(see page 443.)

PROCEEDINGS

OF THE

ROYAL SOCIETY OF EDINBURGH.

1844. No. 23.

Monday, 4th December 1843.

Sir THOMAS BRISBANE, President, in the Chair.

The following communication was read:—

On the Influence of various Circumstances in Vegetation upon the activity of Plants. Part. II. The Umbelliferous Narcotics. By Dr Christison.

In the First Part of this inquiry, the author gave an account, in 1840, of some observations made by him, as to the influence of season on the activity of the acrid plants of the natural family *Ranunculaceæ*, and of the narcotics belonging to the family *Drupaceæ*.* In the Second Part now laid before the Society, he proceeded to relate a series of experiments instituted by him with the view of determining the influence of season on the activity of the poisonous narcotic plants of the family *Umbelliferæ*.

The plants belonging to this family are for the most part aromatic and stimulant, and destitute of poisonous properties. In four species only have narcotic properties been unequivocally recognised, viz., *Conium maculatum*, *Œnanthe crocata*, *Cicuta virosa*, and *Æthusa Cynapium*; but these are universally held to be highly energetic.

1. *Conium maculatum*, Common Hemlock.—No accurate information is yet possessed as to the influence of season on the activity of this species; for all investigations on the subject are vitiated by the uncertain strength of its preparations, and the ignorance which prevailed till very lately as to the conditions required for securing

* See the Society's Proceedings, 1840–41.

their uniformity. The author has found by experiment, as Professor Geiger had already been led to conclude, that every part of the plant is poisonous, both the root, the leaves, and the fruit; and that the root is least active, the leaves much more so, but the fruit the most active of all. The root is commonly held to be most active in midsummer, when the plant is in full vegetation and coming into flower; but this belief is founded only on a single, and not altogether conclusive, experiment made by *Professor Orfila*. The author found this part of the plant to be so feeble at all times, that its respective energy at different seasons could not be satisfactorily settled. The expressed juice of twelve ounces of roots had no appreciable effect on a small dog in the end of October or towards the close of June; but an alcoholic extract of six ounces in the beginning of May killed a rabbit in thirty-seven minutes, when introduced into the cellular tissue. The leaves are commonly thought to be most energetic when the plant is coming into flower in midsummer, and to be very feeble while it is young. The author finds it to be probable, that the leaves are very active in midsummer; but he has likewise observed, that they are eminently energetic in the young plant, both in the beginning of November, and in the month of March before vegetation starts on the approach of genial weather. Thirty-three grains of a carefully prepared alcoholic extract, representing one ounce and a third of fresh leaves, killed a rabbit in nine minutes, when introduced into the cellular tissue. The fruit is most active when it is full grown, but still green and juicy. It then yields much more of the active principle conia than afterwards when it is ripe and dry. The author added, as a fact contrary to general belief, that he had found the ripe seeds of hemlock, and an alcoholic extract of the leaves, to sustain no diminution in energy by keeping, at all events for eight years.

2. *Œnanthe crocata*, Dead-tongue.—This species is universally considered to be the most deadly of all the narcotic *Umbelliferæ*. Many instances of fatal poisoning with its roots have been published during the last two centuries, in the various periodicals of Europe. It has repeatedly proved fatal in two hours; and a portion no bigger than a walnut has been thought adequate to occasion death. Fatal accidents have occurred from it in England, France, Holland, Spain, and Corsica. The root would seem from these cases to be the most active part; but few observations are on record as to the effects of the leaves, and none as to the fruit. The root appears from these cases to be very active in all seasons, at least in the beginning of January,

the end of March, the middle of April, the middle of June, and the middle of August.

The author proceeded to inquire carefully into the effects of season upon this species as it grows wild in the neighbourhood of Edinburgh, but was surprised to find that every part of the plant in this locality is destitute of narcotic properties at all seasons. The juice of a whole pound of the tubers, the part which has proved so deadly elsewhere, had no effect when secured in the stomach of a small dog, either in the end of October when the tubers are plump and perfect, but the plant not above ground, or in the month of June when it was coming into flower; and an alcoholic extract of the leaves, and that prepared from the ripe fruit, had no effect whatever when introduced into the cellular tissue of a rabbit, under the same conditions in which the Common Hemlock acts so energetically. By a comparative experiment he ascertained that tubers, collected near Liverpool, where one of the accidents alluded to above happened in 1782, act with considerable violence on the dog; and he briefly noticed some experiments, made at his request by *Dr Pereira*, with the Œnanthe of Woolwich, shewing that there also it is a powerful poison to the lower animals. Climate seemed to the author to furnish the only adequate explanation of these extraordinary differences; yet the plant grows in all parts of Scotland with great luxuriance.

3. *Cicuta virosa*, Water-hemlock.—This species has been also held to be a deadly poison ever since an express treatise on its effects was published by Wepfer in 1716; and repeated instances of its fatal action have been observed since, and some of these very recently, in Germany. The root is the only part which has given occasion to accidents; it has proved fatal in two hours and a half. Nevertheless, this plant too seems innocuous in Scotland, or nearly so, although, like the last species, it grows with great luxuriance. The juice of a pound of the roots collected in the end of July, while the plant was in full flower, produced no narcotic symptoms; and the only effects observed, namely, efforts to vomit, might have arisen from the operation which is necessary to secure the juice in the stomach. An alcoholic extract of the leaves collected at the same time, and a similar preparation made with two ounces of the full-grown seeds, while still green and juicy, had no effect whatever when introduced into the cellular tissue of a rabbit, except that inflammation was excited where the extract was applied.

4. The author has not yet had an opportunity of trying the effects of the fourth species, *Æthusa cynapium*, or fool's-parsley.

The following Donations to the Society's Library were announced.

Journal of the Asiatic Society of Bengal. Nos. 126, 127, 128, 129, 130, and 131.—*By the Society.*

The American Journal of Science and Arts. Conducted by Professor Silliman. Vol. xliv., No. 2; and vol. xlv., Nos. 1 and 2. —*By the Editor.*

Proceedings of the Academy of Natural Sciences of Philadelphia. Vol. i. Nos. 20, 21, 24, 25.—*By the Academy.*

Proceedings of the Royal Astronomical Society. Vol. v. Nos. 30, 31, and 32.—*By the Society.*

Het Instituut of Verslagen en Mededeelingen, uitgegeven door de vier classen van het koninklijk Nederlandsche Instituut van Wetenschappen, Letterkunde en Schoone Kunsten, over den Jare 1841. Nos. 1, 2, 3, 4; and 1842, Nos. 1, 2, and 3. —*By the Institute.*

Journal of the Royal Geographical Society of London. Vol. xii. Part 2.—*By the Society.*

Historia e Memorias da Academia Real das Sciencias de Lisboa. Tomo xii. Part 2.—*By the Academy.*

Discurso lido em 22 de Janeiro de 1843 na Sessão publica da Academia Real das Sciencias de Lisboa por Joaquim José da Costa de Macedo.—*By the Academy.*

Astronomische Nachrichten. Nos. 462–477.—*By Professor Schumacher.*

Scheikundige Onderzoekingen gedaan in het Laboratorium der Utrechtsche Hoogeschool. Deel 2. St. 1.—*By the Editors.*

Tijdschrift voor Natuurlijke Geschiedenis en Physiologie. Uitgegeven door J. Van Der Hoeven M. D. en W. H. De Vriese M.D. Deel x. St. 1.—*By the Editors.*

Flora Batava. Nos. 127 and 128.—*By the King of Holland.*

Proceedings of the American Philosophical Society. Vol. ii. Nos. 24 and 25.

Transactions of the American Philosophical Society, held at Philadelphia, for promoting Useful Knowledge. Vol. viii. Parts 2 and 3.—*By the Society.*

Address to the Anniversary Meeting of the Royal Geographical Society, 22d May 1843.—*By the Society.*

Reports on the Fishes, Reptiles, and Birds of Massachusetts.—*By the Bowditch Family.*

Annales des Sciences Physiques et Naturelles, d'Agriculture et d'Industrie, publiées par la Société Royale d'Agriculture, &c. de Lyon. Tomes i. ii. iii. et iv.—*By the Society.*

Applications of the Electric Fluid to the Useful Arts, by Mr Alexander Bain; with a Vindication of his claim to be the first Inventor of the Electro-Magnetic Printing Telegraph. By John Finlaison, Esq.—*By the Society.*

The Journal of Agriculture, and the Transactions of the Highland and Agricultural Society of Scotland. July and October 1843. —*By the Society.*

Proceedings of the Zoological Society of London. Nos. 108 to 119. —*By the Society.*

Magnetische und Meteorologische Beobachtungen zu Prag. Dritter Jahrgang. Von Karl Kreil.—*By the Author.*

Journal of the Statistical Society of London. Vol. vi., Part 3.—*By the Society.*

The Transactions of the Microscopical Society of London. Vol. i. Part 1.—*By the Society.*

The Electrical Magazine, conducted by Mr Charles V. Walker. Vol. i., Nos. 1, 2.—*By the Editor.*

Proceedings of the Geological Society of London. Nos. 92–3.— *By the Society.*

Archives du Muséum d'Histoire Naturelle publiées par les Professeurs-Administrateurs de cet Etablissement. Tome ii. Livr. 3. —*By the Editors.*

Astronomical Observations made at the Royal Observatory, Edinburgh. By Thomas Henderson, F.R.S.S.L. & E., Professor of Practical Astronomy in the University of Edinburgh. For the year 1839.—*By the Royal Society, London.*

Memoirs of the Chemical Society of London. Vol. i.—*By the Society.*

Annuaire de l'Observatoire Royal de Bruxelles pour 1843, par A. Quetelet, Directeur de cet Etablissement.—*By the Author.*

Observations des Phénomènes Périodiques. Par Monsieur Quetelet. —*By the Author.*

Annuaire de l'Académie Royale des Sciences et Belles Lettres de Bruxelles pour 1843.

Nouveaux Mémoires de l'Académie Royale des Sciences et Belles Lettres de Bruxelle. Tome xvi.

Memoires Couronnés et Memoires des Savants Etrangers, publiées par

l'Académie Royales des Sciences et Belles Lettres de Bruxelles. Tome xv., P^tie^ 2.

Bulletin des Séances de l'Académie Royale de Bruxelles. Tome ix., Nos. 10, 11, 12, and Tome x., Nos. 1, 2, 3, 4, 5, 6, 7.—*By the Academy.*

Journal of the Bombay Branch Royal Asiatic Society. Nos, 3, 4. January and April 1842.—*By the Society.*

Notizie relative a tre specie d'Insetti Nocivi all' ulivo dal Dr Passerini.

Osservazioni sulle Larve, Ninfe, e Abitudini della Scolia flavifrons del Dr C. Passerini.

Notizie sulla moltiplicazioni dell' uccello Americano Paroaria cucullata dal Dr Passerini.—*By the Author.*

Mémoires de la Société Géologique de France. Tome v. P^ties^ 1, 2. —*By the Society.*

Carte Géologique du Departement de l'Aisne, exécutée et publiée sous les Auspices de M. Legrand, Sous-Secretaire d'Etat des Travaux Publics. Editée par la Société Géologique de France, 1842.—*By the Society.*

Niewe Verhandelingen der Eerste Klasse van het Koninklijk-Nederlandsche Instituut van Wetenschappen, Letterkunde en Schoone Kunsten te Amsterdam. Deel viii. Sts. 1, 2. Deel ix. Sts. 1.—*By the Institut.*

Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin 1841. Thiels 1, 2, 3.

Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Konigl. Preuss. Akademie der Wissenschaften zu Berlin. Juli 1842, bis Mai 1843.— *By the Academy.*

Memoirs of the Royal Astronomical Society. Vol. xii.—*By the Society.*

Astronomical Observations made at the Royal Observatory, Greenwich, in the year 1841; under the direction of George Riddell Airy, Esq.—*By the Royal Society, London.*

Tenth Annual Report of the Royal Cornwall Polytechnic Society, 1842.—*By the Society.*

The Quarterly Journal of Meteorology and Physical Science. Edited by J. W. G. Gutch, M.R.C.S. for April 1843. No. 6.—*By the Editor.*

An Introductory Lecture on Botany, considered as a Science, and as a Branch of Medical Education. By Edward Forbes, Professor of Botany in King's College, London.—*By the Author.*

Mémoires de l'Académie Impériale des Sciences de Saint Petersbourg. (Sciences Politiques, &c.). Tome vi., Livrais 1–3.

Do. do. do. (Sciences Naturelles). Tome v., Livrais 1–. 2

Do. do. do. (Sciences Mathematiques). Tome iii., Livrais 1, 2, 3.

Do. do. do. Memoires présentés par divers Savans. Tome iv., Livrais 1.

Recueil des Actes des Séances Publiques de l'Académie Impériale des Sciences de Saint Petersbourg, tenues le 31 Decembre 1841, et le 30 Decembre 1842.—*By the Academy.*

Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences. Tome xvi., No. 9–25, et Tome xvii., Nos. 1–19.—*By the Academy.*

Maps of the Irish Ordnance Survey, containing the county of Tipperary, in 93 sheets.—*By His Excellency The Lord Lieutenant.*

Transactions of the Royal Irish Academy. Vol. xix. Part 2.—*By the Academy.*

Monday, 18*th December* 1843.

Dr ABERCROMBIE, V.P., in the Chair.

The following Communications were read :—

1. A description of Congenital Malformation of the Auricle and External Meatus of both sides in three persons, with Experiments on the state of Hearing in them, and Remarks on the mode of Hearing by Conduction through the hard parts of the Head in general. By Professor Allen Thomson.

Read 18*th December* 1843, *and 2d January* 1844.

The three persons referred to came accidentally under the observation of the author during the past year. They were from different parts of the country, and not related to one another. In one of them only was it ascertained that other members of the same family had been similarly affected.

The first part of the paper contained a notice of the history of these persons, and an anatomical description of the malformation with which they were affected. In all the individuals, unsuccessful attempts had been made by different surgeons to uncover a mem-

brana tympani by operation. In one of them, it was supposed that a structure of that nature was brought into view, but, in the other two, nothing of that kind could be seen or felt. By a comparison of the external appearances in the last mentioned individuals, with observations made in the dissection of similar cases, and more especially from the examination of a specimen preserved in the anatomical Museum of the University of Edinburgh, the author formed the conclusion, that, in the majority of such cases, the complete closure of the bony part of the meatus opposes an insuperable obstacle to their relief by surgical operation; and that the malformation visible externally, indicates the existence of other defects in the deeper or middle portion of the organ of hearing. These defects consist in the small size and unnatural shape and structure of the cavity of the tympanum; the imperfect condition of the chain of small bones; the impossibility of these bones fulfilling their usual office from the absence of their connection with a membrana tympani; and probably other defects of structure, such as that observed in the specimen preserved in the Edinburgh Museum, which seems important, as consisting in a contracted state of the fenestra rotunda, and the want of direct communication of that orifice with the cavity of the tympanum, such, in fact, as would occasion an interruption of the transmission of vibrations through the air of the tympanum to the fluid of the labyrinth. It does not appear probable, that the Eustachian tube is entirely absent in such cases; but the size of its opening into the tympanum is probably much diminished in most of them. In most of such cases, the labyrinth or internal ear appears to be natural. The defective condition of the bony parts in these cases then appears to consist mainly in the absence of a part of the tympanic bone, that, namely, which intervenes between the fissure of Glaser and the mastoid process, and which forms the tympanic ring and auditory process of the temporal bone.

In the second part of the paper, the author endeavoured to explain the origin of the malformation in question, by a reference to the ascertained history of the development of the external and middle parts of the organ of hearing in the fœtus of man and animals: founding his conclusions more particularly upon the researches of Huschke, Rathke, Reichert, Günther, and his own observations in this point of organo-genesis. From these, it appeared that malformations of the external and middle ear are, in a great measure, unconnected in their origin or progress with those of the labyrinth; and that, while the latter are related to the earliest changes of for-

mation occurring in the brain and cranium, the former may be traced to an arrest or imperfection in the development of part of the walls of the visceral cavity, more particularly of the two anterior branchial arches and the fissure between them. The incomplete condition of the chain of ossicula, and part of the bony wall of the tympanum, is attributable mainly to the defective development of the first branchial arch; the want of the tympanic ring and auditory process, and the consequent absence of bony meatus, to the deficient development of the second branchial arch. The same observations rendered it probable, that the closed condition of the meatus proceeds from a preternatural increase of that deposit in the outer part of the first branchial fissure, which, in the course of natural development, forms the foundation of the septum of the membrana tympani, and thus separates the cavity of the tympanum and Eustachian tube on the inside from the meatus on the outside of this the first branchial fissure. The malformation of the softer part of the meatus externus, and of the auricle, is connected with a defect in the development of the integumental parts of the first and second branchial arches, which constitutes the latest series of changes occurring in the parts under consideration, and, accordingly, is more frequently defective than the others. The very peculiar form of the face, resulting from the undeveloped condition of its maxillary, zygomatic, and malar portions, together with the existence of cleft palate, to a slight degree, in two of the individuals described, appeared to the author to establish still more fully the relation subsisting between the origin of the malformation of the auricle, meatus, and tympanum, and the incomplete development of the anterior part of the transitory branchial apparatus of the fœtus.

The third part of the paper contained an account of a series of experiments performed on the state of hearing in the malformed individuals, and in other persons having the external meatus artificially plugged. In all the three malformed individuals, the hearing was such that they could carry on a conversation with others who spoke slowly and articulately to them, and in one only was there any degree of difficulty in this; and yet, in all of them, sounds must have been communicated to the ear entirely through the bones of the head. In ordinary persons, it is well known, that all sounds which are transmitted directly by contact of the sounding body with the hard parts of the head, are heard with greater intensity when the external ears are closed; but in them the most complete plugging or obliteration of the meatus does not reduce the ear to the condition of that organ

in an aquatic animal, nor entirely remove the effect of the chain of bones and column of air within the tympanum. The author shewed, that in two, at least, of the three malformed individuals, the case was different, as circumstances existed which obstructed the secondary action both of the chain of bones and tympanic column of air, so that these two individuals might be regarded as hearing solely through the solid parts of the head. In these two individuals it was ascertained, by accurate and frequently-repeated experiments, that hearing was not, as in other persons, most perfect near the site of the ear, but on the top of the head; and this was the case whether the sounds proceeded from a body held in contact with the head, or at some distance in the air. So exclusively, indeed, did the hearing seem to take place in these two individuals through the hard parts of the head, that neither, but particularly one of them, seemed ever to have referred sounds to the ear as the seat of the sensation of hearing. As might be supposed in such circumstances, these persons made no distinction between hearing in one ear and in the other; and could obtain, therefore, no knowledge of the direction of sounds in the same manner as other people do, by the comparison of the relative intensity of sounds in the two ears, or in the same ear in different positions. The author made some remarks on the amount of deafness which is calculated to induce dumbness, as well as upon the means of distinguishing different kinds of deafness, and the different means that ought to be employed for their relief. He concluded his paper with some remarks upon the subject of double hearing, considered with reference to the obvious impossibility, in the individuals referred to, of the sensations of one ear being distinguished from those of the other, in consequence of the perfectly equal and simultaneous communication of sonorous vibrations to both ears.

2. On the Luminousness of the Sea. By Dr Traill.

The author stated, that this phenomenon seems scarcely to be noticed in the writings of Aristotle or of Pliny which have reached us, though Pliny was familiar with the light emitted by certain shell-fish, and by the *Sea Lung* or Medusa.

Mr Boyle gives an account, from the journal of a shipmaster, of the luminousness of the sea; and it is particularly detailed, from personal observation, in the Indian voyage of Father Bourzes, in 1704.

The first philosophers, who ascribed it to light emitted by living animals, would seem to be the Abbé Nollet, Professor Vianelli, and Dr Gressellini of Venice, about the middle of the last century. In Cook's first voyage, the luminous properties of several marine animals

are well described by Banks and Solander; and in his second voyage, by Forster. Spallanzani made some good experiments on the phosphorescence of a Medusa in the straits of Messina.

Since that period, the catalogue of noctilucous animals has been greatly enlarged, especially by Peron and Lessueur, the naturalists to the French Voyages de Découvertes aux Terres Australes. A good paper on the luminousness of the sea, by Mr Macartney, appeared in the London Phil. Trans. for 1810; in which the phenomenon is ascribed entirely to living animals, an opinion now generally embraced by naturalists.

The author then detailed his own experiments and observations made, from early life, in different parts of the European Atlantic, from lat. 62° to 36° N. chiefly around the shores of Britain, all which confirmed this opinion.

He detected, in 1814, several of the same noctilucous animals in the waters of the Bay of Biscay as in our own seas, especially the *Noctiluca miliaris*, *Orythia minima*, and a very minute crustacean, seemingly a Zöe.

Besides these, the *Beröe fulgens* of Macartney, and several other Medusaria, he found two very remarkable animals in the luminous waters of the seas around the Western Isles of Scotland—one an *Æquorea*, most splendidly phosphorescent, which seems to be *Æquorea mesonema* of Eschscheltz; and the other a most elegant *Cydippe*, probably the *Cydippe pomiformis* of Paterson. Both were carefully figured from the life by the author, and magnified drawings of them were exhibited.

The paper was concluded by some strictures on the hypothesis of Lamarck, respecting the absence of muscular power and of voluntary movements in the order of *Radiaires mollasses*. He gave the results of many experiments which he had made on the movements of the Medusæ, and which convinced him that they possessed considerable muscular power, obedient to volition; and he ascribed the erroneous views of Lamarck on this subject to his little familiarity with those animals in their natural haunts; for a Medusa swimming in the sea, and cast on the beach, have very different capabilities of locomotion.

The following Donations to the Society's Library were announced.

Journal of the Asiatic Society of Bengal. Nos. 132 and 133.—*By the Society.*

Proceedings of the American Philosophical Society. Nos. 26 and 27.—*By the Society.*

Tuesday, 2d January 1844.

Dr ABERCROMBIE, V.P., in the Chair.

The following communications were read:—

1. On the Fossil Vegetables of the Sandstone of Ayrshire, illustrative of a series of them, as a Donation for the Society's Museum. By J. Shedden Patrick, F.R.S.E., F.R.S.S.A., &c.

The author, after mentioning that they were collected by himself from a quarry on the estate of Mr Warner of Ardeer, in the parish of Stevenston and district of Cuninghame, shortly described the quarry, as belonging in its geological position to the carboniferous group; and stated that it is considered the most valuable for white freestone in the west of Scotland. He mentioned the different strata in the order of their occurrence; and stated that coal had been wrought out from beneath it, within the remembrance of the present generation. He said that the fossils are not confined to any one stratum of the sandstone, but are found in them all, wherever the stone is faulty. He had counted about five strata at the deepest part of the quarry, separated from each other by thin layers of shale; and fossils are found in all these strata, chiefly, however, where the sandstone is rendered impure by a mixture of greenstone and ironstone. There have been above thirty different kinds of fossils found in this quarry (and in the schist connected with the coal); among them many beautiful impressions of *Stigmariæ*, *Sigillariæ*, *Lepidodendra*, and other plants unknown in the present day. Among the ferns will be found *Sphenopteris*, *Neuropteris*, *Pecopteris*, &c. The fossils which occur in greatest profusion are the *Calamites*. Of these, the two kinds met with most commonly are *Calamites nodosus* and *C. approximatus*. The following species are also found, but not so frequently, *C. cannæformis*, *C. Mougeotii*, *C. arenæceus*, and *C. verticillatus*.

The *Sternbergia approximata*, designated by Lindley "a most singular coal-measure plant occurring in most coal-fields in Great Britain, but not abundant anywhere," is likewise found here; the specimens obtained are in general small, but one or two fine large ones have been got. They are usually found in the sandstone, and are covered with a fine coal, which adheres either in the form of an even, thick, glossy integument, or in a powdery state, to the surface of the stem. Some very fine examples of *Sternbergia nodosa* have likewise been procured.

A curious fossil, which he has every reason to believe is original—was discovered by the author among the debris of the quarry. It somewhat resembles a piece of tartan, being divided into regular parallelograms, by double lines intersecting each other at right angles. He submitted it to the inspection of the Rev. D. Landsborough, and to other gentlemen in the neighbourhood, who all declared that it was new to them. He also shewed it to the manager of the works, and to some of the most intelligent of the overseers and colliers, and they all said that they had not before met with it; he therefore ventures to think it unique. Mr Landsborough, after minute examination, bestowed upon it the name of *Dictyodendron Patricii*, deriving the generic name from δικτυον, a net, from its close resemblance to network, and δενδρον, a tree; and dedicating it, by the specific name, to the author, as its discoverer.

The Stigmariæ, which may be said to be peculiar to, and the distinguishing feature of, the coal-measures, occur plentifully. Among these will be found *Stigmaria ficoides*, *S. radiata* and *Stigmaria*. Brongniart comes to the conclusion that the *Stigmaria* and *Sigillaria* constitute a peculiar and extinct family (belonging probably to the gymnospermous division of the Dicotyledons), but of which neither the fruit nor the leaves are as yet known, and adds, that probably *Stigmaria* is only the root of *Sigillaria*.

The *Trigonocarpum olivæformæ* (or fruit of the palm) is very scarce, being found only in one portion of the quarry, of very small extent, in the lowest stratum, next to the shale.

Another fossil met with, but rare, in that district at least, is *Halonia tuberculata*. A very fine specimen was obtained some time ago, adhering to the surface of the upper stratum of sandstone.

Of the *Lepidodendra* there are several species; among them *Lepidodendron Sternbergii* and *L. Harcourtii*, and a peculiar and rare variety, with whose specific name the author is unacquainted.

Eudogenites striata is also met with.

A very remarkable fossil was discovered in 1842, by the Rev. D. Landsborough, which there is every reason to consider as unique. He says, that only a very few specimens exist, and that, to the best of his belief, it has not been found elsewhere. He submitted it to the Philosophical Society of Glasgow, who report, that "the exposed surface presents a most singular appearance, and is unlike any fossil plant which we have ever seen figured. Its peculiar appearance is its resemblance to part of a common osier-basket. Hence, Mr L. used humorously to designate it 'Noah's creel,' for want of a better name. To supply this

desideratum in nomenclature, and as no such fossil appears to have been described or figured, we have named it '*Lyginodendron Landsburgii*;' forming the generic name from λογινος, wicker-work, and δενδρον, a tree; and dedicating it by, its specific name, to its discoverer, Mr Landsborough." The fragments of the fossil were spread over a space of about two yards, and have not been observed, except in that place. The finest specimen obtained was about 18 inches in length, by 3 in breadth. It was discovered in the middle stratum.

Of the genus *Sigillaria* there are two or three varieties, as *Sigillaria oculata*, *Sigillaria reniformis*, &c. &c.

The most magnificent fossil found in the quarry is the *Bothrodendron punctatum*. A splendid specimen of this fossil is in the possession of Mr Landsborough, which he describes to be of a size and weight which he can scarcely lift from the ground. It is extremely rare, however; only two, or at most three, examples of it have been procured.

Another very curious and remarkable fossil also, is the *Stylolithen*, of which there appears to be two distinct varieties—one with very broad stripes, the other with the lines more closely approximating, and, likewise, more deeply indented.

Specimens of all the before-mentioned fossils were contained in the collection presented to the Society. The author presented at the same time some masses of impure ironstone, from a coal-pit on the same estate, containing very beautiful specimens of the *Unio Urii*.

2. On a new Self-Registering Barometer. By Robert Bryson, F.R.S.

From the nature of the instrument, it is impossible to give an intelligible abstract of the paper. The paper, with a description of the instrument, and a statement of its indications for some months, is published in the Society's Transactions.

Monday, 15*th January* 1844.

Dr ABERCROMBIE, V. P., in the Chair.

The following Communications were read:—

1. On the Vibrations of an Interrupted Medium. By Professor Kelland.

The object of this paper was the approximate determination of the change of phase, and intensity of a ray reflected at the surface of a medium, which admits of no refraction.

2. On certain Laws of the Resistance of Fluids. By John Scott Russell, Esq.

3. Chemical Examination of the Tagua-Nut, or Vegetable Ivory. By Professor Connell.

This remarkable nut is now well known as being extensively carved into ornaments, having the high polish and general appearance of the finest ivory.

It is a seed or nut of a palm called *Phytelephas macrocarpa*, which is found on the banks of the Magdalena river, in the republic of Columbia.

For analysis the fine turnings of the vegetable ivory were employed. These were well rubbed in a mortar successively with cold and hot water, and were then heated with hot alcohol. The constituents were found to be—

Gum,	6.73
Legumin or Vegetable Casein,	3.8
Vegetable Albumen,	0.41
Fixed Oil,	0.73
Ashes,	0.61
Water,	9.37
Lignin or Woody Matter,	81·34
	100.

In the ashes were found phosphate of lime, sulphate of potash, chloride of potassium, carbonate of lime, and a little siliceous matter.

The following Donations to the Society's Museum were announced :—

14 Specimens of British land and fresh-water Shells. Presented by the Honourable Mrs Macadam Cathcart.

Block of Sandstone, with organic remains imbedded in it, found in one of the dry docks at Leith, when enlarging it; originally from Rosyth Quarry, Fifeshire. Presented by Captain Patrick Dall, R.N.

Portrait of James Mitchell, at the age of 46 years, well known, and described in the Transactions of this Society, by the late Professor Dugald Stewart and others, as the blind, deaf, and dumb boy. This portrait was given by his sister, Jane G. Mitchell, to, and was presented by, Sir Thomas Dick Lauder, Bart.

The following Donations to the Society's Library were announced.

Proceedings of the Geological Society of London. Nos. 94, 95, and 96.—*By the Society.*

Journal of the Statistical Society of London. Vol. vi. pt. 4.—*By the Society.*

Journal of the Asiatic Society of Bengal. Nos. 50, 51, and 52.—*By the Society.*

Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences de Paris. Tome xvii., Nos. 20, 21, 22, 23, and 24.—*By the Academy.*

The Journal of Agriculture, and the Transactions of the Highland and Agricultural Society of Scotland. Jan. 1844.—*By the Society.*

Elements of Agricultural Chemistry and Geology. By James F. W. Johnston, M.A., F.R.SS.L. & E., &c.—*By the Author.*

Transactions of the Institution of Civil Engineers. Vol. iii., pts. 2, 3, 4, and 5.

Minutes of Proceedings of the Institution of Civil Engineers for Sessions 1840–41–42–43.—*By the Institution.*

Flora Batava. Nos. 129 and 130.—*By the King of Holland.*

Descriptive Catalogue of the Anatomical and Pathological Museum of the School of Medicine, Park Street, Dublin. By John Houston, M.D.—*By the Author.*

Transactions of the Society instituted at London for the encouragement of Arts, Manufactures, and Commerce. Vol. liv.—*By the Society.*

The Journal of the Royal Asiatic Society of Great Britain and Ireland. No. xiv.—*By the Society.*

Tijdschrift voor Natuurlijke Geschiedenis en Physiologie. Uitgegeven door J. van der Hoeven, M.D., en W. H. De Vriese, M.D. Deel x., Stuk. 4.—*By the Editors.*

Abhandlungen der Königlichen Gesellschaft der Wissenschaften zu Gottingen. Band 1.—*By the Society.*

Nova Acta Academiæ Cæsareæ Leopoldino-Carolinæ Naturæ Curiosorum. Vol. xviii., Suppl. ii., et Vol. xix., Pars. ii.—*By the Academy.*

Almanach der Königlichen bayerischen Akademie der Wissenschaften. 1843.—*By the Academy.*

Twenty-third Report of the Council of the Leeds Philosophical and Literary Society. 1842–43.—*By the Society.*

Bulletin de la Société Impériale des Naturalistes de Moscow. 1842, No. 4, et 1843, Nos. 1, 2, 3.—*By the Society.*