ECKHART, JOHANNES, or, according to the general designation, Meister Eckhart, the first of the great speculative mystics, flourished during the latter part of the 13th century and the early part of the 14th. Extremely little is known of his life; the date and place of his birth are equally uncertain. According to some accounts, he was a native of Strasburg, a town with which he was afterwards closely connected; according to others, he was born in Saxony. Trithemius, one of the best authorities, speaks of him merely as "Teutonicus." 1260 has frequently been given as the date of his birth; it was in all probability some years earlier, for we know that he was advanced in age at the time of his death, about 1327. He appears to have entered the Dominican order, and to have acted for some time as professor at one of the colleges in Paris. His reputation for learning was very high, and in 1302 he was summoned to Rome by Boniface VIII., to assist in the controversy then being carried on with Philip of France. From Boniface he received the degree of doctor. In 1304 he became provincial of his order for Saxony, and in 1307 was vicar-general for Bohemia. In both provinces he was distinguished for his practical reforms and for his power in preaching. In what manner he ceased to hold his high office we do not know; indeed, several years of his life about this time are a complete blank. Towards 1325 we hear of him as preaching with great effect at Cologne, where he gathered round him a numerous band of followers. Before this time, and in all probability at Strasburg, where he appears to have been for some years, he had come in contact with the BEGHARDS (*q. v.*) and Brethren of the Free Spirit, whose fundamental notions he may indeed be said to have systematized and expounded in the highest form to which they could attain. In 1327 the opponents of the Beghards laid hold of certain propositions contained in Eckhart's works, and he was summoned before the Inquisition at Cologne. The history of this accusation is by no means clear. Eckhart appears, however, to have made a conditional recantation—that is, he professed to disavow whatever in his writings could be shown to be erroneous. Further appeal, perhaps at his own request, was made to the Pope, and in 1329 a bill was published condemning certain propositions extracted from Eckhart's works. But before its publication Eckhart was dead. The exact date of his death is unknown. Of his writings, several of which are enumerated by Trithemius, there remain only the Sermons and a few tractates. Till recently the majority of these were attributed to Tauler, and it is only from Pfeiffer's careful edition (*Deutsche Mystiker d. XIV. Jahrhunderts*, vol. ii., 1857) that one has been able to gather a true idea of Eckhart's activity. From his works it is evident that he was deeply learned in all the philosophy of the time. He was a thorough Aristotelian, but by preference appears to have been drawn towards the mystical writings of the neo-Platonists and the pseudo-Dionysius. His style is unsystematic, brief, and abounding in symbolical expression. His manner of thinking is clear, calm, and logical, and he has certainly given the most complete exposition of what may be called Christian pantheism.

Eckhart has been called the first of the speculative mystics; but such a designation requires some qualification. Within the Christian church from the time of Erigena there had been a constant stream of what must be called mysticism, originating for the most part from the writings of the neo-Platonists and of Dionysius the Areopagite. This tendency may be noted in Bonaventura, in Albert (under whom Eckhart is said to have studied), and in Aquinas; it is more prominent in Hugo and Richard of St Victor, though with them it took a practical rather than a speculative direction. But in all these writers, with the partial exception of Erigena, who occupies a quite peculiar position, the mystical element was in strict subordination to the church doctrines, which might be speculatively *symbolized*, but were not thereby explained or rationalized. In Eckhart's writings and preaching, on the other hand, the element of mystical speculation for the first time comes to the front as all-important. By its means the church doctrines are made intelligible to the many, and from it the church dogmas receive their true significance. It was but natural that he should gradually diverge more and more widely from the traditional doctrine, so that at length the relation between his teaching and that of the church appeared to be one of opposition rather than of reconciliation. Eckhart is thus in truth the first who attempted with perfect freedom and logical consistency to give a speculative basis to religious doctrines.

It is not possible to expound in detail how Eckhart endeavours to explain the main principles of the Christian faith, but it is necessary to note the two most important points in his as in all mystical theories. These are first, his doctrine of the divine nature, and second, his explanation of the relation between God and human thought. The two are logically connected, and a complete exposition of his theory might start from either his theology or his psychology. Lasson, the author of a most valuable monograph on Eckhart, adopts the latter course, but for many reasons the other appears the most systematic.

The fundamental thought from which Eckhart's theology starts is that of the Absolute or Abstract Unity as the only real existence. Apart from God no thing has real being. But this Absolute is, for Eckhart, the *Deus absconditus*, the θεὸς ὑπερούσιος of the neo-Platonic theology. With Dionysius the Areopagite, Eckhart describes this divine essence, the Godhead, as absolutely without predicates; all determinations are limitations which destroy its infinite being. The Godhead is incomprehensible, inexpressible. It is in truth nothing; yet as the most real of beings it must be conceived as absolutely potential, as containing in itself the origin and final end of all things. This Godhead is not God as known to us. From the Godhead the triune God *proceeds* or is evolved. At this point, at the transition between the divine absolute and the personal deity, Eckhart is face to face with the crucial difficulty of all speculative mysticism, and it is of interest to compare his method of solution with that adopted by later thinkers of like tendencies, *e.g.*, Boehme and Baader. In the Godhead, as in everything, according to Eckhart, there must be distinguished matter and form, or, as they are here called, essence and nature. The matter or essence is the potentiality, what the thing is in itself; the form or nature is that which it becomes as an object for others. The Godhead reveals itself in the personal God, the Father. For the Godhead is a spiritual substance, and as such can only become real by consciousness, by reflection on self, by self-expression. That which reflects and expresses is the Father. The Son is the Word, or expression through and in which the Father becomes self-conscious. As there is here no distinction of time or space, Father and Son are in very truth one. The Father eternally begets the Son, and the return of the Son into the Father in love and mutual will is the Spirit. The Father is not before the Son; only through the begetting of the Son, only through arriving at self-consciousness, does He become the Father.

The genesis of the Son from the Father involves also, according to Eckhart, the production of the world of things. For God is reason, and in reason is contained the ideal world, the world of creatures, not in time and space, which becomes materialized. In the Son are all things made, but only, Eckhart is careful to point out, in ideal form. He holds strongly to the so-called Platonic view that, over and above sensible things, there exists a realm of ideal forms or exemplars, to be apprehended by pure thought, through thought freed from the limitations of space and time. How this ideal world is related to the world of real things he does not show, nor does he explain the apparent independence of the material universe. When, therefore, Eckhart speaks of the world as necessary to the divine existence, of God as loving Himself in created things, and of all things being God, he must be understood to speak of this ideal world, not of things as known to us.

As all things have arisen from God, so all things desire to return into the unity of the divine being. Repose in God is the final end of all things. In man, the noblest of created things, this return is brought about. In man, specially, there is the faculty of supra-rational cognition, the power of reaching to the absolute, the ground both of God and of the universe. This peculiar power, called by Eckhart the spark (*Fünklein, Scintilla*), is in truth God working in man. In cognition of God, God and man are one; there is no distinction of knower and known, and hence, as opposed to empirical knowledge, it may be called faith. In such faith, there is involved not only reason, but will, for the divine illumination becomes operative or takes real effect through the will.

To attain to full union with God is the final end of activity, and the means, it is clear, must be the resignation of all individuality. Absolute quietism appears to be the only method whereby the birth of the Son in the soul may be brought about. When this state has been reached, then the human soul is one with God; its will is God's; no evil can be wrought by it; it cannot sin. The practical consequences which would flow from such a doctrine, and which did appear among the Brethren of the Free Spirit, were evaded, rather than overcome, by Eckhart. For, according to his teaching, all the above applies only to the "spark" in the soul: the other faculties may be reasonably and legitimately employed about other and temporal matters. By this loop-hole, also, he escapes the doctrine that works are entirely inefficacious. He is careful to hold the balance between inward feeling and outward action, and on this point his teaching is important in relation to the later Reformation thinkers.

On the specifically theological doctrines of Eckhart, such as Grace, Incarnation, the Fall, Redemption and Sin, it is not possible to enter in brief compass. A most adequate account of them will be found in Lasson's monograph above referred to.

The most important of the many works upon Eckhart are—Pfeiffer, *Deutsche Mystiker*, vol. ii.; Martensen, *Meister Eckhart*, 1842; Bach, *Meister Eckhart der Vater der Deutschen Speculation*, 1864; Lasson, *Meister Eckhart der Mystiker*, 1868; Ullmann, *Reformatoren vor der Reformation*, 1842; Preger, *Geschichte d. Deutschen Mystik*, i., 1874.

ECKHEL, JOSEPH HILARIUS (1737–1798), one of the most distinguished numismatists, was born at Enzersfeld in Lower Austria, January 13, 1737. His father was farm-steward to Count Zinzendorf, and he received his early education at the Jesuit's College, Vienna. Here at the age of fourteen he was admitted into the order, still pursuing his studies with earnestness, and especially devoting himself to antiquities and numismatics. After being engaged as professor of poetry and rhetoric, first at Steyer and afterwards at Vienna, he was appointed in 1772 keeper of the cabinet of coins at the Jesuit's College, and in the same year he went to Italy for the purpose of personal inspection and study of antiquities and coins. At Florence he was employed to arrange the collection of the grand duke of Tuscany; and the first fruits of his study of this and other collections appeared in his *Numi Veteres Anecdoti*, published in 1775. On the dissolution of the order of Jesuits in 1773, Eckhel was appointed by the empress Maria Theresa professor of antiquities and numismatics at the university of Vienna, and this post he held for twenty-four years. He was in the following year made keeper of the imperial cabinet of coins, and in 1779 appeared his *Catalogus Vindobonensis Numorum Veterum*. Eckhel's great work is the *Doctrina Numorum Veterum*, in 8 vols., the first of which was published in 1792, and the last in 1798. The author's rich learning, comprehensive grasp of his subject, admirable order and precision of statement in this masterpiece drew from Heyne enthusiastic praise, and the acknowledgment that Eckhel, as the Coryphæus of numismatists, had, out of the mass of previously loose and confused facts, constituted a true science. A volume of *Addenda*, prepared by Steinbüchel from Eckhel's papers after his death, was published in 1826. Among the other works of this great scholar are—*Choix de Pierres gravées du Cabinet Imperial des Antiques* (1788), a useful school-book on coins entitled *Kurzgefasste Anfangsgründe zur alten Numismatik* (1787), of which a French version enlarged by Jacob appeared in 1825, &c. Eckhel died at Vienna, May 16, 1798.

ECLECTIC (from ἐκλέγω, I select), a term of which the most important application is in philosophy, denotes a thinker whose views are borrowed partly from one, partly from another, of his predecessors. It perhaps requires to be noted that, where the characteristic doctrines of a philosophy are not thus merely adopted, but are the modified products of a blending of the systems from which it takes its rise, the philosophy is not properly eclectic.

The history both of ancient and of modern eclecticism shows that eclecticism naturally springs up when, while literary culture makes the doctrines of the chief philosophies familiar and preserves an interest in philosophy, the first pursuit of thinkers is not purely speculative truth.

In the 2d century B.C., a remarkable tendency toward eclecticism began to manifest itself. The longing to arrive at the one explanation of all things which had inspired the older philosophers became less earnest; the belief, indeed, that any such explanation was attainable began to fail; and thus men, not feeling the need of one complete logical system, came to adopt from all systems the doctrines which best pleased them. In Panætius we find one of the earliest examples of the modification of Stoicism by the eclectic spirit; and about the same time the same spirit displayed itself among the Peripatetics.

The philosophy that took root in Rome, where philosophy never became other than a secondary pursuit, was naturally for the most part eclectic; of this Cicero is the most striking illustration,—his philosophical works consisting of a mixture, with little or no blending, of doctrines borrowed from Stoicism, Peripateticism, and the scepticism of the Middle Academy. And, not to mention numerous names of minor importance, eclecticism had another representative at Rome in the school of Sextius and Sotion, who were half Stoic, half Pythagorean.

In the last stage of Greek philosophy the eclectic spirit produced remarkable results outside the philosophies of those properly called eclectics. Thinkers chose their doctrines from many sources—from the venerated teaching of Aristotle and Plato, from that of the Pythagoreans and of the Stoics, from the old Greek mythology, and from the Jewish and other Oriental systems. Yet, it must be observed that neo-Platonism, Gnosticism, and the other systems which are grouped under the name Alexandrian, were not truly eclectic, consisting, as they did, not of a mere syncretism of Greek and Oriental thought, but of a mutual modification of the two. It is true that several of the neo-Platonists professed to accept all the teaching both of Plato and of Aristotle, but, in fact, they arbitrarily interpreted Aristotle so as to make him agree with Plato, and Plato so as to make his teachings consistent with the Oriental doctrines which they had adopted, in the same manner as the schoolmen attempted to reconcile Aristotle with the doctrines of the church. Among the early Christians, Clement of Alexandria, Origen, and Sinesius were eclectics in philosophy.

The eclectics of modern philosophy are too numerous to name. Of Italian philosophers the eclectics form a large proportion. Among the German we may mention (though details cannot here be given) Wolf and his followers, as well as Mendelssohn, Eberhard, Platner, and to some extent Schelling, whom, however, it would be incorrect to describe as merely an eclectic. In the first place he cannot be denied the praise of originality; and, in the second place, it is not so much that his views of any time were borrowed from a number of philosophers, as that his thinking was influenced first by one philosopher then by another.

But, during the present century, the term eclectic has come to be specially applied to a number of French philosophers who differ considerably from one another. Of these the earliest were Royer-Collard, who was mainly a follower of Reid, and Maine de Biran; but the name is still more appropriately given to the school of which the most distinguished members are Victor Cousin, Théodore Jouffroy, Damiron, St Hilaire, Rémusat, Garnier, and Ravaisson. Cousin, whose views varied considerably at different periods of his life, not only adopted freely what pleased him in the doctrines of Laromiguière, Royer-Collard, and Maine de Biran, of Kant, Schelling, and Hegel, and of

the ancient philosophies, but expressly maintained that the eclectic is the only method now open to the philosopher, whose function thus resolves itself into critical selection and nothing more. "Each system," he asserted, "is not false, but incomplete, and in reuniting all incomplete systems, we should have a complete philosophy, adequate to the totality of consciousness." But this assumes that every philosophical truth is contained somewhere in the various philosophies; and if, as it would be surely rash to deny, there still remains philosophical truth undiscovered, but discoverable by human intelligence, it is evident that eclecticism is not yet the only philosophy. For a discussion of the question how far the above dicta of Cousin represent his own method of philosophizing we must refer the reader to the article COUSIN. Eclecticism gained great popularity, and, partly owing to Cousin's position as minister of public instruction, became the authorized system in the chief seats of learning in France, where it has given a most remarkable impulse to the study of the history of philosophy.

ECLIPSE. See ASTRONOMY.

ECSTASY (ἔκστασις, from ἐξίστημι, to put out of its place, to alter), a term applied to a morbid mental condition, in which the mind is entirely absorbed in the contemplation of one dominant idea or object, and loses for the time its normal self-control. With this there is commonly associated the prevalence of some strong emotion, which manifests itself in various ways, and with varying degrees of intensity. This state resembles in many points that of catalepsy already described, but differs from it sufficiently to constitute it a separate affection. The patient in ecstasy may lie in a fixed position like the cataleptic, apparently quite unconscious, yet, on awaking, there is a distinct recollection of visions perceived during this period. More frequently there is violent emotional excitement, which may find expression in impassioned utterances, and in extravagant bodily movements and gesticulations. This disease usually presents itself as a kind of temporary religious insanity, and has frequently appeared as an epidemic. It is well illustrated in the celebrated examples of the dancing epidemics of Germany and Italy in the Middle Ages, and the *Convulsionnaires* of St Medard at the grave of the Abbé Paris in the early part of the last century, and in more recent times has been witnessed during periods of religious excitement in this country. This disorder is highly contagious, and readily spreads by imitation. As a disease it is more curious than important, and for its treatment requires the judicious exercise of moral influences rather than medical remedies, although these also, as in the case of similar ailments, may often be used with advantage.

ECUADOR, or, in full, LA REPUBLICA DEL ECUADOR, an independent state of South America, traversed by the equator, from which it takes its name, and bounded on the N. by the United States of Colombia, E. by Brazil, S. by Peru, and W. by the Pacific Ocean (see plate xi. vol. i.). Its area cannot be stated with any close approximation to accuracy, for large districts along the frontiers are equally claimed by Ecuador and the neighbouring powers; and even within the limits of undisputed possession no systematic survey has been undertaken. According to Villavicencio, the area is only 127,205 English square miles; but F. Hanemann, quoted by Behm and Wagner (*Bevölkerung der Erde*, 1874, p. 76), makes it 248,580 by planimetric calculation on the basis of H. Kiepert's map in his *Handatlas*, 1872. Kiepert places the eastern limit at 70° W. of Greenwich, but does not assign to Ecuador the disputed territory along both sides of the Marañon. The population was stated by Villavicencio at 1,108,082 in 1857, exclusive of 200,000 "wild" Indians; but an official estimate for the same year is quoted by Wappäus, which gives only 881,943, exclusive of 150,000 "wild" Indians, and even this he thinks is probably too high. His opinion is so far confirmed by the memoir of the minister Leon, published in 1875 at Quito, according to which the total population, exclusive of about 200,000 Indians, was 866,137. The Galapagos Islands, an uninhabited group with an area of 2951 square miles, are dependent on Ecuador.

Mountains.—The great South American chain of the Andes traverses Ecuador from south to north, and forms the predominant factor in its physical constitution. Its two Cordilleras run parallel with each other, and inclose an elevated longitudinal valley about 40 miles wide and 300 miles long, which is divided by the transverse ridges, or *nudos*, of Tiupullo and Assuay into the three great basins of Quito, Ambato, and Cuenca, which are again subdivided by inferior ridges into irregular sections. The eastern Cordillera attains in several of its summits a height of more than 18,000 feet; the western has only one (Chimborazo) which exceeds 17,500. The Quito plain lies 9500 feet above the sea, Ambato 8500, and Cuenca 7800: the last two are comparatively barren and melancholy, while the first, though so much the loftiest of the three, is clothed with luxuriant vegetation. The altitude of the Tiupullo or Chisinche ridge, stretching across from Cotopaxi to Iliniza, is 11,500 feet, and that of the Assuay ridge about 13,500. Both the western and eastern slopes of the chain are marked by magnificent valleys of erosion; the former, which contains at least six successive terraces, has an average gradient of 275 feet per mile, while that of the latter is only 125. Granitic, gneissoid, and schistose rocks are the main materials of the gigantic pile; the summits are capped with trachyte and porphyry, and the sides are strewn with immense beds of gravel and volcanic debris. Nowhere in the whole Andean system do the individual mountains attain so magnificent a development as in the Ecuadorian section. Around the valley of Quito alone there are twenty noble volcanic summits, presenting a beautiful variety of form,—here a perfect and there a truncated cone, there a jagged and blasted crest, and there again a smooth and snow-covered dome.

In the Eastern Cordillera the following are capped with perpetual snow—Cayambi, Antisana, Cotopaxi, Llanganati, Sincholagua, Sangai, Sara-urcu, Tunguragua, Collanes, and Assuay; in the Western—Chimborazo, Iliniza, Casalagua, Cotacachi, Pichincha, Corazon, Atacazo, Chiles, Carahuirazo, Yana-urcu, and Quilindaña. Imbabura may either be assigned to the eastern range, or perhaps, more properly regarded as the common point of junction. It is situated at the northern end of the great central valley, attains a height of 15,929 feet, and is remarkable for its vast eruptions of mud and water, the most extensive of which took place in 1691. The name, equivalent to the "fish-producing," from *imba*, fish, and *bura*, mother, is supposed to refer to the quantities of *Pimelodus cyclopum* said to have been contained in its discharges—a phenomenon, however, which has been called in question by Wagner, after a searching investigation into the origin of the report. Cayambi (or by mistake, Cayamburo) is situated exactly on the equator, and is thus distinguished, as Humboldt observes, from every other snow-capped mountain in the world. It is the loftiest summit in the eastern Cordillera, and spreads out at the base over a very extensive area. Antisana rises with a double dome to the height of 18,880 feet, and presents the proof of its former activity in its magnificent lava-streams, of which one, according to Orton, is ten miles long and five hundred feet deep. It may now be classed with the *apagados*, though Humboldt saw smoke issuing in 1802. On the side is the famous *tambo* of Antisana at a height of 13,300 feet above the sea. To the next two peaks—Sincholagua and Rumiñagui, respectively 16,360 and 15,603 feet in height—comparatively little attention has been paid, perhaps from the rivalry of their southern neighbour Cotopaxi. This magnificent mountain has already been briefly described (vol. vi. p. 480). It is the loftiest active volcano in the world. The slope, according to Orton, is 30°, according to Wagner 29°, the north-western side being very slightly steeper than the south-eastern. The apical angle is 122° 30'. On the east it is covered with snow, but on the west it is usually kept bare by the action of the trade winds. Its crater, estimated by Wagner as less than that of Mount Etna, is bordered by a band of trachytic rock, forming a black coronet above the white. On the southern slope, at a height of 15,059 feet, a small

cone of porphyritic andesite, called *el Picacho*, the beak, or *Cabeza del Inca*, the Inca's head, lifts its bare cliffs for above a thousand feet, and from its general appearance gives some show of reason to the tradition which regards it as the original summit of the mountain blown off at the first eruption in 1532. The present summit is usually enveloped in clouds; and even in the clearest month of the year it becomes visible only for eight or ten days. "On the Tacunga plateau," says Wagner (*N. Reisen im trop. Amerika*, p. 514), "at a height of 8000 Paris feet the prevailing direction of the wind is meridional, usually from the south in the morning, and frequently from the north in the evening; but over the summit of Cotopaxi, at a height of 18,000 feet, the north-west wind always prevails throughout the day. The gradually-widening volcanic cloud continually takes a south-eastern direction over the rim of the crater; at a height, however, of about 21,000 feet, it suddenly turns to the north-west, and maintains that direction till it reaches a height of at least 28,000 feet. There are thus from the foot of the volcano to the highest level attained by its smoke-cloud three quite distinct regular currents of wind."

The principal product of the Cotopaxi eruptions is pumice stone; and the flanks of the mountain are covered with deep beds of this material mingled with trachytic rocks. In the vicinity fragments of obsidian are found in great profusion. Llanganati or Cerro Hermoso has been little visited except by natives in search of the golden treasures of the Incas believed to be hid in one of its lakes; and even their curiosity was quenched by the mysterious fate of Padre Longo. Its height is 17,843 feet, and it is said by Villavicencio to contain large quantities of pyrites. In regularity of structure the cone-shaped summit of Tunguragua is similar to Cotopaxi. It attains an altitude of 16,685 feet above the Pacific; and, inasmuch as it rises directly from a plain only 5700 feet above the sea, and is connected with the Cordillera only by a *cuchilla* or "knife-edge" from its southern side, it has a much greater apparent elevation than many a mountain that really overtops it. Its slope is 38°. A cataract fed by the snows on the summit descends 1500 feet in three leaps; and an enormous basaltic lava-stream, black and smooth and barren as when first it cooled, may be traced in a north-east direction across the channel of many a chafing torrent. The most notable eruption was in 1777. Whether the mountain is now to be classed with the *apagados* appears doubtful. In 1832 Dr Terry reported that smoke was almost always ascending from the top; Spruce saw smoke issuing from the western side in 1857; two years later Wagner could find no trace of activity though he ascended several times to the snow-line; but since that date Prof. Orton, on the authority of Dr Taylor of Riobamba, reports a continual fuliginous discharge. El-Altar is of very irregular shape, consisting of eight snow clad peaks, the highest of which is 17,735 feet in height. According to an account accepted by Humboldt, there existed at the time of his visit an ancient Quichua manuscript with a description of a terrific catastrophe by which Capac urcu, the "Chief Mountain"—for so the natives call El-Altar—was blown into its present picturesque confusion, and lost the rank it had previously held of the loftiest summit in all the Andes; but more modern inquiries throw the gravest doubt on the trustworthiness of Humboldt's informant, and the manuscript has never been seen by European eyes. The crater, surrounded by a steep and jagged wall of rocks, is remarkable as the bed of the only real glacier known to exist in the Ecuadorian Andes. Sangai, which brings the list of the summits of the Eastern Cordillera to a close, is perhaps the most restless volcano in the world. Since the Spanish conquest three hundred years ago it has been in uninterrupted activity. Small outbursts of lava, accompanied by explosions of steam and reports as of platoon-firing, succeed each other at intervals usually of 10 or 15 minutes, the fiery discharge shooting about 700 or 800 feet above the rim of the crater. From time to time, especially during the rainy season, the symptoms become more violent, the gigantic jet of molten rock leaps up 2000 feet, the explosions are louder and more terrible than the cannonading of armies, and the noise of the thunders amidst the clouds is answered by still more awful *bramidos* from the inferno below. Though of exceptional interest to the physical investigator, not only on account of this perpetual activity, but also on account of its peculiar position in the Andean range, Sangai, by reason of the difficult and dangerous country by which it is surrounded, has been but rarely visited by European travellers. Wisse and Garcia Moreno, and afterwards Schmarda, attempted the ascent. Our knowledge of Chimborazo, the most southern of the predominant summits of the Western Cordillera, has on the other hand received continuous augmentation from explorer after explorer. The "Mountain of Snow"—for such is the meaning of Chimpu-raza, the original form of the name—attains, according to Humboldt, a height of 21,420 feet,[1] and was long regarded as the culminating point of the Andes. The fact that it only makes the plumb-line deviate 7" or 8" shows that it is probably hollow; and there is no doubt the now silent peak was once eloquent with volcanic thunders. The magnificence of its mass, imposing though it be from almost any point of view, can be fully appreciated only from the Pacific. The summit has never been reached; Humboldt attained to a height of 19,331 in 1802; Bolivar afterwards exceeded this limit; and Bossingault and Hall reached 19,682 in 1831. Access can be obtained either by Chillapullo or by the *arenal*—a stretch of sand and gravel about three miles in length which crosses the N.W. side of the mountain at an elevation of more than 14,000 feet. In ascending by the *arenal* the traveller can reach about 16,210 feet above the sea on horseback, and pursue his difficult path on foot till about 19,693; taking the other route he sleeps at the hacienda about 12,664 feet, may proceed to a height of 15,770 by his mule, and attains his furthest limit at 16,777. To the north of Chimborazo, and separated from it only by a narrow valley, Carahuairazo, or, as the Indians call it, Chimborazo's Wife, rises to a height of 16,748 feet. It owes its present diminished stature and picturesque profusion of peak and crag to the sudden collapse of its hollow summit in 1699. Quirotoe, still further north, is supposed to have suffered a similar fate. It now contains in its hollow summit an extensive lake, which, according to Velasco and Villavicencio, has frequently, and most noticeably in 1740, been covered with flames. The height is calculated at about 13,510 feet. Iliniza is a magnificent mountain with two pyramidal peaks, of which the loftiest rises 17,395 feet above the sea. In the 18th century it was trigonometrically measured by the French Academician Bouguer; and Wagner succeeded in reaching within 800 feet of the top, and was only prevented by a sudden storm from completing the ascent. Mules can only be used to a height of 13,200 feet. The geological phenomena furnish no evidence of any volcanic activity either from the summit or the sides. Corazon, so called from its heart-shaped appearance, is equally destitute of a crater. Its summit, 15,796 feet above the sea, has been reached by La Condamine and Bouger, Humboldt and Bonpland, and José Caldas. Atacazo, about 16,000 feet in height, has nothing very remarkable in its appearance or history. According to Wagner, it has no activity, and from its weather-worn aspect seems of older date than its mightier neighbour Pichincha. The summit of the latter, the "Boiling Mountain," presents three groups of rocky peaks, of which the most westerly, Rucu-Pichincha or Old Pichincha, alone displays volcanic activity. The crater, believed to be the deepest on the face of the globe, consists of a funnel-shaped basin 2500 feet deep, 1500 feet wide at the bottom, and upwards of a mile wide at the mouth. The inner sides rise in some places vertically, in others with an angle of 20°; the exterior of the cone has an angle of 30°. Bouger and La Condamine reached the brink in 1742; Wisse and Moreno entered the crater in 1844; and Farrand and Orton have descended to the bottom, the latter in 1867. Orton gives a thrilling description of his exploit. He found that the real cone of eruption was an irregular heap 250 feet in height and 800 feet in diameter, containing about seventy vents. The temperature of the vapour within the fumarole was 184°, and water boiled at 189°. There have been five eruptions of Pichincha since the Spanish conquest—in 1539, 1566, 1577, 1587, and 1660. The second covered Quito three feet deep with ashes and stones. The last, happily, broke down the western side of the crater, so that in any future outburst Quito will probably be safe. Since the earthquake of August 1867, the mountain has sent forth dense masses of black smoke, and large quantities of fine sand. Of Cotocachi, a conical summit 16,288 feet high, and Chiles, a truncated cone about 16,200 feet high, comparatively little is known. The latter is situated on the frontiers of Ecuador, and its northern neighbour Cumbal lies in the territory of Columbia.

[1] Reiss and Stübel make it only 20,697 feet.

Rivers.—The surplus waters of the eastern versant in Ecuador all find their way to the great head-stream of the Amazon; those of the western form a large number of independent rivers disemboguing in the Pacific. The Napo, which claims the first place, rises in the eastern defiles of Cotopaxi and Sincholagua—the principal source being the Rio del Valle, which traverses the Valle Vicioso. The river is still 1450 feet above the sea-level at the village of Napo, 858 at the mouth of the Coca, 586 at the mouth of the Aguarico, 500 at the mouth of the Curaray, and 385 where it joins the Marañon. The current, as observed by Orton in the month of November, was six miles an hour at Napo; in the course of the next eighty miles the river falls 350 feet, and produces a fine series of rapids; and from Santa Rosa downwards the rate is not less than four miles an hour. The breadth of the stream, which is only 120 feet at Napo, has increased to 1500 feet by the time it reaches Coca, and near the end of its course is little less than a full mile. The junction with the Marañon takes

place by several distinct mouths. For some distance beyond the mouth of the Coca the channel is navigable for steam-boats, and the natives proceed in canoes as far as the Cataract del Cando, 3332 feet above the sea level. The Curaray rises in the Llanganati Cordillera, and flows almost parallel with the Napo till their point of confluence, a distance of 490 miles. The waters are rendered unpalatable by a reddish slime in the lower part of its course, where the current is very gentle. The Aguarico, formed by the union of the Cofanes, San Miguel, and Azuela, which descend from the Pimampiro Cordillera in the northern limits of the country, has a course of about 420 miles. The Coca, rising in the neighbourhood of Cayambi and the Guamani Mountains, receives the Maspa and the Cosanga, flows eastward along the line of the equator as far as 76° 10′ W. long, turns southward, takes a leap of 137 feet, and maintains the same direction till it reaches the Napo rather as a rival than a tributary. The Napo system thus drains a district extending from 1° N. to 3° S. lat. and from 78° 10′ to 73° 50′ W. long. The only other Ecuadorian tributary of the Marañon that has any claim to special notice is the Pastassa. Instead of having its head-waters in the eastern slopes of the Eastern Cordillera, as is the case with most if not all of the rivers already described, it rises in the central plateau, within the shadow of Cotopaxi, forces its way through the range to the north of Tunguragua, and flows south-eastwards past the roots of Sangai, augmented from stage to stage by the numerous torrents that are fed by the eternal snows. It bears the name of Patate till its junction with the Chambo in the neighbourhood of Baños, and is not recognized as the Pastassa above the Agoyan falls. As early as 1741 it was navigated without difficulty by Don Pedro Maldonado; and it is believed that it would afford a passage for steamboats for a distance of 314 miles. Mr Simson, one of the most recent explorers of eastern Ecuador, gives a graphic account of the terrific floods to which its mountain tributaries, and more especially the Topo, are subject. The rise of the waters is sometimes so sudden, and their fury so irresistible, that trading parties are imprisoned for weeks in the narrow strip of land between one torrent and the next; and the whole country is traversed in the line of the currents by long ridges, or *cuchillas*, produced by the disintegration and removal of all the intermediate tracts. The same, indeed, holds true more or less of the whole eastern slope of the mountains and of the upper sections of all the rivers. On the western versant of the Ecuadorian Andes there are three river systems of considerable size—the Mira, the Esmeraldas, and the Guayaquil. The first has its head-waters—the Rioblanco, the Pisco, and the Puntal—in the vicinity of Imbabura, breaks through the Western Cordillera, receives from the left the San Pedro, Paramba, Cachiyacu, Chachavi, Canumbi, and from the right the San Juan, Gualpi, and Nulpe, and empties itself by several mouths into the Pacific near the island of Tumaco. The second, which is the largest of the three, collects its abundant waters from Cotopaxi and Sincholagua, the transverse ridge of Tiupullo or Chisinche, Iliniza, Pichincha, and Cayambi. The Cotopaxi tributary, known as the Rio Pedregal, forms three beautiful cascades, the highest of which is about 220 feet. To the Guayaquil system belong the Daule, the Babahoyo, and the Yaguachi, with their numerous tributaries,—the Daule rising in the Sandomo ridge, the Babahoyo in the slopes of the Western Cordillera, and the Yaguachi in the skirts of Chimborazo. They are all navigable for some distance inland by steamer, and are of great importance in connection with the transport of native produce to the port of Guayaquil. Floods are usual in the rainy season, and vast stretches of country are laid under water. In the Daule the tide is felt at Candelaria, 25 miles inland. Along the coast, between the mouth of the Esmeraldas and the Gulf of Guayaquil, a large number of streams find their way to the sea; but as they all have their sources in the comparatively insignificant line of hills that runs north and south about 25 or 30 miles inland, they are themselves comparatively insignificant.

Lakes.—While Ecuador can boast of nothing worthy of the name of an inland sea, it possesses a large number of lakes, either lying in the laps and extinct craters of the Andes, or formed in the lowlands by the overflowings of its rivers. To the former class belong San Pablo, at the foot of Imbabura, 5 miles in circumference, Cuy-cocha, on the south-east skirt of Cotocachi, 10,200 feet above the sea, and thus one of the highest lakes in the world; Yaguar-cocha, or "Lake of Blood," not far from Ibarra; Quirotoa, about 4600 feet in diameter; Colta, to the east of Riobamba, with a powerful whirlpool in the centre; and Colay, to the south of Riobamba, which exhales gases poisonous enough to stupefy the birds that attempt to cross, and thus helps to fill the larder of the Indians in its neighbourhood. The largest specimens of the second class lie along the Napo. Thermal springs are mentioned in numerous localities,—as at Belermos and San Pedro del Tingo, north-east of Quito; at Cachillacta, in the district of Nanegal; in the skirts of Rumiñagui; at Timbugpoyo, near Tacunga; on the slopes of Chimborazo; and at Baños, near the foot of Tunguragua.

Minerals.—Ecuador is less rich in minerals, especially in the precious metals, than any other of the South American states. Silver, gold, iron, mercury, lead, tin, zinc, copper, antimony, manganese, alum, sulphur, and salt are all said to be found; but very few of these exist in sufficient quantity to affect the destinies of national industry. Gold mixed with silver has long been obtained in the neighbourhood of Zarume, in the province of Loja, and it is gathered by the Indians from the river beds in the Napo and Canelos territory, and more particularly from the Bobonaza. The gold of the Canelos is about 22 carats fine, and that of the Napo 20. The town of Azogues derives its name from its prolific quicksilver mines; and similar deposits are worked within the city of Loja. In the pueblo of Simiatug, to the south-east of Riobamba, the natives manufacture salt from brine springs, and export it under the name of *sal de Tomavela*; the produce of Salinas—a name which tells its own tale—in Imbabura, finds its way to Colombia. Coal of good quality occurs in the province of Cuenca and also on the banks of the Napo near Pucaurcu, the "Red Mountain." Marble, alabaster, gypsum, slate, and other industrial rocks are obtained in various localities; beautiful rock crystal is worked at Chongon, in the province of Guayaquil; and in the coast districts there exist considerable deposits of asphalt.

Climate.—The description already given of the position and vertical arrangement of the country implies the main characteristics of Ecuadorian climate. The snow-line varies considerably in the different seasons of the year, as well as according to the form and situation of the individual mountain. Wagner found it in May on Cotocachi, 15,788 feet high; on Guagua-Pichincha in June, 15,741; on Mozo-Pichincha in May, 15,762; on Iliniza in December, 15,494; on Carahuirazo in January, 15,858; on Tunguragua in February, 15,613; and on El-Altar in February, 15,854. The greatest difference, according to his observations, existed between the south side of Cotopaxi (15,279 feet) and the north side of Chimborazo (15,914). This elevation of the snow-line—so great when compared with its European position—of course renders possible the existence of vegetable and animal life at a correspondingly great height. While St Bernard's, the highest point of permanent human habitation in Europe, is only 8377 feet above the sea, most

of the towns and villages of the central plateaux from Ibarra to Cuenca lie between 8500 and 9500 feet; many of the huts of the cattlemen are at a height of from 11,500 to 12,800, and the loftiest of these, at Cunayaco, on the north side of Chimborazo, in 1° 28′ S. lat., stands no less than 13,396 above the sea. The temperature of these upland districts is of course comparatively low. "At Quito," says Professor Orton, "it is never either spring, summer, or autumn, but each day is a combination of all three." The thermometric mean is 58° 8′; the range in the 24 hours about 10°, the annual maximum 70°, and the annual minimum 45°. In the lower coast-region the tropical position of the country is the main factor, and accordingly at Guayaquil we find the thermometric mean is 83°, and during the rainy season the oppressive and pestiferous air "reminds the geologist of the steaming atmosphere of the Carboniferous period." The rainy season, or *invierno*, in Ecuador continues from December to May, with a short period of dry weather called the *veranillo* shortly after the December solstice. The rest of the year forms the *verano*, or summer, which, however, is in like manner interrupted by a little rainy season called the *inviernillo*, or Cordonazo de San Francisco, after the September equinox. The mean annual rainfall at Quito is 70 inches. In the coast region the two seasons are not very distinctly marked: in the invierno the sky is sometimes perfectly cloudless, while during the verano there occasionally falls a continuous drizzle called *garúa*. According to Villavicencio, a gradual diminution of rain has been observed in this district of irregular seasons, and he predicts the assimilation of its climate to that of the rainless coasts of Peru. On the eastern side of the Andes, on the other hand, rain occurs almost at any time of the year, and almost every morning the woods are watered with the gentle showers of the *rocio*. During the verano the Cordilleras and *mesas* are visited by violent hail-storms, and winds of almost incredible force sweep across the wintry scene. In its relation to human health the climate of the upland region is interesting. Goitre is common; and it is found necessary to maintain three large hospitals for lepers. Tubercular disease of the lungs, on the contrary, is said to be completely unknown 8000 feet above the sea, while it is one of the most frequent of diseases in the coast districts of Tropical America. The effects on the human organism of the ascension of the loftier summits are very variously described, owing doubtless to individual differences of constitution. One thing seems established,—that the pugnacious instincts both of men and the lower animals are greatly weakened.

Botany.—The flora of the Quitonian plateau has been well explored by various European botanists, and more especially by Dr Jameson of the university of Quito;[1] that of the western slopes and lowlands is less perfectly ascertained; and that of the richly-wooded country stretching eastward from the Andes is still in great part undescribed. From the coast of the Pacific upwards to a height of about 3000 or 4000 feet, the vegetation is distinctively tropical, including among its ecomonical species the banana, the sweet potato, rice, maize, the bread-fruit tree, indigo, cotton, cocoa, the yam, the mandioc, and the sugar cane. Most of these become rare above 3000 feet, but a few, like the sugar cane, are cultivated as high as 8000. Few parts of the world can vie in richness of vegetation with the alluvial valley of Guayaquil, which in the matter of fruit trees alone produces cocoa-nuts, pine-apples, pomegranates, shaddocks, oranges, lemons, apricots, chirimoyas, pultas, granadillas, tunas, mangos, pacays, and many others of less importance. Between 6000 and 10,000 feet above the sea the European cereals are successfully cultivated, along with the chick-pea, the broad-bean, the cabbage, the quinoa (*Chenopodium Quinoa*), potatoes, *Oxalis*, *Basella*, and *Tropæolum*. Wheat will not form the ear lower than at 4500 feet, or ripen higher than at 10,500; but barley and rye can be grown at a still greater elevation. The oak, the elm, the ash, and the beech never descend lower than to 5500 feet, and are seldom found higher than 9200. Further up, the larger forest trees, except the pine, begin to disappear; but the *Escallonia myrtalloides* is met with at an elevation of 13,000; and the shrubby *Befarias* ascend 400 or 500 feet higher. In the treeless region that lies between 11,600 and 13,800, or in other places between 12,000 and 14,000 feet, the similarity of the vegetation to that of the corresponding European region is, according to Wagner, especially striking. In the paramos of Chimborazo, Pichincha, Iliniza, &c., the relation of characteristic genera to those identical with genera in the Alpine flora of Europe is as 5 to 4; and the botanist might almost suppose himself in the Upper Engadine. As the region of cryptogams does not properly begin till about 17,000 feet on Cayambi and Chimborazo, most of the summits of the Cordilleras, failing, as they do, to reach this elevation, yield a considerable harvest of phanerogamous plants. Boussingault discovered a species of saxifrage (*Saxifraga Boussingaulti*) at a height of nearly 16,000 feet on Chimborazo, and Wagner found the trachytic rocks of Pichincha, Iliniza, and other peaks, far above the snow line, covered in many places with the gonda-plant, or *Culcitium nivale*, H. The species in these upper regions are frequently very remarkable, and a large number of strangely-modified forms have been collected from the craters of the volcanoes.

In its forest-lands alone Ecuador possesses almost inestimable resources. Seven different species of cinchona are known to exist within its borders; the *Ceroxylon andicolis* and many lesser species of palm abound on both sides of the Cordilleras; and redwood, Brazil wood, palo de cruz, guaiacum or holy wood, ebony, cedar, and aguana are a few of the more usual timber trees. In the dripping forests of the west grows the sindi-caspi, which forms excellent fuel even in its moistest condition. Copal, dragon's blood, india-rubber, storax, and several valuable dye-stuffs are obtained from indigenous plants. The cabaya or agave, the chambiri palm, &c., yield textile fibres; and the leaves of the toquilla (*Carludovica palmata*) and the mocora, a cocoa-nut-like tree, furnish material for the well-known hats.

Zoology.—The fauna of Ecuador does not present a great variety among the mammalia; but the birds, and still more the insects, are very numerous. The jaguar, the puma, the ounce, and the ocelot are the chief representatives of the cat tribe; monkeys of various species are common; the four characteristic animals of the Andean range, the llama, the guanaco, the vicuña, and the alpaca, are fairly abundant; large herds and flocks of European cattle and sheep are found in the rich pasture of the paramos; and horses, asses, and mules are reared in sufficient numbers to be articles of export. Few rivers are more densely peopled with alligators than the Guayaquil and Esmeraldas; and several of the largest species of snakes are natives of the warmer regions of the country, though in the Cordilleras and plateaus the reptilia are very rare. The condor, the turkey-buzzard, the gallinazo, the crane, and the pelican are among the larger birds; and ducks, pheasants, and partridges are not uncommon. Of the lesser birds perhaps none appears in such number and such striking variety of form and colour as the humming bird, which is found frequently at a great height on the mountains. The flautero or flute-bird is especially noticeable for the artistic character of his song. That the entomologist finds a rich harvest of coleopterous insects in the low countries is in keeping

[1] See his *Synopsis Plantarum Æquatoriensium*, 2 vols.

with what might be expected; butterflies are so numerous in some parts as even to surprise the veteran collector; and in certain favoured regions, mosquitoes, sand-flies, and the equally troublesome piums seem nearly as prolific as their ancient congeners in Egypt. The silkworm has been successfully introduced, but bee-keeping is as yet practically unknown. The ichthyology of Ecuador, and more particularly that of the rivers of the Amazon system, is very partially ascertained; but the species of the two versants seem to be quite distinct. According to Wagner's investigations the distribution is mainly vertical, and to the N. of Chimborazo alpine forms go as high as 13,400 Paris feet; the forms of the lower region (or under 1000 feet), are closely connected with those of Brazil and Guiana; more peculiar genera appear in the middle region, (from 1000 to 7000 feet), and the upper region is exclusively occupied by characteristic and frequently very strangely-shaped genera; the number of species is comparatively small, and that of individuals great only in the lower parts of the rivers.

Produce and Industries.—The principal article of foreign export is cocoa, of which two kinds especially are distinguished in the market—the fine "up-river" quality and the so-called Machala quality. Spain is the greatest purchaser, then England, Germany, and Peru and Chili. In 1874 the total quantity that left the country was 250,216 quintals, valued at 2,752,381 pesos, or, taking the peso as equal to 4s. 2d., £573,412. The collection of india-rubber is becoming an important trade; and pupils trained at the Government expense have been sent into the various provinces to superintend the introduction of indigo cultivation. Cotton, not proving a profitable investment, is being somewhat neglected: the export in 1874 was only 440,091lb, valued at 35,208 pesos. The other articles, arranged in the order of importance, were—coffee, 10,652 lbs, at 245,014 pesos; Cinchona bark, 981,132, at 196,226 pesos; vegetable ivory, 7,148,192 lb, at 142,963 pesos; straw hats, 7600 dozen, at 91,200 pesos; sole-leather, 19,744 pieces, at 88,848 pesos; dried skins to the amount of 43,115 pesos; bamboos to the amount of 23,002; and small quantities of sarsaparilla, algarroba, tamarinds, tobacco, pita, orchilla, rice, mats, and saibo-wool. A bank of issue and deposit, called the Bank of Ecuador, with a capital of a million dollars, was established in 1868.

Details of Political and Social Condition.—The main basis of the Ecuadorian constitution dates from 1843, but several important modifications have been introduced at various periods. The executive power is vested in a responsible president elected by a majority of votes among a body of 900 electors appointed by popular suffrage. He has no right of veto, and cannot interfere in any way with the sitting of the congress. Besides a vice-president, who is elected in the same way as the president, and, according to the decree of 1869, discharges the functions of home secretary, the cabinet comprises a minister of war and marine, a minister of finance, the president of the supreme court, and a prominent member of the clerical body. The legislative assembly or congress is divided into two houses, the upper consisting of sixteen senators, the lower of thirty deputies elected by popular suffrage. The judicial system comprises a supreme court at Quito, three upper courts, provincial courts, municipal courts presided over by the alcaldes, and parochial courts. Jury trial is employed in criminal cases, but many districts are very evidently too ignorant for the satisfactory working of the method. A governor-general is appointed for Guayaquil and Quito respectively. Slavery was abolished in 1854: all races and classes are equal in the eyes of the law; and there are no hereditary distinctions of rank or title. The military force numbers only about 1200 men, and the marine consists of three small steamers. The finances have long been in a rotten condition, and trustworthy information is of difficult attainment. The public revenue in 1873 was stated at 3,650,510 dollars or piastres (about £730,102); and the expenditure at 3,935,560 dollars (about £787,112). In 1872 the receipts were thus divided:—Customs, 1,707,403 piastres; duty on tobacco, 19,084; duty on alcohol, 111,420; salt monopoly, 312,785; gunpowder monopoly, 30,477; stamped paper, 114,395; income-tax, 67,451; duty on sale of land, 216,110; tithes, 371,611; mont-de-piété, 1159; post-office, 96,280; national property, 52 866; miscellaneous, 512,297—total, 3,613,536. In 1857 the national debt amounted to 16,370,000 piastres (or £3,274,000), of which £1,824,000 was the English loan contracted in 1855.

Artificial means of communication are still for the most part in a very primitive condition, though few countries have so little reason to be content with their natural highways by land or water. Many of the roads, even between important centres of population, are mere mule-tracks, altogether impassable in bad weather it may be for weeks or months at a time; while the violent torrents which have so frequently to be crossed often present nothing better than more or less elaborate bridges of rope, similar to the *jhuler* or *sanspur* of the Kashmirians. The simplest of these is the *taravita*, consisting of a single tight rope, with or without a travelling rope by which the passenger or his luggage may be hauled across; the most complex is the *chimba-chaca*, a rude prototype of the regular suspension bridge, constructed of four or five ropes of agave-root fibre, supporting transverse layers of bamboos. The best are hazardous to all except a practised foot, and they go out of repair in a few years. Since the middle of the century something has been done to improve this state of affairs; and a very great deal more has always been about to be done. According to Moreno's address to congress in 1873, Ecuador had at that time 30 miles of railway, nearly 200 miles of cart-road with substantial bridges, and about 250 miles of roads fit for the ordinary mule-traffic of the country. Wheeled conveyances are almost unknown, especially in the inland districts, the transport of goods of every description being effected by porters or mules. The first carriage was introduced into Quito in 1859, and the owner had to pay a tax for his innovation.

Religion

With the partial exception of such rude forms of belief as still linger among the semi-civilized Indians, the only religion professed by the Ecuadorian populations is the Roman Catholic. Nowhere in modern times have Jesuits and priests had it more their own way. Even in 1876 Dr Borrero, the "liberal" president, thought it expedient to declare that he would protect the religion of his fathers, which he believed "had not an enemy in all Ecuador." Two years before, in spite of the extremely depressed state of the finances, ten per cent. of the part of the church revenue belonging to the state was assigned to the Pope as an annual offering. The oath of a Protestant has no value in a court of justice; and it was regarded as an extraordinary stretch of liberality to allow the formation of a Protestant burial-ground at Quito in 1867. Monkish orders that lost their influence in Europe centuries ago still flourish in Quito—Trinitarians, Dominicans, Augustinians, Brown Franciscans, Black Franciscans, Lazarists, &c. According to Villavicencio, the number of the regular clergy at the time he wrote was 415, of the secular clergy 524, and of nuns 391. Quito is the seat of an archbishop; and there are bishoprics for Cuenca, Loja, Ibarra, Riobamba, Guayaquil, and Manabi.

Education has hitherto been left in the hands of the clergy, and primary education is consequently in a very defective condition. There has long been a university at Quito with about a dozen professors and nearly 300 students; and in 1875 the Ecuador academy was instituted in the city in accordance with the decree of the Spanish academy of Madrid. There are colleges in several of the larger towns, and nearly 600 schools exist throughout the country. The normal school at Guayaquil is open to Indian children.

Provinces

For administrative purposes the country is divided into eleven provinces—Azuay, with 149,103 of a population in 1871; Chimborazo, 110,860; Pichincha, 102,281; Guayas, 87,427; Imbabura, 77,379; Leon, 76,140; Tunguragua, 73,143; Los Rios, 61,922; Loja, 60,784; Manabi, 59,098; Esmeraldas, 8000. Besides the capital, whose inhabitants are variously estimated from 35,000 to 80,000, the largest cities are—Guayaquil, from 20,000 to 25,000; Tacunga, from 16,000 to 20,000; Cuenca, about 25,000; Riobamba and Ibarra, both perhaps about 16,000; Ambato, about 10,000; Otavalo, about 8000; Guaranda, 8000; and Cotacachi, 4000.

Antiquities

Antiquities.—Throughout Ecuador there are still considerable remains of the architectural and artistic skill of the ante-European period. At Cañar, to the north-east of Cuenca, stands the Incapirca, a circular rampart of finely hewn stone, inclosing an open area with a roofless but well-preserved building in the centre; not far off is the Inca-chungana, a very much smaller inclosure, probably the remains of a pavilion; and in the same neighbourhood the image of the sun and a small chapel are carved on the face of a rock called Inti-huacu. On one of the hills running from Pichincha to the Esmeraldas there are remains at Paltatamba of a temple and a conical tower, the buttresses of a bridge composed of stone and bitumen, portions of a great causeway, and numerous tombs from which mummies and plates of silver have been obtained. At Hantuntaqui similar sepulchral mounds, called *tolas*, may be seen, as well as traces of military structures. On the plain of Callo, near Cotopaxi, at a height of 8658 feet, the ruins of an Incarial palace, Pachusala, are utilized by the *hacienda*; and a conical hill at its side is supposed to be of artificial construction. The remains of another fortress and palace are preserved at Pomallacta, and in the neighbouring pueblo of Achupallas an ancient temple of the sun now serves as parish church.

History.—The territory of the present republic of Ecuador, when first it becomes dimly visible in the grey dawn of American history, appears to be inhabited by upwards of fifty independent tribes, among which the Quitus seem to hold the most important position. About 280 A.D. a foreign tribe is said to have forced their way inland up the valley of the Esmeraldas; and the kingdom which they founded at Quito lasted for about 1200 years, and was gradually extended, both by war and alliance, over many of the neighbouring dominions. In 1460, during the reign of the fourteenth *Caran Shyri*, or king of the Cara nation, Hualcopo Duchisela, the conquest of Quito was undertaken by Tupac Yupanqui, the Inca of Peru; and his ambitious schemes were, not long after his death, successfully carried out by his son Huaina-Capac, who inflicted a decisive defeat on the Quitonians in the battle of Hatuntaqui, and secured his position by marrying Pacha, the daughter of the late Shyri. By his will the conqueror left the kingdom of Quito to Atahuallpa, his son by this alliance; while the Peruvian throne was assigned to Huascar, an elder son by his Peruvian consort. War soon broke out between the two kingdoms, owing to Huascar's pretensions to supremacy over his brother; but it ended in the defeat and imprisonment of the usurper, and the establishment of Atahuallpa as master both of Quito and Cuzco. The fortunate monarch, however, had not long to enjoy his success; for Pizarro and his Spaniards were already at the door, and by 1533 the fate of the country was sealed. As soon as the confusions and rivalries of the first occupation were suppressed, the recent kingdom of Quito was made a presidency of the Spanish vice-royalty of Peru, and no change of importance took place till 1710. In that year it was attached to the viceroyalty of Santa Fé; but it was restored to Peru in 1722. When, towards the close of the century, the desire for independence began to manifest itself throughout the Spanish colonies of South America, Quito did not remain altogether indifferent. The Quitonian doctor Eugenio Espejo, and his fellow-citizen Don Juan Pio Montufar, entered into hearty co-operation with Nariño and Zea, the leaders of the revolutionary movement at Santa Fé; and it was at Espejo's suggestion that the political association called the *Escuela de Concordia* was instituted at Quito. It was not till 1809, however, that the Quitonians made a real attempt to throw off the Spanish yoke; and both on that occasion and in 1812 the royal general succeeded in crushing the insurrection. In 1820 the people of Guayaquil took up the cry of liberty; and in spite of several defeats they continued the contest, till at length, under Antonio José de Sucre, who had been sent to their assistance by Bolivar, and reinforced by a Peruvian contingent under Andres de Santa Cruz, they gained a complete victory on May 22, 1822, in a battle fought on the side of Mount Pichincha, at a height of 10,200 feet above the sea. Two days after, the Spanish president of Quito, Don Melchor de Aymeric, capitulated, and the independence of the country was secured. A political union was at once effected with New Granada and Venezuela on the basis of the republican constitution instituted at Cucuta in July 1821,—the triple confederation taking the name of Colombia.

A disagreement with Peru in 1828 resulted in the invasion of Ecuador and the temporary occupation of Cuenca and Guayaquil by Peruvian forces; but peace was restored in the following year after the Ecuadorian victory at Tarqui. In the early part of 1830 a separation was effected from the Colombian federation, and the country was proclaimed an independent republic. General Juan José Flores was the first president, and in spite of many difficulties, both domestic and foreign, he managed to maintain a powerful position in the state for about 15 years. Succeeded in 1835 by Vicente Rocafuerte, he regained the presidency in 1839, and was elected for the third time in 1843; but shortly afterwards he accepted the title of generalissimo and a sum of 20,000 pesos, and left the country to his rivals. One of the most important measures of his second presidency was the establishment of peace and friendship with Spain. Roca, who next attained to power, effected a temporary settlement with Colombia, concluded a convention with England against the slave trade, and made a commercial treaty with Belgium. Diego Noboa, elected in 1850 after a period of great confusion, recalled the Jesuits, produced a rupture with New Granada by receiving conservative refugees, and thus brought about his own deposition and exile. The democratic Urbina now became practically dictator, and as the attempt of Flores to reinstate Noboa proved a total failure, he was quickly succeeded in 1856 by General Francisco Robles, who, among other progressive measures, secured the adoption of the French system of coinage, weights, and measures. He abdicated in 1859 and left the country, after refusing to ratify the treaty with Peru, by which the defender of Guayaquil had obtained the raising of the siege. Dr Gabriel Garcia Moreno, professor of chemistry, the recognized leader of the conservative party at Quito, was ultimately elected by the national convention of 1861. Distrust in his policy, however, was excited by the publication of some of his private correspondence, in which he spoke favourably of a French protectorate, and the army which he sent under Flores to resist the encroachments of Mosquera, the president of New Granada, was completely routed. His first resignation in 1864 was refused, but the despotic acts by which he sought to establish a dictatorship only embittered his opponents, and in Sept. 1865 he retired from office. While he had endeavoured to develop the material resources of the country, he had at the same time introduced retrograde measures in regard to religion and education. The principal event in the short presidency of his successor, Geronimo Carrion (May 1865–Nov. 1867), was the alliance with Chili and Peru against Spain, and the banishment of all Spanish subjects. Several important changes were made by congress in the period between his resignation and the election of Xavier Espinosa, Jan. 1868: the power of the president to imprison persons regarded as dangerous to public order was annulled; and the immediate naturalization of Bolivians, Chilians, Peruvians, and Colombians was authorized. Espinosa had hardly entered on his office when, in August 1868, the country was visited by an earthquake, in which 30,000 people are said to have perished throughout South America. The public buildings of Quito were laid in ruins; and Ibarra, Otavalo, Cotacachi, and several other towns were completely destroyed. Next year a revolution at Quito, under Moreno, brought Espinosa's presidency to a close; and though the national convention appointed Carvajal to the vacant office, Moreno succeeded in securing his own election in 1870 for a term of six years. His policy had undergone no alteration since 1865: the same persistent endeavour was made to establish a religious despotism, in which the supremacy of the president should be subordinate only to the higher supremacy of the clergy. The tyranny, however, came to a sudden end in August 14th 1875, when the president was assassinated in Quito, by three of his private enemies. The consequent election resulted in the appointment of Dr Borrero, who, in his address to congress, December 1876, promised "to maintain, during the tenure of the responsible office to which he had never aspired, full political liberty and the freedom of the press." An insurrection headed by Veintemilla, the military commandant of Guayaquil, had already broken out; and on the 14th December the Government forces under Aparicio were completely routed at Galte.

See Ulloa, *Relacion hist. del Viaje*, Madrid, 1748; Caldas, *Seminario de la Nueva Granada*, Paris, 1849; Velasco, *Hist. del reino de Quito*, Quito, 1789 (French, by Ternaux-Compans, Paris, 1840); Humboldt and Bonpland, *Voyages aux régions équinox. du nouveau continent*, 1799, &c.; Villavicencio, *Geografia de la Rep. del Ecuador*, New York, 1858; Richard Spruce, "Visit to the Cinchona forests on the western slopes of the Quitonian Andes," in *Journ. of the Proc. of the Linnean Soc.* 1860; Pritchett, "Explor. in Ecuador in the years 1856 and 1857," in *Journ. of Roy. Geog. Soc.* 1860; Spruce, "On the Mountains of Llangnati," and Prof. Jameson, "Journey from Quito to Cayambe in 1859, in *Journ. Roy. Geog. Soc.*, 1861; Viscount Onffroy de Thoron, *Amérique équatoriale*, 1855; Haussarek, *Four Years among Spanish Americans*, London, 1868; Juan Leon Mera, *Ojeada histórico-crítica sobre la poesia Ecuadoriana*, Quito, 1868; Wagner, *Naturwissensch. Reisen im trop. Amerika*, Stuttgart, 1870; Orton, *The Andes and the Amazon*, 1870; Flemming in the *Globus*, 1871 and 1872; Reiss and Stübel, "Höhenmessungen in Süd Amerika," in *Zeitsch. der Gesells. für Erdkunde zu Berlin*, 1874; "Die Zustände in der Rep. Ecuador," in *Das Ausland*, 1875; Dr W. Reiss, "Bericht über eine Reise nach dem Quilotoa und dem Cerro Hermoso," in *Zeitsch. der Deutsch. Geol. Gesells.*, 1875; Vidal, "L'Equateur," in *L'Explorateur géographique et commerciale*, 1875; Simson, "Notes of Journeys in the Interior of South America," in *Proc. of Roy. Geog. Soc.*, 1877.

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EDAM, a town of the Netherlands, in the province of North Holland and arrondissement of Hoorn, about 11 miles north-east of Amsterdam, and hardly a mile from the present limits of the Zuider Zee, at the junction of two branch canals. It has a fine town-house, an exchange, and a fish-market, and one of its two Reformed churches is adorned with stained glass, and ranks among the most beautiful buildings of the kind in the province. Ship-building, rope-spinning, and salt-boiling are carried on, and the place gives its name to a well-known description of "sweet-milk" cheese—*Zoetemelks Kaas*. It was at Edam that nearly the whole of Admiral De Ruyter's fleet was constructed. Population of the commune in 1869, 5152, and of the town 3356.

EDDA, the original signification of which is "great-grandmother," is the title given to two very remarkable collections of old Icelandic literature. Of these only one bears that title from antiquity; the other is named *Edda* by a comparatively modern misnomer. The only work known by this name to the ancients was the miscellaneous group of writings attributed to Snorri Sturluson (1178–1241), a scholar of Jon Löftssön, and the greatest name in old Scandinavian literature. It is believed that the *Edda*, as he left it, was completed about 1222. Whether he gave this name to the work is doubtful; the title first occurs in the Upsala Codex, transcribed about fifty years after his death. The collection of Snorri is now known as the *Prose*