

was shown to be quite a different plant, by specimens laid before the Society.

Mr. Hewett Watson called the attention of the Society to a series of specimens in illustration of the three species of *Enanthe* described by Mr. Ball, in the 'Annals of Natural History,' under the names of *pimpinelloides*, *Lachenalii*, and *silaifolia*. Mr. Watson stated that these species had been confused and misnamed by Hudson and Smith, and that most succeeding botanists had in consequence been misled about them; the error and confusion being greatly increased by the want of root and fruit on specimens collected for herbaria. He considered that Mr. Lees was the first English botanist who correctly understood the true *pimpinelloides*. Mr. Babington next rightly determined the *Lachenalii*; and lastly, Mr. Ball, contrasting these two plants with the *peucedanifolia* of Smith, showed clearly enough that three indigenous species had been confused into two only, on account of no single botanist being sufficiently acquainted with all three. Specimens sent to the Society by the Rev. A. Bloxam, Mr. Lees, Mr. G. S. Gibson and Mr. Thwaites, with others collected by Mr. Watson himself, illustrated the three species clearly; except that the early radical leaves and perfectly mature fruit of Smith's *peucedanifolia* were still wanting. Mr. Watson, however, suspected that Mr. Ball's name of *silaifolia* was equally incorrect as Smith's name of *peucedanifolia*, and not knowing any other described species to which Smith's plant could be referred, he adopted the name of *Enanthe Smithii*; to be temporary or permanent, as occasion might require.

The following is an abbreviation of the specific characters proposed for the species:—

1. *Æ. pimpinelloides*, Linn. Tubers oval or subspherical, connected with the stem by a slender peduncle. Fruit cylindrical, about as broad as the calyx, callous at the base, not contracted.

2. *Æ. Lachenalii*, Gmel. Tubers elongated and slender, clavate, fusiform or subcylindrical, gradually enlarging from the base of the stem, without any distinct peduncle. Fruit oblong or turbinate, broader than the calyx, contracted, and without callosity at base.

3. *Æ. Smithii*, H. Wats. Tubers short and thick, clavate, fusiform or oblong, sessile at the base of the stem. Fruit cylindrical, scarcely so broad as the calyx, callous at the base, not contracted.

GEOLOGICAL SOCIETY.

May 29.—The Rev. Professor Sedgwick read the conclusion of his "Memoirs on the Geology of North Wales."

June 12.—The following papers were read:—

1. "On Fluorine in Bones, its Source and its Application to the ascertainment of Geological Time." By Mr. J. Middleton.

The author having analysed and determined the amount of fluoride of calcium in recent bone, in that of an ancient Greek, of a mummy, and in the bones of fossil vertebrata from the Siwalic hills, found the proportions increase according to the age. He instituted a se-

ries of experiments on aqueous deposits of different kinds and ages, and found fluorine also present in them, with a single exception. He refers its presence in bones to deposition from fluids, and hence accounts for its great abundance in fossil bones, which had long been exposed to aqueous infiltration.

2. "On the Cliffs of Northern Drift on the Coast of Norfolk between Weybourne and Happisburgh." By Mr. J. Trimmer.

The author describes such changes as have occurred along the line of cliffs between Weybourne and Happisburgh since Mr. Lyell's visit in 1840. He gives an account of the present state of the pinnacle of chalk at Old Hythe point, and holds with Mr. Lyell, that it is separated from the fundamental chalk by the ferruginous breccia of the crag. The southern mass of chalk near Trimmingham has been greatly reduced. The author's observations lead him to conclude that the till and freshwater deposit between Mundesley and Trimmingham are so interlaced as to indicate that they were in part contemporaneous. He regards the northern drift containing shells as having been transported on ice, but as differing materially from ordinary raised beaches. Mr. Trimmer concludes from the phenomena exhibited at Happisburgh, that the land on which the elephant and hippopotamus lived was submerged beneath an icy sea, and that there was an antecedent conversion of a sea-bottom, the Norwich crag, into a terrestrial surface.

3. A letter was read from Mr. Jeffreys of Swansea, to the Rev. Dr. Buckland, describing several raised sea-bottoms, forming platforms on the shores of Loch Carron and the neighbouring coast of Scotland, some of them fifty feet and more above high-water mark, containing shells similar to those found living in the neighbouring sea.

June 26.—The following papers were read:—

1. "Notice of the Tertiary Deposits in the South of Spain." By Mr. Smith of Jordan Hill.

The author has found a tertiary deposit bordering the Bay of Gibraltar. This agrees in its fossils with those observed by Colonel Silvertop in Murcia and Granada. Mr. Smith has found similar beds at Cadiz, and between Xeres and Seville. All these deposits agree with those of Malta and Lisbon, and belong to a great expanse of miocene tertiary, which runs from Greece to the Straits of Gibraltar, and the shores of Portugal, and from Malta to Vienna.

2. "On the Stonesfield Slate of the Cotteswold Hills." By Mr. Buckman and the Rev. P. B. Brodie.

The Stonesfield slate in the Cotteswold range occupies an area of more than fifty miles. It is identical in lithological and palæontological characters with that at Stonesfield. It is so intermixed with as scarcely to be separable from the ragstone, and hence the authors conclude that it is a part of the great oolitic formation, and was deposited by the same sea in which the great oolite itself was formed, and owed its origin to certain mixed conditions arising from the influx of rivers into an ocean interspersed with numerous scattered islands, abounding with a luxuriant vegetation, and inhabited by numerous terrestrial animals; which view, they hold, is borne out

by the quantity of plants which occur throughout the Stonesfield slate beds, and also from the relics of land animals, such as the *Didelphis* and *Pterodactylus*. The clays which lie upon the slate may possibly represent the Bradford clay, or if not, are the equivalents of certain clay beds, containing *Apiocrinites*, which in Wiltshire separate the freestone from a lower stratum of freestone of a coarser texture.

3. "Description of a Fossil Ray from Mount Lebanon." By Sir Philip Grey Egerton, Bart., M.P.

The author describes a new and most remarkable fossil fish brought from Syria by Capt. Graves, R.N. It is a true ray, much resembling those of the present period, but entirely surrounded by a broad flexible cartilagino-membranous fin. The skin appears to have been smooth, and there are no traces of dermal spines, tubercles, or defensive weapons. From its apparent helplessness, Sir Philip Egerton conjectures that it was probably armed like the torpedo, to which it is in some respects allied, with an electrical apparatus. He names it *Cyclobatis oligodactylus*.

4. "Description of some New Species of Fossil Fish, from the Oxford Clay of Christian-Malford." By Sir Philip Grey Egerton, Bart., M.P.

Three new species are described in this communication, the *Lepidotus macrochirus*, the *Leptolepis macrophthalmus*, and the *Aspidorhynchus enodus*. They were procured by the Marquis of Northampton and Mr. Pratt.

5. "On certain Calcareo-corneous Bodies found in the Outer Chambers of Ammonites." By Mr. H. E. Strickland.

These bodies are semicircular, very thin, slightly concave plates, usually corneous, sometimes more or less calcareous. Mr. Strickland regards them as having formed laminar appendages to the animals of the Ammonites, adapted to discharge some unascertained function. They resemble the two expanded valves of *Aptychus*, soldered together; and the author considers them as allied to that fossil, to which he attributes a similar origin.

November 6.—First Meeting of the Session. The President, Mr. Warburton, in the Chair. A paper was read entitled "Observations on the Geology of some parts of Tuscany," by Mr. W. J. Hamilton, M.P., Sec. G.S.

One of the principal features of the district examined by the author, is the existence of three distinct mountain ridges, extending from N.W. to S.E. by S. parallel to the direction of the main chain of the Apennines, and all belonging to the cretaceous system. The valleys between these ranges are filled with tertiary deposits. Secondary formations form the greater part of the mountainous district of Tuscany, consisting of beds of sandstone, indurated marls and shales, and compact gray lithographic limestone or scaglia. These sometimes alternate with each other, and are variously developed in different localities. Fossils are rare in all of them. The tertiary formations are both marine and freshwater. The marine tertiaries attain a height of nearly 1800 feet in the basin of Volterra, where they consist of beds of blue marl and sandy limestones, capped by

shelly limestone. Marine shells are frequent in some of these beds, of which the blue marl is the most extensive, attaining in the locality referred to a thickness of nearly 1000 feet. Selenite abounds in part of it; also beds of rock-salt and alabaster, extensively worked, the mines of the latter by means of regularly constructed mining galleries. The other marine tertiary districts are those of Leghorn, Poggebonzi, Sienna, and Val de Chiana. Freshwater tertiaries were noticed in two localities, forming limestones as compact and having the aspect of scaglia, but well characterized by their peculiar organic remains. Extensive post-tertiary formations of calc-tuff occur in the valley of the Staggia and of Elsa, and the beds are in places more than 100 feet thick. The rock called "Gabbro Rosso" by Savi, Mr. Hamilton considers as a metamorphic rock derived from the altered marls and sandstones of the secondary formation, acted on by the protrusion of igneous rocks of the serpentine class. At the junction of the Serpentine and Gabbro at Monte Catini is found copper ore (a sulphuret) extensively worked. Besides the serpentine, the quasi-trachytic rock called Selagite, and the basalts of Radicofani, are among the igneous rocks of the district. The author concludes with an account of the remarkable boracic acid works at Monte Cerboli, and of the phenomena connected with them.

MISCELLANEOUS.

HELIANTHEMUM GUTTATUM, MILL.

IN No. 36. of the 'London Journal of Botany,' Dr. Planchon has shown that the true *H. guttatum* has not as yet been recorded as a native of Britain, the plant of Jersey and Alderney being truly it, but that of Anglesea proving to be a distinct species. I possess a specimen of the true *H. guttatum*, gathered by Miss H. Townsend at Three-castle Head near Crookhaven, in the county of Cork, one of the extreme south-western points of Ireland, and thus restore it to its place in the British flora, of which it has only just been deprived. The Anglesea plant, called *H. Breweri* by Dr. Planchon, has bracteated pedicels and obovate lower leaves, but *H. guttatum* has no bracts and oblong-lanceolate leaves. It is singular that all our botanists should have overlooked these very obvious distinctions, but probably the extreme rarity of the plants and the small and usually imperfect state of the specimens from Anglesea may somewhat account for it.—C. C. B.

ELATINE HEXANDRA AND HYDROPIPER.

I find that I have fallen into a mistake concerning the discovery of these plants in Surrey. Mr. Newnham does not claim their discovery, which I am informed is due to Mr. Walter Reeves.—C. C. B.

PEDICELLINA ECHINATA.

A zoophyte, new to Britain, the *Pedicellina echinata* of Sars, is found in considerable abundance in some localities near low-water mark at St. Andrew's.—*Proceedings of the St. Andrew's Lit. and Phil. Soc.* Nov. 1844.