

Quincke.—On the excitation of electricity through gliding friction, by M. Riess.—On unipolar induction of a solenoid, by M. Zöllner.—Remarks on Prof. Neumann's paper on the number of electric materials, by M. Edlund.

No. 5.—On the reflection of heat rays from metals, by M. Knoblauch.—On the treatment of ponderomotive and electromotive forces occurring between linear currents and conductors, according to the fundamental laws of electrodynamics, by M. Clausius.—On the tensions of vapour in dissociation of salts containing water of crystallisation, by M. Pareau.—On the coefficients of temperature of heat conduction of air and hydrogen, by M. Winkelmann.—On the phenomena of motion of electrified mercury in glass vessels, by M. Herwig.—On divergences from Ohm's law in metallic conducting bodies, by M. Braun.—On the theory of unipolar induction and Plücker's experiments, by M. Riecke.—On heat conduction in sulphate of copper, by M. Pape.—Remarks on the polarisation of the rainbow, by M. Lommel.—On the history of the invention of the areometer, by M. Gerland.—On the significance of the rhombohedric and prismatic surfaces in quartz, by M. Baumhauer.

SOCIETIES AND ACADEMIES

LONDON

Zoological Society, June 19.—E. W. H. Holdsworth, F.Z.S., vice-president, in the chair.—The secretary read a letter addressed to him by Mr. J. M. Cornély, announcing that his female *Hydropetes inermis* had just produced three young ones.—Mr. J. E. Harting, F.Z.S., exhibited and made remarks on a variety of the common Snipe, intermediate between the usual form of that species and the so-called Sabine's Snipe.—Mr. B. Tegetmeier, F.Z.S., exhibited a specimen of a curiously malformed sternum of the Tawny Owl.—Mr. John Murray, Naturalist to the *Challenger* Expedition, exhibited and made remarks on a series of sharks' teeth, whales' ear-bones, and other specimens dredged up at great depths during the *Challenger* Expedition.—Mr. P. L. Sclater, F.R.S., read the first of a series of reports on the collection of birds made during the voyage of H.M.S. *Challenger*, containing general remarks on the collection, which was stated to consist of about 679 skins of terrestrial and 198 of oceanic birds, besides a considerable series of specimens in salt and in spirit, and a collection of eggs, principally of the oceanic species.—A communication was read from the Marquis of Tweeddale, F.R.S., containing a report on the collection of birds made during the voyage of H.M.S. *Challenger* in the Philippine Islands. Amongst them were examples of seven species new to science.—Mr. P. L. Sclater read a paper giving a description of the birds collected at the Admiralty Islands during the visit of the *Challenger* expedition to that place. Amongst these were examples of six species hitherto unknown to naturalists.—A communication was read from the Rev. O. P. Cambridge, C.M.Z.S., on some new species of Araneidea, with characters of two new genera and some remarks on the families *Podophalmides* and *Dinopides*.—A note was read by Mr. J. H. Gurney on the breeding of the Polish swan in captivity, and on the stages of plumage of the young birds.—A communication was read from Mr. F. Moore, in which he gave a complete description of the Lepidopterous fauna of the Andaman and Nicobar Islands, so far as is yet known.—A communication was read from Mr. Herbert Druce, F.Z.S., containing a revision of the Lepidopterous genus *Paphia*, with descriptions of twenty-one new species.—A communication was read from Mr. E. J. Miers, F.Z.S., containing the description of a collection of Crustacea (*Decapoda* and *Isopoda*), chiefly from South America, with descriptions of new genera and species.—Mr. A. H. Garrod read a description of the brain of the Sumatran Rhinoceros (*Ceratohinus sumatrensis*).—A paper by Mr. A. D. Bartlett, contained the description of a new Guinea Fowl, from Mombassa, in Eastern Africa, based on a specimen brought home by Mr. Gerald Waller, for which the name *Numida ellioti* was proposed.

Entomological Society, July 4.—Prof. Westwood, president, in the chair.—Mr. J. W. Douglas exhibited a living specimen of *Cerambyx Heros* and a young larva of the same insect, bred from a log of wood imported from Bosnia.—The president exhibited some cases composed of small semi-transparent quartz-like particles and constructed by the larva of a Trichopterous insect inhabiting Southern Europe. They had been described by Swainson in 1840 as a shell belonging to the genus *Thelidomus*.—The president also exhibited a plant-bug (*Capsida*) found on the

leaf of an orchis which had become covered with blisters from the attack of the insect.—Mr. Jenner Weir exhibited a female specimen of a *Cicada* taken in his presence in the New Forest by Mr. Auld, who stated that he had heard it stridulating. Mr. Douglas, however, suggested that the sound had been produced by a male concealed near.—Mr. S. Stevens exhibited two living specimens of *Tillus unifasciatus* taken on a fence near Norwood.—Mr. J. P. Mansell Weale, who had just returned from South Africa, exhibited a fine collection of insects from that country and read a paper containing the results of his observations and experiments upon the breeding of *Papilio merope* and other insects.—The secretary read a letter from Dumfries stating that *Colias edusa* had made its appearance in that district in the month of June.—The president brought before the Society the recent accounts of the appearance of the Colorado beetle in Canada and in Europe.

Physical Society, June 23.—Prof. G. C. Foster, president, in the chair.—Prof. W. Grylls Adams exhibited a very complete form of optical bench, which, in addition to being provided with all the improvements introduced by Prof. Clifton, carries an arm which can be set at any angle to it and is provided with appliances for studying a beam of light or radiant heat when it deviates from the main axis of the instrument. At the base of a pillar firmly clamped in any position in the manner adopted by Prof. Clifton, is fixed a horizontal graduated circle, and a vernier, attached to a counterpoised arm, which rotates round the axis of this pillar, renders it possible to determine the angle made by the arm with the bench to one minute. At the upper extremity of the pillar is a steel pivot to which various appendages may be clamped, and immediately below this is a second graduated circle by which to determine the angular position of whatever is supported by the pillar. Mirrors, metallic surfaces, prisms, &c., may be placed on this pillar for the reflection, refraction, diffusion, or polarisation of heat and light. For radiant heat the rotating arm carries a line thermo-electric pile and a table on which absorbing media may be placed. Prof. Adams illustrated the use of the instrument by projecting on to a screen the interference bands obtained when a beam of light, after reflection from the two surfaces of a thick plate of glass, is again reflected from the two surfaces of a similar plate placed very nearly parallel to the first. A compensator consisting of two plates of glass of equal thickness is also added between the two thick plates, and an ingenious arrangement renders it possible to incline the glasses at any angle to one another, and to move them either independently or together. He also showed the effect produced in the positions of the bands when the rays from the two surfaces of the first plate traverse a pair of different densities before falling on the second. The adjustment of this latter was facilitated by fine screws supplemented by springs which rendered it possible to give a slight movement to the plate in any direction, by combining a motion of translation of the plate parallel to its reflecting faces with a motion of rotation about a vertical or horizontal axis.—Mr. F. D. Brown exhibited an apparatus he has arranged, in which to compare thermometers. From a brass hemispherical boiler rises a tube of the same metal two inches in diameter and about two feet long; the steam, after ascending through it, descends a metallic jacket surrounding it, whence it passes into a U-shaped condenser, and from this it is returned to the boiler. The upper end of the condenser is in connection with a large air-tight vessel forming the base of the apparatus, and in which any required degree of exhaustion can be maintained by the use of Lothar Meyer's form of pump. The thermometers are placed in tubes, which pass within the wide brass tube at its upper end, and by varying the nature of the liquid in the boiler, and the pressure to which it is subjected, the boiling point can be retained constant at any required temperature.—Dr. Guthrie and Mr. Akroyd communicated a paper on electrical selection. When a metal or other body is rubbed against some non-conducting substance like caoutchouc, electricity is developed, and the track of the metal may be readily made evident by sprinkling on the caoutchouc a mixture of red lead and sulphur. This sieving imparts negative electricity to the sulphur and positive to the red lead, hence that particular ingredient of the mixture is drawn to the metal track which possesses the opposite kind of electricity. Iron, for example, when rubbed against caoutchouc generates negative electricity, and, after sprinkling the powder, the iron track is revealed by the marked collection thereon of red-lead. A list of mixtures was given which may be used instead of the above, and it was shown that electrical selection may prove of use (1) in making an electrical

diagnosis of the metals, (2) in certain experiments where the quadrant electrometer is objectionable, and (3) in teaching, where this instrument is often unavailable on account of its cost. An adjourned special general meeting of the society was then held, after which the meetings were adjourned until November next.

Anthropological Institute, June 26.—Mr. John Evans, F.R.S., president, in the chair.—Three new members, one honorary, and one corresponding member were elected.—Mr. Burt exhibited the prow of a New Zealand war canoe supposed to have been that which met Capt. Cook on his second visit to that country.—Mr. Atkinson exhibited a specimen of gold so-called Irish ring money.—A paper by Mr. Mortimer on an underground structure near Langtoft, Yorkshire, was read. Mr. Mortimer considers it is not a *Botontinus*; in this opinion he is opposed by Mr. J. E. Price, F.S.A.—Mr. C. H. E. Carmichael, M.A., read a paper on a Benedictine missionary's account of the natives of Australia and Oceania, in which he summarised the principal points of anthropological interest in the *Memoire Storiche dell' Australia*, by Mgr. Don Rudesindo Salvado, O.S.B., and illustrated the missionary's account by reference to the views expressed by Topinard, Virchow, and other foreign writers. Mgr. Salvado maintains the unity of the Australian race and language, and upholds the possibility of raising the aborigines to a fairly high pitch of civilisation, using their extreme quickness in learning to speak and write European languages. Two letters written in Italian by native boys brought to Europe at about eleven years of age, were commented upon by Mr. Carmichael, who laid copies on the table, and promised further investigation of the questions raised in the discussion.—The president, Mr. C. Walford, Sir John Lubbock, and others took part in the discussion.—H.I.M. the Emperor of Brazil was present at the meeting.

VIENNA

Imperial Academy of Sciences, April 12.—Senile changes of the joints and their connection with *Arthritis deformans*, by M. Weichselbaum.—On a new determination of a quantity having reference to the measurement of molecules from the theory of capillarity, by M. Boltzman.—On the orbit of Dione 106, by M. Seydler.—On the decomposition of hydroxylamin by alkaline copper solution, by M. Donath.—On a method of determining the resistance of bad conductors of electricity, by M. Domalip.—Influence of temperature on velocity of evaporation, by M. Baumgartner.—On diffusion of vapours through clay-cells, by M. Puluji. The velocity of diffusion depends on the temperature in the same way as the maximum of tension. There is not direct proportionality between velocity of diffusion and difference of tension. The logarithmic function represents the connection more accurately.—A contribution to the knowledge of viscous substances, by M. Obermayer. Experiment showed that the internal friction in brittle black pitch follows the same laws as fluid friction. That in soft bodies does not exactly follow those laws.—On the internal condition and the latent heat of vapours, by M. Fuschl. Very rare aqueous vapour deviates from Mariotte's law in an opposite direction to that of gases and vapours generally, and in this it behaves like very greatly rarefied atmospheric air.

PARIS

Academy of Sciences, July 2.—M. Peligot in the chair.—The following papers were read:—On the generation of the meridian curve of a surface of revolution, of which the mean curvature varies according to a given law, by M. Resal.—Researches on anhydrous chloral and on its hydrate, by M. Berthelot. There is a liberation of heat in the reaction of gaseous chloral with gaseous water, with formation of a gaseous compound, gaseous hydrate of chloral therefore truly exists as a compound distinct from a simple mixture of the two vapours.—Remarks on the subject of M. Mouchez' letter of June 18, by M. Villarceau.—On the distribution of waters coming from natural slopes of the French territory, and on the amelioration of our interior navigation, by M. De Lesseps. M. Cotard has suggested the storing of water in the higher parts and distribution of it to navigation-canal giving cheap transport for materials of small value, and avoiding the formation of unwholesome marshes. M. Sibour advises the opening of a canal (seven kiloms.) between the lake of Berre and the harbour of Marseilles.—Reply to M. Roudaire's last communication on the formation of a Saharan sea, by M. Cosson. *Inter alia*, he urges that the change of the local climate would be fatal to the date, and that new plants introduced would not compensate the loss. The Artesian system is open to being greatly developed. The caravans

of Central Africa would not diverge from their route to Morocco and Tripoli. The addition of so much saline matter would make the Artesian water undrinkable and unfit for irrigation. The climate would become very unhealthy from combination of moisture with great variations of temperature, &c.—M. Godron was elected correspondent for the section of botany, in room of the late M. Lestiboudois, obtaining thirty-three votes, against five for M. Duval Jouve.—Trepanation of the membrane of the tympanum, successfully performed in a case of long deafness which had resisted all treatment, by M. Bonnafont. Any deafness not accompanied by weakening of the sensibility of the acoustic nerves (ascertained by placing a watch on the cranial wall near the ear), may be cured or greatly improved (he thinks) by trepanation of the tympanic membrane. The tympanum should be anaesthetised, and the canula should be allowed to remain in the opening till it falls out naturally.—Argilocalcareous land and phylloxera, by M. Joffroy. A vine-stock planted in such land resists the disease when the surface of the ground is sufficiently inclined from its base, and is preserved from contact with rain-water from higher ground.—Researches on the compressibility of liquids, by M. Amagat. He studied volatile liquids kept liquid by pressure at a temperature above that of their boiling-point (when, it is known, their coefficient of dilatation becomes very considerable). He gives numerical results for ordinary ether and chlorhydric ether, and will afterwards show that these numbers agree satisfactorily with deductions from the formulæ of the mechanical theory of heat.—On the state of the vines treated at Cognac with alkaline sulphocarbonates, by M. Mouillefert.—On the vapour of hydrate of chloral, by M. Troost. Fresh experiments by a method which he describes confirm his former results, which M. Wurtz had questioned.—Dissociation of gaseous iodhydric acid in presence of an excess of one of the elements, by M. Lemoine. The most important result is the stability which this excess gives to the combination; in mixing iodhydric acid with increasing quantities of hydrogen the quantity of iodhydric acid dissociated diminishes about half. Still the character of the dissociation seems always to subsist, whatever the inequality in the atomic proportions. This influence of *mass* in dissociation is in accord with several other known facts.—On the dissociation of ammoniacal salts in presence of metallic sulphides, by MM. De Clermont and Guiot.—On the employment of fluoride of bromine as a dehydrating agent, by M. Landolph. He gives several examples of its action (with camphor, &c.).—On the ordinary presence of copper and zinc in the human body, by MM. Raoult and Breton. They give the results of a judicial investigation made by them in 1874. 700 grammes of (moist) liver of a man who had died after an operation for stone, gave 2 milligr. of copper and 7 mgr. of zinc; 400 grammes liver of a consumptive person gave 6 mgr. of copper and 12 mgr. of zinc. To prove poisoning, it should be shown that the quantities of copper or zinc found in a body are greater than the maxima in normal conditions.—On the determination, in weight, of atmospheric ozone, by M. Lévy. This relates to a supposed influence of platinum on arsenite of potash, which, however, was not manifested in the conditions with which M. Lévy operated.

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