh, 1880); Zockler, *Apok. des A.T.* (Munchen, 1891); Wace, *The Apocrypha* ("Speaker's Commentary") (1888). Introduction and General Literature:—E. Schürer[3], *Geschichte des jud. Volkes*, vol. iii. 135 sqq., and his article on "Apokryphen" in Herzog's *Realencykl*. i. 622-653; Porter in Hastings' *Bible Dic*. i. 111-123.

2 (a). *Other Old Testament Apocryphal Literature*:—

(*a*) *Historical*.

History of Johannes Hyrcanus.

(*b*) *Legendary*.

Book of Jubilees.
Paralipomena Jeremiae, or the Rest of the Words of Baruch.
Martyrdom of Isaiah.
Pseudo-Philo's Liber Antiquitatum.
Books of Adam.
Jannes and Jambres.
Joseph and Asenath.

(*c*) *Apocalyptic*.

(See separate article.)

(*d*) *Didactic or Sapiential*.

Pirke Aboth.

(*a*) *Historical.—The History of Johannes Hyrcanus* is mentioned in 1 Macc. xvi. 23-24, but no trace has been discovered of its existence elsewhere. It must have early passed out of circulation, as it was unknown to Josephus.

(*b*) *Legendary.*—The *Book of Jubilees* was written in Hebrew by a Pharisee between the year of the accession of Hyrcanus to the high-priesthood in 135 and his breach with the Pharisees some years before his death in 105 B.C. *Jubilees* was translated into Greek and from Greek into Ethiopic and Latin. It is preserved in its entirety only in Ethiopic. *Jubilees* is 178
the most advanced pre-Christian representative of the midrashic tendency, which was already at work in the Old Testament 1 and 2 Chronicles. As the chronicler rewrote the history of Israel and Judah from the basis of the Priests' Code, so our author re-edited from the Pharisaic standpoint of his time the book of Genesis and the early chapters of Exodus. His work constitutes an enlarged targum on these books, and its object is to prove the everlasting validity of the law, which, though revealed in time, was superior to time. Writing in the palmiest days of the Maccabean dominion, he looked for the immediate advent of the Messianic kingdom. This kingdom was to be ruled over by a Messiah sprung not from Judah but from Levi, that is, from the reigning Maccabean family. This kingdom was to be gradually realized on earth, the transformation of physical nature going hand in hand with the ethical transformation of man. (For a fuller account see JUBILEES, BOOK OF.)

Paralipomena Jeremiae, or the *Rest of the Words of Baruch.*— This book has been preserved in Greek, Ethiopic, Armenian and Slavonic. The Greek was first printed at Venice in 1609, and next by Ceriani in 1868 under the title *Paralipomena Jeremiae*. It bears the same name in the Armenian, but in Ethiopic it is known by the second title. (See under BARUCH.)

Martyrdom of Isaiah.—This Jewish work has been in part preserved in the *Ascension of Isaiah*. To it belong i. 1, 2^a, 6^b-13^a; ii. 1-8, 10-iii. 12; v. 1^c-14 of that book. It is of Jewish origin, and recounts the martyrdom of Isaiah at the hands of Manasseh. (See ISAIAH, ASCENSION OF.)

Pseudo-Philo's Liber Antiquitatum Biblicarum.—Though the Latin version of this book was thrice printed in the 16th century (in 1527, 1550 and 1599), it was practically unknown to modern scholars till it was recognized by Conybeare and discussed by Cohn in the *Jewish Quarterly Review*, 1898, pp. 279-332. It is an Haggadic revision of the Biblical history from

Adam to the death of Saul. Its chronology agrees frequently with the LXX. against that of the Massoretic text, though conversely in a few cases. The Latin is undoubtedly translated from the Greek. Greek words are frequently transliterated. While the LXX. is occasionally followed in its translation of Biblical passages, in others the Massoretic is followed against the LXX., and in one or two passages the text presupposes a text different from both. On many grounds Cohn infers a Hebrew original. The eschatology is similar to that taught in the similitudes of the Book of Enoch. In fact, Eth. En. li. 1 is reproduced in this connexion. Prayers of the departed are said to be valueless. The book was written after A.D. 70; for, as Cohn has shown, the exact date of the fall of Herod's temple is predicted.

Life of Adam and Eve.—Writings dealing with this subject are extant in Greek, Latin, Slavonic, Syriac, Armenian and Arabic. They go back undoubtedly to a Jewish basis, but in some of the forms in which they appear at present they are christianized throughout. The oldest and for the most part Jewish portion of this literature is preserved to us in Greek, Armenian, Latin and Slavonic, (i.) The Greek Διήγησις περὶ Ἀδὰμ καὶ Εὔας (published under the misleading title Ἀποκάλυψις Μωυσέως in Tischendorf's *Apocalypses Apocryphae*, 1866) deals with the Fall and the death of Adam and Eve. Ceriani edited this text from a Milan MS. (*Monumenta Sacra et Profana*, v. i). This work is found also in Armenian, and has been published by the Mechitharist community in Venice in their *Collection of Uncanonical Writings of the Old Testament*, and translated by Conybeare (*Jewish Quarterly Review*, vii. 216 sqq., 1895), and by Issaverdens in 1901. (ii.) The *Vita Adae et Evae* is closely related and in part identical with (i.). It was printed by W. Meyer in *Abh. d. Münch. Akad.*, Philos.-philol. Cl. xiv., 1878. (iii.) The Slavonic Adam book was published by Jajić along with a Latin translation (*Denkschr. d. Wien. Akad. d. Wiss.* xlii., 1893). This version agrees for the most part with (i.). It has, moreover, a section, §§ 28-39, which though not found in (i.) is found in (ii.). Before we discuss these three documents we shall mention other members of this literature, which, though derivable ultimately from Jewish sources, are Christian in their present form, (iv.) *The Book of Adam and Eve*, also called the *Conflict of Adam and Eve with Satan*, translated from the Ethiopic (1882) by Malan. This was first translated by Dillmann (*Das christl. Adambuch des Morgenlandes*, 1853), and the Ethiopic book first edited by Trump (*Abh. d. Münch. Akad.* xv., 1870-1881). (v.) A Syriac work entitled *Die Schalzhöhle* translated by Bezold from three Syriac MSS. in 1883 and subsequently edited in Syriac in 1888. This work has close affinities to (iv.), but is said by Dillmann to be more original, (vi.) Armenian books on the *Death of Adam* (*Uncanonical Writings of O.T.* pp. 84 sqq., 1901, translated from the Armenian), *Creation and Transgression of Adam* (*op. cit.* 39 sqq.), *Expulsion of Adam from Paradise* (*op. cit.* 47 sqq.), *Penitence of Adam and Eve* (*op. cit.* 71 sqq.) are mainly later writings from Christian hands.

Returning to the question of the Jewish origin of i., ii., iii., we have already observed that these spring from a common original. As to the language of this original, scholars are divided. The evidence, however, seems to be strongly in favour of Hebrew. How otherwise are we to explain such Hebraisms (or Syriacisms) as ἐνῷ ῥέει τὸ ἔλαιον ἐξ αὐτοῦ (§ 9), οὗ εἶπεν ... μὴ φαγεῖν ἀπ᾽ αὐτοῦ (§ 21). For others see §§ 23, 33. Moreover, as Fuchs has pointed out, in the words ἔσῃ ἐν ματαίοις addressed to Eve (§ 25) there is a corruption of מילבח into מילבה. Thus the words were: "Thou shalt have pangs." In fact, Hebraisms abound throughout this book. (See Fuchs, *Apok. u. Pseud, d. A.T.* ii. 511; *Jewish Encyc.* i. 179 sq.)

Jannes and Jambres.—These two men are referred to in 2 Tim. iii. 8 as the Egyptian magicians who withstood Moses. The book which treats of them is mentioned by Origen (*ad Matt.* xxiii. 37 and xxvii. 9 [*Jannes et Mambres Liber*]), and in the Gelasian Decree as the Paenitentia Jamnis et Mambre. The names in Greek are generally Ἰαννῆς καὶ Ἰαμβρῆς (= מירבמיו מיני) as in the Targ.-Jon. on Exod. i. 15; vii. ii. In the Talmud they appear as ארממו ינחוי. Since the western text of 2 Tim. iii. 8 has Μαμβρῆς, Westcott and Hort infer that this form was derived from a Palestinian source. These names were known not only to Jewish but also to heathen writers, such as Pliny and Apuleius. The book, therefore, may go back to pre-Christian times. (See Schürer[3] iii. 292-294; *Ency. Biblica*, ii. 2327-2329.)

Joseph and Asenath.—The statement in Gen. xli. 45, 50 that Joseph married the daughter of a heathen priest naturally gave offence to later Judaism, and gave rise to the fiction that Asenath was really the daughter of Shechem and Dinah, and only the foster-daughter of Potipherah (*Targ.-Jon.* on Gen. xli. 45; Tractat. *Sopherim*, xxi. 9; *Jalkut Shimoni*, c. 134. See Oppenheim, *Fabula Josephi et Asenethae*, 1886, pp. 2-4). Origen also was acquainted with some form of the legend (*Selecta in Genesin*, ad Gen. xli. 45, ed. Lommatzsch, viii. 89-90). The Christian legend, which is no doubt in the main based on the Jewish, is found in Greek, Syriac, Armenian, Slavonic and Medieval Latin. Since it is not earlier than the 3rd or 4th century, it will be sufficient here to refer to Smith's *Dict. of Christ. Biog.* i. 176-177;

Hastings' *Bible Dict.* i. 162-163; Schürer, iii. 289-291.

(*d*) *Didactic or Sapiential.*—The *Pirke Aboth*, a collection of sayings of the Jewish Fathers, are preserved in the 9th Tractate of the Fourth Order of the Mishnah. They are attributed to some sixty Jewish teachers, belonging for the most part to the years A.D. 70-170, though a few of them are of a much earlier date. The book holds the same place in rabbinical literature as the Book of Proverbs in the Bible. The sayings are often admirable. Thus in iv. 1-4, "Who is wise? He that learns from every man.... Who is mighty? He that subdues his nature.... Who is rich? He that is contented with his lot.... Who is honoured? He that honours mankind." (See further PIRKE ABOTH.)

2 (*b*). *New Testament Apocryphal Literature*:—

(*a*). *Gospels*:—

Uncanonical sayings of the Lord in Christian and Jewish writings.
Gospel according to the Egyptians.
Gospel according to the Hebrews.
Protevangel of James.
Gospel of Nicodemus.
Gospel of Peter.
Gospel of Thomas.
Gospel of the Twelve.
Gnostic gospels of Andrew, Apelles, Barnabas, Bartholomew, Basilides, Cerinthus and some seventeen others.

(*b*) *Acts and Teachings of the Apostles*:—

Acts of Andrew and later forms of these Acts.
Acts of John.
Acts of Paul.
Acts of Peter.
Preaching of Peter.
Acts of Thomas.
Teaching of the Twelve Apostles.
Apostolic constitutions.

(*c*) *Epistles*:—

The Abgar Epistles.
Epistle of Barnabas.
Epistle of Clement.
"Clement's" 2nd Epistle of the Corinthians.
Clement's Epistles on Virginity.
Clement's Epistles to James.
Epistles of Ignatius.
Epistle of Polycarp.
Pauline Epp. to the Laodiceans and Alexandrians.
3 Pauline Ep. to the Corinthians.

(*d*) *Apocalypses*: see under APOCALYPTIC LITERATURE.

(*a*) GOSPELS.—*Uncanonical Sayings of the Lord in Christian and Jewish Sources.*—Under the head of canonical sayings not found in the Gospels only one is found, *i.e.* that in Acts xx. 35. Of the rest the uncanonical sayings have been collected by Preuschen (*Reste der ausserkanonischen Evangelien*, 1901, pp. 44-47). A different collection will be found in Hennecke, *NTliche Apok.* 9-11. The same subject is dealt with in the elaborate volumes of Resch (*Aussercanonische Paralleltexte zu den Evangelien*, vols. i.-iii., 1893-1895).

To this section belongs also the *Fayum Gospel Fragment* and the *Logia* published by Grenfell and Hunt.[5] The former contains two sayings of Christ and one of Peter, such as we find in the canonical gospels, Matt. xxvi. 31-34, Mark xiv. 27-30. The papyrus, which is of the 3rd century, was discovered by Bickell among the Rainer collection, who characterized it (*Z. f. kath. Theol.*, 1885, pp. 498-504) as a fragment of one of the primitive gospels mentioned in Luke i. 1. On the other hand, it has been contended that it is merely a fragment of an early patristic homily. (See Zahn, *Gesch. Kanons*, ii. 780-790; Harnack, *Texte und Untersuchungen*, v. 4; Preuschen, op. cit. p. 19.) The *Logia* (*q.v.*) is the name given to the sayings contained in a papyrus leaf, by its discoverers Grenfell and Hunt. They think the papyrus was probably written about A.D. 200. According to Harnack, it is an extract from the

Gospel of the Egyptians. All the passages referring to Jesus in the Talmud are given by Laible, *Jesus Christus im Talmud*, with an appendix, "Die talmudischen Texte," by G. Dalman (2nd ed. 1901). The first edition of this work was translated into English by A.W. Streane (*Jesus Christ in the Talmud*, 1893). In Hennecke's *NTliche Apok. Handbuch* (pp. 47-71) there is a valuable study of this question by A. Meyer, entitled *Jesus, Jesu Jünger und das Evangelium im Talmud und verwandten jüdischen Schriflen*, to which also a good bibliography of the subject is prefixed.

Gospel according to the Egyptians.—This gospel is first mentioned by Clem. Alex. (*Strom.* iii. 6. 45; 9. 63, 66; 13. 92), subsequently by Origen (*Hom. in Luc.* i.) and Epiphanius (*Haer.* lxii. 2), and a fragment is preserved in the so-called 2 Clem. Rom. xii. 2. It circulated among various heretical circles; amongst the Encratites (Clem. *Strom.* iii. 9), the Naas-senes (Hippolyt. *Philos.* v. 7), and the Sabellians (Epiph. *Haer.* lxii. 2). Only three or four fragments survive; see Lipsius (Smith and Wace, *Dict. of Christ. Biog.* ii. 712, 713); Zahn, *Gesch. Kanons*, ii. 628-642; Preuschen, *Reste d. ausserkanonischen Evangelien*, 1901, p. 2, which show that it was a product of pantheistic Gnosticism. With this pantheistic Gnosticism is associated a severe asceticism. The distinctions of sex are one day to come to an end; the prohibition of marriage follows naturally on this view. Hence Christ is represented as coming to destroy the work of the female (Clem. Alex. *Strom.* iii. 9. 63). Lipsius and Zahn assign it to the middle of the 2nd century. It may be earlier.

Protevangel of James.—This title was first given in the 16th century to a writing which is referred to as *The Book of James* (ἡ βίβλος Ἰακώβου) by Origen (tom. xi. *in Matt.*). Its author designates it as Ἱστορία. For various other designations see Tischendorf, *Evang. Apocr.*[2] 1 seq. The narrative extends from the Conception of the Virgin to the Death of Zacharias. Lipsius shows that in the present form of the book there is side by side a strange "admixture of intimate knowledge and gross ignorance of Jewish thought and custom," and that accordingly we must "distinguish between an original Jewish Christian writing and a Gnostic recast of it." The former was known to Justin (*Dial.* 78, 101) and Clem. Alex. (*Strom.* vii. 16), and belongs at latest to the earliest years of the 2nd century. The Gnostic recast Lipsius dates about the middle of the 3rd century. From these two works arose independently the *Protevangel* in its present form and the Latin pseudo-Matthaeus (*Evangelium pseudo-Matthaei*). The *Evangelium de Nativitate Mariae* is a redaction of the latter. (See Lipsius in Smith's *Dict. of Christ. Biog.* ii. 701-703.) But if we except the Zachariah and John group of legends, it is not necessary to assume the Gnostic recast of this work in the 3rd century as is done by Lipsius. The author had at his disposal two distinct groups of legends about Mary. One of these groups is certainly of non-Jewish origin, as it conceives Mary as living in the temple somewhat after the manner of a vestal virgin or a priestess of Isis. The other group is more in accord with the orthodox gospels. The book appears to have been written in Egypt, and in the early years of the 2nd century. For, since Origen states that many appealed to it in support of the view that the brothers of Jesus were sons of Joseph by a former marriage, the book must have been current about A.D. 200. From Origen we may ascend to Clem. Alex. who (*Strom.* vi. 93) shows acquaintance with one of the chief doctrines of the book—the perpetual virginity of Mary. Finally, as Justin's statements as to the birth of Jesus in a cave and Mary's descent from David show in all probability his acquaintance with the book, it may with good grounds be assigned to the first decade of the 2nd century. (So Zahn, *Gesch. Kanons*, i. 485, 499, 502, 504, 539; ii. 774-780.) For the Greek text see Tischendorf, *Evang. Apocr.*[2] 1-50; B.P. Grenfell, *An Alexandrian erotic Fragment and other Papyri*, 1896, pp. 13-17: for the Syriac, Wright, *Contributions to Apocryphal Literature of the N.T.*, 1865, pp. 3-7; A.S. Lewis, *Studia Sinaitica*, xi. pp. 1-22. See literature generally in Hennecke, *NT liche Apok. Handbuch*, 106 seq.

Gospel of Nicodemus.—This title is first met with in the 13th century. It is used to designate an apocryphal writing entitled in the older MSS. ὑπομνήματα τοῦ Κυρίου ἡμῶν Ἰησοῦ Χριστοῦ πραχθέντα ἐπὶ Ποντίου Πιλάτου; also "Gesta Salvatoris Domini ... inventa Theodosio magno imperatore in Ierusalem in praetorio Pontii Pilati in codicibus publicis." See Tischendorf, *Evang. Apocr.*[2] pp. 333-335. This work gives an account of the Passion (i.-xi.), the Resurrection (xii.-xvi.), and the *Descensus ad Inferos* (xvii.-xxvii.). Chapters i.-xvi. are extant, in the Greek, Coptic, and two Armenian versions. The two Latin versions and a Byzantine recension of the Greek contain i.-xxvii. (see Tischendorf, *Evangelia Apocrypha*[2], pp. 210-458). All known texts go back to A.D. 425, if one may trust the reference to Theodosius. But this was only a revision, for as early as 376 Epiphanius (*Haer.* i. 1.) presupposes the existence of a like text. In 325 Eusebius (*H.E.* ii. 2) was acquainted only with the heathen *Acts of Pilate*, and knew nothing of a Christian work. Tischendorf and Hofmann, however, find evidence of its existence in Justin's reference to the ῎Ακτα Πιλάτου (*Apol.* i. 35, 48), and in Tertullian's mention of the *Acta Pilati* (*Apol.* 21), and on this

evidence attribute our texts to the first half of the 2nd century. But these references have been denied by Scholten, Lipsius, and Lightfoot. Recently Schubert has sought to derive the elements which are found in the Petrine Gospel, but not in the canonical gospels, from the original *Acta Pilati*, while Zahn exactly reverses the relation of these two works. Rendel Harris (1899) advocated the view that the Gospel of Nicodemus, as we possess it, is merely a prose version of the Gospel of Nicodemus written originally in Homeric centones as early as the 2nd century. Lipsius and Dobschütz relegate the book to the 4th century. The question is not settled yet (see Lipsius in Smith's *Dict. of Christ. Biography*, ii. 708-709, and Dobschütz in Hastings' *Bible Dictionary*, iii. 544-547).

Gospel according to the Hebrews.—This gospel was cited by Ignatius (*Ad Smyrnaeos*, iii.) according to Jerome (*Viris illus.* 16, and *in Jes.* lib. xviii.), but this is declared to be untrustworthy by Zahn, op. cit. i. 921; ii. 701, 702. It was written in Aramaic in Hebrew letters, according to Jerome (*Adv. Pelag.* iii. 2), and translated by him into Greek and Latin. Both these translations are lost. A collection of the Greek and Latin fragments that have survived, mainly in Origen and Jerome, will be found in Hilgenfeld's *NT extra Canonem receptum*, Nicholson's *Gospel according to the Hebrews* (1879), Westcott's *Introd. to the Gospels*, and Zahn's *Gesch. des NTlichen Kanons*, ii. 642-723; Preuschen, op. cit. 3-8. This gospel was regarded by many in the first centuries as the Hebrew original of the canonical Matthew (Jerome, *in Matt.* xii. 13; *Adv. Pelag.* iii. 1). With the canonical gospel it agrees in some of its sayings; in others it is independent. It circulated among the Nazarenes in Syria, and was composed, according to Zahn (*op. cit.* ii. 722), between the years 135 and 150. Jerome identifies it with the *Gospel of the Twelve* (*Adv. Pelag.* iii. 2), and states that it was used by the Ebionites (*Comm. in Matt.* xii. 13). Zahn (*op. cit.* ii. 662, 724) contests both these statements. The former he traces to a mistaken interpretation of Origen (*Hom. I. in Luc.*). Lipsius, on the other hand, accepts the statements of Jerome (Smith and Wace, *Dict. of Christian Biography*, ii. 709-712), and is of opinion that this gospel, in the form in which it was known to Epiphanius, Jerome and Origen, was "a recast of an older original," which, written originally in Aramaic, was nearly related to the Logia used by St Matthew and the Ebionitic writing used by St Luke, "which itself was only a later redaction of the Logia."

According to the most recent investigations we may conclude that the Gospel according to the Hebrews was current among the Nazarenes and Ebionites as early as 100-125, since Ignatius was familiar with the phrase "I am no bodiless demon"—a phrase which, according to Jerome (*Comm. in Is.* xviii.), belonged to this Gospel.

The name "Gospel according to the Hebrews" cannot have been original; for if it had been so named because of its general use among the Hebrews, yet the Hebrews themselves would not have used this designation. It may have been known simply as "the Gospel." The language was Western Aramaic, the mother tongue of Jesus and his apostles. Two forms of Western Aramaic survive: the Jerusalem form of the dialect, in the Aramaic portions of Daniel and Ezra; and the Galilean, in isolated expressions in the Talmud (3rd century), and in a fragmentary 5th century translation of the Bible. The quotations from the Old Testament are made from the Massoretic text.

This gospel must have been translated at an early date into Greek, as Clement and Origen cite it as generally accessible, and Eusebius recounts that many reckoned it among the received books The gospel is synoptic in character and is closely related to Matthew, though in the Resurrection accounts it has affinities with Luke. Like Mark it seems to have had no history of the birth of Christ, and to have begun with the baptism. (For the literature see Hennecke, *NTliche Apok. Handbuch*, 21-23.)

Gospel of Peter.—Before 1892 we had some knowlege of this gospel. Thus Serapion, bishop of Antioch (A.D. 190-203) found it in use in the church of Rhossus in Cilicia, and condemned it as Docetic (Eusebius, *H.E.* vi. 12). Again, Origen (*In Matt.* tom. xvii. 10) says that it represented the brethren of Christ as his half-brothers In 1885 a long fragment was discovered at Akhmim, and published by Bouriant in 1892, and subsequently by Lods, Robinson, Harnack, Zahn, Schubert, Swete.

Gospel of Thomas.—This gospel professes to give an account of our Lord's boyhood. It appears in two recensions. The more complete recension bears the title Θωμᾶ Ἰσραηλίτου Φιλοσόφου ῥητὰ εἰς τὰ παιδικὰ τοῦ Κυρίου, and treats of the period from the 7th to the 12th year (Tischendorf, *Evangelia Apocrypha*^{2}, 1876, 140-157). The more fragmentary recension gives the history of the childhood from the 5th to the 8th year, and is entitled Σύγγραμμα τοῦ ἁγίου ἀποστόλου Θωμᾶ περὶ τῆς παιδικῆς ἀναστροφῆς τοῦ Κυρίου (Tischendorf, *op. cit.* pp. 158-163). Two Latin translations have been published in this work by the same scholar—one on pp. 164-180, the other under the wrong title, *Pseudo-Matthaei Evangelium*, on pp.

93-112. A Syriac version, with an English translation, was published by Wright in 1875. This gospel was originally still more Docetic than it now is, according to Lipsius. Its present form is due to an orthodox revision which discarded, so far as possible, all Gnostic traces. Lipsius (Smith's *Dict. of Christ. Biog.* ii. 703) assigns it to the latter half of the 2nd century, but Zahn (*Gesch. Kan.* ii. 771), on good grounds, to the earlier half. The latter scholar shows that probably it was used by Justin (*Dial.* 88). At all events it circulated among the Marcosians (Irenaeus, *Haer.* i. 20) and the Naasenes (Hippolytus, *Refut.* v. 7), and subsequently among the Manichaeans, and is frequently quoted from Origen downwards (*Hom. I. in Luc.*). If the stichometry of Nicephorus is right, the existing form of the book is merely fragmentary compared with its original compass. For literature see Hennecke, *NTliche Apokryphen Handbuch*, 132 seq.

Gospel of the Twelve.—This gospel, which Origen knew (*Hom. I. in Luc.*), is not to be identified with the *Gospel according to the Hebrews* (see above), with Lipsius and others, who have sought to reconstruct the original gospel from the surviving fragments of these two distinct works. The only surviving fragments of the *Gospel of the Twelve* have been preserved by Epiphanius (*Haer.* xxx. 13-16, 22: see Preuschen, *op. cit.* 9-11). It began with an account of the baptism. It was used by the Ebionites, and was written, according to Zahn (*op. cit.* ii. 742), about A.D. 170.

Other Gospels Mainly Gnostic and almost all Lost.— *Gospel of Andrew.*—This is condemned in the Gelasian Decree, and is probably the gospel mentioned by Innocent (1 Ep. iii. 7) and Augustine (*Contra advers. Leg. et Proph.* i. 20).

Gospel of Apelles.—Mentioned by Jerome in his *Prooem. ad Matt.*

Gospel of Barnabas.—Condemned in the Gelasian Decree (see under Barnabas *ad fin.*).

Gospel of Bartholomew.—Mentioned by Jerome in his *Prooem. ad Matt.* and condemned in the Gelasian Decree.

Gospel of Basilides.—Mentioned by Origen (*Tract. 26 in Matt.* xxxiii. 34, and in his *Prooem. in Luc.*); by Jerome in his *Prooem. in Matt.* (See Harnack i. 161; ii. 536-537; Zahn, *Gesch. Kanons*, i. 763-774.)

Gospel of Cerinthus.—Mentioned by Epiphanius (*Haer.* li. 7).

Gospel of the Ebionites.—A fragmentary edition of the canonical Matthew according to Epiphanius (*Haer.* xxx. 13), used by the Ebionites and called by them the Hebrew Gospel.

Gospel of Eve.—A quotation from this gospel is given by Epiphanius (*Haer.* xxvi. 2, 3). It is possible that this is the Gospel of Perfection (Εὐαγγέλιον τελειώσεως) which he touches upon in xxvi. 2. The quotation shows that this gospel was the expression of complete pantheism.

Gospel of James the Less.—Condemned in the Gelasian Decree.

Wisdom of Jesus Christ.—This third work contained in the Coptic MS. referred to under *Gospel of Mary* gives cosmological disclosures and is presumably of Valentinian origin.

Apocryph of John.—This book, which is found in the Coptic MS. referred to under *Gospel of Mary* and contains cosmological disclosures of Christ, is said to have formed the source of Irenaeus' account of the Gnostics of Barbelus (i. 29-31). Thus this work would have been written before 170.

Gospel of Judas Iscariot.—References to this gospel as in use among the Cainites are made by Irenaeus (i. 31. 1); Epiphanius (xxxviii. 1. 3).

Gospel, The Living (*Evangelium Vivum*).—This was a gospel of the Manichaeans. See Epiphanius, *Haer*. lxvi. 2; Photius, *Contra Manich*. i. 181

Gospel of Marcion.—On this important gospel see Zahn, *Gesch. Kanons*, i. 585-718.

Descent of Mary (Γέννα Μαρίας).—This book was an anti-Jewish legend representing Zacharias as having been put to death by the Jews because he had seen the God of the Jews in the form of an ass in the temple (Epiphanius, *Haer*. xxvi. 12).

Questions of Mary (*Great and Little*).—Epiphanius (*Haer*. xxvi. 8) gives some excerpts from this revolting work.

Gospel of Mary.—This gospel is found in a Coptic MS. of the 5th century. According to Schmidt's short account, *Sitzungsberichte d. preuss. Akad. d. Wiss. zu. Berlin* (1896), pp. 839 sqq., this gospel gives disclosures on the nature of matter (ὕλη) and the progress of the

Gnostic soul through the seven planets.

Gospel of Matthias.—Though this gospel is attested by Origen (*Horm. in Luc.* i.), Eusebius, *H.E.* iii. 25. 6, and the List of Sixty Books, not a shred of it has been preserved, unless with Zahn ii. 751 sqq. we are to identify it with the *Traditions of Matthias*, from which Clement has drawn some quotations.

Gospel of Perfection (*Evangelium perfectionis*).—Used by the followers of Basilides and other Gnostics. See Epiphanius, *Haer.* xxvi. 2.

Gospel of Philip.—This gospel described the progress of a soul through the next world. It is of a strongly Encratite character and dates from the 2nd century. A fragment is preserved in Epiphanius, *Haer*. xxvi. 13. In Preuschen, *Reste*, p. 13, the quotation breaks off too soon. See Zahn ii. 761-768.

Gospel of Thaddaeus.—Condemned by the Gelasian Decree.

Gospel of Thomas.—Of this gospel only one fragment has been preserved in Hippolytus, *Philos*. v. 7, pp. 140 seq. See Zahn, *op. cit.* i. 746 seq.; ii. 768-773; Harnack ii. 593-595.

Gospel of Truth.—This gospel is mentioned by Irenaeus i. 11. 9, and was used by the Valentinians. See Zahn i. 748 sqq.

(*b*) Acts and Teachings of the Apostles.—*Acts of Andrew.*—These Acts, which are of a strongly Encratite character, have come down to us in a fragmentary condition. They belong to the earliest ages, for they are mentioned by Eusebius, *H.E.* iii. 25; Epiphanius, *Haer.* xlvii. 1; lxi. 1; lxiii. 2; Philaster, *Haer.* lxviii., as current among the Manichaeans and heretics. They are attributed to Leucius, a Docetic writer, by Augustine (*c. Felic. Manich.* ii. 6) and Euodius (*De Fide c. Manich.* 38). Euodius in the passage just referred to preserves two small fragments of the original Acts. On internal grounds the section recounting Andrew's imprisonment (Bonnet, *Acta Apostolorum Apocrypha*, ii. 38-45) is also probably a constituent of the original work. As regards the martyrdom, owing to the confusion introduced by the multitudinous Catholic revisions of this section of the Acts, it is practically impossible to restore its original form. For a complete discussion of the various documents see Lipsius, *Apokryphen Apostelgeschichte*, i. 543-622; also James in Hastings' *Bible Dict.* i. 92-93; Hennecke, *NT. Apokryphen*, *in loc.* The best texts are given in Bonnet's *Acta Apostolorum Apocrypha*, 1898, II. i. 1-127. These contain also the *Acts of Andrew and Matthew* (or Matthias) in which Matthew (or Matthias) is represented as a captive in the country of the anthropophagi. Christ takes Andrew and his disciples with Him, and effects the rescue of Matthew. The legend is found also in Ethiopic, Syriac and Anglo-Saxon. Also the *Acts of Peter and Andrew*, which among other incidents recount the miracle of a camel passing through the eye of a needle. This work is preserved partly in Greek, but in its entirety in Slavonic.

Acts of John.—Clement of Alexandria in his *Hypotyposes* on 1 John i. 1 seems to refer to chapters xciii. (or lxxxix.) of these Acts. Eusebius (*H.E.* iii. 25. 6), Epiphanius (*Haer.* xlvii. 1) and other ancient writers assign them to the authorship of Leucius Charinus. It is generally admitted that they were written in the 2nd century. The text has been edited most completely by Bonnet, *Acta Apostol. Apocr.*, 1898, 151-216. The contents might be summarized with Hennecke as follows:—Arrival and first sojourn of the apostle in Ephesus (xviii.-lv.); return to Ephesus and second sojourn (history of Drusiana, lviii.-lxxxvi.); account of the crucifixion of Jesus and His apparent death (lxxxvii.-cv.); the death of John (cvi.-cxv.). There are manifest gaps in the narrative, a fact which we would infer from the extent assigned to it (*i.e.* 2500 stichoi) by Nicephorus. According to this authority one-third of the text is now lost. Many chapters are lost at the beginning; there is a gap in chapter xxxvii., also before lviii., not to mention others. The encratite tendency in these Acts is not so strongly developed as in those of Andrew and Thomas. James (*Anecdota*, ii. 1-25) has given strong grounds for regarding the Acts of John and Peter as derived from one and the same author, but there are like affinities existing between the Acts of Peter and those of Paul. For a discussion of this work see Zahn, *Gesch. Kanons*, ii. 856-865; Lipsius, *Apok. Apostelgesch.* i. 348-542; Hennecke, *NT. Apokryphen*, 423-432. For bibliography, Hennecke, *NT. Apok. Handbuch*, 492 sq.

Acts of Paul.—The discovery of the Coptic translation of these Acts in 1897, and its publication by C. Schmidt (*Acta Pauli aus der Heidelberger koptischen Papyrushandschrift herausgegeben*, Leipzig, 1894), have confirmed what had been previously only a hypothesis that the Acts of Thecla had formed a part of the larger Acts of Paul. The Acts therefore embrace now the following elements:—(*a*) Two quotations given by Origen in his *Princip.* i.

2. 3 and his comment on John xx. 12. From the latter it follows that in the Acts of Paul the death of Peter was recounted, (*b*) *Apocryphal 3rd Epistle of Paul to the Corinthians* and *Epistle from the Corinthians to Paul*. These two letters are connected by a short account which is intended to give the historical situation. Paul is in prison on account of Stratonice, the wife of Apollophanes. The Greek and Latin versions of these letters have for the most part disappeared, but they have been preserved in Syriac, and through Syriac they obtained for the time being a place in the Armenian Bible immediately after 2 Corinthians. Aphraates cites two passages from 3 Corinthians as words of the apostle, and Ephraem expounded them in his commentary on the Pauline Epistles. They must therefore have been regarded as canonical in the first half of the 4th century. From the Syriac Bible they made their way into the Armenian and maintained their place without opposition to the 7th century. On the Latin text see Carrière and Berger, *Correspondance apocr. de S.P. et des Corinthiens*, 1891. For a translation of Ephraem's commentary see Zahn ii. 592-611 and Vetter, *Der Apocr. 3. Korinthien*, 70 sqq., 1894. The Coptic version (C. Schmidt, *Acta Pauli*, pp. 74-82), which is here imperfect, is clearly from a Greek original, while the Latin and Armenian are from the Syriac. (*c*) *The Acts of Paul and Thecla*. These were written, according to Tertullian (*De Baptismo*, 17) by a presbyter of Asia, who was deposed from his office on account of his forgery. This, the earliest of Christian romances (probably before A.D. 150), recounts the adventures and sufferings of a virgin, Thecla of Iconium. Lipsius discovers Gnostic traits in the story, but these are denied by Zahn (*Gesch. Kanons*, ii. 902). See Lipsius, *op. cit.* ii. 424-467; Zahn (*op. cit.* ii. 892-910). The best text is that of Lipsius, *Acta Apostol. Apocr.*, 1891, i. 235-272. There are Syriac, Arabic, Ethiopic and Slavonic versions. As we have seen above, these Acts are now recognized as belonging originally to the Acts of Paul. They were, however, published separately long before the Gelasian Decree (496). Jerome also was acquainted with them as an independent work. Thecla was most probably a real personage, around whom a legend had already gathered in the 2nd century. Of this legend the author of the Acts of Paul made use, and introduced into it certain historical and geographical facts, (*d*) The healing of Hermocrates of dropsy in Myra. Through a comparison of the Coptic version with the Pseudo-Cyprian writing "Caena," Rolffs (Hennecke, *NT. Apok.* 361) concludes that this incident formed originally a constituent of our book, (*e*) The strife with beasts at Ephesus. This event is mentioned by Nicephorus Callistus (*H.E.* ii. 25) as recounted in the περίοδοι of Paul. The identity of this work with the Acts of Paul is confirmed by a remark of Hippolytus in his commentary on Daniel iii. 29. 4, ed. Bonwetsch 176 (so Rolffs). (*f*) Martyrdom of Paul. The death of Paul by the sentence of Nero at Rome forms the close of the Acts of Paul. The text is in the utmost confusion. It is best given by Lipsius, *Acta Apostol. Apocr.* i. 104-117.

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Notwithstanding all the care that has been taken in collecting the fragments of these Acts, only about 900 stichoi out of the 3600 assigned to them in the Stichometry of Nicephorus have as yet been recovered.

The author was, according to Tertullian (*De Baptism.* 17), a presbyter in Asia, who out of honour to Paul wrote the Acts, forging at the same time 3 Corinthians. Thus the work was composed before 190, and, since it most probably uses the martyrdom of Polycarp, after 155. The object of the writer is to embody in St Paul the model ideal of the popular Christianity of the 2nd century. His main emphasis is laid on chastity and the resurrection of the flesh. The tone of the work is Catholic and anti-Gnostic. For the bibliography of the subject see Hennecke, *NT. Apok.* 358-360.

Acts of Peter.—These acts are first mentioned by Eusebius (*H.E.* iii. 3) by name, and first referred to by the African poet Commodian about A.D. 250. Harnack, who was the first to show that these Acts were Catholic in character and not Gnostic as had previously been alleged, assigns their composition to this period mainly on the ground that Hippolytus was not acquainted with them; but even were this assumption true, it would not prove the non-existence of the Acts in question. According to Photius, moreover, the Acts of Peter also were composed by this same Leucius Charinus, who, according to Zahn (*Gesch. Kanons*, ii. 864), wrote about 160 (*op. cit.* p. 848). Schmidt and Ficker, however, maintain that the Acts were written about 200 and in Asia Minor. These Acts, which Ficker holds were written as a continuation and completion of the canonical Acts of the Apostles, deal with Peter's victorious conflict with Simon Magus, and his subsequent martyrdom at Rome under Nero. It is difficult to determine the relation of the so-called Latin *Actus Vercellenses* (which there are good grounds for assuming were originally called the Πράξεις Πέτρου) with the Acts of John and Paul. Schmidt thinks that the author of the former made use of the latter, James that the Acts of Peter and of John were by one and the same author, but Ficker is of opinion that their affinities can be explained by their derivation from the same ecclesiastical atmosphere and school of theological thought. No less close affinities exist between our Acts

and the Acts of Thomas, Andrew and Philip. In the case of the Acts of Thomas the problem is complicated, sometimes the Acts of Peter seem dependent on the Acts of Thomas, and sometimes the converse.

> For the relation of the *Actus Vercellenses* to the "Martyrdom of the holy apostles Peter and Paul" (*Acta Apostol. Apocr.* i. 118-177) and to the "Acts of the holy apostles Peter and Paul" (*Acta Apostol. Apocr.* i. 178-234) see Lipsius ii. 1. 84 sqq. The "Acts of Xanthippe and Polyxena," first edited by James (*Texts and Studies*, ii. 3. 1893), and assigned by him to the middle of the 3rd century, as well as the "Acts of the Disputation of Archelaus, bishop of Mesopotamia, and the Heresiarch Manes" ("Acta Disputationis Archelai Episcopi Mesopotamiae et Manetis Haeresiarchae," in Routh's *Reliquiae Sacrae*^{2}, v. 36-206), have borrowed largely from our work.
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> The text of the *Actus Vercellenses* is edited by Lipsius, *Acta Apostol. Apocr.* i. 45-79. An independent Latin translation of the "Martyrdom of Peter" is published by Lipsius (*op. cit.* i. 1-22), *Martyrium beati Petri Apostoli a Lino episcopo conscriptum*. On the Coptic fragment, which Schmidt maintains is an original constituent of these Acts, see that writer's work: *Die alten Petrusakten im Zusammenhang der apokryphen Apostelliteratur nebst einem neuentdeckten Fragment*, and *Texte und Untersuch.* N.F. ix. 1 (1903). For the literature see Hennecke, *Neutestamentliche Apokryphen Handbuch*, 395 sqq.

Preaching of Peter.—This book (Πέτρου κήρυγμα) gave the substance of a series of discourses spoken by one person in the name of the apostles. Clement of Alexandria quotes it several times as a genuine record of Peter's teaching. Heracleon had previously used it (see Origen, *In Evang. Johann.* t. xiii. 17). It is spoken unfavourably of by Origen (*De Prin.* Praef. 8). It was probably in the hands of Justin and Aristides. Hence Zahn gives its date as 90-100 at latest; Dobschütz, as 100-110; and Harnack, as 110-130. The extant fragments contain sayings of Jesus, and warnings against Judaism and Polytheism.

They have been edited by Hilgenfeld: *Nov. Test. extra Can.*, 1884, iv. 51-65, and by von Dobschütz, *Das Kerygma Petri*, 1893. Salmon (*Dict. Christ. Biog.* iv. 329-330) thinks that this work is part of a larger work, *A Preaching of Peter and a Preaching of Paul*, implied in a statement of Lactantius (*Inst. Div.* iv. 21); but this view is contested by Zahn, see *Gesch. Kanons*, ii. 820-834, particularly pp. 827-828; Chase, in Hastings' *Bible Dict.* iv. 776.

Acts of Thomas.—This is one of the earliest and most famous of the Gnostic Acts. It has been but slightly tampered with by orthodox hands. These Acts were used by the Encratites (Epiphanius, *Haer.* xlvii. 1), the Manichaeans (Augustine, *Contra Faust.* xxii. 79), the Apostolici (Epiphanius lxi. 1) and Priscillianists. The work is divided into thirteen Acts, to which the Martyrdom of Thomas attaches as the fourteenth. It was originally written in Syriac, as Burkitt (*Journ. of Theol. Studies*, i. 278 sqq.) has finally proved, though Macke and Nöldeke had previously advanced grounds for this view. The Greek and Latin texts were edited by Bonnet in 1883 and again in 1903, ii. 2; the Greek also by James, *Apoc. Anec.* ii. 28-45, and the Syriac by Wright (*Apocr. Acts of the Gospels*, 1871, i. 172-333). Photius ascribes their composition to Leucius Charinus—therefore to the 2nd century, but Lipsius assigns it to the early decades of the 3rd. (See Lipsius, *Apokryphen Apostelgeschichten*, i. 225-347; Hennecke, *N.T. Apokryphen*, 473-480.)

Teaching of the Twelve Apostles (Didachē).—This important work was discovered by Philotheos Bryennios in Constantinople and published in 1883. Since that date it has been frequently edited. The bibliography can be found in Schaff's and in Harnack's editions. The book divides itself into three parts. The first (i.-vi.) contains a body of ethical instruction which is founded on a Jewish and probably pre-Christian document, which forms the basis also of the *Epistle of Barnabas*. The second part consists of vii.-xv., and treats of church ritual and discipline; and the third part is eschatological and deals with the second Advent. The book is variously dated by different scholars: Zahn assigns it to the years A.D. 80-120; Harnack to 120-165; Lightfoot and Funk to 80-100; Salmon to 120. (See Salmon in *Dict. of Christ. Biog.* iv. 806-815, also article DIDACHĒ.)

Apostolical Constitutions.—For the various collections of these ecclesiastical regulations—the Syriac *Didascalia, Ecclesiastical Canons of the Holy Apostles*, &c.—see separate article.

(*c*) EPISTLES.—*The Abgar Epistles.*—These epistles are found in Eusebius (*H.E.* i. 3), who translated them from the Syriac. They are two in number, and purport to be a petition of Abgar Uchomo, king of Edessa, to Christ to visit Edessa, and Christ's answer, promising after his ascension to send one of his disciples, who should "cure thee of thy disease, and give eternal life and peace to thee and all thy people." Lipsius thinks that these letters were manufactured about the year 200. (See *Dict. Christ. Biog.* iv. 878-881, with the literature there mentioned.) The above correspondence, which appears also in Syriac, is inwoven with

the legend of Addai or Thaddaeus. The best critical edition of the Greek text will be found in Lipsius, *Acta Apostolorum Apocrypha*, 1891, pp. 279-283. (See also ABGAR.)

Epistle of Barnabas.—The special object of this epistle was to guard its readers against the danger of relapsing into Judaism. The date is placed by some scholars as early as 70-79, by others as late as the early years of the emperor Hadrian, 117. The text has been edited by Hilgenfeld in 1877, Gebhardt and Harnack in 1878, and Funk in 1887 and 1901. In these works will be found full bibliographies. (See further BARNABAS.)

Epistle of Clement.—The object of this epistle is the restoration of harmony to the church of Corinth, which had been vexed by internal discussions. The epistle may be safely ascribed to the years 95-96. The writer was in all probability the bishop of Rome of that name. He is named an apostle and his work was reckoned as canonical by Clement of Alexandria (*Strom.* iv. 17. 105), and as late as the time of Eusebius (*H.E.* iii. 16) it was still read in some of the churches. Critical editions have been published by Gebhardt and Harnack, *Patr. Apost. Op.*, 1876, and in the smaller form in 1900, Lightfoot[2], 1890, Funk[2], 1901. The Syriac version has 183
been edited by Kennet, *Epp. of St Clement to the Corinthians in Syriac*, 1899, and the Old Latin version by Morin, *S. Clementis Romani ad Corinthios epistulae versio Latina antiquissima*, 1894.

"*Clement's*" *2nd Ep. to the Corinthians.*—This so-called letter of Clement is not mentioned by any writer before Eusebius (*H. E.* iii. 38. 4). It is not a letter but really a homily written in Rome about the middle of the 2nd century. The writer is a Gentile. Some of his citations are derived from the Gospel to the Egyptians.

Clement's Epistles on Virginity.—These two letters are preserved only in Syriac which is a translation from the Greek. They are first referred to by Epiphanius and next by Jerome. Critics have assigned them to the middle of the 2nd century. They have been edited by Beelen, Louvain, 1856.

Clement's Epistles to James.—On these two letters which are found in the Clementine Homilies, see Smith's *Dict. of Christian Biography*, i. 559, 570, and Lehmann's monograph, *Die Clementischen Schriften*, Gotha, 1867, in which references will be found to other sources of information.

Epistles of Ignatius.—There are two collections of letters bearing the name of Ignatius, who was martyred between 105 and 117. The first consists of seven letters addressed by Ignatius to the Ephesians, Magnesians, Trallians, Romans, Philadelphians, Smyrnaeans and to Polycarp. The second collection consists of the preceding extensively interpolated, and six others of Mary to Ignatius, of Ignatius to Mary, to the Tarsians, Antiochians, Philippians and Hero, a deacon of Antioch. The latter collection is a pseudepigraph written in the 4th century or the beginning of the 5th. The authenticity of the first collection also has been denied, but the evidence appears to be against this contention. The literature is overwhelming in its extent. See Zahn, *Patr. Apost. Op.*, 1876; Funk[2], *Die apostol. Väter*, 1901; Lightfoot[2], *Apostolic Fathers*, 1889.

Epistle of Polycarp.—The genuineness of this epistle stands or falls with that of the Ignatian epistles. See article in Smith's *Dictionary of Christian Biography*, iv. 423-431; Lightfoot, *Apostolic Fathers*, i. 629-702; also POLYCARP.

Pauline Epistles to the Laodiceans and the Alexandrians.— The first of these is found only in Latin. This, according to Lightfoot (see *Colossians*[3], 272-298) and Zahn, is a translation from the Greek. Such an epistle is mentioned in the Muratorian canon. See Zahn, *op. cit.* ii. 566-585. The Epistle to the Alexandrians is mentioned only in the Muratorian canon (see Zahn ii. 586-592).

For the *Third Epistle of Paul to the Corinthians*, and *Epistle from the Corinthians to Paul*, see under "Acts of Paul" above.

(R. H. C.)

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1 Judaism was long accustomed to lay claim to an esoteric tradition. Thus though it insisted on the exclusive canonicity of the 24 books, it claimed the possession of an oral law handed down from Moses, and just as the apocryphal books overshadowed in certain instances the canonical scriptures, so often the oral law displaced the written in the regard of Judaism.

2 See Porter in Hastings' *Bible Dict.* i. 113

3 The New Testament shows undoubtedly an acquaintance with several of the apocryphal books. Thus James i. 19 shows dependence on Sirach v. 11, Hebrews i. 3 on Wisdom vii. 26, Romans ix. 21 on Wisdom xv. 7, 2 Cor. v. 1, 4 on Wisdom ix. 15, &c.

4 Thus some of the additions to Daniel and the Prayer of Manasses are most probably derived from a Semitic original written in Palestine, yet in compliance with the prevailing opinion they are classed under Hellenistic Jewish literature. Again, the Slavonic Enoch goes back undoubtedly in parts to a Semitic original, though most of it was written by a Greek Jew in Egypt.

5 These editors have discovered (1907) a gospel fragment of the 2nd century which represents a dialogue between our Lord and a chief priest—a Pharisee.

APODICTIC (Gr. ἀποδεικτικός, capable of demonstration), a logical term, applied to judgments which are necessarily true, as of mathematical conclusions. The term in Aristotelian logic is opposed to dialectic, as scientific proof to probable reasoning. Kant contrasts apodictical with problematic and assertorical judgments.

APOLDA, a town of Germany, in the grand-duchy of Saxe-Weimar, near the river Ilm, 9 m. E. by N. from Weimar, on the main line of railway from Berlin via Halle, to Frankfort-On-Main. Pop. (1900) 20,352. It has few notable public buildings, but possesses three churches and monuments to the emperor Frederick III. and to Christian Zimmermann (1759-1842), who, by introducing the hosiery and cloth manufacture, made Apolda one of the most important places in Germany in these branches of industry. It has also extensive dyeworks, bell foundries, and manufactures of steam engines, boilers and bicycles.

APOLLINARIS, "the Younger" (d. A.D. 390), bishop of Laodicea in Syria. He collaborated with his father Apollinaris the Elder in reproducing the Old Testament in the form of Homeric and Pindaric poetry, and the New after the fashion of Platonic dialogues, when the emperor Julian had forbidden Christians to teach the classics. He is best known, however, as a warm opponent of Arianism, whose eagerness to emphasize the deity of Christ and the unity of His person led him so far as a denial of the existence of a rational human soul (νοῦς) in Christ's human nature, this being replaced in Him by a prevailing principle of holiness, to wit the Logos, so that His body was a glorified and spiritualized form of humanity. Over against this the orthodox or Catholic position maintained that Christ assumed human nature in its entirety including the νοῦς, for only so could He be example and redeemer. It was held that the system of Apollinaris was really Docetism (see DOCETAE), that if the Godhood without constraint swayed the manhood there was no possibility of real human probation or of real advance in Christ's manhood. The position was accordingly condemned by several synods and in particular by that of Constantinople (A.D. 381). This did not prevent its having a considerable following, which after Apollinaris's death divided into two sects, the more conservative taking its name (Vitalians) from Vitalis, bishop of Antioch, the other (Polemeans) adding the further assertion that the two natures were so blended that even the body of Christ was a fit object of adoration. The whole Apollinarian type of thought persisted in what was later the Monophysite (*q.v.*) school.

Although Apollinaris was a prolific writer, scarcely anything has survived under his own name. But a number of his writings are concealed under the names of orthodox Fathers, *e.g.* ἡ κατὰ μέρος πίστις, long ascribed to Gregory Thaumaturgus. These have been collected and edited by Hans Lietzmann.

He must be distinguished from the bishop of Hierapolis who bore the same name, and who wrote one of the early Christian "Apologies" (*c.* 170). See A. Harnack, *History of Dogma*, vols. iii. and iv. *passim*; R.L. Ottley, *The Doctrine of the Incarnation*; G. Voisin, *L'Apollinarisme* (Louvain, 1901); H. Lietzmann, *Apollinaris von Laodicea und seine Schule* (Tubingen, 1905).

APOLLINARIS, SULPICIUS, a learned grammarian of Carthage, who flourished in the 2nd century A.D. He taught Pertinax—himself a teacher of grammar before he was emperor, —and Aulus Gellius, who speaks of him in the highest terms (iv. 17). He is the reputed author of the metrical arguments to the *Aeneid* and to the plays of Terence and (probably) Plautus (J.W. Beck, *De Sulpicio Apollinari*, 1884).

APOLLINARIS SIDONIUS, CAIUS SOLLIUS (*c.* 430-487 or 488), Christian writer and bishop, was born in Lyons about A.D. 430. Belonging to a noble family, he was educated under the best masters, and particularly excelled in poetry and polite literature. He married (about 452) Papianilla, the daughter of Avitus, who was consul and afterwards emperor. But Majorianus, in the year 457, having deprived Avitus of the empire and taken the city of Lyons, Apollinaris fell into the hands of the enemy. The reputation of his learning led Majorianus to treat him with the greatest respect. In return Apollinaris composed a panegyric in his honour (as he had previously done for Avitus), which won for him a statue at Rome and the title of count. In 467 the emperor Anthemius rewarded him for the panegyric which he had written in honour of him by raising him to the post of prefect of Rome, and afterwards to the dignity of a patrician and senator. In 472, more for his political than for his theological abilities, he was chosen to succeed Eparchius in the bishopric of Arverna (Clermont). On the capture of that city by the Goths in 474 he was imprisoned, as he had taken an active part in its defence; but he was afterwards restored by Euric, king of the Goths, and continued to govern his bishopric as before. He died in A.D. 487 or 488. His extant works are his *Panegyrics* on different emperors (in which he draws largely upon Statius, Ausonius and Claudian); and nine books of *Letters* and *Poems*, whose chief value consists in the light they shed on the political and literary history of the 5th century. The *Letters*, which are very stilted, also reveal Apollinaris as a man of genial temper, fond of good living and of pleasure. The best edition is that in the *Monumenta Germaniae Historica* (Berlin, 1887), which gives a survey of the manuscripts.

> Apollinaris Sidonius (the names are commonly inverted by the French) is the subject of numerous monographs, historical and literary. See, for bibliography, A. Molinier, *Sources de l'histoire de France*, no. 136 (vol. i.). S. Dill, *Roman Society in the Fifth Century*, and T. Hodgkin, *Italy and her Invaders* (vol. vii.), contain interesting sections on Apollinaris. See also Teuffel and Ebert's histories of Latin literature.

APOLLO (Gr. Ἀπόλλων, Ἀπέλλων), in Greek mythology, one of the most important and many-sided of the Olympian divinities. No satisfactory etymology of the name has been given, the least improbable perhaps being that which connects it with the Doric ἀπέλλα ("assembly")[1] so that Apollo would be the god of political life (for other suggested derivations, ancient and modern, see C. Wernicke in Pauly-Wissowa's *Realencyclopädie*). The derivation of all the functions assigned to him from the idea of a single original light- or sun-god, worked out in his *Lexikon der Mythologie* by Roscher, who regards it as "one of the most certain facts in mythology," has not found general acceptance, although no doubt some features of his character can be readily explained on this assumption.

In the legend, as set forth in the Homeric hymn to Apollo and the ode of Callimachus to Delos, Apollo is the son of Zeus and Leto. The latter, pursued by the jealous Hera, after long wandering found shelter in Delos (originally Asteria), where she bore a son, Apollo, under a palm-tree at the foot of Mount Cynthus. Before this, Delos—like Rhodes, the centre of the worship of the sun-god Helios, with whom Apollo was wrongly identified in later times—had been a barren, floating rock, but now became stationary, being fastened down by chains to the bottom of the sea. Apollo was born on the 7th day (ἑβδομαγενής) of the month

Thargelion according to Delian, of the month Bysios according to Delphian, tradition. The 7th and 20th, the days of the new and full moon, were ever afterwards held sacred to him. In Homer Apollo appears only as the god of prophecy, the sender of plagues, and sometimes as a warrior, but elsewhere as exercising the most varied functions. He is the god of agriculture, specially connected with Aristaeus (*q.v.*), which, originally a mere epithet, became an independent personality (see, however, Farnell, *Cults of the Greek States*, iv. 123). This side of his character is clearly expressed in the titles *Sitalcas* ("protector of corn"); *Erythibius* ("preventer of blight"); *Parnopius* ("destroyer of locusts"); *Smintheus* ("destroyer of mice"), in which, however, some modern inquirers see a totemistic significance (*e.g.* A. Lang, "Apollo and the Mouse," in *Custom and Myth*, p. 101; against this, W.W. Fowler, in *Classical Review*, November 1892); *Erithius* ("god of reapers"); and *Pasparius* ("god of meal"). He is further the god of vegetation generally—*Nomios*, "god of pastures" (explained, however, by Cicero, as "god of law"), *Hersos*, "sender of the fertilizing dew." Valleys and groves are under his protection, unless the epithets *Napaeus* and *Hylates* belong to a more primitive aspect of the god as supporting himself by the chase, and roaming the glades and forests in pursuit of prey. Certain trees and plants, especially the laurel, were sacred to him. As the god of agriculture and vegetation he is naturally connected with the course of the year and the arrangement of the seasons, so important in farming operations, and becomes the orderer of time (*Horomedon*, "ruler of the seasons"), and frequently appears on monuments in company with the Horae.

Apollo is also the protector of cattle and herds, hence *Poimnius* ("god of flocks"), *Tragius* ("of goats"), *Kereatas* ("of horned animals"). *Carneius* (probably "horned") is considered by some to be a pre-Dorian god of cattle, also connected with harvest operations, whose cult was grafted on to that of Apollo; by others, to have been originally an epithet of Apollo, afterwards detached as a separate personality (Farnell, *Cults*, iv. p. 131). The epithet *Maleatas*, which, as the quantity of the first vowel (ă) shows,[2] cannot mean god of "sheep" or "the apple-tree," is probably a local adjective derived from Malea (perhaps Cape Malea), and may refer to an originally distinct personality, subsequently merged in that of Apollo (see below). Apollo himself is spoken of as a keeper of flocks, and the legends of his service as a herdsman with Laomedon and Admetus point in the same direction. Here probably also is to be referred the epithet *Lyceius*, which, formerly connected with λυκ- ("shine") and used to support the conception of Apollo as a light-god, is now generally referred to λύκος ("wolf") and explained as he who keeps away the wolves from the flock (cf. λυκόεργος, λυκοκτόνος). In accordance with this, the epithet λυκηγενής will not mean "born of" or "begetting light," but rather "born from the she-wolf," in which form Leto herself was said to have been conducted by wolves to Delos. The consecration of the wolf to Apollo is probably the relic of an ancient totemistic religion (Farnell, *Cults*, i. 41; W. Robertson Smith, *Religion of the Semites*, new ed., 1894, p. 226).

With the care of the fruits of the earth and the lower animals is associated that of the highest animal, man, especially the youth on his passage to manhood. As such Apollo is κουροτρόφος ("rearer of boys") and patron of the palaestra. In many places gymnastic contests form a feature of his festivals, and he himself is proficient in athletic exercises (ἐναγώνιος). Thus he was supposed to be the first victor at the Olympic games; he overcomes Hermes in the foot-race, and Ares in boxing.

The transition is easy to Apollo as a warlike god; in fact, the earlier legends represent him as engaged in strife with Python, Tityus, the Cyclopes and the Aloidae. He is *Boëdromios* ("the helper"), *Eleleus* ("god of the war-cry"), and the Paean was said to have been originally a song of triumph composed by him after his victory over Python. In Homer he frequently appears on the field, like Ares and Athene, bearing the aegis to frighten the foe. This aspect is confirmed by the epithets *Argyrotoxos* ("god of the silver bow"), *Hecatebolos* ("the shooter from afar"), *Chrysaoros* ("wearer of the golden sword"), and his statues are often equipped with the accoutrements of war.[3]

The fame of the Pythian oracle at Delphi, connected with the slaying of Python by the god immediately after his birth, gave especial prominence to the idea of Apollo as a god of prophecy. Python, always represented in the form of a snake, sometimes nameless, is the symbol of the old chthonian divinity whose home was the place of "enquiry" (πυθέσθαι). When Apollo Delphinius with his worshippers from Crete took possession of the earth-oracle Python, he received in consequence the name Pythius. That Python was no fearful monster, symbolizing the darkness of winter which is scattered by the advent of spring, is shown by the fact that Apollo was considered to have been guilty of murder in slaying it, and compelled to wander for a term of years and expiate his crime by servitude and purification. Possibly at Delphi and other places there was an old serpent-worship ousted by that of

Apollo, which may account for expiation for the slaying of Python being considered necessary. In the solar explanation, the serpent is the darkness driven away by the rays of the sun. (On the Delphian cult of Apollo and its political significance, see Amphictyony, Delphi, Oracle; and Farnell, *Cults*, iv. pp. 179-218.) Oracular responses were also given at Claros near Colophon in Ionia by means of the water of a spring which inspired those who drank of it; at Patara in Lycia; and at Didyma near Miletus through the priestly family of the Branchidae. Apollo's oracles, which he did not deliver on his own initiative but as the mouthpiece of Zeus, were infallible, but the human mind was not always able to grasp their meaning; hence he is called *Loxias* ("crooked," "ambiguous"). To certain favoured mortals he communicated the gift of prophecy (Cassandra, the Cumaean sibyl, Helenus, Melampus and Epimenides). Although his favourite method was by word of mouth, yet signs were sometimes used; thus Calchas interpreted the flight of birds; burning offerings, sacrificial barley, the arrow of the god, dreams and the lot, all played their part in communicating the will of the gods.

Closely connected with the god of oracles was the god of the healing art, the oracle being frequently consulted in cases of sickness. These two functions are indicated by the titles *Iatromantis* ("physician and seer") and *Oulios*, probably meaning "health-giving" (so Suidas) rather than "destructive." This side of Apollo's character does not appear in Homer, where Paieon is mentioned as the physician of the gods. Here again, as in the case of Aristaeus and Carneius, the question arises whether Paean (or Paeon) was originally an epithet of Apollo, subsequently developed into an independent personality, or an independent deity merged in the later arrival (Farnell, *Cults*, iv. p. 234). According to Wilamowitz-Möllendorff in his edition of Isyllus, the epithet Maleatas alluded to above is also connected with the functions of the healing god, imported into Athens in the 4th century B.C. with other well-known health divinities. In this connexion, it is said to mean the "gentle one," who gave his name to the rock Malion or Maleas (O. Gruppe, *Griechische Mythologie*, ii. 1442) on the Gortynian coast. Apollo is further supposed to be the father of Asclepius (Aesculapius), whose ritual is closely modelled upon his. The healing god could also prevent disease and misfortune of all kinds: hence he is ἀλεξίκακος ("averter of evil") and ἀποτρόπαιος. Further, he is able to purify the guilty and to cleanse from sin (here some refer the epithet ἰατρόμαντις, in the sense of "physician of the soul"). Such a task can be fitly undertaken by Apollo, since he himself underwent purification after slaying Python. According to the Delphic legend, this took place in the laurel grove of Tempe, and after nine years of penance the god returned, as was represented in the festival called Stepterion or Septerion (see A. Mommsen, *Delphika*, 1878). Thus the old law of blood for blood, which only perpetuated the crime from generation to generation, gave way to the milder idea of the expiatory power of atonement for murder (cf. the court called τὸ ἐπὶ Δελφινίῳ at Athens, which retained jurisdiction in cases where justifiable homicide was pleaded).

The same element of enthusiasm that affects the priestess of the oracle at Delphi produces song and music. The close connexion between prophecy and song is indicated in Homer (*Odyssey*, viii. 488), where Odysseus suggests that the lay of the fall of Troy by Demodocus was inspired by Apollo or the Muse. The metrical form of the oracular responses at Delphi, the important part played by the paean and the Pythian nomos in his ritual, contributed to make Apollo a god of song and music, friend and leader of the Muses (μουσαγέτης). He plays the lyre at the banquets of the gods, and causes Marsyas to be flayed alive because he had boasted of his superior skill in playing the flute, and the ears of Midas to grow long because he had declared in favour of Pan, who contended that the flute was a better instrument than Apollo's favourite, the lyre.

A less important aspect of Apollo is that of a marine deity, due to the spread of his cult to the Greek colonies and islands. As such, his commonest name is *Delphinius*, the "dolphin god," in whose honour the festival Delphinia was celebrated in Attica. This cult probably originated in Crete, whence the god in the form of a dolphin led his Cretan worshippers to the Delphian shore, where he bade them erect an altar in his honour. He is *Epibaterius* and *Apobaterius* ("embarker" and "disembarker"), *Nasiotas* ("the islander"), *Euryalus* ("god of the broad sea"). Like Poseidon, he looks forth over his watery kingdom from lofty cliffs and promontories (ἀκταῖος, and perhaps ἀκρίτας).

These maritime cults of Apollo are probably due to his importance as the god of colonization, who accompanied emigrants on their voyage. As such he is ἀγήτωρ ("leader"), οἰκίστης ("founder"), δωματίτης ("god of the home"). As *Agyieus* ("god of streets and ways"), in the form of a stone pillar with painted head, placed before the doors of houses, he let in the good and kept out the evil (see Farnell, *Cults*, iv. p. 150, who takes Agyieus to mean "leader"); on the epithet *Prostaterius*, he who "stands before the house," hence

"protector," see G.M. Hirst in *Journal of Hellenic Studies*, xxii. (1902). Lastly, as the originator and protector of civil order, Apollo was regarded as the founder of cities and legislation. Thus, at Athens, Apollo *Patroös* was known as the protector of the Ionians, and the Spartans referred the institutions of Lycurgus to the Delphic oracle.

It has been mentioned above that W.H. Roscher, in the article "Apollo" in his *Lexikon der Mythologie*, derives all the aspects and functions of Apollo from the conception of an original light- and sun-god. The chief objections to this are the following. It cannot be shown that on *Greek* soil Apollo originally had the meaning of a sun-god; in Homer, Aeschylus and Plato, the sun-god Helios is distinctly separated from Phoebus Apollo; the constant epithet Φοῖβος, usually explained as the brightness of the sun, may equally well refer to his physical beauty or moral purity; λυκηγενής has already been noticed. It is not until the beginning of the 5th century B.C. that the identification makes its appearance. The first literary evidence is a fragment of Euripides (*Phaëthon*), in which it is especially characterized as an innovation. The idea was taken up by the Stoics, and in the Roman period generally accepted. But the fact of the gradual development of Apollo as a god of light and heaven, and his identification with foreign sun-gods, is no proof of an original Greek solar conception of him. Apollo-Helios must be regarded as "a late by-product of Greek religion" (Farnell, *Cults*, iv. p. 136; Wernicke in Pauly-Wissowa's *Realencydopädie*). For the manner in which the solar theory is developed, reference must be made to Roscher's article, but one legend may here be mentioned, since it helps to trace the spread of the cult of the god. It was said that Apollo soon after his birth spent a year amongst the Hyperboreans, who dwelt in a land of perpetual sunshine, before his return to Delphi. This return is explained as the second birth of the god and his victory over the powers of winter; the name Hyperboreans is explained as the "dwellers beyond the north wind." This interpretation is now, however, generally rejected in favour of that of H.L. Ahrens,—that Hyperborei is identical with the Perphereës ("the carriers"), who are described as the servants of Apollo, carriers of cereal offerings from one community to another (Herodotus iv. 33). This would point to the fact that certain settlements of Apolline worship along the northernmost border of Greece (Illyria, Thrace, Macedonia) were in the habit of sending offerings to the god to a centre of his worship farther south (probably Delphi), advancing by the route from Tempe through Thessaly, Pherae and Doris to Delphi; while others adopted the route through Illyria, Epirus, Dodona, the Malian gulf, Carystus in Euboea, and Tenos to Delos (Farnell, *Cults*, iv. p. 100).

The most usual attributes of Apollo were the lyre and the bow; the tripod especially was dedicated to him as the god of prophecy. Among plants, the bay, used in expiatory sacrifices and also for making the crown of victory at the Pythian games, and the palm-tree, under which he was born in Delos, were sacred to him; among animals and birds, the wolf, the roe, the swan, the hawk, the raven, the crow, the snake, the mouse, the grasshopper and the griffin, a mixture of the eagle and the lion evidently of Eastern origin. The swan and grasshopper symbolize music and song; the hawk, raven, crow and snake have reference to his functions as the god of prophecy.

The chief festivals held in honour of Apollo were the Carneia, Daphnephoria, Delia, Hyacinthia, Pyanepsia, Pythia and Thargelia (see separate articles).

Among the Romans the worship of Apollo was adopted from the Greeks. There is a tradition that the Delphian oracle was consulted as early as the period of the kings during the reign of Tarquinius Superbus, and in 430 a temple was dedicated to Apollo on the occasion of a pestilence, and during the Second Punic War (in 212) the *Ludi Apollinares* were instituted in his honour. But it was in the time of Augustus, who considered himself under the special protection of Apollo and was even said to be his son, that his worship developed and he became one of the chief gods of Rome. After the battle of Actium, Augustus enlarged his old temple, dedicated a portion of the spoil to him, and instituted quinquennial games in his honour. He also erected a new temple on the Palatine hill and transferred the secular games, for which Horace composed his *Carmen Saeculare*, to Apollo and Diana.

Apollo was represented more frequently than any other deity in ancient art. As Apollo Agyieus he was shown by a simple conic pillar; the Apollo of Amyclae was a pillar of bronze surmounted by a helmeted head, with extended arms carrying lance and bow. There were also rude idols of him in wood (*xoana*), in which the human form was scarcely recognizable. In the 6th century, his statues of stone were naked, stiff and rigid in attitude, shoulders square, limbs strong and broad, hair falling down the back. In the riper period of art the type is softer, and Apollo appears in a form which seeks to combine manhood and eternal youth. His long hair is usually tied in a large knot above his forehead. The most famous statue of him is the Apollo Belvidere in the Vatican (found at Frascati, 1455), an imitation

belonging to the early imperial period of a bronze statue representing him, with aegis in his left hand, driving back the Gauls from his temple at Delphi (279 B.C.), or, according to another view, fighting with the Pythian dragon. In the Apollo Citharoedus or Musagetes in the Vatican, he is crowned with laurel and wears the long, flowing robe of the Ionic bard, and his form is almost feminine in its fulness; in a statue at Rome of the older and more vigorous type he is naked and holds a lyre in his left hand; his right arm rests upon his head, and a griffin is seated at his side. The Apollo Sauroctonus (after Praxiteles), copied in bronze at the Villa Albani in Rome and in marble at Paris, is a naked, youthful, almost boyish figure, leaning against a tree, waiting to strike a lizard climbing up the trunk. The gigantic statue of Helios (the sun-god), "the colossus of Rhodes," by Chares of Lindus, celebrated as one of the seven wonders of the world, is unknown to us. Bas-reliefs and painted vases reproduce the contests of Apollo with Tityus, Marsyas, and Heracles, the slaughter of the daughters of Niobe, and other incidents in his life.

AUTHORITIES.—F.L.W. Schwartz, *De antiquissima Apollinis Natura* (Berlin, 1843); J.A. Schönborn, *Über das Wesen Apollons* (Berlin, 1854); A. Milchhöfer, *Über den attischen Apollon* (Munich, 1873); T. Schreiber, *Apollon Pythoktonos* (Leipzig, 1879); W.H. Roscher, *Studien zur vergleichenden Mythologie der Griechen und Romer*, i. (Leipzig, 1873); R. Hecker, *De Apollinis apud Romanos Cultu* (Leipzig, 1879); G. Colin, *Le Culte d'Apollon pythien à Athènes* (1905); L. Dyer, *The Gods in Greece* (1891); articles in Pauly-Wissowa's *Realencyclopädie*, W.H. Roscher's *Lexikon der Mythologie*, and Daremberg and Saglio's *Dictionnaire des antiquités*; L. Preller, *Griechische und römische Mythologie* (4th ed. by C. Robert); J. Marquardt, *Römische Staalsverwaltung*, iii.; G. Wissowa *Religion und Kultus der Romer* (1902); D. Bassi, *Saggio di Bibliografia mitologica*, i. *Apollo* (1896); L. Farnell, *Cults of the Greek States*, iv. (1907); O. Gruppe, *Griechische Mythologie und Religionsgeschichte*, ii. (1906). In the article GREEK ART, fig. 9 represents a bearded Apollo, playing on the lyre, in a chariot drawn by winged horses; fig. 55 (pl. ii.) Apollo of the Belvidere; fig. 76 (pl. v.) a nude and roughly executed colossal figure of the god.

(J. H. F.)

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1 Hesychius; who also gives the explanation σηκός ("fold"), in which case Apollo would be the god of flocks and herds.

2 The authority for the quantity is Isyllus.

3 Hence some have derived "Apollo" from ἀπολλύναι, "to destroy."

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