strated with three figures, and likewise shown to be susceptible of ocular proof by direct experiment. Several interesting corollaries are also drawn. Some such mechanism is shown to be an anatomical necessity, from the structure of the wrist-joint, to provide for the extremes of adduction aud abduction that take place in the wrist, without straining the joint. Another obvious purpose subserved is equalisation of muscular power, by relegating a part of the work, that the hand muscles would otherwise have to perform, to the larger flexors and extensor of the upper arm; and an actual saving of a certain amount of muscular effort, this being replaced by automatic movements of the bones themselves, Having seen no account of this mechanism, the author is inclined to think it may be unnoticed.* It is is at any rate a new explanation of the design of the peculiar shape and position of the radial articulating surface of a bird's humerus, far more important than that hitherto assigned—viz., its causing simply the well-known obliquity of flexion of the forearm.

SCIENTIFIC SERIALS

THE number of the *Geological Magazine* for Dec. 1871 (No. 90) contains an unusual abundance of important interesting papers. The first is an article by Prof. Traquair on the genus of fossil fishes to which Prof. Huxley has given the name of *Phaneropleuron*, with the description of new species (*P. elegans*) from the Lower Carboniferous limestone of Burdiehouse. The author describes some new points in the structure of the type-species of this genus (*P. Andersoni*) from the Devonian yellow sandstone of Dura Den), the most important being that the dorsal fin was in that fish continued as a "dorso-caudal" to extremity of the body as in *Lepidosiren* and *Ceratodus Forsteri*. Prof. Traquair gives a restored outline of *P. Andersoni* in accordance with his views, and also figures of two specimens of his new species.—Mr. T. G. Bonney contributes an interesting paper on a double "cirque" in the syenite hills of Skye, with remarks upon the formation of cirques, in continuation of his paper read before the Geological Society some time since.—From Mr. Carruthers we have descriptions of two previously unknown coniferous fruits from the Gault of Folkestone; one of them a magnificent cone, described and figured under the name of *Pinites hexagonus*; the other a smaller form called *Sequoites ovalis*. To this paper the author has appended a note on the structure of the scales of his *Araucarites sphærocarpus*, with some judicious remarks on the caution which ought to be exercised by the student of fossil plants in determining the affinities of the often fragmentary remains with which he has to deal.—Mr. James Geikie publishes a first paper connected with that apparently inexhaustible subject, the climate of the glacial epoch. In this the author discusses the evidence furnished by the glacial deposits of Scotland with regard to the occurrence of warm interglacial periods, during which all or nearly all the snow and ice may have disappeared from the face of the country.—Mr. A. H. Green's notes on the geology of part of the county of Donegal contain an interesting account of the structure of the county, especially with regard to the relations of the granites and stratified rocks and to the glaciation of the surface.—And lastly, Mr. A. J. Browne, from an examination of the valley of the Yar in the Isle of Wight, throws out the suggestion that that valley and the other river-valleys of the island were originally occupied by continuations of the Hampshire rivers before the excavation of the Solent.—Among the miscellaneous notices we may call attention to an article by Prof. T. Rupert Jones and Mr. W. K. Parker on the Foraminifera from the chalk of Meudon, figured by Ehrenberg in his "Mikrogeologie."

Quarterly Journal of Microscopical Science, January.—"Notes of a Course of Practical Histology for Medical Students," given at King's College, London, by Dr. Wm. Rutherford, F.R.S.E., &c. This paper illustrates the author's method of teaching, the students preparing for themselves the series of specimens of the various tissues. After an enumeration of the tissues so prepared follow some general observations on Examination of Tissues, How to Harden Tissues, How to Soften Tissues, How to make Sections of Tissues, How to render Tissues Transparent, How to Stain Tissues, How to Inject, and How to Preserve Tissues, with notes on cells and cements.—"On the Peripheral Distribution of Non-medullated Nerve-fibres," by Dr. E. Klein. Part II. This is the continuation of the paper commenced in the last number of this journal, and to be concluded in the next. It deals with the Nerves of the Nictitating Membrane and Nerves of the Peritoneum.—"Remarks on Prof. Schulze's Memoir on *Cordylophora lacustris*," by Prof. Allman, F.R.S.; "Size of the Red Corpuscles of the Blood of the Porbeagle, or Beaumaris Shark, *Lamna cornubica*," by George Gulliver, F.R.S. The mean long diameter of the corpuscles measured $\frac{1}{213}$ of an inch, and the short diameter $\frac{1}{1500}$, nearly alike in magnitude to those of the small dog-fish and other Selachii.—"A Note on some Circumstances affecting the Value of Glycerine in Microscopy," by Mr. W. M. Ord. This note suggests that from the action of glycerine on murexide and oxalate of lime, mounted for the microscope, it is impossible not to have some misgivings as to the results of its use in the preparation of tissues for the microscope.—"On Remak's Ciliated Vesicles and Corneous Filaments of the Peritoneum of the Frog," by Dr. E. Klein.—"On the Structure of the Stem of the Screw Pine," by Prof. W. T. Thiselton Dyer. Scalariform ducts were detected by the author in the branches of a *Pandanus*, and crystalline forms of two kinds in the tissues.—"On Students' Microscopes," by Mr. J. F. Payne, with a table of English and foreign microscopes, their features, powers, accessory apparatus, and prices.

Journal of the Quekett Microscopical Club, January.—"Notes on Podisoma," by Mr. M. C. Cooke. After describing the minute structure and mode of germination in these fungi, the author proceeds to detail the experiments of Prof. Oersted, from which it has been supposed that the identity of *Podisoma* with *Ræstelia* has been established. The paper concludes with a critical examination of all the known species, one of which it referred to a new genus, and a different order, under the name of *Sarcostroma Berkeleyi*.—"On the so-called Boring or Burrowing Sponge (*Cliona*)," by Mr. J. G. Waller. The object of this paper is to call in question the burrowing proclivities of the sponges belonging to the genus *Cliona* of which *Hymeniacidon celata*, Bowerbank, is the type. This number completes the second volume of the journal.

SOCIETIES AND ACADEMIES

LONDON

Geologists' Association, January 5.—The Rev. J. Wiltshire, president, in the chair. "On the overlapping of several Geological formations on the North Wales border," by Mr. D. C. Davies, of Oswestry. The author stated that the Geological formations of the district ranged upwards from the Llandeilo to the New Red Sandstone. Attention was directed to the way in which nearly every one of these overlapped the one below, hiding in its course many of the beds, amounting in some cases to 1,000 feet of strata, which at other points were exposed. The overlaps increase as a rule from north to south, except in that of the Bala and Caradoc beds by the Llandovery, which increase in an opposite direction. The author inferred that the conformability of strata at a given point did not necessarily prove the unbroken sequence or complete series of the beds at that point, and also that conformability between either two consecutive beds of the same formation, or between those of two distinct formations, was not to be expected to extend over a large area. Amongst other facts stated in this paper was the important one that coal seams occur in Permian strata in the neighbourhood of Ifton. The President remarked upon the enormous time required for the production of the phenomena described by Mr. Davies. Prof. Morris explained the geological and physical features of the district, and spoke of the high value of the paper.—"Report of the Proceedings of the Geological Section of the British Association at Edinburgh, 1871," by Mr. John Hopkinson, one of the deputation from the Geologists' Association. In this communication the author succinctly stated the more important features of the opening address by the president, Prof. Geikie, and of the many papers read before Section C at the meeting at Edinburgh last year, and gave interesting accounts of the two geological excursions under the direction of Prof. Geikie.—Mr. J. T. B. Ives communicated the interesting fact of an extensive bed of peat occurring under gravel between Finchley and Whetstone.—Fossils from the glacial deposits of Islington cemetery were exhibited by Mr. Caleb Evans.

* It is indeed not mentioned in the works of Cuvier, Meckel, Tiedemann, Wagner, and other distinguished authors; but Dr. Bergmann, of Göttingen (*Archiv. fur Anat.*, 1839. 296), speaks of essentially the same thing, although the results of the mechanism are not so fully shown. —*Eds. Am. Nat.*

Photographic Society, January 9.—Mr. J. R. Sawyer, in a paper entitled "Photography in the Printing Press," gave an account of the history of mechanical photographic printing. He ascribed to Mungo Ponton the discovery of the action of light upon the bichromates when mixed with certain organic bodies, and to Becquerel the first suggestion of employing gelatine and bichromate in conjunction for photographic printing; but to Poitevin is due the honour of having invented photo-mechanical printing. Mr. Sawyer proceeded to describe the improvements which have since been made, referring to the processes of Tessié de Motay, Lichtdruck, Heliotype, &c. He concluded with a description of photo-collographic printing as now practised.—Mr. J. W. Stillman exhibited and described some new Photographic apparatus.—Mr. Henry Whitfield and Mr. R. Phipps were elected members.

GLASGOW

Geological Society, Dec. 14, 1871.—Mr. John Young, vice-president, exhibited specimens of coal from a thin seam, intercalated amidst beds of trappean ash at Glenarbuck, near Bowling, He referred to the discovery, by the late Mr. Currie of Bowling, of thin beds of coal amongst the traps of the Kilpatrick hills at Auchintorlie Glen, which clearly established the carboniferous age of these igneous rocks. He also alluded to his own subsequent observation of thin beds of indurated shale, containing fish remains of carboniferous genera, associated with and overlying one of the seams of coal in the same glen. Since then he had found another thin seam of coal cropping out at a high level in beds of trappean ash on the hillside above Glenarbuck, in the same neighbourhood. In the specimens of the coal exhibited, the woody fibre of the plants in a carbonised condition is clearly distinguishable; and although of a very foul quality, and considerably altered by the heat of the traps amongst which it is imbedded, yet it still gives off a little flame in the burning. From the same ash-bed he had also extracted a portion of the stem of a species of *Sigillaria*, and he believed the greater part of the woody structure observed in this Glenarbuck coal was derived from plants allied to *Sigillariæ* and *Lepidodendra*.—Mr. D. Bell submitted portions of the large pitchstone vein at Corriegills, Arran, and of the sandstone in which it occurs, showing that both rocks are much altered along the lines of contact.

HALIFAX, NOVA SCOTIA

Institute of Natural Science, November 13, 1871.—"On a Lophioid Fish caught off Halifax Harbour," by Mr. J. M. Jones, F.L.S., president. The little Lophioid fish in the Provincial Museum collection was at first sight regarded by the writer as a Gurnard, but on closer examination it was found to be a Lophioid. The description in the paper, with a figure, were submitted to Dr. Theodore Gill, of Washington, who considered that in the description and figure he recognised the young of the *Lophius americanus* or Sea Devil. It was supposed, however, that the description was slightly defective, and that some characteristic features had been unobserved. The writer did not find the desiderated features in the specimen, and was assured that it never possessed them, as the specimen had been brought to the museum while living and unhurt, and was in the finest state of preservation when examined and described. It was very different from any of the young Lophioids described in Günther's Catalogue, and was, therefore, probably a new Lophioid. The writer referred to two fine specimens of *Lophius piscatorius* lately caught in the Halifax Harbour, one of which had a cod fish in its stomach. He could see no reason for the application of the term *americanus* by American naturalists, as the European and American forms are identical.—On Sir W. Logan and Hartley's Geology of the Precarboniferous Rocks underlying the Picton Coal Field, by Rev. D. Honeyman. Sir W. Logan, in his Report on the Picton Coal Field (*vide* Report of Progress from 1866 to 1869, page 7), says: "No evidence was observed by me on McLellan's mountain to show to what epoch these old rocks belong, but masses somewhat similar are noticed by Mr. Hartley on the west side of East River in a position where they have been mentioned in his Acadian Geology by Dr. J. W. Dawson, who considers them to be of Devonian age, and on his authority they will be so distinguished." By the Devonian colouring of Logan and Hartley's map, which accompanies the Report and illustrates it, it would appear that Sir W. Logan intends that the language should apply to a part of pre-carboniferous rocks in the district of Sutherland River as well as the northern part of McLellan's mountain. Now the rocks of the part of McLellan's mountain range indicated belong to the northern part of one of the great anticlinal Silurian series which extends to the south about nine miles is generally metamorphic and non-fossiliferous. The author was, however, fortunate enough to discover the fossiliferous localities in the series, viz., at Fraser's mountain, the southern extremity of McLellan's mountain, and Blanchard, celebrated in Danzer's Eulogy and elsewhere for its iron deposit. In the former he found Middle Silurian fossils in the western side of the anticlinal, and in the other Middle Silurian fossils on the eastern side of the same anticlinal, of one or both of these Sir W. Logan's Devonian Rocks must be the extension and northern terminus. In this series the author found Lower Heldesberg or Upper Ludlow fossiliferous strata overlying the Clinton and Redina fossiliferous of Fraser's mountain, and this is the most recent of the pre-carboniferous rocks of McLellan's mountain. The other part of Sir W. Logan's Devonian area, the Sutherland river containing the Middle Silurian bend which changes the direction of the Silurians, or connects the N. and S. anticlinals of McLellan and Irish mountains with the Silurians to the east, viz., French River, Barney's River, Antigonish, Arisaig, and Lochaber. In this band there are two monoclinal Middle Silurian series: the one commencing in McLellan's mountain, its greenstone forming Blackwood's mountain, the northern extremity of McLellan's mountain range; overlying this to the south is a metamorphic Medina band. Overlying the greenstone of the second monoclinal on the south is a partially metamorphosed band of Medina age, containing abundance of fossils. The lower part overlying the greenstone at St. Mary's Road contains abundance—beds of Orthids and Athyrus. At Sutherland's River Bridge I found indifferently preserved Linguleæ in the same strata.

PARIS

Academy of Sciences, January 2.—After the election of officers and the reading of the report for 1871, M. Delaunay communicated a note on the movements of the perigee and node of the moon.—M. E. Vicaire read a note on the temperature of the solar surface, in which he arrives at the conclusion that this temperature is below 3000° C. (= 5432° F.). M. Faye, M. H. Sainte-Claire Deville, M. E. Becquerel, and M. Fizeau, spoke upon this subject, all of them agreeing in opinion with M. Vicaire. Father Secchi, however, in a third note on the solar temperature, maintained his previous estimate of 10,000,000° C. —M. Chasles read a continuation of his theorems relating to the harmonic axes of geometrical curves; General Morin presented a note by General Didion on the expression of the relation of the circumference to the diameter, and on a new function; and M. Chasles communicated a further note by M. Halphen, on the straight lines which fulfil given conditions.—A note on the electrical currents obtained by the flexion of metals, by M. P. Volpicelli, was read, in which the author enlarged and corrected the results obtained by Peltier and De la Rive.—M. W. Fonvielle read an explanation of the appearance, during balloon ascents, of rings which do not exhibit chromatic decomposition.—A letter was read from M. de Bizeau, of Entre-Monts, near Binche, in Belgium, giving the extreme cold at that place on the 8th December, 1871, at −21·5° C. (= −6·7° F.) at half-past 7 A.M.—M. Pasteur presented a note upon a previous communication of M. Trécul on the origin of lactic and alcoholic ferments, in which he stated that he saw nothing in M. Trécul's results to impugn the exactitude of former experiments or the conclusions which he had drawn from them.—M. A. Trécul read a paper, in which he described the cells of beer-yeast becoming mobile like monads.—M. Berthelot communicated a further paper on the state of bodies in solutions, in which he treated of certain salts of peroxide of iron (sulphate, nitrate, and acetate).—M. Balard presented a third note by M. C. Saint-Pierre on the spontaneous decomposition of certain bisulphites (of lead and baryta).—M. Robin communicated a note by MM. Rabuteau and Massul, on the physiological properties and metamorphoses of the cyanates in the organism, in which the authors state as the result of their researches that the cyanates of potassa and soda are not poisonous, and that in the animal economy they give origin to carbonates.—A note by M. S. Jourdain, containing materials towards the history of *Gymnetrus gladius*, was presented by M. Blanchard. The author describes the anatomy of a specimen of this rare fish, which was stranded near Palavas (in Hérault.)—A note on the heat absorbed during incubation by M. A. Moitessier was communicated by M. Balard. The author finds that the specific heat of fecundated is less than that of unfecundated eggs when treated in the same manner, and infers that a portion of the heat absorbed by the former during incubation is transformed.—M.

Decaisne presented a note by M. A. F. Marion on the fossil plants of Ronzon in the department of the Haute Loire. The flora of the marly limestones of Ronzon includes only fifteen species belonging to the same number of genera; eleven of the species are said to be new. These belong to the genera *Equisetum*, *Podostachys*, *Myrica*, *Celtis*, *Litsæa*, *Bumelia*, *Myrsine*, *Pistacia*, *Mimosa*, *Echitenium*, and *Ronzocarpum*. The facies of the flora is African or Asiatic.—A note by M. Bleichen on the discovery of *Posidonia minuta* in the Trias of the department of the Gard, and on a deposit of schists containing *Walchia* in the Permian formation of Aveyron, was presented by M. de Verneuil; and a note by M. Sanson on an equine skull from the turbaries of the Somme by M. de Quartrefages. The author of the last-mentioned paper refers the skull obtained by Boucher de Perthes from the ancient turbaries of the Somme to the African variety of the common ass.

January 8.—M. Martin de Brettes presented a memoir on the motion of oblong projectiles in resisting media, and on the explanation of the wounds produced in living creatures by the oblong balls of rifled guns.—M. E. Rolland read a memoir on the effects of variations of work transmitted by machines, and on the means of regulating them.—Three letters from M. Janssen were read, giving an account of the position selected by him at Sholoor, in Neilgherry Hills, for the observation of the solar eclipse of Dec. 12, and a brief statement of his results, the latter will be found in another column.—M. S. Meunier read a note on the transition types in meteorites. In this paper the author indicated certain transitions between the constituents of meteorites analogous to those occurring in terrestrial lithology—namely, between luceite and montrejite, mesminite and canellite, montrejite and limerickite, montrejite and stawoopolite, and between aumalite and tadjerite.—A memoir was presented by M. C. A. Valson on a relation between capillary actions and densities in saline solutions, in which he showed by a table of results that in nearly all cases the amount of capillary action is dependent on the density of the fluid.—M. H. Sainte-Claire Deville presented a note by MM. Troost and P. Hautefeuille on the action of heat upon the oxy-chlorides of silicium.—M. Berthelot read the conclusion of his memoir on the state of bodies in solutions, which related to persalts of iron.—M. S. de Luca communicated some investigations of a complex alum, obtained from the thermo-mineral water of the Solfatara of Puzzuoli; it consists of sulphuric acid combined with alumina, ammonia, protoxide and sesquioxide of iron, lime, magnesia, and potass, with traces of soda and manganese.—A note by M. D. Tommasi on the action of iodide of lead upon some metallic acetates was read.—M. Dubrunfaut presented a note on the combustion of carbon in carbonic acid in presence of water, in which he indicated the importance of the presence of aqueous vapour in many phenomena of combustion. M. Dumas spoke in opposition to to the views of Dubrunfaut.—M. Pasteur communicated a note by M. J. C. de Seynes on the asserted transformations of Bacteria and Mucedineæ into alcoholic ferments; and M. F. Béchamp a paper on the development of alcoholic and other ferments in fermentescible media, without the direct intervention of albuminoid substances.—M. Boussingault presented a note on saccharine matter which appeared in the leaves of a lime tree.—The author stated that the saccharine fluid observed by him was not, as is generally supposed, the production of *Aphides*, but apparently a morbid secretion of the tree; it was found to be identical in saccharine constitution with the manna from Sinai analysed by Berthelot.—M. C. Dareste read a note in which he described the presence of bodies presenting the characters of starch-grains in the testes of birds, before the appearance of the spermatozoids.—M. Decaisne presented a note by M. J. E. Planchon, on the characters and systematic position of the Chinese spiny elm (*Hemiptelea Davidii*); and M. Daubrée some observations by M. H. Magnan, on two recent notes by M. Cayrol, on "The Lower Cretaceous formation of La Clape and Les Corbières."

BOOKS RECEIVED

ENGLISH.—Text Books of Science; Arithmetic and Mensuration: C. W. Merrifield (Longmans).—The Elements of Plane Geometry, 2nd edition: R. P. Wright (Longmans).—Concerning Spiritualism: Gerald Massey (Burns).—Catalogue of Transactions, &c, Radcliffe Library, Oxford.

AMERICAN.—Approved Plans and Specifications for Ports, Hospitals, &c., —Reports on Barracks and Hospitals, &c.—Elements of Chemistry and Mineralogy, Vol. ii.: J. Hinrichs.

DIARY

THURSDAY, JANUARY 18.

ROYAL SOCIETY, at 8.30.—Investigations of the Currents in the Strait of Gibraltar, made in August 1871, by Capt. Nares, of H.M.S. *Shearwater*: Admiral Richards, F.R.S.—On the Absolute Direction and Intensity of the Earth's Magnetic Force at Bombay, and its Secular and Annual Variations: C. Chambers, F.R.S.

SOCIETY OF ANTIQUARIES, at 8.30.—On Neolithic and Savage Implements: A. W. Franks, M.A., and Col. A. H. Lane Fox.

CHEMICAL SOCIETY, at 8.

ROYAL INSTITUTION, at 3.—On the Chemistry of Alkalies and Alkali Manufacture; Prof. Odling, F.R.S.

LINNEAN SOCIETY. at 8.—On the Anatomy of the American King-Crab (*Limulus polyphemus*, Lat.): Prof. Owen, F.R.S. (*Continued.*)

FRIDAY, JANUARY 19.

ROYAL INSTITUTION at 9.—On the new metal Indium: Prof. Odling, F.R.S.

SATURDAY, JANUARY 20.

ROYAL INSTITUTION, at 2.—On the Theatre in Shakespeare's Time: Wm. B. Donne.

SUNDAY, JANUARY 21.

SUNDAY LECTURE SOCIETY, at 4.—On King Arthur; the legend and its significance in relation to English life, past and present: Sebastian Evans.

MONDAY, JANUARY 22.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.

VICTORIA INSTITUTE, at 8.—On the Influence of Colloid Matters upon Crystalline Form: Dr W. M. Ord.

ENTOMOLOGICAL SOCIETY, at 7.—Anniversary Meeting.

LONDON INSTITUTION, at 4. Elementary Chemistry: Prof. Odling, F.R.S.

TUESDAY, JANUARY 23.

ROYAL INSTITUTION, at 3.—On the Circulatory and Nervous Systems: Dr. W. Rutherford, F.R.S.E.

WEDNESDAY, JANUARY 24.

GEOLOGICAL SOCIETY, at 8.—On the Foraminifera of the family Rotalinæ (Carpenter) found in the Cretaceous formations, with Notes on their Tertiary and Recent Representatives: Prof. T. Rupert Jones, F.G.S., and W. K. Parker, F.R.S.—On the Infra-Lias in Yorkshire: Rev. J. F. Blake, F.G.S.—Further Notes on the Geology of the Neighbourhood of Malaga: M. D. M. d'Orueta.

SOCIETY OF ARTS, at 8.—On Improvements in the Process of Coining: Ernest Seyd.

ROYAL SOCIETY OF LITERATURE, at 8.30.—On Excavations at the Site of the Homeric Pergamus: Dr. J. G. Von Hahn.

THURSDAY, JANUARY 25.

ROYAL SOCIETY, at 8.30.

SOCIETY OF ANTIQUARIES, 8.30.

ROYAL INSTITUTION, at 3.—On the Chemistry of Alkalies and Alkali Manufacture: Prof. Odling, F.R.S.

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NOTICE

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