

or *Younger Edda*, the title of the *Elder Edda* being given to a book of ancient mythological poems, discovered by the Icelandic bishop of Skálholt, Brynjulf Sveinsson, in 1643, and erroneously named by him the *Edda of Sæmund*.

1. The Prose *Edda*, properly known as *Edda Snorra Sturlusonar*, was arranged and modified by Snorri, but actually composed, as has been conjectured, between the years 1140 and 1160. It is divided into five parts, the Preface or *Formáli*, *Gylfaginning*, *Bragaræður*, *Skáldskaparmál*, and *Háttatal*. The preface bears a very modern character, and simply gives a history of the world from Adam and Eve, in accordance with the Christian tradition. *Gylfaginning*, or the Delusion of Gylfi, on the other hand, is the most precious compendium which we possess of the mythological system of the ancient inhabitants of Scandinavia. Commencing with the adventures of a mythical king Gylfi and the giantess Gefion, and the miraculous formation of the island of Zealand, it tells us that the Æsir, led by Odin, invaded Svithjod or Sweden, the land of Gylfi, and settled there. It is from the *Ynglingasaga* and from the *Gylfaginning* that we gain all the information we possess about the conquering deities or heroes who set their stamp upon the religion of the North. Advancing from the Black Sea northwards through Russia, and westward through Esthonia, the Æsir seem to have overrun the south lands of Scandinavia, not as a horde but as an immigrant aristocracy. The Eddaic version, however, of the history of the gods is not so circumstantial as that in the *Ynglingasaga*; it is, on the other hand, distinguished by an exquisite simplicity and archaic force of style, which give an entirely classical character to its mythical legends of Odin and of Loki. The *Gylfaginning* is written in prose, with brief poetic insertions. The *Bragaræður*, or sayings of Bragi, are further legends of the deities, attributed to Bragi, the god of poetry, or to a poet of the same name. The *Skáldskaparmál*, or Art of Poetry, commonly called *Skálda*, contains the instructions given by Bragi to Ægir, and consists of the rules and theories of ancient verse, exemplified in copious extracts from Eyvindr Skáldaspillir and other eminent Icelandic poets. The word *Skáldskap* refers to the form rather than the substance of verse, and this treatise is almost solely technical in character. It is by far the largest of the sections of the *Edda* of Snorri, and comprises not only extracts but some long poems, notably the *Thorsdrapa* of Eilifr Guðrúnarson and the *Haukstunga* of Thjóðólfr. The fifth section of the *Edda*, the *Háttatal*, or Number of Metres, is a running technical commentary on the text of Snorri's three poems written in honour of Hakon, king of Norway. Affixed to some MS. of the *Younger Edda* are a list of poets, and a number of philological treatises and grammatical studies. These belong, however, to a later period than the life of Snorri Sturluson.

The three oldest MSS. of the prose *Edda* all belong to the beginning of the 14th century. The Wurm MS. was sent to Ole Wurm in 1628; the Codex Regius was discovered by the indefatigable bishop Brynjulf Sveinsson in 1640. The most important, however, of these MSS. is the Upsala Codex, an octavo volume written probably about the year 1300. There have been several good editions of the *Edda Snorra Sturlusonar*, of which perhaps the best is that published by the Arne-Magnæan Society in Copenhagen in 1848, in two vols., edited by a group of scholars under the direction of Jón Sigurdsson.

2. The *Elder Edda*, Poetic *Edda*, or *Sæmundar Edda hins fröða* was entirely unknown until about 1643, when it came into the hands of Brynjulf Sveinsson, who, puzzled to classify it, gave it the title of *Edda Sæmundi multiscii*. Sæmund Sigfusson, who was thus credited with the collection of these poems, was a scion of the royal house of Norway, and lived from about 1055 to 1132 in Iceland. The poems themselves date in all probability from

the 8th or 9th centuries, and are many of them only fragments of longer heroic chants now otherwise entirely lost. They treat of mythical and religious legends of an early Scandinavian civilization, and are composed in the simplest and most archaic forms of Icelandic verse. The author of no one of them is mentioned. It is evident that they were collected from oral tradition; and the fact that the same story is occasionally repeated, in varied form, and that some of the poems themselves bear internal evidence of being more ancient than others, proves that the present collection is only a gathering made early in the Middle Ages, long after the composition of the pieces, and in no critical spirit. Sophus Bugge, indeed, one of the greatest living authorities, absolutely rejects the name of Sæmund, and is of opinion that the poetic *Edda*, as we at present hold it, dates from about 1240. There is no doubt that it was collected in Iceland, and by an Icelander.

The most remarkable and the most ancient of the poems in this priceless collection is that with which it commences, the *Völuspá*, or Prophecy of the Völva or Sibyl. In this chant we listen to an inspired prophetess, "seated on her high seat, and addressing Odin, while the gods listen to her words." She sings of the world before the gods were made, of the coming and the meeting of the Æsir, of the origin of the giants, dwarfs, and men, of the happy beginning of all things, and the sad ending that shall be in the chaos of Ragnarök. The latter part of the poem is understood to be a kind of necromancy,—according to Vigfusson, "the raising of a dead völva;" but the mystical language of the whole, its abrupt transitions and terse condensations, and above all the extinct and mysterious cosmology, an acquaintance with which it presupposes, make the exact interpretation of the *Völuspá* extremely difficult. The charm and solemn beauty of the style, however, are irresistible, and we are constrained to listen and rever as if we were the auditors of some fugal music devised in honour of a primal and long-buried deity. The melodies of this earliest Icelandic verse, elaborate in their extreme and severe simplicity, are wholly rhythmical and alliterative, and return upon themselves like a solemn incantation. *Hávamál*, the Sayings of the High One, or Odin, follows next; this contains proverbs and wise saws, and a series of stories, some of them comical, told by Odin against himself. The *Vafthrúðnismál*, or sayings of Vafthrúðnir, is written in the same mystical vein as *Völuspá*; in it the giant who gives his name to the poem is visited by Odin in disguise, and is questioned by him about the cosmogony and chronology of the Norse religion. *Grimnismál*, or the Sayings of Grimnir, which is partly in prose, is a story of Odin's imprisonment and torture by king Geirröd. *För Skirnir*, or the Journey of Skirnir, *Harbarðsljóð*, or the Lay of Harbarð, *Hymiskviða*, or the Song of Hymir, and *Ægisdrækka*, or the Brewing of Ægir, are poems, frequently composed as dialogue, containing legends of the gods, some of which are so ludicrous that it has been suggested that they were intentionally burlesque. *Thrymskviða*, or the Song of Thrym, possesses far more poetic interest; it recounts in language of singular force and directness how Thor lost his hammer, stolen by Thrym the giant, how the latter refused to give it up unless the goddess Freyia was given him in marriage, and how Thor, dressed in women's raiment, personated Freyia, and, slaying Thrym, recovered his hammer. *Alvismál*, or the Sayings of Alvis, is actually a philological exercise under the semblance of a dialogue between Thor and Alvis the dwarf. In *Vegtamskviða*, or the Song of Vegtam, Odin questions a völva with regard to the meaning of the sinister dreams of Balder. *Rígsmál*, or more properly *Rígstula*, records how the god Heimdall, disguised as a man called Rig, wandered by the sea-shore, where he met the original dwarf pair, Ai and Edda. To

whom he gave the power of child-bearing, and thence sprung the whole race of thralls; then he went on and met with Afi and Amma, and made them the parents of the race of churls; then he proceeded until he came to Faðir and Móðir, to whom he gave Jarl, the first of free men, whom he himself brought up, teaching him to shoot and snare, and to use the sword and runes. It is much to be lamented that of this most characteristic and picturesque poem we possess only a fragment. In *Hynduljóð*, the Lay of Hyndla, the goddess Freyia rides to question the völva Hyndla with regard to the ancestry of her young paramour Ottar; a very fine quarrel ensues between the prophetess and her visitor. With this poem, the first or wholly mythological portion of the collection closes. What follows is heroic and pseudo-historic. The *Völundarkviða*, or Song of Völundr, is engaged with the sufferings and adventures of Völundr, the smith-king, during his stay with Nidud, king of Sweden. Völundr, identical with the Anglo-Saxon Weland and the German Welant, is sometimes confounded with Odin, the master-smith. This poem contains the beautiful figure of Svanhvit, the swan-maiden, who stays seven winters with Völundr, and then, yearning for her fatherland, flies away home through the dark forest. *Helgakviða Hörvarðs Sonar*, the Song of Helgi, the Son of Hörvarð, which is largely in prose, celebrates the wooing by Helgi of Svava, who, like Atalanta, ends by loving the man with whom she has fought in battle. Two Songs of Helgi the Handing's Bane, *Helgakviða Hundingsbana*, open the long and very important series of lays relating to the two heroic families of the Völsungs and the Niblungs. Including the poems just mentioned, there are about twenty distinct pieces in the poetic *Edda* which deal more or less directly with this chain of stories. It is hardly necessary to give the titles of these poems here in detail, especially as they are, in their present form, manifestly only fragments of a great poetic saga, possibly the earliest coherent form of the story so universal among the Teutonic peoples. We happily possess a somewhat later prose version of this lost poem in the *Völsungasaga*, where the story is completely worked out. In many places the prose of the *Völsungasaga* follows the verse of the Eddaic fragments with the greatest precision, often making use of the very same expressions. At the same time there are poems in the *Edda* which the author of the saga does not seem to have seen. But if we compare the central portions of the myth, namely Sigurd's conversation with Fafnir, the death of Regin, the speech of the birds and the meeting with the Valkyrie, we are struck with the extreme fidelity of the prose romancer to his poetic precursors in the *Sigurdarkviða Fafnirsbana*; in passing on to the death of Sigurd, we perceive that the version in the *Völsungasaga* must be based upon a poem now entirely lost. Of the further extension of the myth and its corruption into the romantic epic of *Der Nibelunge Nôt*, this is not the place for discussion. Suffice to say that in no modernized or Germanized form does the legend attain such an exquisite colouring of heroic poetry as in these earliest fragments of Icelandic song. A very curious poem, in some MSS. attributed directly to Sæmund, is the Lay of the Sun, *Sólarkviða*, which forms a kind of appendix to the poetic *Edda*. In this the spirit of a dead father addresses his living son, and exhorts him, with maxims that resemble those of *Hávamál*, to righteousness of life. The tone of the poem is strangely confused between Christianity and Paganism, and it has been assumed to be the composition of a writer in the act of transition between the old creed and the new. It may, however, not impossibly, be altogether spurious as a poem of great antiquity, and may merely be the production of some Icelandic monk, anxious to imitate the Eddaic form and spirit. Finally *Forsnjalls-*

*ljóð*, or the Preamble, formerly known as the Song of Odin's Raven, is an extremely obscure fragment, of which little is understood, although infinite scholarship has been expended on it. With this the poetic *Edda* closes.

The principal MS. of this *Edda* is the Codex Regius in the Royal Library at Copenhagen, written continuously, without regard to prose or verse, on 45 leaves. This is that found by Bishop Brynjulf. Another valuable fragment exists in the Arne-Magnæan collection in the University of Copenhagen, consisting of six leaves. These are the only MSS. older than the 17th century which contain a collection of the ancient mythico-heroic lays, but fragments occur in various other works, and especially in the *Edda* of Snorri. The poetic *Edda* was translated into English verse by Amos Cottle in 1797; the poet Gray produced a version of the *Vegtamskviða*; but the first good translation of the whole was that published by Benjamin Thorpe in 1866. An excellent edition of the Icelandic text has been prepared by Th. Möbius, but the standard of the original orthography will be found in the admirable edition of Sophus Bugge, *Norren Fornkvæði*, published at Christiania in 1867. (E. W. G.)

EDELINCK, GERAARD (1649–1707), one of the greatest copper-plate engravers, was born at Antwerp in 1649. The rudiments of the art, which he was to carry to a higher pitch of excellence than it had previously reached, he acquired in his native town under the engraver Cornelisz Galle. But he was not long in reaching the limits of his master's attainments; and then he went to Paris to improve himself under the teaching of De Poilly. This master likewise had soon done all he could to help him onwards, and Edelinck ultimately took the first rank among line engravers. His excellence was generally acknowledged; and having become known to Louis XIV. he was appointed, on the recommendation of Le Brun, teacher at the academy established at the Gobelins for the training of workers in tapestry. He was also entrusted with the execution of several important works. In 1677 he was admitted member of the Paris Academy of Painting and Sculpture. The work of this great engraver constitutes an epoch in the art. His prints number more than four hundred, and it is asserted that amongst them there is no work of poor or middling quality, although many of his subjects were poor and unworthy of the high art which he lavished upon them. Edelinck stands above and apart from his predecessors and contemporaries especially in this that he excelled, not in some one respect, but in all respects,—that while one engraver attained excellence in correct form, and another in rendering light and shade, and others in giving colour to their prints and the texture of surfaces, he, as supreme master of the burin, possessed and displayed all these separate qualities, and that in so complete a harmony that the eye is not attracted by any one of them in particular, but rests in the satisfying whole. Edelinck was the first to break through the custom of making prints square, and to execute them in the lozenge shape. Among his most famous works are a Holy Family, after Raphael; a Penitent Magdalene, after Charles le Brun; Alexander at the Tent of Darius, after Le Brun; a Combat of Four Knights, after Leonardo da Vinci; Christ surrounded with Angels; St Louis praying; and St Charles Borromeo before a crucifix,—the last three after Le Brun. Edelinck was especially good as an engraver of portraits, and executed prints of many of the most eminent persons of his time. Among these are those of Le Brun, Rigaud, Philippe de Champagne (which the engraver thought his best), Santeuil, La Fontaine, Colbert, John Dryden, Descartes, &c. He died at Paris in 1707. His younger brother John, and his son Nicholas, were also engravers, but did not attain to his excellence.

EDEN, Hebrew (עֵדֶן, denoting pleasure or delight), was the first residence of Adam and Eve according to the Old Testament Scriptures. The passage in which its geographical position seems to be indicated (Gen. ii. 8–14) has been from the earliest times the subject of a discussion as ingenious and elaborate as it has been fruitless. Its

general position is given as "eastward," i.e., to the east of the place where the narrative was written. Of the four rivers mentioned the Euphrates is undoubtedly the same which is still known by that name, and the Hiddekel has been almost universally identified with the Tigris. The object of commentators who have sought to put a literal construction on the passage has, therefore, been to identify the Pison and the Gihon, by finding two rivers which together with the Euphrates and the Tigris fulfil the condition stated in Gen. ii. 10, "And a river went out of Eden to water the garden; and from thence it was parted and became into four heads." As there is no river which forms a common source for the Euphrates, the Tigris, and two others, recourse has been had to a strained construction of one kind or other. Josephus, for example, supposes the river which is the common source to have been the ocean stream which surrounds the earth, and identifies the Pison with the Ganges and the Gihon with the Nile; and in this he is followed by many of the fathers. Calmet, Rosenmüller, and others, again, suppose the river which is the common source to have been a region of springs, and, by making the Pison and the Gihon mountain streams, place the site of Eden in the highlands of Armenia. Calvin, Huet, and Bochart place Eden in lower Babylonia, on the supposition that the Pison and the Gihon are the two channels by which the united rivers Euphrates and Tigris enter the Persian Gulf. Luther and others, such as Clericus and more recently Baumgarten, have hazarded the supposition that the flood altered the course of the streams, and thus rendered it impossible to identify the locality of Eden from the description given in Genesis. These may suffice as specimens of the almost innumerable solutions that have been offered of what is now generally admitted to be an insoluble problem. On the theory that the narrative in Genesis is veritable history to be literally interpreted, it is impossible to fix the geographical position of Eden with any approach to certainty. This impossibility fully accounts for the immense variety of the conjectures that have been put forward. It deserves mention as a curiosity of criticism that the site of Eden has been assigned by different writers to each of the four quarters of the globe, and that the particular localities specified have ranged from Scandinavia to the South Sea Islands. The allegorical interpretations, which have been offered in great variety from the time of Philo downwards, are, of course, not hampered with any geographical difficulties. Philo supposes Eden to be a symbol of the soul that delights in virtue, the river which is the source to be generic virtue or goodness, and the four rivers to be the specific virtues of prudence, temperance, courage, and justice. Origen finds in the subject an excellent opportunity for applying his favourite allegorical method, and supposes Eden to be heaven, and the rivers wisdom. Similar interpretations, with individual variations, are given by several of the fathers who are prone to allegorize. In modern times Coleridge is perhaps the most celebrated of those who have interpreted the story of Eden as an allegory. It is to be observed, however, that this mode of explaining the narrative has found even less favour with recent interpreters than that which accepts it as literal history, meeting the obvious difficulties as best it can. The undoubted tendency of later criticism has been to discard alike the theory of literal history and the theory of allegory in favour of another, according to which the story of Eden is a mythical tradition of a kind similar to that which is to be found in the early sacred literature of most nations. According to this view the true explanation is to be sought for in a careful comparison of these various traditions as preserved in sacred scriptures, early histories, inscriptions, and otherwise. See ADAM, vol. 1. p. 135-6, and PENTATEUCH.

EDEN, THE HONOURABLE EMILY (1795-1851), novelist and miscellaneous writer, was the seventh daughter of the first Lord Auckland, and was born in 1795. Happily gifted by nature, her literary faculties and tastes were fostered by a liberal education. In 1835 she accompanied her brother, Lord Auckland, to India, on his appointment as governor-general, and remained with him during his term of office, which covered the period of the Afghan war. Returning to England in 1841, she made herself favourably known as a writer by the publication, three years later, of her *Portraits of the Princes and People of India*. She was also author of two novels entitled *The Semi-detached House* and *The Semi-attached Couple*, which first appeared anonymously under the editorship of Lady Theresa Lewis. In these works she gives clever and amusing delineations of Anglo-Indian life and manners as she saw them. In 1866 was published a series of her letters to her sister written from India, and entitled *Up the Country*. Her private journal, at present unpublished, is said to be still more attractive and full of sparkling anecdote and graphic sketches. Another volume entitled *Letters from India*, edited by her niece, the Hon. Eleanor Eden, was published in 1872. For many years Miss Eden lived at Kensington, and her house was one of the most frequented centres of London intellectual and fashionable life. She afterwards removed to Richmond, and there died, August 5, 1869. Her eldest sister Eleanor attracted the warm affection of William Pitt, who, however, did not feel justified in making her an offer of marriage. This was, it is supposed, the only love-passion in Pitt's history. She afterwards married Lord Hobart, and died in 1851.

EDENTATA, an order of placental mammals characterized by the total absence of median incisor teeth. Such teeth as are found in edentate species are composed entirely of dentine and cement, without enamel; they likewise grow for an indefinite period, and are consequently without root; and so far as yet discovered there is no displacement of the first teeth by any second set except in a few of the armadillos. This order contains the sloths, armadillos, and ant-eaters.

EDESSA, the ancient capital of Macedonia, previously known as *Ægæ*, was situated 46 miles W. of Thessalonica on the banks of a beautiful stream in the very centre of the kingdom, and at the head of a defile commanding the approaches from the sea-coast to the interior of the country. It was the original residence of the Macedonian kings; and even after the seat of government was removed to the more accessible Pella, it continued to be the burial-place of the royal family. At the celebration of his daughter's marriage in the town, Philip II. was murdered by Pausanias in 336 B.C. His greater son Alexander was buried at Memphis through the contrivance of Ptolemy; but the bodies of his granddaughter Eurydice and her husband Arrhidaeus were removed by Cassander to the ancestral sepulchre. On the occupation of the town by Pyrrhus the royal tombs were plundered by the Gallic mercenaries. The modern city of Vodena is built on the site of Edessa, and preserves a few unimportant remains of ancient buildings. The names *Ægæ* and Edessa were both probably given in allusion to the full-flowing streams that form one of the principal features of the situation; and Vodena is certainly derived from the Slavonic *voda*, water. Full details in regard to the position of the city may be found in Tozer, *The Highlands of Turkey*, vol. 1.

EDESSA, or, as it is now called, Urfa or Orfa, a city of Northern Mesopotamia, on the Daisun, a left-hand tributary of the Euphrates, 75 miles W. of Diarbekir and 59 E. of Biredjik, in 37° 21' N. lat. and 39° 6' E. long. It is surrounded with walls and towers, well preserved on the northern side, has narrow but comfortable and cleanly

streets, and displays in its bazaar not only the native woollen stuffs, pottery, and silver work, but also a considerable variety of European goods. In the principal square there is a large mosque dedicated to Abraham, who, according to Mahometan legend, was slain in the city; and in its immediate vicinity is a pond shaded by fine pomegranate, plain, and cypress trees, and tenanted from time immemorial by sacred fish. The only ancient remains are those of a tower ascribed by tradition to Nimrod; but in the neighbourhood there exist extensive catacombs with numerous inscriptions of an early date. The prevailing language is Turkish, though more than three-fourths of the inhabitants are Christian. The population was estimated about 1796 by Olivier as from 20,000 to 24,000; by Buckingham at 50,000; and, in 1873, by Chernik at 40,000. There are two mission establishments, an American and a French, and in connection with the former a school with about 250 pupils. The outskirts are occupied by melon-gardens, vineyards, and mulberry plantations.

Nothing is known of the origin of Edessa. It has been suggested that probably the early inhabitants were Sabæans, and that the sacred fish originally belonged to the worship of Atergatis. According to the Targum of the pseudo-Jonathan, Jerome, and Ephraem Syrus, the city is to be identified with the Erech of Genesis x. 10, and the local tradition of the Arabs and Jews makes it the same as Ur of the Chaldees; but there is no historical basis for either identification, though the former has received the support of Michaelis, Buttmann, and Von Bohlen. The first authentic mention of the city connects it with Seleucus, who appears to have greatly increased its prosperity, and was probably the bestower of the name by which it is best known in history. This, according to Stephanus, was taken from the Macedonian Edessa, from the abundance of the water in both cities, but a modern etymologist recognizes the Syrian Haditha or New Town. Another designation, Callirhoe, found in the ancient writers, undoubtedly alludes to its fountain; and it is at least possible that this may be the derivation of its modern name—Urhoi among the Syrians, Er Roha among the Arabs, and Orfa among the Turks and Christians. In the time of Antiochus VII., about 135 B.C., the city became the seat or centre of the Osroeneic kingdom, founded by Orhoi-Bar-Khevo, and governed for centuries by a series of elective monarchs. Of these the eighth in succession, Abgar Bar-Abgar, fought against Lucullus, but afterwards sided with the Romans; the fifteenth Abgar Uchomo is famous for the legendary correspondence with Christ reported by Eusebius. The city was plundered by Trajan's general Lusius Quietus, and the kingdom became tributary in 116. Restored by Hadrian it was finally abolished by Caracalla in 217, and a Roman military colony was established with the title of Colonia Marcia Edessorum. Meanwhile Christianity had been taking fast root in the city, the first church having been built as early as 202. By the time of Julian, the wealth of the Christians was sufficient to attract his revengeful cupidity; and in the course of the following century, the number of monasteries alone is said to have exceeded 300. Great theological schools were established, and the city, in fact, became one of the chief seats of Oriental learning. Most famous of all was the *Schola Persica* or Persian School; but its professors having adopted the Nestorian heresy were expelled by Martyrus the bishop, and the building was destroyed in 439, and replaced by St Mary's Church. The prosperity of the city gradually disappeared during the next five centuries, as it passed successively into the hands of the Arabs and the Seljuks. From the latter it was captured in 1097 by Baldwin de Bouillon, and for the next fifty years it continued an independent Christian countship. Baldwin's successors were his cousin Baldwin II. (1100-1118), Jocelin de Courtenay, surnamed the Great (1118-1131), and Jocelin II. (1131-1144). The negligence of this last count permitted the city to fall into the hands of Zengi of Mosul, and in 1466, the attempt of the inhabitants to recover their independence brought down the vengeance of Zengi's successor Nur-ed-din. The sultans of Egypt and Syria obtained possession in 1181, the Byzantines in 1234, the Mongolians under Tamurlane about 1393, the Turkomans and the Persians at a later date, and finally the Turks in 1637.

See *Assemani Biblioth. Orient.*, vol. 1. where the "Chron. Edessenum" is reprinted; Th. I. Bayer, *Historia Osroëna et Edessena ex nummis illustrata*, St Petersburg, 1734.

EDFU, in Coptish Atbo, from the old Egyptian Tebu, a village of Upper Egypt, in the province of Said, situated about a third of a mile from the left bank of the Nile, 55 miles below the cataracts of Syene, in 24° 58' 43" N. lat. It is inhabited by about 2000 Arabs and Copts, engaged

for the most part in the manufacture of earthenware, which finds ready sale all through Egypt, and is remarkable for the similarity it retains to the ancient pottery represented on the monuments. To the Egyptologist the spot is of extreme interest, as furnishing the most perfect specimen of an ancient Egyptian temple, full details in regard to which may be found in the article ARCHITECTURE, vol. ii. p. 389. By the Greeks and Romans the city to which this splendid building belonged was known as Apollinopolis Magna, the god to whom the temple was dedicated being identified with the Greek Apollo. Under the later empire it was the see of a bishop and the head-quarters of the Legio II. Trajana.

See Belzoni, *Narrative*, 3d ed., 1822; Wilkinson, *Egypt and Thebes*, 1843; Lepsius, *Ueber eine hieroglyphische Inschrift am Tempel von Edfu*, Berlin, 1855; Mariette, *Fouilles exécutées en Egypte, &c., d'après les ordres du vice-roi*, 1867.

EDGEWORTH, MARIA (1767-1849), the creator of the novel of national manners and moral purpose, was the daughter, by his first wife, of Richard Lovell Edgeworth noticed below. She was born at Hare Hatch, Berkshire, in 1767, and did not see Ireland till she was twelve years old. She was educated by her father, who devoted himself with great enthusiasm to the intellectual advancement of his children. In most of her literary undertakings Miss Edgeworth had the advantage of her father's criticism, who also wrote introductions to her novels. "It is my business," he used to say, "to cut and correct: yours to write on." Many tales and essays were written by Maria for private pleasure before publication was thought of. *Practical Education* (1798) was a joint work by father and daughter. In 1800 appeared *Castle Rackrent*, which at once made for her a reputation as a national novelist. This was followed soon after by *Belinda*, and by the *Essay on Irish Bulls*, published in partnership with her father, and intended to familiarize the English public with Irish humour and pathos. The work is so thoroughly the joint-product of two minds, that Miss Edgeworth, in writing her father's life, cannot tell distinctly which parts are his, but says that passages in which classical allusions and quotations occur must be her father's, as she was "entirely ignorant of the learned languages" (*Memoirs*, second edition, ii. 315). In 1804 appeared *Popular Tales*; in 1806 *Leonora*; in 1809 the first instalment of *Fashionable Tales*, which were finished in 1812; in 1814 *Patronage*; and in 1817 *Harrington, Ormond*, and *Comic Dramas*, which failed on the stage. The death of her father, in that year, recalled her from novel writing to fulfil the sacred duty of completing his *Memoirs*, which were given to the world in 1820, and of which a second edition was called for in 1821. In 1822 appeared *Rosamond, a Sequel to Early Lessons*, a work published earlier with contributions from Mr Edgeworth's pen. In August 1823 Miss Edgeworth visited Sir Walter Scott at Abbotsford, where she remained a fortnight; and Scott repaid this visit at Edgeworthstown exactly two years afterwards. In 1825 Miss Edgeworth further continued her tales for the young by the publication of *Harry and Lucy*. In 1834 appeared *Helen, a Tale*, her last and one of her best novels; and she afterwards wrote *Orlandino*, a book for children. Her *Letters for Literary Ladies* were suggested by a correspondence between Thomas Day and her father as to the propriety of "female authorship," in which the former stoutly maintained the negative.

Miss Edgeworth died on the 21st of May 1849, after having lived to see her works take rank as English classics. Her influence was deep and lasting. Sir Walter Scott confesses that he was anxious to do for Scotland what Miss Edgeworth had done for Ireland; and it is said that O'Connell regretted deeply that one so powerful did not serve Ireland as an agitator. Her society was courted by

the most distinguished of her contemporaries; and countless tourists, who visited her, returned home charmed by her lively conversation and by the domestic virtues which brightened the home of which she was the centre. With Scott she was on terms of the closest intimacy; Byron admired her works, in spite of his sarcastic reference to "Miss Edgeworth's novels stepping from their covers;" and Lord Macaulay was one of her most enthusiastic worshippers. "Among all the incidents," says Mr Trevelyan, "connected with the publication of his *History*, nothing pleased Macaulay so much as the gratification that he contrived to give to Maria Edgeworth, as a small return for the enjoyment which, during more than forty years, he had derived from her charming writings." Macaulay mentions Miss Edgeworth's name in a note, in which he describes her delineation of King Corny, in *Ormond*, as "that admirable portrait." Miss Edgeworth, in a letter to Dr Holland, speaks of the "self-satisfaction, vanity, pride, surprise, I had in finding my own name in a note."

*Castle Rackrent*, the first and one of the most characteristic of her novels, is lit up throughout with sunny Irish humour, Sir Condy complaining that he "was very ill used by the Government about a place that was promised him and never given, after his supporting them against his conscience very honourably" (1857 edition, p. 39). *Leonora* has a painful plot. It treats of the seduction of an attached husband by a professed friend of his wife Leonora's forbearance, however, and her deep-seated love for her husband prove, in the end, too much for the hollow professions and vaunted "sensibility" of Olivia. The *Tales of Fashionable Life* include *Ennui*, *The Dun*, *Manoeuvring*, *Almeria*, *Vivian*, *The Absentee*, *Madame de Fleury*, and *Emilie de Coulanges*. *Ennui* is a powerful story, and relates how the earl of Glenethorn was cured of the disease which gives its name to the book. There are several fine character studies, including the Earl; MLeod, the cool, but faithful, Scotch agent; witty Lady Geraldine; Christy, the blacksmith; and Ellinor, the Irish foster nurse, who said, on one occasion, that "if it pleased God, she would like to die on a Christmas day, of all days, because the gates of Heaven, they say, will be open all that day, and who knows but a body might slip in unknownst?" (1857 edition, p. 231). *The Dun* portrays, with a realism almost too painful, the dreadful privations undergone by the poor who are unable to get in the money justly their due. *Manoeuvring* depicts the efforts of Mrs Beaumont, a clever, scheming, deceitful woman, to marry her son and daughter contrary to their inclinations. For a while all seems to go well with Mrs Beaumont, until she is herself entangled in her net of white lies, and finally thoroughly outwitted. Her character, and that of Mr Palmer, a wealthy merchant from Jamaica, are worthy of the author's high reputation. *Almeria* traces the rise of the worldly spirit in the breast of a young girl, and the debasing consequences of a passionate pursuit of fashion for its own sake, unredeemed by any ennobling feature. *Vivian* is an admirably told story, and illustrates the terrible evils which sometimes arise from indecision of character. *Vivian*, the undecided, brilliant, young noble; Russell, the faithful tutor; Wharton, the unscrupulous politician and voluptuary; self-willed Lord Glistonbury; prim Lady Glistonbury; and vivacious Lady Julia seem to start from the canvas. *The Absentee*, considered by many as Miss Edgeworth's masterpiece, is written to expose the misery entailed on the tenantry by the Irish gentry, who deserted their native country for London, and abandoned their affairs to be managed by unscrupulous agents. The characters are among the most life-like in the annals of fiction. Lady Clonbrony makes herself exquisitely ridiculous in her vain

endeavours to act the fine English lady; Lord Colambre, the hero of the novel, travels, under an assumed name, among his father's tenants in Ireland, finds out how rudely they have been oppressed, and champions their cause so skilfully as to win over even Lady Clonbrony; Lady Dashfort and her daughter are wonderfully real representations of heartless women of fashion; the sufferings of the Irish peasantry are drawn with a loving and masterly pencil; and the general sadness of the work is relieved by such humorous sketches as Colonel Heathcock, Sir Terence O'Fay, and Larry Brady, whose inimitable letter closes the book. Macaulay considered the scene in which Lord Colambre discovers himself to his father's tenantry the best passage of the kind since the beginning of the 22d book of the *Odyssey*. This is very high praise, especially when we remember that Macaulay seems to have read almost every novel—so much was he fascinated by narrative composition. *Madame de Fleury* is the story of a French lady who set up a school in Paris for neglected girls. The school came to grief at the great Revolution; and its benevolent founder had to fly to England, where she was supported mainly by donations from the girls, who were instigated by Victoire, the heroine of the book. Ultimately her return to France, was secured by Basile, Victoire's lover, who had obtained influence with his general through his valuable engineering knowledge. *Emilie de Coulanges* describes the mortifications two French refugees had to undergo in living with Mrs Somers, an excessively ill-tempered English lady, who was generous enough with her money, but neglectful of kindness of a more delicate order. Mrs Somers's incessant outbursts of temper and reconciliations with Emilie, to be followed inevitably by fresh quarrels, are somewhat wearisome reading. *The Modern Griselda*, a story treating of the attempts of a wife to bring her husband to abject submission, manifests fine satiric power, and great liveliness—the dialogue being particularly animated. *Patronage*, which is in the same vein as the *Tales of Fashionable Life*, rather disappointed the critics, who concluded that Mr Edgeworth had written considerable parts of it. This, however, is expressly denied by Miss Edgeworth (*Memoirs*, ii. 323). *Ormond* is an Irish tale, and ranks among the best of Miss Edgeworth's works. It shows how a youth, whose education had been neglected, and whose temper was naturally impetuous, managed to reach true nobility of character. King Corny, Ormond, Sir Ulick O'Shane, Moriarty Carroll, Dora, and Mademoiselle O'Faley are masterly creations. There is a true Irish ring about the book, although it is composed in the purest English. *Helen* is a novel of thrilling interest, and displays greater passion and a finer insight into the more subtle moods of the human mind than any of Miss Edgeworth's previous works. The moral is that falsehood and deceit almost invariably bring misery in their train. Although on a more elaborate scale than her other books, *Helen* surpasses them all in grace, charm, and lightness of touch. Such powerfully conceived characters as Lady Davenant, Helen, Cecilia, Beauclerc, Churchill, and the Clarendons, leave an indelible impression on the memory.

Miss Edgeworth's novels are distinguished by good sense, humour, and an easy flowing style. As the construction of a plot is not her strong point, she is generally more successful in tales than in lengthy novels. The vivacity of her dialogues is extraordinary; and in them her characters reveal themselves in the most natural way possible. Her books are character-studies, rather than intensely interesting narratives. Sobriety of judgment is seen throughout; and passion, romance, and poetry rarely, if ever, shed their lustre on her pages. Three of her aims were to paint national manners, to enforce morality, and to teach fashionable society by satirizing the lives of the idle and worldly. She expressly calls some of her stories "Moral Tales"; but they all fall under this category. The two poles of thought in regard to the moral tendency of Miss Edgeworth's works are well represented by Robert Hall, the eminent Baptist preacher, and Monsieur Taine

Miss Edgeworth "does not," says Hall, "attack religion or inveigh against it, but makes it appear unnecessary by exhibiting perfect virtue without it. No books ever produced so bad an effect on my own mind as hers. I did not expect any irreligion there: I was off my guard; their moral character beguiled me: I read volume after volume with eagerness; and the evil effects of them I experienced for weeks" (*Hall's Works*, vol. 1. Bohn's edition, 1846 appendix, note A). Monsieur Taine, again, says that "this regular presence of a moral intention spoils the novel as well as the novelist. It must be confessed a volume of Thackeray has the cruel misfortune of recalling the novels of Miss Edgeworth" (*English Literature, Criticism on Thackeray*). To Robert Hall's criticism it is to be objected that a novel is scarcely the place to explain and inculcate the systematic theology of the evangelical school, while we must concede to Taine and the French critics that to burden a novel with a moral, or other special purpose, is artistically a blemish, especially when it is professedly made an aim as in Miss Edgeworth's case. She remarks very beautifully of Sir Walter Scott, that "his morality is not in purple patches, ostentatiously obtrusive, but woven in through the very texture of the stuff" (*Helen*, 1838 edition, 123)—a statement which scarcely holds true of herself. Still, strong national tendencies must be allowed to assert themselves in fiction, and there can be no doubt that the didactic or moralizing tendency is deeply seated in the English-speaking peoples.

No writer teaches a more admirable practical philosophy than Miss Edgeworth, and she reaches her object by making her characters natural, and capable, as well as worthy, of imitation. She plainly belongs to the realistic school of fiction; and it is interesting to remember that her Tales are expressly founded on a carefully thought out philosophy of education. She thus gives no countenance to the popular fallacy that teaching is a mere trick or knack, rather than a science resting on well-ascertained mental phenomena. Few novelists display less extravagance than Miss Edgeworth. We feel that her minor characters especially are genuine flesh and blood. Sometimes the hero or heroine of the story is liable to the charge of being the incarnation of a single quality, rather than a man or woman. However, in the case of one who writes with a didactic purpose, this is almost inevitable. Miss Edgeworth has drawn attention to the less brilliant faculties of humanity, and always prefers to be useful, where others would have endeavoured to be striking. In her pages the heroic virtues give place to prudence, industry, kindness, and sweetness of temper. There are few instances of overwhelming emotions or tumultuous passions in her works; and it is remarkable how little the love of nature appears. She never uses material which does not yield some direct moral lesson. All this is the natural consequence of Miss Edgeworth's method and utilitarian aim. But, working under such self-imposed conditions, she has done wonders. Her representations of the humour, pathos, and generous character of the Irish peasantry are an imperishable monument of her genius. Nor is it fair to depreciate the English novels in comparison, *Helen* being quite equal to any of her distinctively national tales. The freshness of her stories, her insight into character, lively dialogues, originality of invention, and delightfully clear style render it quite possible to read her works in succession without any sense of weariness. As a painter of national life and manners, and an illustrator of the homelier graces of human character, Miss Edgeworth is surpassed by Sir Walter Scott alone; while as a direct moral teacher she has no peer among novelists. Among the many sweet memories her unsullied pages have bequeathed to the world, not the least precious is her own noble character, which ever responded to all that is best and most enduring in human nature.

In 1832 a collected edition of Miss Edgeworth's novels was published in London in 18 volumes.—I. *Castle Rackrent; Essay on Irish Bulls; Essay on Self-Justification*. II. *Forester; the Frustration Vain; the Good Aunt*. III. *Angelina; the Good French Governess; Mademoiselle Panache; the Knapsack*. IV. *Lame Jerry; the Will; the Limerick Gloves; Out of Debt; Out of Danger; the Lottery; Rosanna; V. Murad the Unlucky; the Manufacturers; the Contrast; the Grateful Negro; To-morrow*. VI. *Ennui; the Dun*. VII. *Manoeuvring; Almeria*. VIII. *Vivian*. IX. *The Absentee*. X. *Absentee (concluded); Madame de Fleury; Emilie de Coulanges; the Modern Griselda*. XI. and XII. *Belinda*. XIII. *Leonora; Letters XIV. and XV. Patronage*. XVI. *Comic Dramas*. XVII. *Harrington; Thoughts on Boreas*. XVIII. *Ormond*. To this list are to be added *Essays on Practical Education*, written in conjunction with Mr Edgeworth (1788), *Helen* (1834), and numerous stories and books for children. In 1848 a new collected edition of Miss Edgeworth's works appeared in London in nine volumes; and, after her death, an edition was published in ten volumes, with steel engravings. (C. G.)

EDGEWORTH, RICHARD LOVELL (1744–1817), father of the subject of the foregoing notice, and her associate in many literary undertakings, was born at Bath in 1744. The greater part of his life, however, was spent at Edgeworthstown, or Edgeworthstown, in the county of Longford, Ireland, where the Edgeworth family had been settled for upwards of 150 years. He was of gentle blood—his father being the son of Colonel Francis Edgeworth, and his mother, Jane Lovell, being the daughter of

Samuel Lovell, a Welsh judge. Richard's mother taught him to read at a very early age; his young imagination was nurtured on the beautiful stories in the book of Genesis and on Shakespeare's characters of Coriolanus and Julius Caesar; and, when he was only seven years old, a Mr Deane explained to him the uses and structure of several pieces of machinery, a circumstance to which he ever afterwards traced his strong love for mechanical science. The Rev. Patrick Hughes initiated him in Lilly's *Latin Grammar*—an office he also performed for Goldsmith, who was born on the property of the Edgeworths—and his public education began, in August 1752, in a school at Warwick. He subsequently attended Drogheda school, then reputed the best in Ireland; and, after spending two years at a school in Longford, entered Trinity College, Dublin, in April 1761, from which he was transferred to Corpus Christi College, Oxford, in October of the same year. While still at college, he made a runaway match, marrying at Gretna Green one of the daughters of Mr Paul Elers, an old friend of his father, by whom he had a son, who was born before Edgeworth reached his twentieth birth-day, and his daughter Maria. Shortly after the birth of his son, he and his wife went to Edgeworthstown, where he met a severe trial in the death of his mother. Her dying advice to him, to "learn how to say no," was the germ of *Vivian*, one of Miss Edgeworth's best novels. For some time after this Edgeworth devoted himself to scientific reading and experiments; and he claims to be the reviver of telegraphic communication in modern times (*Memoirs*, second edition, i. 144). His home was now at Hare Hatch, in Berkshire, where he endeavoured to educate his son according to the method explained in Rousseau's *Emile*. In later life, however, he saw reason to doubt many of Rousseau's views (*Memoirs*, ii. 374). At the same time he went on keeping terms at the Temple, and formed the greatest friendship of his life with Thomas Day—an able man, of noble character, excessively eccentric, and known to all boys as the author of *Sandford and Merton*, which was written at Edgeworth's suggestion. In 1769, on the death of his father, he gave up the idea of being a barrister; but, instead of immediately settling on his Irish estate, he spent a considerable time in England and France, mainly in Day's company. In Lyons, where he resided for about two years, he took an active part in the management of public works intended to turn the course of the Rhone. He was summoned to England by the death of his wife, with whom his autobiography tells us plainly he was not happy. Edgeworth hurried to Lichfield, to Dr Erasmus Darwin's, one of his greatest friends, and at once declared his passion for Miss Honora Sneyd, which had been the cause of his flight to France two years before. They were married (1773) in the cathedral, and after residing at Edgeworthstown for three years, settled at Northchurch, in Hertfordshire. When six years of great domestic happiness had elapsed, Mrs Honora Edgeworth died, after recommending her husband to marry her sister Elizabeth—which he did, on Christmas Day 1780. In 1782 Edgeworth returned to Ireland, determined to improve his estate, educate his seven children, and ameliorate the condition of the tenants. Up to this point Edgeworth has told his own story. The rest of his life is written by his daughter, and opens with an account of the improvements he effected, and a lengthy panegyric on Mr Edgeworth as a model landlord (*Memoirs*, ii. 12–36). In 1785 he was associated with others in founding the Royal Irish Academy; and, during the two succeeding years, mechanics and agriculture occupied most of his time. In October 1789 his friend Day was killed by a fall from his horse, and this trial was soon followed by the loss of a daughter, who had just reached her fifteenth

year. The first thing that broke the monotony of his grief was the arrival of Dr Darwin's poem, the *Botanic Garden*, about which the author says, "It was your early approbation that contributed to encourage me to go on with the poem" (*Memoirs*, ii. 113). In 1792 the health of one of Edgeworth's sons took him to Clifton, where he remained with his family for about two years, returning in 1794 to Edgeworthstown. Ireland was, at that time, harassed by internal disturbances, and threats of a French invasion, and Edgeworth offered to establish telegraphic communication of his own invention throughout the country. This offer was declined. A full account of the matter is given in Edgeworth's *Letter to Lord Charlemont on the Telegraph*; and his apparatus is explained in an "Essay on the Art of Conveying Swift and Secret Intelligence," published in the sixth volume of the *Transactions of the Royal Irish Academy*. In the autumn of 1797 Mrs Edgeworth fell a victim to decline. *Practical Education*, a work which embodied the experience of the authors in dealing with children, was published in 1798. "So commenced," says Miss Edgeworth, "that literary partnership which, for so many years, was the pride and joy of my life" (*Memoirs*, ii. 170). In the same year Edgeworth married Miss Beaufort, and was elected M.P. for the borough of St John's Town, Longford. The same year, too, saw a hostile landing of the French and a formidable rebellion; and for a short time the Edgeworths took refuge in Longford. The spring of 1802 brought the depressing announcement of Dr Darwin's death; and the winter of that year was spent by the Edgeworths in Paris, where, among many friends, they particularly valued M. Dumont. On his return home he was gratified by Government accepting of his telegraphic apparatus, which worked admirably. In 1802 appeared the *Essay on Irish Bulls* by Mr and Miss Edgeworth; and in 1806 Edgeworth was elected a member of the Board of Commissioners to inquire into Irish education. From 1807 till 1809 much of his time was spent on mechanical experiments and in writing the story of his life. In 1808 appeared *Professional Education*, and in 1813 his *Essay on the Construction of Roads and Carriages*. He died on the 13th of June 1817, and was buried in the family vault in Edgeworthstown churchyard.

Many of Edgeworth's works were suggested by his zeal for the education of his own children. Such were *Poetry Explained for Young People*, *Readings on Poetry*, *A Rational Primer*, and the parts of *Early Lessons* contributed by him. His speeches in the Irish Parliament have also been published; and numerous essays, mostly on scientific subjects, have appeared in the *Philosophical Transactions*, the *Transactions of the Royal Irish Academy*, the *Monthly Magazine*, and *Nicholson's Journal*. The story of his early life, told by himself, is fully as entertaining as the continuation by Maria, as it contains less dissertation and more incident. (T. GI.)

EDINBURGH, COUNTY OF, or MID-LOTHIAN, one of the lowland counties of Scotland, is situated between 55° 39' 30" and 55° 59' 20" N. lat., and between 2° 52' and 3° 45' 10" W. long. It is bounded on the N. by the Firth of Forth, on the N.W. by Linlithgowshire or West-Lothian, on the S.W. by Lanarkshire, on the S. by Peebles and Selkirk, and on the E. by Roxburgh, Berwick, and Haddington or East-Lothian. The area comprises 362 square miles, or 231,724 acres.

The surface of the county presents a great variety of scenery. The Pentland Hills advance boldly from the south-west to within five miles of the sea, rising to a relative height of from 1000 to 1300 feet. The loftiest summits are Scald Law (1898 feet), Carnethie (1890), West and East Cairn Hill (1844 and 1839), and West Kip (1806). They generally present a rounded appearance, and are covered with heath or grass. The south-eastern corner of the county is occupied by the Moorfoot Hills, which form a continuation of the Lammermuirs, and attain in Blackhope

Scar a height of 2136 feet. Of more or less isolated eminences throughout the county it is enough to mention the Braid Hills and Blackford Hill to the S. of the city, Arthur's Seat towards the E., Corstorphine Hill about two miles to the W., and Dalmahoy Crag about seven miles to the S.W.

With the exception of the Gala, which rises on the south-east side of the Moorfoot Hills and flows south to join the Tweed, and the partial exception of the Tyne, which after a course of about seven miles passes into Haddingtonshire, all the streams, we cannot say the rivers, find their way to the Firth of Forth. The Esk (the largest) drains the district between the Pentlands and the Moorfoot Hills, and falls into the sea at Musselburgh. The southern branch has its sources near Blackhope Scar, receives the Redside and Middleton Burns, and flows past Newbattle Abbey; the northern rises in the Pentlands, and proceeds through much picturesque scenery, past Penicuik, Roslin, Lasswade, and Eskbank; and the union of the two streams takes place a short distance below Dalkeith, within the grounds of Dalkeith Palace. The Braid Burn from Capelaw Hill passes between the Braid Hills and Blackford Hill, and reaches the sea at Portobello. The Water of Leith, with its head streams on the western slope of the Pentlands, flows past Balerno, Currie, Juniper Green, Colinton, Edinburgh, and Leith. The Almond, which has its origin in Lanarkshire, and its right-hand tributary the Breich Water, form the boundary between Mid-Lothian and Linlithgowshire. Most of these streams, and especially the Esk and the Water of Leith, afford a large amount of water-power, well-preserved by means of artificial dams and embankments. The deep ravines which in some places they have formed in the Carboniferous strata through which they flow conceal spots of romantic beauty, in striking contrast to the immediately contiguous scenery. The only lake is that at Duddingston, near Edinburgh; but there are several extensive reservoirs connected with the water supply of the city, viz.—Threipmuir, Loganlee, Harelaw, Clubbidean, and Torduff in the Pentlands, and Gladsmuir and Rosebery on the South Esk. The Cobbinshaw reservoir, situated at the head of the Bog Burn, a tributary of the Almond, is used for the supply of the Union Canal.

The geology of Mid-Lothian is of interest, not only from its intrinsic characteristics, but also as the subject of investigation of many of the most famous among Scottish geologists—Hutton, Hall, Jamieson, Cunningham, Hugh Miller, Fleming, and others. The Lammermuir and Moorfoot Hills are a continuation of the Silurian tableland of the south of Scotland, and consist mainly of strata of greywacke, grit, and shale, greatly contorted, broken, and altered in position. Sandstones, grits, shales, and mud-stones of the Upper Silurian occur in three very limited areas in the Pentland Hills, in the midst of Lower Old Red Sandstone formations. They are abundantly fossiliferous, especially on the North Esk,—*Chondrites verisimilis*, *Amphispongia oblonga*, *Protaster Sedgwickii*, *Pterygotus acuminatus*, various *Strophomenas*, and *Euomphalus funatus* being among the characteristic forms. The Lower Old Red Sandstone formations just mentioned are a massive series of grits, conglomerates, and volcanic rocks, resting unconformably on the Upper Silurian series; the Upper Old Red Sandstone is found only in a few small patches in the hollows of the Lower Silurian. All the four series into which it is usual to divide the Carboniferous system are well represented. The Calciferous Sandstone series breaks up into two groups:—the former consisting of reddish sandstones, and forming the south-western eminences of the Pentland Hills and nearly the whole site of the city of Edinburgh; while the latter comprises white and grey sandstones, shales, limestone, and coal, and furnishes a good portion of the

mineral wealth of the county. The Carboniferous Limestone series consists of strata of white and grey sandstones, shales, fire-clays, coal, and encrinal limestone,—one section being known as the "Edge coals" from the almost-vertical displacement of the beds. The strata of the Millstone Grit are not very extensive—only appearing in a narrow band round the central part of the Dalkeith coal-field, and in a limited area to the south of Penicuik. The history of the igneous rocks which are sporadically distributed through the county is still matter of dispute,—the main question debated being whether the volcanic activity which has left its traces took place exclusively in the Carboniferous period, or broke out again later. The spot round which the discussion has principally been maintained is Arthur's Seat, which is the centre of the intrusive movement, although considerable masses of intrusive basaltic rocks make their appearance in many other localities. Diorite is the principal rock of Corstorphine Hill, and occurs also to the west of Ratho. Marks of glacial action may be observed at Corstorphine, Granton, Arthur's Seat, and on the Pentland Hills; and large beds of boulder-clay are present in the lower districts. Boulders of distant transport are rather rare, but a few apparently from the Ochils or even the Grampians may be discovered.<sup>1</sup>

The cultivated condition of the county is incompatible with a varied or remarkable fauna; but the botanist finds a rich harvest of smaller plants. Arthur's Seat and the Queen's Park, in spite of their proximity to the city, yield a considerable number of very rare specimens. Details may be sought in Professor Balfour's *Flora of Edinburgh*.

The climate naturally differs in different districts, according to elevation and distance from the sea. From observations made at Inveresk, 90 feet above the sea-level, which may be taken as fairly representative, the annual mean of the barometer has only once fallen as low as 29.68 in the twenty-one years from 1855 to 1875, and usually exceeds 29.85. The maximum cold ranged from zero in 1860 to 22° in 1872; the maximum heat from 73° in 1862 to 88° in 1868 and 1873; and the mean annual temperature from 44° in 1855 to 48.2° in 1868. The average temperature of the six summer months beginning with April reached 55.8° in 1868, and sank to 51.6° in 1872. The annual rainfall varied from 16.50 inches in 1870 to 32.89 in 1862; and the number of fair days from 162 in 1872 to 247 in 1869. The greatest rainfall takes place in August at Edinburgh, Meadowfield, and Bonnington; but in January in the Pentlands. According to observations made at Inveresk over a period of 15 years, the wind blew from the N. 31 days, N.E. 40, E. 22, S.E. 24, S. 51, S.W. 119, W. 56, and N.W. 24. The N.E. and E. winds prevail in March and April, and especially in the neighbourhood of the city are remarkable for their cold and blighting character. Snow seldom lies long except in the uplands; but night frosts occur even as late as the beginning of June, severe enough to destroy the young shoots of the seedling trees in the nursery grounds.<sup>2</sup> On the shores of the Firth, along the Almond and Esk, and in some of the richer flats the grain

crops ripen early; two miles nearer the hills and 200 feet higher the harvest is ten days later; and at an elevation of 600 feet another week at least intervenes.

The total area in cereals in 1876 was 88,189 acres. The quantity of wheat grown is gradually diminishing, occupying in 1876 only 4456 acres in contrast to 10,123 in 1856. The average produce in the more fertile districts is 31 bushels per acre, in the poorer districts from 24 to 25 bushels. The roots of the plant are in some seasons attacked severely by the larvae of the crane-fly (*Tipula oleracea*), and the ears sometimes suffer from the wheat-midge. Of other cereals there were in barley 10,123 acres in 1856, and 11,982 in 1876 (the return varying from 42 to 48 bushels); and in oats 23,121 in 1856, and 21,311 in 1876. Beans declined from 802 acres in 1856 to 467 in 1876. The area of sown grasses has greatly extended, being 26,907 acres in 1856, and in 1876, 31,869. The grass-seed is usually put in with the barley crops. Near the city sewage-farming has been carried on to a remarkable extent. The Craigtinny meadows between the city and the sea, comprising 200 acres, have been under sewage cultivation for upwards of 30 years. The produce, now consisting principally of natural grasses, is sold at from £16 to £28 per acre, and the whole realizes from £3000 to £4000 per annum. About 80 acres are under similar treatment at Lochend, 70 acres at Dalry, and 16 at the Grange. The total produce of the whole area under irrigation is estimated at £6000. The acreage of turnips in 1856 was 14,517, in 1876, 13,342. About 16 or 18 tons of swedes, or 22 or 23 tons of common turnips, is considered a good crop for first-rate land. Potatoes hold much the same position as in former years, though the demand for them is not so great. A considerable quantity is despatched to England for seed purposes, while the seed required in the county is obtained from Perth, Lanark, or the neighbouring counties. The number of cattle was in 1862, 13,013, in 1876, 18,661. In the neighbourhood of Edinburgh especially, dairying forms a very important industry: the number of milch cows in the county is probably 11,000 or 12,000, of which 1800 or 2000 are kept in the town or suburbs, and supply about half of the milk necessary for the local consumption. Sheep are returned as—113,479 in 1856, and 168,565 in 1876. Very few horses are bred in the county, but several of the studs are of excellent character. The Clydesdale blood predominates. Pigs form a very small item in the list of stock; and the poultry yard is of distinct importance only in the farms in the neighbourhood of the city. The crop rotations vary considerably in different districts. Oats, potatoes, wheat, turnips, barley, and hay or pasture is a common order; while a five-course shift of oats, potatoes and turnips, barley or wheat, hay, pasture, or a six-course shift (oats, beans, wheat, turnips, barley, grass), is used elsewhere. The average size of farms is 131 acres. According to the returns, out of a total of 1012 holdings 477 did not exceed 50 acres, 116 lay between 50 and 100, 294 were over 100 and under 300, 75 were from 300 to 500, and only 50 were more than 500. Leases of nineteen years are common; the change of proprietor is as frequent as that of the tenants, and in some cases the same tenant has continued to hold a farm under six or eight successive landlords. The average value of the arable land is calculated at from 40 to 55 shillings the acre; that of the upland pastures at from 10 to 15 shillings. The whole of the county has been drained more or less thoroughly, and some portions twice over. Tiles and small stones began to be laid about 1830, with a distance between the drains of about 36 feet; and since 1845 deeper drains, with pipes and collars, have been put into the intermediate furrows. Great improvements have been effected not only in the farm-houses and steadings since 1835, but also in the cottages for the labourers, which now for the most part contain a sitting-room and two or even three bedrooms. Steam thrashing-machines and grinding mills are not uncommon. The reaping-machine has been generally adopted within the last 20 years, except for very difficult ground, or where the crop has been laid by wind or rain. The assistance of the steam plough has hitherto been very partially obtained.

The nursery grounds of Mid-Lothian are more extensive than those of any other county of Scotland; and in the variety and quantity of their productions they are equal to any in Britain. To orchards proper there are devoted about 72 acres; and no less than 775 acres, mainly in the vicinity of the city, are devoted to market gardening. Further details on the whole subject of Mid-Lothian agriculture may be found in Thomas Farrall's paper in *Trans. of Highland and Agricultural Society*, 1877.

It appears from the Owners and Heritages Return, 1872-73, that the county, exclusive of Edinburgh and Leith, was divided among 3237 owners, holding land the yearly value of which amounted to £581,603. Of the owners 78½ per cent. possessed less than 1 acre, and the average value per acre over all was £2, 11s. 3d. There were 9 proprietors holding upwards of 5000 acres, viz., Earl of Rosebery (Dalmeny), 15,568; Sir G. D. Clerk (Penicuik), 12,696; Robert Dundas (Arniston), 10,184; the Stair family (Oxenford), 9609; Heirs of Alex. Mitchell (Stow), 9038; Earl

<sup>1</sup> See Fleming's *Lithology of Edinburgh*; Hugh Miller, *Edinburgh and its Neighbourhood*; Macfarlane, *Sketch of the Geology of Fife and the Lothians*; Arch. Geikie, *The Geology of Edinburgh and its Neighbourhood*, 1871; Sheet No. 22 of the one-inch Geol. Survey Map, with the accompanying memoir; and several other papers in the *Transactions of the Edinburgh Geological Society*.

<sup>2</sup> The mildness of the winter is well illustrated by the fact that Mr M'Nab of the Royal Botanic Gardens reported 138 species of flowers in bloom on New Year's Day 1874, of which 35 were winter or spring flowers, and 103 summer or autumn flowers. The *Galanthus nivalis*, or common snowdrop, blossoms, according to an average of 20 years, on the 25th of January, the *Hepatica triloba* on the 31st, and the *Rhododendron nobleanum* on the 25th of February.