

SOCIETIES AND ACADEMIES.

LONDON.

Entomological Society, November 6.—Prof. J. O. Westwood in the chair.—Mr. J. W. Douglas sent for exhibition specimens of *Anthocoris visci*, Dougl., a new species taken at Hereford, in September last, by Dr. T. A. Chapman; also specimens of *Psylla visci*, Curtis, taken by Dr. Chapman at the same time and place.—Mr. R. McLachlan, F.R.S., exhibited coloured drawings of a specimen of *Zygana filipendula*, in which the left posterior leg is replaced by a fully-developed wing, similar to an ordinary hind wing, but less densely clothed with scales. Mr. McLachlan also exhibited a female specimen of the common earwig, *Forficula auricularia*, with a parasitic Gordius emerging from between the metathorax and abdomen. He said that it had been placed in his hands by Mr. A. B. Farn, by whom it was taken, and that other instances of similar parasitism by Gordius on earwigs had been recorded.—Mr. W. F. Kirby exhibited a gynandromorphous specimen of *Lycana icarus*, having the characters of a male in the right wings and of a female in the left wings, caught at Keyingham, Yorkshire, in June last; also a specimen of a variety of *Crabro interruptus*, De Geer, found at Uxbridge.—Mr. W. L. Distant exhibited a male and female specimen of a species belonging to a new genus of *Discocephalina*, from Guatemala, in which the sexes were totally dissimilar, the female having abbreviated membranes, and being altogether larger than the male.—Dr. D. Sharp stated that he had observed that in the *Ipsina* division of *Nitidulidae* there was present a stridulating organ in a position in which he had not noticed it in any other Coleoptera—viz. on the summit of the back of the head. He had found it to exist not only in the species of *Ips* and *Cryptarcha*, but also in other genera of the subfamily. He exhibited specimens of *Ips* and *Cryptarcha*, mounted to show the organ. Dr. Sharp also exhibited a number of *Rhynchota*, chiefly *Pentatomida*, in which the specimens were prepared so as to display the peculiarities of the terminal segment in the male sex.—Mr. R. Adkin exhibited for Mr. H. Murray, a fine series of *Polia xanthomista*, var. *nigrocincta*, from the Isle of Man, and *Cidaria reticulata* and *Emmelesia taniata* from the Lake District.—Mr. W. White exhibited a living larva of *Zeuzera asculi*, and called attention to the thoracic segments with several rows of minute serrations, which evidently assist progression. He stated that the larva exudes from its mouth, when irritated, a colourless fluid, which he had tested with litmus-paper and found to be strongly alkaline.—Captain H. J. Elwes exhibited a number of insects of various orders, part of the collection formed by the late Otto Möller, of Darjeeling.—Mons. A. Wailly exhibited the cocoon of an unknown species of *Antheraea* from Assam; also a number of cocoons and imago of *Anophe venata* from Acugua, near the Gold Coast; specimens of *Lasiocampa otus*, a South European species, which was said to have been utilized by the Romans in the manufacture of silk; also a quantity of eggs of *Epeira madagascariensis*, a silk-producing spider from Madagascar, locally known by the name of "Halabe." He also read extracts from letters received from the Rev. P. Camboué, of Tananarivo, Madagascar, on the subject of this silk-producing spider.—Mr. H. Goss read a communication from Dr. S. H. Scudder, of Cambridge, Mass., U.S.A., on the subject of his recent discoveries of some thousands of fossil insects, chiefly Coleoptera, in Florissant, Western Colorado, and Wyoming. Prof. Westwood remarked on the extreme rarity of fossil Lepidoptera, and called attention to a recent paper by Mr. A. G. Butler, in the Proc. Zool. Soc., 1889, in which the author described a new genus of fossil moths belonging to the family *Euschemidae*, from a specimen obtained at Gurnet Bay, Isle of Wight.—Mr. F. P. Pascoe read a paper entitled "Additional Notes on the genus *Hilipus*," and exhibited a number of new species belonging to that genus.—The Rev. Dr. Walker read a paper entitled "Notes on the Entomology of Iceland." Mr. R. Trimmen, F.R.S., asked if any butterflies had been found in the island. Dr. Walker said that neither he nor Dr. P. B. Mason had seen any during their recent visit, nor were any species given in Dr. Staudinger's list. Dr. Mason said that during his recent visit to Iceland he had collected nearly one hundred species of insects, including about twenty Coleoptera. He added that several of the species had not been recorded either by Dr. Staudinger or Dr. Walker. Capt. Elwes inquired if Mr. J. J. Walker, with his great experience as a collector in all parts of the world, was aware of

any land outside the Arctic Circle from which no butterflies had been recorded. Mr. J. J. Walker replied that the only place in the world which he had visited, in which butterflies were entirely absent was Pitcairn Island.

Royal Microscopical Society, October 9.—Dr. C. T. Hudson, F.R.S., President, in the chair.—The President referred to the deaths of the Rev. M. J. Berkeley and Dr. G. W. Royston-Pigott, the former an honorary, and the latter formerly an ordinary, Fellow of the Society.—Mr. Crisp announced that, owing to certain business arrangements, he was obliged to retire from the secretaryship of the Society and from the conduct of the Journal. It was with the very greatest reluctance that he had found it necessary to resign, but there would, he anticipated, be no difficulty in continuing the Journal on its present lines, while he was sure there were many Fellows both able and willing to undertake the duties of Microscopical Secretary.—Mr. John Meade's communication on stereoscopic photo-micrography was read.—The President brought for inspection three photo-micrographs of one of the new rotifers mentioned in his supplement—*Gomphogaster areolatus*.—Mr. E. M. Nelson exhibited a new elementary centering sub-stage which he thought was likely to be useful. It was fitted in the simplest manner by placing two legs under the main stage, and the movement was given to it with the finger; it was very inexpensive, and was only designed to render the ordinary student's microscope of a higher degree of efficiency by providing it with an easy method of correctly centering the condenser and diaphragm.—The President mentioned that *Pedalion* was to be had in many places in the neighbourhood of London about a month ago, where it had not been previously found.—Mr. Ahrens's description was read of his new patent polarizing binocular microscope for obviating the difficulty of using analyzing prisms with the double tube. The inventor uses for an analyzer a black glass prism, set above the objective with a horizontal side upwards. Two faces are symmetrically inclined to the optical axis at the polarizing angle. The pencil is thus reflected at the proper angle, and at the same time divided into two parts, which are then reflected up the two tubes either by prisms or by plane reflectors.—Prof. Abbe's paper, notes on the effect of illumination by means of wide-angled cones of light, was read.—Mr. T. F. Smith read a paper on the ultimate structure of the *Pleurosigma* valve.

Royal Meteorological Society, November 20.—Dr. W. Marcet, F.R.S., President, in the chair.—The following papers were read:—Second Report of the Thunderstorm Committee. This is a discussion by Mr. Marriott on the distribution of days of thunderstorms over England and Wales during the seventeen years 1871–87. Notices of sheet lightning are included in the term "thunderstorms." The years of greatest frequency were 1880, 1882, 1884, and 1872; and the years of least frequency 1887, 1874, 1879, and 1871. Years of greater or less frequency alternate regularly throughout nearly the whole of the period. The average yearly number of thunderstorms is about thirty-nine. The districts with the greatest yearly frequency are the south of England and extreme northern counties, and those with the least yearly frequency are Cheshire, Lancashire, and Yorkshire. The greatest number of thunderstorms occur in July, and the least in February and December.—On the change of temperature which accompanies thunderstorms in Southern England, by Mr. G. M. Whipple.—Note on the appearance of St. Elmo's fire at Walton-on-the-Naze, September 3, 1889, by Mr. W. H. Dines.—Notes on cirrus formation, by Mr. H. Helm Clayton. The author, who has made a special study of cloud forms and their changes, gives a number of notes and drawings on the formation of cirrus under various conditions, e.g. in a previously cloudless sky, cirrus bands with cross fibres, cirrus from cirro-cumulus clouds, cirrus drawn out from cumulus clouds, "mares-tail" cirrus, &c. Curved cirrus clouds when accompanied by decreasing barometric pressure frequently indicate that a storm of increasing energy is approaching.—A comparison between the Jordan and the Campbell-Stokes sunshine recorder, by Mr. F. C. Bayard. As a result of a year's comparison between these two instruments, the author found that the Jordan photographic recorder registered nearly 30 per cent. more sunshine than the Campbell burning recorder.—Sunshine, by Mr. A. B. MacDowall. This is a discussion of the hours of sunshine recorded at the stations of the Royal Meteorological Society.—On climatological observations at Ballyboley, co. Antrim, by Prof. S. A. Hill. This is the result of observations made during the five years 1884–88.

Geological Society, November 6.—W. T. Blanford, F.R.S., President, in the chair.—The following communications were read:—Contributions to our knowledge of the Dinosaurs of the Wealden and the Saurpterygians of the Purbeck and Oxford Clay, by R. Lydekker. The first section of this paper was devoted to the description of the remains of Iguanodonts from the Wadhurst Clay near Hastings collected by Mr. C. Dawson. They were considered to indicate two species, for which the names *Iguanodon hollingtoniensis* and *I. Filtoni* had been proposed in a preliminary notice. In the second section an imperfect metatarsus of a species of *Megalosaurus* from the Hastings Wealden was described, and shown to indicate a species quite distinct from the one to which a metatarsus from the Wealden of Cuckfield belonged. Two cervical vertebrae of a Saurpterygian from the Purbeck of the Isle of Portland were next described, and referred to *Cimoliosaurus portlandicus*, Owen, sp. The concluding section described an imperfect skeleton of a large Pliosaur from the Oxford Clay, in the collection of Mr. A. N. Leeds, which indicated a species intermediate between the typical Kimeridgian forms and the genus *Peloneustes*. These specimens were considered as probably referable to *Pliosaurus ferox*. Evidence was adduced to show that *Pliosaurus Evansi*, Seeley, should be transferred to *Peloneustes*.—Notes on a “dumb fault” or “wash-out” found in the Pleasley and Teversall Collieries, Derbyshire, by J. C. B. Hendy; communicated by the President.—On some Palaeozoic Ostracoda from North America, Wales, and Ireland, by Prof. T. Rupert Jones, F.R.S. The specimens were described as nearly as possible in the order of their natural relationship, and thus, besides adding to the known forms, they were shown to illustrate the modifications exhibited by the genera and species of these minute bivalved Crustaceans, both in limited districts and in different regions. Amongst the forms described were the following new species and variety:—*Primitia mundula*, Jones, var. *cambrica*, nov.; *P. humilior*, sp. nov.; *P. Morgani*, sp. nov.; *P. Ulrichi*, sp. nov.; *P. Whitfieldi*, sp. nov.; *Entomis rhomboidea*, sp. nov.; *Strepsula sigmoidalis*, sp. nov.; *Beyrichia Hallii*, sp. nov.; *Isochilina lineata*, sp. nov.; *I. ? fabacea*, sp. nov.; *Leperditia Claypolei*, sp. nov.; *Xestoleberis Wrightii*, sp. nov.

Zoological Society, November 5.—Prof. W. H. Flower, F.R.S., President, in the chair.—The Secretary read a Report on the additions that had been made to the Society's Menagerie during the months of June, July, August, and September, 1889, and called attention to certain interesting accessions which had been received during that period. Amongst these were specially noted a Short Python (*Python curtus*), from Malacca, presented on July 2 by Mrs. Bertha M. L. Bonsor; and a Prêtre's Amazon (*Chrysotis pretreii*), purchased July 23: both new to the collection.—Mr. J. H. Gurney, Jun., exhibited and made remarks on a hybrid Wagtail, bred in confinement, between the Grey Wagtail (*Motacilla melanope*) and the Pied Wagtail (*M. lugubris*).—Mr. W. B. Tegetmeier exhibited and made remarks on some variations in the plumage of the Partridge (*Perdix cinerea*).—Prof. Bell exhibited and made remarks on two specimens of *Virgularia mirabilis*, recently dredged by the Hon. A. E. Gathorne Hardy, M.P., in Loch Craignish. He also exhibited two young living specimens of *Palinurus vulgaris*, received from Mr. Spencer, of Guernsey, in which the stridulating-organs were still capable of making sounds.—A communication was read from the Rev. Thomas R. R. Stebbing, containing an account of the Amphipodous Crustaceans of the genus *Urothoë*, and of a new allied genus proposed to be called *Urothoides*.—A communication was read from Colonel C. Swinhoe, containing descriptions of a large number of new Indian Lepidoptera, chiefly Heterocera.—Mr. P. L. Sclater gave an account of the birds collected by Mr. Ramage in St. Lucia, West Indies, which were referred to thirty species.—Mr. G. A. Boulenger read a note on the Short Python (*Python curtus*), a specimen of which was stated to be living in the Society's reptile house.—A communication was read from Dr. E. C. Stirling, of the University of Adelaide, on some points in the anatomy of the female organs of generation of the Kangaroo, especially in relation to the acts of impregnation and parturition.—Mr. F. E. Beddard read some notes on the anatomy of an Oligochaetous Worm of the genus *Dero*, relating principally to its reproductive system.—A communication was read from Mr. Scott B. Wilson, in which were given the descriptions of four new species of Hawaiian birds, proposed to be called *Chrysometridops cereuleirostris*, *Loxops flammea*, *Himatione montana*, and *H. stejneri*.

Mathematical Society, November 14.—Sir J. Cockle, F.R.S., Vice-President, in the chair.—The following gentlemen were elected to form the Council for the ensuing session:—President: J. J. Walker, F.R.S. Vice-Presidents: Sir J. Cockle, F.R.S., E. B. Elliott, and Prof. Greenhill, F.R.S. Treasurer: A. B. Kempe, F.R.S. Honorary Secretaries: M. Jenkins and R. Tucker. Other members: A. B. Basset, F.R.S., Prof. W. Burnside, Prof. Cayley, F.R.S., Dr. Glaisher, F.R.S., J. Hammond, Dr. Larmor, C. Leudesdorf, Major Macmahon, R.A., and S. Roberts, F.R.S.—The following papers were read:—Isoceles hexagrams, by Mr. R. Tucker.—On Euler's ϕ -function, two notes by Mr. H. F. Baker and Major Macmahon (the former communicated by Mr. Jenkins).—On the extension and flexure of a thin elastic plane plate, by Mr. A. B. Basset, F.R.S.

PARIS.

Academy of Sciences, November 18.—M. Hermite in the chair.—On animal heat and the heats of formation and of combustion of urea, by MM. Berthelot and P. Petit. In connection with the production of animal heat the study of urea is of special interest, for next to carbon dioxide it is the chief form under which carbon is eliminated from the system, while almost all the nitrogen is eliminated as urea. Hence it is important to know how the production of urea in the organs is related to the heat of formation of urea, and of the substances from which it is derived. In the present paper the authors deal with the first problem, for the heat of combustion of urea in free oxygen has not yet been measured. Three concordant combustions in the calorimetric bomb yielded 151.8 C. per gram-molecule, and the molecular heat of solution of urea at about 11° C. is found to be -3.58 C., whence the heat of formation of urea is 80.8 C., and of its solution in water or urine is found to be +77.2 C.—On the orbit of Winnecke's periodical comet, by M. H. Faye. These remarks are made in connection with a memoir presented to the Academy by Baron von Haerdtl, on the movements of Winnecke's periodical comet. He arrives at the conclusion that there is no trace of acceleration in the mean movement. He finds that the mass of Jupiter must be raised to 1:1047152, and determines that of Mercury in round numbers at 1:5,010,000 \pm 700,000. This agrees pretty closely with the value 1:5,310,000 already obtained by Le Verrier.—Experimental study of the transits and occultations of Jupiter's satellites, by M. Ch. André. These observations have been made by means of an apparatus specially constructed by MM. Brunner, and here fully described. Particular attention was paid to the phenomenon of the luminous ligament which is formed near the point of contact. It begins to appear when the satellite is about 2½ minutes from real contact, gradually increasing in size and intensity as the two bodies draw near, so that at the instant of geometrical contact they appear to be connected by a veritable luminous bridge about one-third the breadth of the diameter of the satellite. The moment of geometrical contact is accompanied by optical appearances sufficiently distinct to serve as a base for the direct observation of the phenomenon.—Researches on the application of the measurement of rotatory power to the study of compounds resulting from the action of malic acid on sodium molybdate, by M. D. Gernez. In a previous communication (*Comptes rendus*, cix. p. 151) the author showed that solutions of malic acid, with molybdate of ammonia added, show sundry changes in rotatory power, which may easily be explained by assuming that definite compounds are formed between the substances. His present researches, made with the same acid and neutral sodium molybdate, lead to still more varied results, clearly showing the production of compounds between simple numbers of molecules of these bodies. The results, which are here tabulated and described, demonstrate that definite compounds are formed in solution on increasing the amount of one of the compounds regularly. They also show the defect of analytical methods claiming to deduce the composition of an active liquid from the measurement of its rotation, at least so far as regards substances analogous to those here under consideration.—On the ophthalmoscopic examination of the base of the eye in hypnotic subjects, by MM. Luys and Bacchi. Nine subjects (six women and three men) were examined, first in the normal state and then in various phases of catalepsy, lucid somnambulism, and hallucination. In some instances the iris was found to be excessively dilated and almost insensible to light. Other appearances are described, but no general inferences are drawn from these preliminary observations.—The second part of vol. i. of MM. Houzeau and Lancaster's “Bib-

liothèque générale de l'Astronomie," was presented by M. Faye, who remarked that this great compilation would not be interrupted by the death of M. Houzeau. The present volume comprises biographies, didactic and general works, spherical and theoretical astronomy, astronomical tables for all epochs, and treatises on calendars.

BERLIN.

Physical Society, October 25.—The President, Prof. Kundt, opened the meeting by a warm expression of regret at the loss sustained by the Society in the death of its late member, Dr. Robert von Helmholtz.—Prof. von Bezold spoke on the various causes which lead to the production of clouds and aqueous precipitates. Using the graphic methods which he had himself introduced into meteorology, he showed by means of diagrams that the older ideas on this subject are insufficient, and that, even in the case where both masses of air are saturated with aqueous vapour, the precipitation which may occur when they are mixed is not due to the mere mixing of warm and cold air: the temperature of the mixture is not the mean of that of the respective masses of air, but is somewhat higher, and the amount of water which is condensed on their mixing is very small. By means of his diagrams a simple solution is at once obtained of many problems which have reference to the temperature and humidity of masses of air when they are mixed together in unequal quantities. It appeared that under the most favourable conditions, when air saturated with aqueous vapour at 0° C. is mixed with air saturated at 20° C., under a pressure of 700 millimetres of mercury, only 0.6 grams of water is condensed out of 2 kilograms of the mixed portions of air. The same mass of water would be condensed out of the same mass of air saturated at 20° C. if its temperature were reduced to 19°·3 C., or if the air were to ascend through a height of 200 metres, in which case its temperature would fall to 18°·9 C. Much more massive aqueous precipitates are formed when moist air is either cooled directly, or has its pressure reduced by rising upwards, in which case a simultaneous cooling occurs. When air saturated at 25° C. is cooled down to 10°·7 C.,—a temperature which results from mixing air at 24° C. with air at 0° C.,—4.4 grams of water are precipitated out of each kilogram of air, and if the temperature is reduced to 0° C., 8 grams are precipitated. Similar falls of temperature may be obtained during an adiabatic rise in altitude. The conditions which hold good for super-saturated air may similarly be comprehended by this graphic method. Notwithstanding that the formation of aqueous precipitates by the mere mixing of two masses of air is thus shown to be very minimal in amount, still it does occur in nature as the result of this cause, as, for instance, in the case of cloud-caps formed when different winds meet, and in the case of the formation of ground-fogs. According to the speaker, clouds ought to be distinguished by reference to the way in which the precipitate of which they consist is formed, rather than by the casual appearance which they present to the eye; in any case, mist and clouds must in the future be studied from the above new point of view.—Prof. von Helmholtz added to the above communication some remarks on the way in which the mixing of two fluids of different specific gravities is brought about. Such mixing is only possible as the result of vortex movements or of "breaking" waves. He had already dealt with the production of vortices, and the production of waves has recently engaged his attention, inasmuch as this problem has, up to the present, only been regarded from a one-sided point of view with reference to water, without taking into account the influence of the air which is moving over its surface. When wind blows over the surface of water, or when lighter air streams over a mass of heavier air, waves are formed, whose size and rate of propagation depend upon the relationship of the two fluids which are moving one over the other. To obtain the mechanical equations of these movements was the problem which he had set before himself for solution in a communication which he had recently made to the Berlin Academy. This dealt first with waves on water, and then the conditions involved in these were transferred to the consideration of waves in air. Waves 1 metre long on the surface of water, which are frequently met with in nature, correspond to waves in air 21 metres long—that is to say, to air-waves which extend over a considerable stretch of land. Waves in air are only visible in the cases where they are accompanied by condensations of vapour, the latter occurring in the case where the air rises several hundred metres to the crest

of a wave. Prof. Helmholtz pointed out that the most important outcome of the whole theoretical consideration of the problem was the following: a quiescent surface of water over which a wind is blowing is in a state of unstable equilibrium; as the result of this, waves are produced as soon as the wind acquires a sufficient velocity, and the energy required to raise the water from the trough to the crest of each wave, as well as to produce the onward motion of the wave, is derived from the more rapidly-moving lower layers of air of which the wind consists. Friction plays a very subordinate part in the whole process.

November 8.—Prof. du Bois Reymond, President, in the chair.—Dr. Pernet demonstrated the latest and newest form of Edison's phonograph, and gave a minute description of the apparatus, illustrating his remarks by means of two instruments which were exhibited to the Society. He prefaced his description by a short historical introduction, from which it appeared that several years before Edison's discovery, a Frenchman named Gros had deposited with the Paris Academy a sealed packet containing a statement of the essentials for the construction of a phonograph.

Physiological Society, November 1.—Prof. du Bois Reymond, President, in the chair.—Dr. René du Bois Reymond spoke on the striated muscles which occur in the small intestine of the tench. The exceptional occurrence of striated muscles in the small intestine of this fish has long been known, as also that when the intestine is stimulated electrically it contracts suddenly, as does a skeletal muscle. The whole intestine is surrounded by these striated fibres arranged both longitudinally and circularly. Further examination revealed a very thin layer of both longitudinal and circular non-striated muscle-fibres, lying internally to the striated fibres. The only other known case of a similar occurrence of striated muscle-fibres in the walls of the small intestine is found in *Cobitis*; but in this fish the fibres do not extend as far as the rectum, as they do in the tench. The speaker set aside the idea that these striated muscle fibres are connected with the respiratory function of the intestine, by showing that other fish are also in the habit of swallowing air, and that in such fish the mucous membrane of the small intestine is extremely rich in blood-vessels, whereas this is not the case in the tench. He put forward the suggestion that the striated fibres in the intestine of the tench are a transitional form between unstriated and striated muscle-fibres, and based his views upon the observation that, firstly, the reaction of these muscles is alkaline, and, secondly, upon an analysis of an aqueous extract of them. An aqueous extract of striated muscles contains, as is well known, three different proteids; one which coagulates at 47° C., one which comes down at 56° C., and a third coagulating at 70° C. The proteid which coagulates at 47° C. does not occur in unstriated muscles, and was similarly found to be absent in the extract of the striated muscles of the intestine of the tench. The function of these last-named muscles has not as yet been made out.—Prof. Fritsch spoke on the sensory organs in the skin of fishes. Starting from the simplest forms in which they occur as end-bulbs or tiny dilatations in the nerves which supply the several somites in the embryos of fishes, the speaker described their gradual change of form during growth. The end-organ is always characterized by sensory cells—that is to say, by cells which have a pear-like shape and are provided with a sensory filament or hair, and are connected with nerve-fibres. The developmental change which takes place is as follows: at first the organ becomes protected by being set deeper into the skin, spaces are then developed superficially to the organ, and these are finally placed in communication with the surface of the skin by means of a minute orifice or somewhat lengthy canal. The lateral-line organs of fishes in several modified forms is developed as above described; the sense-organ, with its sensory cells and nerves, lying at its base. A further modification leads to the development of the closed vesicles of Savi, which are completely filled with a mucous secretion. In the further modification of structure met with in the ampullæ of Lorenzini, a change of functional activity is already marked, as shown by the fact that the sensory cells have lost their hairs and have been converted into secretory cells. The speaker expressed his concurrence with that view of the function of dermal sense-organs, according to which they are to be regarded as auditory organs in a low stage of evolution, set aside for the perception of vibrations and waves which are propagated through the water.

Meteorological Society, November 5.—Dr. Vettin, President, in the chair.—The President spoke on the interchange of air which takes place between regions of high and regions of low pressure. He first described his own measurements of the altitudes of the various most characteristic forms of clouds, finding them in complete accord with those of Abercromby and Ekholm. He then passed on to his determinations of the velocity of the wind at those several altitudes, using as a means of measurement the records afforded by the direction and rate of motion of the clouds. The mean values thus obtained for the rate of flow of the air-currents were compared in each case with the positions of maximal and minimal air-pressure; from this comparison the speaker found that the motion of the air between points of maximum and minimum pressure does not take place in the way in which it has usually been supposed to occur. He then gave a detailed account of the results of his observations, but these do not admit of being reproduced within the limits of a brief abstract.

SYDNEY.

Royal Society of New South Wales, August 21.—A "reception" of the members of the Society was held for conversational scientific discussion, and the exhibition of various objects of interest: upwards of 100 members were present.

September 4.—Prof. Liversidge, F.R.S., President, in the chair.—Mr. H. G. McKinney read a paper on irrigation in its relation to the pastoral industry in New South Wales, which was freely discussed.—Sir Alfred Roberts, Vice-President, exhibited a large collection of photo-micrographs taken by the late Captain Francis.

October 2.—Prof. Liversidge, F.R.S., President, in the chair.—The following papers were read:—The analysis of prickly pear; on the occurrence of arabin in the prickly pear (*Opuntia brasiliensis*), by W. M. Hamlet.—Personal recollections of the aboriginal tribes once inhabiting the Adelaide Plains of South Australia, by Edward Stephens.—The Chairman exhibited some interesting fungoid growths which had formed in water containing finely-divided gold in suspension. The gold had been precipitated from a weak solution of the chloride by phosphorus dissolved in ether; the mycelium of the fungoid growths had acquired a purple colour from the gold which it had absorbed; on incineration, a skeleton outline of the mycelium is left in gold.

AMSTERDAM.

Royal Academy of Sciences, October 26.—M. Mulder presented, for the Reports and Communications, an essay on tartaric acid of ethyl, and its relations to ethylate of sodium and potassium.—M. Grinwis spoke on two forms of energy occurring in rolling motion, and presented an essay on this subject for the Reports and Communications.—M. Rauwenhoff presented for the Transactions an essay in quarto, with plates, on the sexual generation of the Gleicheniaceæ, and communicated briefly the results to which his researches had led him.—M. van der Waals spoke of the equilibrium of solid compounds in presence of fluid and vapour mixtures, illustrated by the ψ surface of a mixture of two kinds of matter.

DIARY OF SOCIETIES.

LONDON.

THURSDAY, NOVEMBER 28.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Electrical Engineering in America; G. L. Addenbrooke.

FRIDAY, NOVEMBER 29.

INSTITUTION OF CIVIL ENGINEERS, at 7.30.—Principles of Iron Foundry Practice; G. H. Sheffield.

SATURDAY, NOVEMBER 30.

ROYAL SOCIETY, at 4.—Anniversary.
ESSEX FIELD CLUB, at 7.—How to commence the Study of Botany; George Massee.

SUNDAY, DECEMBER 1.

SUNDAY LECTURE SOCIETY, at 4.—Invisible Stars; the Use of the Camera in the Observatory (with Oxyhydrogen Lantern Illustrations); Sir Robert S. Ball, F.R.S., Astronomer Royal, Ireland.

MONDAY, DECEMBER 2.

SOCIETY OF ARTS, at 8.—Modern Developments of Bread-making; William Jago.

SOCIETY OF CHEMICAL INDUSTRY, at 8.—Some Notes on Variations in the Products of the Destructive Distillation of Different Gas Coals, Heated Separately in the same Retort, and under Similar Conditions; Watson Smith.—Cresontinic Acid and its Applications; I. Hauff.

VICTORIA INSTITUTE, at 8.—Instinct and Reason; Dr. C. Collingwood.

ARISTOTELIAN SOCIETY, at 8.—The Æsthetic Theory of Ugliness; B. Bosanquet.

ROYAL INSTITUTION, at 5.—General Monthly Meeting.

TUESDAY, DECEMBER 3.

ZOOLOGICAL SOCIETY, at 8.30.—On the Anatomy of Burmeister's Cariama (*Chunga burmeisteri*).—On the Relations of the Fat-bodies of the Saurapsida; G. W. Butler.—List of the Reptiles, Batrachians, and Fresh-water Fishes, collected by Prof. Moesch in the District of Deli, Sumatra; G. A. Boulenger.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Ballot for the Election of Members.—Water-Tube Steam-Boilers for Marine Engines; John I. Thornycroft. (Discussion).—The Triple-Expansion Engines at the Owens College, Manchester; Prof. Osborne Reynolds, F.R.S.

WEDNESDAY, DECEMBER 4.

SOCIETY OF ARTS, at 8.—Rabies and its Prevention; Dr. Armand Ruffer.
GEOLOGICAL SOCIETY, at 8.—On Remains of Small Saurapodous Dinosaurs from the Wealden; R. Lydekker.—On a Peculiar Horn-like Dinosaurian Bone from the Wealden; R. Lydekker.—The Igneous Constituents of the Triassic Breccias and Conglomerates of South Devon; R. N. Worth.—Notes on the Glaciation of Parts of the Valleys of the Jhelum and Sind Rivers in the Himalaya Mountains of Kashmir; Captain A. W. Stiffe.

ENTOMOLOGICAL SOCIETY, at 7.—Systematic Temperature Experiments on some Lepidoptera in all their stages; Frederic Merrifield.—Notes on Indian Longicornia, with Descriptions of New Species; Charles J. Gahan.—On the Peculiarities of the Terminal Segment in some Male Hemiptera; Dr. D. Sharp.—Notes on a Species of Lycænidæ; Lionel de Nicéville.

THURSDAY, DECEMBER 5.

LINNEAN SOCIETY, at 8.—Life History of a Stipitate Fresh-water Alga; G. Massee.—On the Anatomy of the Sand Grouse; G. Sim.

FRIDAY, DECEMBER 6.

GEOLOGISTS' ASSOCIATION, at 8.—*Conversazione*.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Proposed Method of Recording Variations in the Direction of the Vertical; H. C. Russell.—The Storm of September 21, 1888; H. C. Russell.—O Therii Forem Bilinearych; E. Weyr (V. Praze).—Journal of Physiology, vol. x., No. 6 (Cambridge).—Proceedings of the Linnean Society of New South Wales, vol. i., Part 1 (Sydney).—Quarterly Journal of the Geological Society, November 1889 (Longmans).—Papers and Proceedings of the Royal Society of Tasmania, 1888 (Hobart).—Proceedings of the Physical Society of London, vol. x., Part 2 (Taylor and Francis).—Transactions of the Seismological Society of Japan, vol. xiii., Part 1 (Yokohama).

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