

government. It was at this very period, the close of the 15th and commencement of the 16th century, that the genius and daring of a Genoese mariner, Christopher Columbus, gave to Spain that new world, which might have become the possession of his native state, had Genoa been able to supply him with the ships and seamen which he so earnestly entreated her to furnish. The government as restored by Andrea Doria, with certain modifications tending to impart to it a more conservative character, remained unchanged until the outbreak of the French Revolution and the creation of the Ligurian republic. During this long period of nearly three centuries, in which the most dramatic incident is the conspiracy of Fieschi, the Genoese found no small compensation for their lost traffic in the East in the vast profits which they made as the bankers of the Spanish crown and outfitters of the Spanish armies and fleets both in the Old World and the New.

The short-lived Ligurian republic was soon swallowed up in the French empire, not, however, until Genoa had been made to experience, by the terrible privations of the siege when Masséna held the city against the Austrians (1800), all that was meant by a participation in the vicissitudes of the French Revolution. In 1814 Genoa rose against the French, on the assurance given by Lord William Bentinck that the allies would restore to the republic its independence. It had, however, been determined by a secret clause of the treaty of Paris that Genoa should be incorporated with the dominions of the king of Sardinia. The discontent created at the time by the provision of the treaty of Paris as confirmed by the congress of Vienna had doubtless no slight share in keeping alive in Genoa the republican spirit which, through the influence of a young Genoese citizen, Joseph Mazzini, assumed forms of permanent menace not only to the Sardinian monarchy but to all the established Governments of the peninsula. Even the material benefits accruing from the union with Sardinia and the constitutional liberty accorded to all his subjects by King Charles Albert were unable to prevent the republican outbreak of 1850, when, after a short and sharp struggle the city, momentarily seized by the republican party, was recovered by General Alfonso La Marmora. The most important of the later events in the history of Genoa has been the seizure within its port of the five Neapolitan brigands, Cipriano La Gala and his accomplices, who travelling with papal passports were arrested on board the French passenger steamer, the "Aunis," by orders of the Marquis Gualterio prefect of Genoa. Though the event threatened at first to create a rupture between the French and Italian Governments, the diplomatic discussions which it called forth, and the impression generally produced throughout Europe, had no slight share in weakening the political ties which had hitherto existed between the Papal Government and France.

Among the earlier Genoese historians the most important are Bartolommeo Fazio and Jacopo Braccelli, both of the 15th century, and Paolo Partenopeo, Jacopo Bonfadio, Oberto Foglietta, and Agostino Giustiniano of the 16th. Paganetti wrote the ecclesiastical history of the city; and Accioli and Gaggero collected material for the ecclesiastical archaeology. The memoirs of local writers and artists were treated by Soprani and Ratti. Among more general works are Bréguigny, *Histoire des Révolutions de Gênes jusqu'en 1748*; Serra, *La Storia dell'antica Liguria e di Genova* (Turin, 1834); Varese, *Storia della repubblica di Genova sino al 1814* (Genoa, 1835-39); Canale, *Storia del Genovesi* (Genoa, 1844-54); Nuova istoria della repubblica di Genova (Florence, 1858); and *Storia della rep. di Genova dall'anno 1528 al 1550* (Genoa, 1874); Blumenthal, *Zur Verfassungsgeschichte Genuas im 12. Jahrhundert* (Kalbe an der Saale, 1872); Mallison, *Studies from Genoese History* (London, 1875). The *Liber turum republice Genensis* was edited by Ricotti in the 7th, 8th, and 9th volumes of the *Monumenta historiae patriae* (Turin, 1854-1857). A great variety of interesting matter will be found in the *Atti della Società Ligure di Storia patria* (13 volumes, from 1861-1878), and in the *Giornale Ligustico di Archeologia, Storia, e Bell. Arti*. The history of the university has been written by Lorenzo Isnardi, and continued by Em. Ceslea (2 vols., Genoa). Belgrano, *Della vita privata dei Genovesi*, P. M. Garibaldi, *Stato meteorologico per la città di Genova* (for 1870, &c.), and Rocca, *Pesi e misure antichi di Genova*, may also be mentioned. A *Vocabolario tascabile genovese-italiano* compiled by P. E. B. is published by the deaf-mute publishing department.

GENOVA, LUCHETTO DA (1527-1585). This is the familiar name given to the painter Luca Cambiasi (written also Cambiaso or Cangiagio), who was born at Moneglia in the Genoese state, son of a painter named Giovanni Cambiasi. He took to drawing at a very early age, imitating his father, and developed great aptitude for foreshortening. At the age of fifteen he painted, along with his father, some subjects from Ovid's *Metamorphoses* on the front of a house in Genoa, and afterwards, in conjunction with Calvi, a ceiling showing great daring of execution, in the Palazzo Doria. He also formed an early friendship with Giambattista Castello; both artists painted together, with so much similarity of style that their works could hardly be told apart; from this friend Cambiasi learned much in the way of perspective and architecture. Luchetto's best artistic period lasted for twelve years after his first successes; from that time he declined in power, though not at once in reputation, owing to the agitations and vexations brought

upon him by a passion which he conceived for his sister-in-law. His wife having died, and the sister-in-law having taken charge of his house and children, he endeavoured to procure a papal dispensation for marrying her; but in this he was disappointed. In 1583 he accepted an invitation from Philip II. to continue in the Escorial a series of frescos which had been begun by Castello, now deceased; and it is said that one principal reason for his closing with this offer was that he hoped to bring the royal influence to bear upon the pope, but in this again he failed. Worn out with his disquietudes, he died in the Escorial in the second year of his sojourn. Cambiasi had an ardent fancy, and was a bold designer in a Raphaelesque mode. His extreme facility astonished the Spanish painters; and it is said that Philip II., watching one day with pleasure the offhand zest with which Luchetto was painting a head of a laughing child, was allowed the further surprise of seeing the laugh changed, by a touch or two upon the lips, into a weeping expression. The artist painted sometimes with a brush in each hand, and with a certainty equalling or transcending that even of Tintoret. He made a vast number of drawings, and was also something of a sculptor, executing in this branch of art a figure of Faith. Altogether he ranks as one of the ablest artists of his day. In personal character, notwithstanding his executive energy, he is reported to have been timid and diffident. His son Orazio became likewise a painter, studying under Luchetto.

The best works of Cambiasi are to be seen in Genoa. In the church of St George—the martyrdom of that saint; in the Palazzo Imperiali, Terralba, a Genoese suburb—a fresco of the Rape of the Sabines; in S. Maria da Carignano—a Pietà, containing his own portrait and (according to tradition) that of his beloved sister-in-law. In the Escorial he executed several pictures: one is a Paradise on the vaulting of the church, with a multitude of figures. For this picture he received 12,000 ducats, probably the largest sum that had, up to that time, ever been given for a single work.

GENOVESI, ANTONIO (1712-1769), an Italian writer on philosophy and political economy, was born in November 1712, at Castiglione, near Salerno. At an early age he was destined by his father for the church and began the study of philosophy and theology. He distinguished himself highly by his acuteness and diligence, and after some struggles, caused by his disinclination for an ecclesiastical life, he took orders at Salerno in 1736. He had not been long in this position when the archbishop of the town, recognizing his rare abilities, nominated him to the chair of rhetoric in the theological seminary. During this period of his life Genovesi began the study of philosophy as it existed outside the limits of theology. He read with eagerness the works of the chief modern philosophers, and was particularly attracted by Locke.

Apparently still dissatisfied with ecclesiastical life, Genovesi, resigning his post at Salerno, proceeded to Rome, undertook the study of law, and qualified as an advocate. The details of legal practice, however, proved as distasteful as theology, and for some years he gave himself entirely to the study of philosophy, attending most of the distinguished lecturers at the university of Naples. At this place, after having obtained the appointment of extraordinary professor of philosophy, he opened a seminary or private college for students. His reputation as a teacher was increased by the publication in 1743 of the first volume of his *Elements of Metaphysics*, and in 1745 of his *Logic*. Both works are imbued with the spirit and principles of the empirical school of philosophy, and the latter, an eminently practical treatise, had long a recognized position as one of the best logical text-books written from the point of view of Locke. On account of the accusations of infidelity and heresy naturally excited by his discussion of metaphysical principles, he had some difficulty in obtaining the professorship of moral philosophy, and failed to be appointed to the

chair of theology; but this did not prevent him from following out his philosophical studies. He published a continuation of his *Elements of Metaphysics*; but with every new volume he experienced fresh opposition from the partisans of scholastic routine. Among these were Cardinal Spinelli, archbishop of Naples, and an Abbé Magli, whom Genovesi covered with ridicule in his work entitled *Lettere ad un Amico Provinciale*. In spite of this, Genovesi obtained the approbation of Pope Benedict XIV., of several cardinals, and of most of the learned men of Italy. Of this number was Intieri, a Florentine, who founded at his own expense, in the university of Naples, the first Italian chair of political economy, under three conditions—namely, that the lectures should be in Italian, that Genovesi should be the first professor, and that, after his death, no ecclesiastic should succeed him.

Genovesi commenced his first course of lectures on the 5th of November 1754 with great success,—the novelty and the interest of the subject, and the eloquent style and agreeable manner of the professor, attracting a crowd of auditors. He afterwards published his *Lectures on Commerce*, and Carey's *Account of the Trade of England*, translated into Italian by his brother, with notes by himself. The *Lecioni di Commercio* is the first complete and systematic work in Italian on the science which Italians have done much to advance. On the whole it is to be included among works of the Mercantile school, but in treatment of fundamental problems, such as labour and money, it is distinguished by fairness and breadth of view. Specially noteworthy are the sections on human wants as foundation of economical theory, on labour as the source of wealth, on personal services as economic factors, and on the united working of the great industrial functions. Gioja's more important treatise owes much to Genovesi's lectures.

Till his death in 1769 Genovesi continued his labours at the university of Naples, which owes much of its celebrity to the solidity and excellence of his teaching. It cannot be said that Genovesi takes a high rank in philosophy, but he did much to introduce into Italy the new order of ideas, and his exposition of philosophical doctrines is fair and lucid. His work on *Metaphysics*, divided into the four rubrics, *Ontosophy*, *Cosmosophy*, *Theosophy*, *Psychosophy*, distinguished by its solid erudition, is an excellent specimen of the pre-critical or dogmatic method of handling speculative problems. His merits in political economy have been indicated above. (For list of works see Fabroni's *Lives*.)

GENSERIC, or GENSERIC, king of the Vandals, and the most formidable of the Gothic invaders of the Roman empire, was the natural son of Godegiselus the founder of a Vandal kingdom in Spain, and was born at Seville about 406. Though he was only of middle stature, and had a lameness of one leg, such was his renown as a warrior that on the death of his brother Gonderic in 427 he was chosen to succeed him on the throne. At the invitation of Boniface, the Roman general in Africa, who wished to revolt against Valentinian III., Genserich in 429 crossed into Africa, and took possession of Mauretania. Soon afterwards he besieged Boniface in Hippo Regius, and compelled him after a defence of fourteen months to seek safety by a precipitate embarkation, leaving his soldiers and their families to the ruthless cruelty of the Vandals. In 435 Genserich concluded a treaty with the Romans by which he retained possession of western Numidia and Mauretania; but peace was not of long duration, and in October 439 he captured Carthage, which he made the capital of his kingdom. Genserich was an Arian, and cruelly persecuted the orthodox Catholics in Africa. In 455 at the invitation of Eudocia, who wished to be revenged on Maximus the murderer of her husband Valentinian, he fitted out an expedition against Rome,

and after storming the city, gave it up during fourteen days to be pillaged by his soldiers. Eudocia and her daughters he carried captive to Carthage, where she was retained in prison till 462. Two attempts were made by the Romans to avenge themselves on the barbarians,—the first by Majorian, emperor of the West, in 457, and the second by Leo, emperor of the East, in 468. Both attempts, however, signally failed, and in 475 Leo's successor Zeno concluded a truce. Genserich's dominion ultimately included Sicily, Sardinia, Corsica, and the Balearic isles; and he even extended his conquests to Thrace, Egypt, and Asia Minor. He died in 477. He was cruel to blood-thirstiness, cunning, unscrupulous, and grasping; but he possessed great military talents, and his manner of life was austere. Though the effect of his victories was neutralized by the subsequent successes of Belisarius, his name long remained the glory of the Vandal tribes.

GENTIAN, botanically *Gentiana*, a large and typical genus of herbaceous plants forming the type of the natural order *Gentianaceae*. The genus comprises about 180 species,—most of them perennial plants growing in hilly or mountainous districts, chiefly in the northern hemisphere, some of the blue-flowered species ascending to a height of 16,000 feet in the Himalaya mountains. The leaves are opposite, entire, and smooth, and often strongly ribbed. The flowers are furnished with a persistent calyx and corolla, which is usually 4- or 5-parted, but occasionally 10-parted; the stamens are equal in number to the lobes of the corolla. The ovary is one-celled, with two stigmas, either separate and rolled back or contiguous and funnel-shaped. The fruit when ripe separates into two valves, and contains numerous small seeds. The majority of the genus are remarkable for the deep or brilliant blue colour of their blossoms, comparatively few having yellow, white, or more rarely red flowers; the last are almost exclusively found in the Andes.

Only a few species occur in Britain. *G. Amarella* and *G. campestris* are small annual species growing on chalky or calcareous hills, and bear, in autumn, somewhat tubular pale purple flowers; the latter is most easily distinguished by having two of the lobes of the calyx larger than the other two, while the former has the parts of the calyx in fives, and equal in size. Some intermediate forms between these two species occur, although rarely, in England; one of these, *G. germanica*, Willd., has larger flowers of a more blue tint, spreading branches, and a stouter stem. Some of these forms flower in spring. *G. Pneumonanthe*, the Calathian violet, is a rather rare perennial species, growing in moist heathy places from Cumberland to Dorsetshire. Its average height is from 6 to 9 inches. It has linear leaves, and a bright blue corolla 1½ inches long, marked externally with five greenish bands, is without hairs in its throat, and is found in perfection about the end of August. It is the handsomest of the British species; two varieties of it are known in cultivation, one with spotted and the other with white flowers. *G. verna* and *G. nivalis* are small species with brilliant blue flowers and small leaves. The former is a rare and local perennial, occurring, however, in Teesdale and the county of Clare in Ireland in tolerable abundance. It has a tufted habit of growth, and each stem bears only one flower. It is sometimes cultivated as an edging for flower borders. *G. nivalis* in Britain occurs only on a few of the loftiest Scotch mountains. It differs from the last in being an annual, and having a more isolated habit of growth, and in the stem bearing several flowers. On the Swiss mountains these beautiful little plants are very abundant; and the splendid blue colour of masses of gentian in flower is a sight which, when once seen, can never be forgotten. For ornamental purposes several species are cultivated. The great difficulty of growing them successfully renders them, however, less common than would otherwise be the case; although very hardy when once established, they are very impatient of removal, and rarely flower well until the third year after planting. Of the ornamental species found in British gardens some of the prettiest are *G. acutis*, *G. verna*, *G. pyrenaica*, *G. bavarica*, *G. septemfida*, and *G. glida*. Perhaps the handsomest and most easily grown is the first named, often called *Gentianella*, which produces its large intensely blue flowers early in the spring.

All the species of the genus are remarkable for possessing an intense but pure bitter taste and tonic properties. About forty species are used in medicine in different parts

of the world. The name of felwort given to *G. Amarella*, but occasionally applied to the whole genus, is stated by Dr Prior to be given in allusion to these properties—*fel* meaning gall, and *wort* a plant. In the same way the Chinese call the *G. asclepiaderi*, and the Japanese the *G. Buergeri*, "dragon's gall plants," in common with several other very bitter plants whose roots they use in medicine. *G. campestris* is sometimes in Sweden and other northern countries a substitute for hops.

By far the most important of the species used in medicine is the *G. lutea*, a large handsome plant 3 or 4 feet high, growing in open grassy places on the Alps, Apennines, and Pyrenees, as well as on some of the mountainous ranges of France and Germany, extending as far east as Bosnia and the Danubian principalities. It has large oval strongly-ribbed leaves and dense whorls of conspicuous yellow flowers. Its use in medicine is of very ancient date. Pliny and Dioscorides mention that the plant was noticed by Gentius, a king of the Illyrians, living 180–167 B.C., from whom the name *Gentiana* is supposed to be derived. During the Middle Ages it was much employed in the cure of disease, and as an ingredient in counter-poisons. In 1552 Tragus mentions the use of the root as a means of dilating wounds.

The root, which is the part used in medicine, is tough and flexible, scarcely branched, and of a brownish colour and spongy texture. It has a pure bitter taste and faint distinctive odour. On account of its porous nature it has been used in modern surgery, as in the time of Tragus, as a substitute for sponge tents. The root has been several times analysed with varying results, but Kromayer in 1862 first obtained the bitter principle in a state of purity. This substance, to which the bitterness of the root is due, he called *gentiopicrin* ($C_{20}H_{30}O_{12}$). It is a neutral glucoside, crystallizing in colourless needles, and is contained in the fresh root in the proportion of about $\frac{1}{10}$ th per cent., but has not been obtained in a crystalline state from the dried root. It is soluble in water and spirit of wine, but it does not dissolve in ether. It is easily decomposed, dilute mineral acids splitting it up into *glucose* and *gentiogenin*, the latter being an amorphous yellowish-brown neutral substance. It is not precipitated by tannin or subacetate of lead. A solution of caustic potash or soda forms with gentiopicrin a yellow solution, and the tincture of the root to which either of these alkalies has been added loses its bitterness in a few days. Gentian root also contains *gentianic acid* ($C_{14}H_{10}O_5$), which is inert and tasteless. It forms pale yellow silky crystals, very slightly soluble in water or ether, but soluble in hot strong alcohol and in aqueous alkaline solutions. This substance, which is also called *gentianin*, *gentisin*, and *gentisic acid*, has been shown by Ville to partake of the nature of tannin, giving the reactions of that substance with ferric chloride, gelatin, and albumen. On this account he proposes to change the name to *gentiano-tannic acid*.

The root also contains 12 to 15 per cent. of an uncrystallizable sugar, of which fact advantage has long been taken in Switzerland and Bavaria, for the production of a bitter cordial spirit called *Enzianbranntwein*. The use of this spirit, especially in Switzerland, has sometimes been followed by poisonous symptoms, which have been doubtfully attributed to inherent narcotic properties possessed by some species of gentian, the roots of which may have been indiscriminately collected with it; but it is quite possible that it may be due to the contamination of the root with that of *Veratrum album*, a poisonous plant growing at the same altitude, and having leaves extremely similar in appearance and size to those of *G. lutea*. Gentian is considered by therapeutists to be one of the most efficient of the simple bitter tonics, that is, of that class of substances which act upon the stomach so as to invigorate digestion and thereby

increase the general nutrition, without exerting any direct influence upon any other portion of the body than the alimentary canal. It is used in dyspepsia, chlorosis, anæmia, and various other diseases, in which the tone of the stomach and alimentary canal is deficient, and is sometimes added to purgative medicines to increase and improve their action. In veterinary medicine it is also used as a tonic, and enters into a well-known compound called *diapente* as a chief ingredient.

See Sowerby, *English Botany*, 3d edit., vol. vi. p. 74–81; Hemsley, *Handbook of Hardy Trees, Shrubs, and Herbaceous Plants*, p. 303; *Journal of Botany*, 1864, p. 65; 1872, p. 166; 1878, p. 265; *Pharmacographia*, p. 389; *Pharmaceutical Journal* (1), vol. xii. p. 371; (3) vol. iii. p. 42; (3) vol. vi. p. 90; (3) vol. viii. p. 182; Wood and Bache, *United States Dispensatory*, 14th edit., p. 438; Porter Smith, *Chinese Materia Medica*, p. 102. (E. M. H.)

GENTILESCHI, ARTEMISIA and ORAZIO DE', painters. ORAZIO (1565–1646) is generally named Orazio Lomi de' Gentileschi; it appears that De' Gentileschi was his correct surname, Lomi being the surname which his mother had borne during her first marriage. He was born at Pisa, and studied under his half-brother Aurelio Lomi, whom in course of time he surpassed. He afterwards went to Rome, and was associated with the landscape-painter Agostino Tasi, executing the figures for the landscape backgrounds of this artist in the Palazzo Rospigliosi, and it is said in the great hall of the Quirinal Palace, although by some authorities the figures in the last-named building are ascribed to Lanfranchi. His best works are Saints Cecilia and Valerian, in the Palazzo Borghese, Rome; David after the death of Goliath, in the Palazzo Doria, Genoa; and some works in the royal palace, Turin, noticeable for vivid and uncommon colouring. At an advanced age Gentileschi went to England at the invitation of Charles I., and he was employed in the palace at Greenwich. Vandyck included him in his portraits of a hundred illustrious men. His works generally are strong in shadow and positive in colour. He died in England in 1646. ARTEMISIA (1590–1642), Orazio's daughter, studied first under Guido, acquired much renown for portrait-painting, and considerably excelled her father's fame. She was a beautiful and elegant woman; her likeness, limned by her own hand, is to be seen in Hampton Court. Her most celebrated composition is Judith and Holofernes, in the Pitti palace; certainly a work of singular energy, and giving ample proof of executive faculty, but repulsive and unwomanly in its physical horror. She accompanied her father to England, but did not remain there long; the best picture which she produced for Charles I. was David with the head of Goliath. Artemisia refused an offer of marriage from Agostino Tasi, and bestowed her hand on Pier Antonio Schiattesi, continuing however to use her own surname. She settled in Naples, whither she returned after her English sojourn; she lived there in no little splendour, and there she died in 1642. She had a daughter and perhaps other children.

GENTILI, ALBERICO (1552–1608), may fairly be called the founder of the science of international law. He was the second son of Matteo Gentili, a physician of noble family and scientific eminence, and was born 14th January 1552 at Sanginesio, a small town of the march of Ancona which looks down from the slopes of the Apennines upon the distant Adriatic. After taking the degree of doctor of law at the university of Perugia, and holding a judicial office at Ascoli, he returned to his native city, and was entrusted with the task of recasting its statutes, but, sharing the Protestant opinions of his father, shared also his flight to Carniola, where Matteo was appointed physician to the duchy. The Inquisition condemned the fugitives as contumacious, and they soon received orders to quit the dominions of Austria. Alberico set out for England, travelling by way of Tübingen and Heidelberg, and every-

where meeting with the reception to which his already high reputation entitled him. He arrived at Oxford in the autumn of 1580, with a commendatory letter from the earl of Leicester, at that time chancellor of the university, and was shortly afterwards qualified to teach by being admitted to the same degree which he had taken at Perugia. His lectures on Roman law soon became famous, and the dialogues, disputations, and commentaries, which he published henceforth in rapid succession, established his position as an accomplished civilian, of the older and severer type, and secured his appointment in 1587 to the regius professorship of civil law. It was, however, rather by an application of the old learning to the new questions suggested by the modern relations of states that his labours have produced their most lasting result. In 1584 he was consulted by Government as to the proper course to be pursued with Mendoza, the Spanish ambassador, who had been detected in plotting against Elizabeth. He chose the topic to which his attention had thus been directed as a subject for a disputation when Leicester and Sir Philip Sidney visited the schools at Oxford in the same year; and this was six months later expanded into a book, the *De legationibus libri tres*. In 1588 Alberico selected the law of war as the subject of the law disputations at the annual "Act" which took place in July; and in the autumn published in London the *De Jure Belli commentatio prima*. A second and a third *Commentatio* followed, and the whole matter, with large additions and improvements, appeared at Hanau, in 1598, as the *De Jure Belli libri tres*. It was doubtless in consequence of the reputation gained by these works that Gentili became henceforth more and more engaged in forensic practice, and resided chiefly in London, leaving his Oxford work to be partly discharged by a deputy. In 1600 he was admitted to be a member of Gray's Inn, and in 1605 was appointed standing counsel to the king of Spain. He died 19th June 1608, and was buried, by the side of Dr Matteo Gentili, who had followed his son to England, in the churchyard of St Helen's, Bishopsgate. By his wife, Hester de Peigni, he left two sons and a daughter. His notes of the cases in which he was engaged for the Spaniards were posthumously published in 1613 at Hanau, as *Hispanice advocacionis libri duo*. This was in accordance with his last wishes; but his direction that the remainder of his MSS. should be burnt was not complied with, since fifteen volumes of them found their way, at the beginning of this century, from Amsterdam to the Bodleian library.

The true history of Gentili and of his principal writings has only been ascertained quite recently, in consequence of a revived appreciation of the services which he rendered to international law. The movement to do him honour, which originated four or five years since, has in spreading through Europe encountered two curious cross-currents of opinion,—one the ultra-Catholic, which three centuries ago ordered his name to be erased from all public documents and placed his works in the *Index*; another the narrowly-Dutch, which is, it seems, needlessly careful of the supremacy of Grotius. Preceding writers had dealt with various international questions, but they dealt with them singly, and with a servile submission to the decisions of the church. It was left to Gentili to grasp as a whole the relations of states one to another, to distinguish international questions from questions with which they are more or less intimately connected, and to attempt their solution by principles entirely independent of the authority of Rome. He uses, without yielding to them implicit deference, the reasonings of the civil and even the canon law, but he proclaims as his real guide the *Jus Naturæ*, the highest common sense of mankind, by which historical precedents are to be criticized, and, if necessary, set aside.

His faults are not few. His style is prolix, obscure, and to the modern reader pedantic enough; but a comparison of his greatest work with what had been written upon the same subject by, for instance, Belli, or Soto, or even Ayala, will show that he greatly improved upon his predecessors, not only by the fulness with which he has worked out points of detail, but also by clearly separating the law of war from martial law, and by placing the subject once for all upon a non-theological basis. If, on the other hand, the same work be compared with *De Jure Belli et Pacis* of Grotius, it is at once evident that the later writer is indebted to the earlier, not only for a large portion of his illustrative erudition, but also for all that is commendable in the method and arrangement of the treatise.

The following is probably a complete list of the writings of Gentili, with the places and dates of their first publication:—*De Juris interpretibus dialogi sex*, Lond., 1582; *Lectio in epist. quæ ad jus civile pertinent libri tres*, Lond., 1583–4; *De divers. temp. appellationibus*, Hanau, 1584; *De Legationibus libri tres*, Lond., 1585; *Legal. comitiorum Oxon. actio*, Lond., 1585–6; *De nascendi tempore disputatio*, Witteb., 1586; *Disputationum decem prima*, Lond., 1587; *Conditionum liber singularis*, Lond., 1587; *De Jure Belli comm. prima*, Lond., 1588; *secunda*, ib., 1588–9; *tertia*, 1589; *De injustitia bellica Romanorum*, Oxon., 1590; *De Armis Romanis*, &c., Hanau, 1599; *De ludis scenicis epist. duæ*, Middleburg, 1599; *De actoribus et de abusu mendacii*, Hanau, 1599; *Lectioes Virgilianæ*, Hanau, 1600; *De nuptiis libri septem*, 1601; *Ad 1 Maccab. et de linguarum mistura*, Lond., 1604; *In tit. si quis principis, et ad leg. Jul. majest.*, Hanau, 1604; *In tit. de Malef. et Math.*, et de Prof. et Med., Hanau, 1604; *De latin. vet. Bibl.*, Hanau, 1604; *De libro Pyano*, Oxon., 1604; *Laudes Acad. Perus. et Oxon.*, Hanau, 1605; *De unione Angliæ et Scotiæ*, Lond., 1605; *Disputationes tres, de libris jur. can., de libris jur. civ., de latinitate vet. vers.*, Hanau, 1605; *Regales disput. tres, de pot. regis absoluta, de unione regnorum, de vi civium*, Lond., 1605; *Hispanice advocacionis libri duo*, Hanau, 1613; *In tit. de verb. signif.*, Hanau, 1614; *De legatis in test.*, Amsterd., 1661. An edition of the *Opera Omnia*, commenced at Naples in 1770, was cut short by the death of the publisher, Gravier, after the second volume. Of his numerous unpublished writings, Gentili complained that four volumes were lost "pessimo pontificiorum facinore," meaning probably that they were left behind in his flight to Carniola.

Authorities.—Several tracts by the Abate Benigni in Colucci, *Antichità Picene*, 1790; a Dissertation by W. Reiger annexed to the *Program of the Groningen Gymnasium* for 1867; an Inaugural Lecture delivered in 1874 by T. E. Holland, and the preface to a new edition of the *Jus Belli*, 1877, by the same; works by Valdarnini and Foglietti, 1875; Speranza and De Giorgi, 1876; Fiorini (a translation of the *Jus Belli*, with essay), 1877; A. Saffi, 1878. See also E. Comba, in the *Rivista Christiana*, 1876–7; and Sir T. Twiss, in the *Law Review*, 1878. (T. E. H.)

GENTILLY, a town of France, in the department of the Seine, is situated on the Bièvre, a short distance south of the fortifications of Paris. Its manufactures include, biscuits, soap, vinegar, mustard, wax candles, buttons, leather, and pottery wares. It possesses a church of the 13th century, a lunatic asylum, a convent, a monastery, and several charitable institutions. The population in 1876 was 10,378.

GENTZ, FRIEDRICH VON (1764–1832), born at Breslau, May 2, 1764, aptly and accurately described by his distinguished friend Varnhagen von Ense as a writer-statesman (Schriftsteller Staatsmann). He was more than a publicist or political writer. His position was peculiar, and his career without a parallel. It is believed that no other instance can be adduced of a man exercising the same amount of influence in the conduct of public affairs, without rank or fortune, without high office, without being a member of a popular or legislative assembly, without in fact any ostensible means or instrumentality besides his pen. Born in the middle class in an aristocratic country, he lived on a footing of social equality with princes and ministers, the trusted partaker of their counsels and the chosen exponent of their policy.

His father held an employment in the Prussian civil service; his mother was an Ancillon distantly related to the statesman of that name. On his father's promotion to the mint

directorship at Berlin and consequent removal to the capital, he was sent to a gymnasium there, and in due course completed his education at the university of Frankfort-on-the-Oder. He is said to have shown neither liking nor aptitude for intellectual pursuits till after his attendance on the lectures of Kant at Königsberg, in his twentieth or twenty-first year, when, suddenly lighted up as by inspiration, he set to work in right earnest, mastered the Greek and Latin languages, acquired as perfect a knowledge of French as could well be attained by one who was not a Frenchman, and a sufficient familiarity with English to enable him to translate from it with clearness and fluency. He also managed to gain an intimate acquaintance with English commerce and finance, which he afterwards turned to good account. The extent of his acquisitions was rendered more remarkable by his confirmed habits of dissipation; for from the commencement to the conclusion of his career he was remarkable for the manner in which, in the midst of the gravest occupations, he indulged his fondness for female society and a ruinous passion for play. In 1786 he was appointed private secretary to the royal general directory, and was soon afterwards promoted to the rank of *Kriegsrath* (war-councillor). Like Mackintosh, he was fascinated by the French Revolution at its dawn, and, like Mackintosh, was converted to a sounder estimate of its then pending results by Burke. He broke ground in literature in 1794, by a translation of the celebrated *Essay on the French Revolution*, followed in 1794 and 1795 by translations from Mallet du Pan and Mounier. In 1795 he founded and edited a monthly journal which soon came to an untimely end. In November 1797 he published a pamphlet under the title of a *Sendsreiben* or *Missive* addressed to Frederick William III. of Prussia on his accession, pointing out the duties of the new sovereign and especially recommending the complete freedom of the press. In the course of the next three years he contributed to the *Historisches Journal* a series of articles "On the Origin and Character of the War against the French Revolution," with express reference to Great Britain. These led to his visiting England, where he formed intimate relations with Mackintosh, Lord Grenville, Pitt, and other eminent men, which proved lasting, flattering, and remunerative. The first entries in his published diary, beginning April 14, 1800, and continued (with breaks) to the end of 1828, run thus:—

"On the 14th of April, an agreeable surprise. The Jew elder, Hirsch, brought me 50 thalers for drawing up I know not what representation (*Vorstellung*). May 28.—Received through Baron Krüdener a watch set with (small) brilliants, a present from the emperor of Russia. June 1.—Received through Garlicke a letter from Lord Grenville, together with a donation of £500, the first of its kind."

The last entry for this year, 1800, is:—"At the end of the year great pecuniary embarrassment. Received £100 from Garlicke and negotiated with Carysfort."

The diary for 1801 begins:—"February.—Very remarkable that on the one side Lord Carysfort charged me with the translation into French of the English Notes against Prussia, and shortly afterwards Count Haugwitz with the translation into German of the Prussian Notes against England."

Frequently recurring entries of this kind illustrate his position through life. He was to all intents and purposes a mercenary of the pen, but he was so openly and avowedly, and he was never so much as suspected by those who knew him best of writing contrary to his own convictions at the time. This is why he never lost the esteem or confidence of his employers;—of Prince Metternich, for example, who, when he was officially attached to the Austrian Government, was kept regularly informed of the sources from which the greater part of his income was derived. Embarrassments of all sorts, ties and temptations from which he was irresistibly impelled to tear himself, led to his change of country; and an entry for May 1802 runs:—"On the 15th I take leave of my wife, and at three in the morning of the 20th

I leave Berlin with Adam Müller, never to see it again." It does not appear that he ever saw his wife again either; and his intimacies with other women, mostly of the highest rank, are puzzling from their multiplicity. He professes himself unable to explain the precise history of his settlement in Vienna. All he remembers is that he was received with signs of jealousy and distrust, and that the emperor, to whom he was presented by Count Colloredo, showed no desire to secure his services. Many years were to elapse before the formation of the connexion with Metternich, the most prominent feature and crowning point of his career.

Before entering into any kind of engagements with the Austrian Government he applied to the king of Prussia for a formal discharge, which was granted with an assurance that his Majesty, "in reference to his merits as a writer, coincided in the general approbation which he had so honourably acquired." A decisive proof of the confidence placed in him was his being invited by Count Haugwitz to the Prussian headquarters shortly before the battle of Jena, and commissioned to draw up the Prussian manifesto and the king's letter to Napoleon. It was in noticing this letter that Napoleon spoke of the known and avowed writer as "a wretched scribe named Gentz, one of those men without honour who sell themselves for money." In the course of 1806, he published *War between Spain and England*, and *Fragments upon the Balance of Power in Europe*, on receiving which (at Bombay) Mackintosh wrote:—"I assent to all you say, sympathize with all you feel, and admire equally your reason and your eloquence throughout your masterly fragment." The bond of union between him and Metternich was formed in 1840. This was one reason, joined to his general reputation, for his being named first secretary to the congress of Vienna in 1814, where, besides his regular duties, he seems to have made himself useful to several of the plenipotentiaries, as he notes in his diary that he received 22,000 florins in the name of Louis XVIII. from Talleyrand, and £600 from Lord Castlereagh, accompanied by "*les plus folles promesses*." He acted in the same capacity at the congress or conference of Paris in 1815, of Aix in 1818, Karlsbad and Vienna in 1819, Troppau and Laybach in 1820 and 1821, and Verona in 1822. The following entry in his diary for December 14, 1819, has exposed him to much obloquy as the interested advocate of reactionary doctrines:—"About eleven, at Prince Metternich's: attended the last and most important sitting of the commission to settle the 13th article of the Bundes-Akt, and had my share in one of the greatest and worthiest results of the transactions of our time. A day more important than that of Leipsic." The 13th article provides that in all states of the Bund the constitutional government shall be byestates instead of by a representative body in a single chamber: "in allen Bundestaaten wird eine landständische Verfassung stattfinden." Remembering what ensued in France from the absorption of the other estates in the *Tiers-État*, it would have been strange if Gentz had not supported this 13th article. He was far from a consistent politician, but he was always a sound Conservative at heart; and his reputation rests on his foreign policy, especially on the courage, eloquence, and efficiency with which he made head against the Napoleonic system till it was struck down.

The most remarkable phase of Gentz's declining years was his passion, in his sixty-seventh year, for Fanny Elssler, the celebrated *danseuse*, which forms the subject of some very remarkable letters to his attached friend Rabel (the wife of Varnhagen von Ense) in 1830 and 1831. He died June 9, 1832. There is no complete edition of his works. The late Baron von Prokesch was engaged in preparing one when the Austrian Government interfered, and the design was perforce abandoned. (A. H.)

G E O D E S Y

GEODESY ($\gamma\eta$, the earth, $\delta\alpha\iota\nu\alpha$, to divide) is the science of surveying extended to large tracts of country, having in view not only the production of a system of maps of very great accuracy, but the determination of the curvature of the surface of the earth, and eventually of the figure and dimensions of the earth. This last, indeed, may be the sole object in view, as was the case in the operations conducted in Peru and in Lapland by the celebrated French astronomers Bouguer, La Condamine, Maupertuis, Clairaut, and others; and the measurement of the meridian arc of France by Mechain and Delambre had for its end the determination of the true length of the "metre" which was to be the legal standard of length of France.

The basis of every extensive survey is an accurate triangulation, and the operations of geodesy consist in—the measurement, by theodolites, of the angles of the triangles; the measurement of one or more sides of these triangles on the ground; the determination by astronomical observations of the azimuth of the whole network of triangles; the determination of the actual position of the same on the surface of the earth by observations, first for latitude at some of the stations, and secondly for longitude.

To determine by actual measurement on the ground the length of a side of one of the triangles, wherefrom to infer the lengths of all the other sides in the triangulation, is not the least difficult operation of a trigonometrical survey. When the problem is stated thus—To determine the number of times that a certain standard or unit of length is contained between two finely marked points on the surface of the earth at a distance of some miles asunder, so that the error of the result may be pronounced to lie between certain very narrow limits,—then the question demands very serious consideration. The representation of the unit of length by means of the distance between two fine lines on the surface of a bar of metal at a certain temperature is never itself free from uncertainty and probable error, owing to the difficulty of knowing at any moment the precise temperature of the bar; and the transference of this unit, or a multiple of it, to a measuring bar, will be affected not only with errors of observation, but with errors arising from uncertainty of temperature of both bars. If the measuring bar be not self-compensating for temperature, its expansion must be determined by very careful experiments. The thermometers required for this purpose must be very carefully studied, and their errors of division and index error determined.

The base apparatus of Bessel and that of Colby have been described in *FIGURE OF THE EARTH* (vol. vii. p. 598). The average probable error of a single measurement of a base line by the Colby apparatus is, according to the very elaborate investigations of Colonel Walker, C.B., R.E., the Surveyor-General of India, $\pm 1.5\mu$ (μ meaning "one millionth"). W. Struve gives $\pm 0.8\mu$ as the probable error of a base line measured with his apparatus, being the mean of the probable errors of seven bases measured by him in Russia; but this estimate is probably too small. Struve's apparatus is simple: there are four wrought iron bars, each two toises (rather more than 13 feet) long; one end of each bar is terminated in a small steel cylinder presenting a slightly convex surface for contact, the other end carries a contact lever rigidly connected with the bar. The shorter arm of the lever terminates below in a polished hemisphere, the upper and longer arm traversing a vertical divided arc. In measuring, the plane end of one bar is brought into contact with the short arm of the contact lever (pushed forward by a weak spring) of the next bar. Each bar has

two thermometers, and a level for determining the inclination of the bar in measuring. The manner of transferring the end of a bar to the ground is simply this: under the end of the bar a stake is driven very firmly into the ground, carrying on its upper surface a disk, capable of movement in the direction of the measured line by means of slow-motion screws. A fine mark on this disk is brought vertically under the end of the bar by means of a theodolite which is planted at a distance of 25 feet from the stake in a direction perpendicular to the base. Struve investigates for each base the probable errors of the measurement arising from each of these seven causes:—alignment, inclination, comparisons with standards, readings of index, personal errors, uncertainties of temperature, and the probable errors of adopted rates of expansion.

The apparatus used in the United States Coast Survey consists of two measuring bars, each 6 metres in length, supported on two massive tripod stands placed at one quarter length from each end, and provided, as in Colby's apparatus, with the necessary mechanism for longitudinal, transverse, and vertical adjustment. Each measuring rod is a compensating combination of an iron and a brass bar, supported parallel to one another and firmly connected at one end, the medium of connexion between the free ends being a lever of compensation so adjusted as to indicate a constant length independent of temperature or changes of temperature. The bars are protected from external influences by double tubes of tinned sheet iron, within which they are movable on rollers by a screw movement which allows of contacts being made within $\frac{1}{100000}$ of an inch. The abutting piece acts upon the contact lever which is attached to the fixed end of the compound bar, and carries a very sensitive level, the horizontal position of which defines the length of the bar. It is impossible here to give a full description of this complicated apparatus, and we must refer for details to the account given in full in the United States Coast Survey Report for 1854. This apparatus is doubtless a very perfect one, and the manipulation of it must offer great facilities, for it appears to be possible, under favourable circumstances, to measure a mile in one day, 1.06 mile having been measured on one occasion in eight and a half hours. In order to test to the utmost the apparatus, the base at Atlanta, Georgia, was measured twice in winter and once in summer 1872-73, at temperatures 51°, 45°, 90° F.; the difference of the first and second measurements was +0.30 in., of the second and third +0.34 in.,—the actual length and computed probable error expressed in metres being 9338.4763 \pm 0.0166. It is to be noted that in the account of a base recently measured in the United States Lake Survey, some doubt is expressed as to the perfection of the particular apparatus of this description there used, on account of a liability to permanent changes of length.

The last base line measured in India with Colby's compensation apparatus had a length of 8912 feet only, and in consequence of some doubts which had arisen as to the accuracy of this compensation apparatus, the measurement was repeated four times, the operations being conducted in such a manner as to indicate as far as possible the actual magnitudes of the probable errors to which such measures are liable. The direction of the line (which is at Cape Comorin) is north and south, and in two of the measurements the brass component was to the west, in the other two it was to the east. The differences between the individual measurements and the mean of the four are +.0017, -.0049, -.0015, +.0045 in feet. The measure-