

SECTION H.

Committee of Aid for Anthropological Excavations.—Dr. Garson called attention to the existence of a Committee of Aid formed by the Anthropological Institute for the purpose of aiding by direction or otherwise the exploration of ancient remains, the Chairman of this Committee being General Pitt-Rivers, the Inspector of Ancient Monuments. Local societies, he said, would find it to their advantage if they would report to this Committee when they were desirous of undertaking explorations.

Prehistoric Remains Committee.—Mr. J. W. Davis said that this Committee, of which he was Secretary, wanted a record of everything that had reference to prehistoric man, his dwellings, implements, pottery, &c.

A discussion then took place with reference to the best method of imparting to the Corresponding Societies through their delegates a knowledge of what had taken place at the Conferences. Mr. Hopkinson suggested that each delegate should read a paper before his Society, giving an account of the work taken up by the various Committees, and that this paper should be published by that Society, so as to be accessible to every member of it. He distributed amongst the delegates a paper on the work of the Committees of the Association which he had brought before the Hertfordshire Natural History Society. Another question raised was the advisability of in some way bringing into relationship with the British Association certain societies which did not come up to the standard of excellence requisite for enrolment as Corresponding Societies.

On the motion of Prof. Lebour, seconded by Mr. J. W. Davis, a vote of thanks was passed to Mr. Symons, Chairman of the Conference, and to Prof. Meldola, Secretary.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Mr. Love, Fellow of St. John's College, has been elected Chairman of the Examiners for the Mathematical Tripos, Part I.

Prof. Darwin, Prof. J. J. Thomson, Mr. Pendlebury, St. John's, and Mr. Lachlan, Trinity, have been appointed Examiners for the second part of the Mathematical Tripos.

Mr. E. A. Parkyn, Christ's, and Mr. M. C. Potter, Peterhouse, have been appointed Lecturers in Science at affiliated lecture-centres.

Scholarships and Exhibitions in Natural Science will be open for competition to non-members of the University in December and January next at the following Colleges: King's, Jesus, Christ's, St. John's, Trinity, Emmanuel, and Sidney Sussex (see *Cambridge University Reporter*, November 18, 1890, p. 237).

SOCIETIES AND ACADEMIES.

LONDON.

Royal Meteorological Society, November 19.—Mr. Baldwin Latham, President, delivered an address on "The Relation of Ground Water to Disease." The pages of history show that when the ground waters of our own or other countries have arrived at a considerable degree of lowness, as evidenced by the failure of springs and the drying up of rivers, such periods have always been accompanied or followed by epidemic disease. In all probability ground water in itself, except under conditions where it is liable to pollution, has no material effect in producing or spreading disease. As a rule, it is most rife in those places in which there has been a considerable amount of impurity stored in the soil that diseases become manifest, and the most common modes by which diseases are, in all probability, disseminated, are by means of the water supplies drawn from the ground, or by the elimination of ground-air into the habitations of the people. It is found that the periods of low and high water mark those epochs when certain organic changes are taking place in the impurities stored in the ground, which ultimately become the cause and lead to the spread of disease. Mr. Latham defines "ground water" as all water found in the surface soil of the earth's crust, except such as may be in combination with the materials forming the crust of the earth. It is usually derived from rainfall, by percolation; and it is also produced by con-

densation. In dry countries, ground water is principally supplied by the infiltration from rivers, as, for example, in the Delta of the Nile. The absence of water passing into the ground for a long period naturally leads to the lowering of the free ground water-line, and may lead to the drying of the ground above the water-line; and it is curious to note, with reference to small-pox, that the periods marking the epochs of this disease are those in which there has been a long absence of percolation, and a consequent drying of the ground preceding such epidemics. On the other hand, small-pox is unknown at such periods as when the ground has never been allowed to dry, or is receiving moisture by condensation or capillarity. The study of underground water shows that certain diseases are more rife when the water is high in the ground, and others when the water is low. The conditions that bring about and accompany low water, however, have by far the most potential influence on health, as all low water years are, without exception, unhealthy. As a rule, the years of high water are usually healthy, except, as often happens, when high water follows immediately upon marked low water, when on the rise of the water an unhealthy period invariably follows. Mr. Latham has found that those districts which draw their water supplies direct from the ground, are usually more subject to epidemics and disease than those districts in which the water supply is drawn from rivers supplied from more extended areas, or from sources not liable to underground pollution. In the case of Croydon, one portion of the district (under three-fourths) is supplied with water taken direct from the ground, whilst the remaining portion is supplied with water from the River Thames. It is curious to note that even so recently as 1885 the zymotic death-rate in the districts supplied with underground water was twice as great as in that part of the district supplied from the Thames; and in this particular year forty-one deaths from small-pox occurred in the district, not one of which was recorded outside the district supplied by the underground water. Mr. Latham, in his address, dealt largely with zymotic diseases as affected by ground water, and showed that cholera ordinarily breaks out when there is the least ground water; a high air and ground temperature is also necessary for its development, and as a rule the low-lying districts are favourable to the production of these high temperatures. Small-pox is almost always preceded by a long period of dryness of the ground, as measured by the absence of percolation. Typhoid fever is most prevalent after a dry period and the first wetting of the ground or percolation from any cause taking place. The condition essential to the development of diphtheria is a damp state of the ground marked by extreme sensitiveness to percolation of rain. Scarlet fever follows the state of the dryness of the ground, which is essential for its development, and it occurs in the percolation period. The conditions that precede small-pox are those favourable for the development of scarlet fever, and, like small-pox, the dampness of the ground for any considerable period in any particular locality, may check its development or render it less virulent, and it is most rife in low water years. Measles are least prevalent at the low water periods, and mostly rife at and near high water periods. Whooping-cough follows the percolation period in its incidence, increasing with percolation, and diminishing as the waters in the ground subside. Diarrhoea is generally more prevalent in a low water year than in other years; that is, with a very much colder temperature in a low water year there is a very much higher death-rate from this disease. Mr. Latham finds that the general death-rate of a district is amenable to the state of the ground water, years of drought and low water being always the most unhealthy.

Geological Society, November 12.—Dr. A. Geikie, F.R.S., President in the chair.—The President referred to the sad loss the Society had sustained since the last meeting, through the death of the late Foreign Secretary, Sir Warington W. Smyth, F.R.S.—The President reported that Mr. L. Belinfante had been temporarily appointed by the Council to the office of Assistant-Secretary.—The following communications were read:—On the porphyritic rocks of the Island of Jersey, by Prof. A. De Lapparent, Foreign Correspondent of the Society. (Communicated by the President.) The author had some years ago described as Permian a series of porphyritic rocks, of which specimens had been sent to him from Jersey. He had since been led to believe that this view of their age, arrived at from what he knew of similar rocks in France, was erroneous, and in a recent visit to the island had satisfied himself that the English observers who had assigned to these rocks a much higher antiquity were in the right. He now found that

the igneous rocks in question underlie the Rozel conglomerate, which must be placed at the very base of the Silurian formations. He reserved his detailed statement for a communication to the Geological Society of France; his present object being to do justice to English geologists, whose views he had formerly opposed.—On a new species of *Trionyx* from the Miocene of Malta, and a Chelonian scapula from the London Clay, by R. Lydekker.—Notes on specimens collected by W. Gowland, in the Korea, by Thomas H. Holland, of the Geological Survey of India, late Berkeley Fellow of the Owens College. (Communicated by Prof. J. W. Judd). The southern half of Korea traversed by Mr. Gowland is of a hilly character. The rocks forming the hills are chiefly crystalline schists—gneisses with graphite, garnet, dichroite, and fluor occurring in considerable abundance; and the whole group is probably part of the great Archæan mass of North-East China. The author describes these metamorphic rocks in detail. Stratified rocks, probably of Carboniferous age, lie unconformably upon the schists in the south-eastern part of the peninsula, and petrographical notes of these are given in the paper. Through the crystalline schists and stratified rocks various igneous rocks have been erupted as dykes or in large masses. Amongst these the most conspicuous rock is granite. Biotite- and muscovite-granite are most widely distributed, and in places are cut by dykes of eurite and veins of quartz and pegmatite. The more basic class of rocks is represented by diorites, propylites, andesites, basalts, dolerites, and gabbros. Interesting cases of the gradual passage between the so-called intermediate and basic rocks are found, and various stages in the devitrification and decomposition of andesitic lavas represented. These are described in detail by the author, and compared with similar cases in other regions; and full descriptions of the intrusive rocks are furnished. There are now no active volcanoes; and there is a notable lack of mineral wealth in the southern part of the Korea. Prof. Judd spoke of the value of Mr. Gowland's geographical and geological discoveries, and the enthusiasm with which Mr. Holland had applied himself to the work of examining the specimens brought home, and he considered that the work would prove an important contribution to science. Several points about which difficulties had arisen by examination of European rocks had light thrown upon them by the Korean specimens. The President felt that the Society would agree with him in considering the Geological Survey of India fortunate in securing a petrologist like Mr. Holland.—Further notes on the stratigraphy of the Bagshot Beds of the London Basin (north side), by the Rev. A. Irving.

Mathematical Society, November 13.—J. J. Walker, F.R.S., in the chair.—The Chairman informed the members of the loss the Society had recently sustained by the death of Dr. A. J. Ellis, F.R.S., who was elected a member on June 19, 1865, and had served on the Council during the sessions 1866-67, 1867-68. He gave a brief sketch of Dr. Ellis's contributions to mathematics and other subjects. He next sketched in some detail the numerous contributions made to mathematical physics by Lord Rayleigh, F.R.S., dwelling more particularly upon those memoirs which had led the Society, as announced at the June meeting, to award him the De Morgan Memorial Medal. The medal having been presented, Lord Rayleigh simply thanked the Society for their gift.—The new Council having been duly elected, the new President (Prof. Greenhill, F.R.S.) called upon Mr. Walker to read his address "On the Influence of Applied on the Progress of Pure Mathematics." The author was asked to print the paper in the Proceedings, on the motion of Mr. A. B. Kempe, F.R.S., seconded by Lord Rayleigh.—The following communications were made:—Spherical harmonics of fractional order, by R. A. Sampson.—Proofs of Steiner's theorem relating to circumscribed and inscribed conics, by Prof. Mathews.—On an algebraic integral of two differential equations, by R. A. Roberts.—Some geometrical constructions, by Oscher Ber (communicated by Prof. Hill).—On the analytical representation of heptagrams, by Prof. L. J. Rogers.

Zoological Society, November 18.—Dr. Mivart, F.R.S., in the chair.—Mr. F. Menteith Ogilvie exhibited and made remarks on a specimen of the Red-headed Flycatcher obtained in Norfolk.—Prof. F. Jeffrey Bell exhibited an example of the Cotton-spinner (*Holothuria nigra*), taken off the west coast of Ireland, and sent for determination by Prof. Herdman.—Mr. G. A. Boulenger exhibited a series of skulls belonging to *Distira cyanocincta* and *Chelone midas*.—Mr. G. A. Boulenger read a

paper upon the Reptiles and Batrachians of Barbary (Morocco, Algeria, Tunisia), based chiefly upon the notes and collections made in 1880-84 by M. Fernand Lataste.—A second paper by Mr. G. A. Boulenger contained remarks on the Chinese Alligator.—A communication was read from the Rev. O. P. Cambridge, F.R.S., giving an account of some new species and two new genera of Araneidea, mostly collected in South Africa by the Rev. Nendick Abraham.—Mr. Smith Woodward read a paper on some Upper Cretaceous Fishes of the family Aspidorhynchidæ. He offered a detailed description of *Belonostomus comptoni*, from Brazil, and defined a new genus (*Aptateophilis*) from Syria. The latter is remarkable as being the only physostomous fish hitherto described exhibiting a spinous armature of the preoperculum.—Mr. G. C. Champion read a paper on the Heteromeres Coleoptera collected by Mr. Bonny at the Yambuya Camp, Aruwimi Valley.

PARIS.

Academy of Sciences, November 17.—M. Hermite in the chair.—Ed. Phillips, by M. H. Léauté. The deceased mathematician was born at Paris on May 21, 1821, and died on December 14, 1889. An account is given of his many works in mechanics and mathematical physics.—On the name of bronze, by M. Berthelot. The author quotes the following from a work of the time of Charlemagne: "Compositio brandisii: eramen partes II., plumbi parte I., stagni parte I.," that is to say, bronze is composed of two parts of copper, one of lead, and one of tin. This appears to confirm the view that the name of bronze is derived from that of the town of Brundisium, or *Βρονθίσσιον*, especially as many bronze vessels have been found marked *ars Brundusinum*.—Remarks on some acoustical sensations provoked by certain quinine salts, by M. Berthelot. The author describes certain humming noises that he hears after the ingestion of lactate.—A Chaldæan astronomical annual used by Ptolemy, by M. J. Oppert. A series of lunar and planetary observations have been found in the British Museum among the cuneiform tablets. These have been deciphered, and prove to be among the oldest and most detailed we possess. The phenomena recorded on them took place in the year 522 B.C., and are described in an exceedingly minute manner. An account is given of the results obtained by an investigation into these cuneiform inscriptions, and their bearing upon the dates of certain events.—On the annual variation in the latitude caused by the differences in refractive effects which result from atmospheric tides, by Dom Lamey. The tidal effect of the sun and moon upon the atmosphere is given as a probable cause of the annual variation in latitude.—Rapid development of a solar prominence, by M. Jules Fényi. The prominence appeared on the western edge of the sun, from heliographic latitude $-20^{\circ} 13'$ to $-30^{\circ} 21'$, on October 6, at 1h. 18m. Kalocsa mean time. In about half an hour the eruption had reached a height of $327''$ —that is, 235,900 kilometres.—On one of M. Picard's theorems, by M. Gustaf Kobb.—Note on the construction of plans from views obtained at elevated points in the atmosphere, by M. A. Laussedat. A method is described by means of which photographic views obtained from balloons may be reduced to plan.—Researches in thermo-electricity, by MM. Chassagny and H. Abraham. The authors have already shown that the electromotive forces of thermo-electric couples, of which the junctions are maintained at 0° and 100° respectively, may be determined to $\frac{1}{10000}$ of their value. They find that the following formula, though not representing their measures with entire accuracy, is sufficient to give the tenth of a degree Centigrade in the interval 0° to 100° . The formula

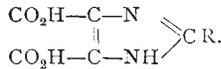
$$E_0^t = \frac{at + bt^2 + ct^3}{t + 273},$$

where $a = 10^{-8} \cdot 356604$, $b = 10^{-6} \cdot 83827$, $c = -10^{-8} \cdot 3265$, $t =$ temperature, and $E =$ electromotive force. The value of E_0 at $100^{\circ} = 0.0010932$ volts with an iron-copper couple. The following is a comparison of observed and calculated results at different temperatures—

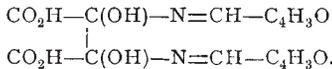
Temperature.	Electromotive forces.	
	Observed volts.	Calculated volts.
$65^{\circ} 13$	0.0007656 ...	0.0007654
$32^{\circ} 49$	0.0004043 ...	0.0004015
$15^{\circ} 48$	0.0001981 ...	0.0001980

—On the periodicity of undulatory pressures produced by the combustion of explosives in a closed vase, by M. P. Vieille.

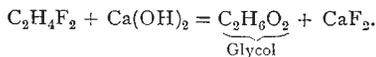
The undulations set up at the extremities of a receiver 1 metre long have been photographically registered by the side of time signals. The extremely accurate results obtained indicate that the method may be used for the study of the phenomena of the propagation of waves in conditions of gaseous condensation and temperature above those as yet investigated.—On the electrical resistance of bismuth in a magnetic field, by M. A. Leduc. The author develops a formula which allows the calculation of the resistance of a wire of bismuth placed in a magnetic field at a certain temperature, in terms of its resistance at 0° outside the field.—On the β-pyrazol-dicarboxylic acids, by M. Maquenne. Aldehydes react with dinitrotartaric acid in presence of ammonia, giving rise to monobasic acids which, on heating, form β-pyrazol-dicarboxylic acids of the general formula



Furfural does not act in the same manner, the body obtained being



The sugars with aldehyde reactions give no definite combination with nitrotartaric acid.—On a phenol acid derived from camphor, by M. P. Cazeneuve.—Note upon active amylic derivatives, by M. Philippe A. Guye.—On the saponification of halogen organic compounds, by M. C. Chabrie.—The author forms the fluorides by the sealed tube method, and saponifies these bodies by means of milk of lime, e.g.



A reaction of the halogen compounds with B₂O₃ is also indicated.—On a gaseous antiseptic, its action upon the pyrogenous bacteria of the urinary infection, by M. C. Chabrie.—On the fixation of gaseous nitrogen by the Leguminosae, by MM. Th. Schloesing and Em. Laurent.—On the microbe of the nodosities of Leguminosae, by M. Em. Laurent.—On some transitory characters presented by *Chelmo rostratus*, Linn., by M. Léon Vaillant.—On the sexual dimorphism of *Enterocola fulgens*, by M. Eugene Canu.—On the sexual differences of *Lepadogaster himaculatus*, Flem., by M. Frédéric Guitel.—On the antagonistic molecular forces which are produced in the cellular nucleus, and on the formation of the nucleiform membrane, by M. Ch. Degagny.—On the origin of the terraces (*rideaux*) in Picardy, by M. H. Lasne.

DIARY OF SOCIETIES.

LONDON.

THURSDAY, NOVEMBER 27.

ROYAL SOCIETY, at 4.30.—On the Homology between Genital Ducts and Nephridia in the Oligochaeta : F. E. Beddard.—The Patterns in Thumb and Finger Marks ; on their Arrangement into Naturally Distinct Classes, the Permanence of the Papillary Ridges that make them, and the Resemblance of their Classes to Ordinary Genera : F. Galton, F.R.S.—Preliminary Note on the Transplantation and Growth of Mammalian Ova within a Uterine Foster-Mother : W. Heape.—The Conditions of Chemical Change between Nitric Acid and Certain Metals : V. H. Veley.—The Variations of Electromotive Force of Cells consisting of Certain Metals, Platinum, and Nitric Acid : G. J. Burch and V. H. Veley.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—The Efficiency of Secondary Cells ; "On the Chemistry of Secondary Cells : Prof. W. E. Ayrton, F.R.S., and E. W. Smith.

FRIDAY, NOVEMBER 28.

PHYSICAL SOCIETY, at 5.—Notes on Secondary Batteries : Dr. Gladstone and W. Hibbert.—An Illustration of Ewing's Theory of Induced Magnetism : Prof. S. P. Thompson.

AMATEUR SCIENTIFIC SOCIETY, at 8.—Aquatic Microscopical Life (with Lantern Illustrations) : J. D. Hardy.

SUNDAY, NOVEMBER 30.

SUNDAY LECTURE SOCIETY, at 4.—The Natural Growth of Religion in India : Sir A. C. Lyall, K.C.B., K.C.I.E.

MONDAY, DECEMBER 1.

SOCIETY OF ARTS, at 8.—Gaseous Illuminants : Prof. Vivian B. Lewes.

ROYAL MICROSCOPICAL SOCIETY, at 8.—*Conversazione*.

VICTORIA INSTITUTE, at 8.—On the Geological History of Egypt : Prof. Hull, F.R.S.

ROYAL INSTITUTION, at 5.—General Monthly Meeting.

TUESDAY, DECEMBER 2.

ZOOLOGICAL SOCIETY, at 8.30.—On the Antelopes of Nyassa-Land ; Richard Crawshay.—On the Suspension of the Viscera in the Batoid Hypnos subnigrum : Prof. G. B. Howes.—Notes on the Pectoral Fin skeleton of the Batoidea and of the Extinct Genus *Chlamydoselache* : Prof. G. B. Howes.—On the Presence of Pterygoid Teeth in a Tailless Batrachian (*Pelobates cultripes*), with Remarks on the Localization of Teeth on the Palate in Batrachians and Reptiles : G. A. Boulenger.

ESSEX FIELD CLUB (at Loughton), at 7.—Some Notes on *Dipsacus sylvestris* and *D. pilosus* and their Natural Relationship : J. French.—The Butterflies of Essex : Edward A. Fitch.—The Land and Fresh-water Mollusca occurring in the Neighbourhood of Bishop's Stortford : Edwin G. Ingold.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Ballot for Members.—The Vibratory Movements of Locomotives : Prof. John Milne, F.R.S., and John McDonald. (Discussion).—The Sukkur Bridge at Benares : F. E. Robertson.—The New Chittravate Bridge, Madras Railway : E. W. Stoney.

WEDNESDAY, DECEMBER 3.

SOCIETY OF ARTS, at 8.—The Chicago Exhibition, 1893 : James Dredge.

ENTOMOLOGICAL SOCIETY, at 7.—On the Conspicuous Changes in the Markings and Colouring of Lepidoptera, caused by subjecting the Pupae to Different Temperature Conditions : Frederic Merrifield.—Notes on the Lepidoptera collected in Madeira by the late T. Vernon-Wollaston : George T. Baker.—A Monograph of the Lycenoid Genus *Hypochryps*, with Descriptions of New Species : Hamilton H. Druce.—The Life-History of the Hessian Fly : Frederick Enock.

THURSDAY, DECEMBER 4.

LINNEAN SOCIETY, at 8.—On the Genus of Orchid *Brownheadia* : H. N. Ridley.—On the Botany of Kandahar : J. H. Lacey.—Botanical Visit to Auckland Isles : Thos. Kirk.

CHEMICAL SOCIETY, at 8.—Ballot for the Election of Fellows.—On the Volumetric Estimation of Tellurium : Dr. Branner.

FRIDAY, DECEMBER 5.

GEOLOGISTS' ASSOCIATION, at 8.—Report on the Microscopical Examination of some Samples of London Clay from the Excavations for the Widening of Cannon Street Railway Bridge, 1887 : C. Davies Sherborn and H. W. Burrows.—A Short Visit to Ingletton and to Filey Brigg (showing how a Dangerous Reef was converted into a Perfect Breakwater by an Ancient Race) : Edwin Litchfield.

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