SCIENTIFIC SERIALS

THE current number of the *Ibis* commences with two papers on the ornithology of the Fiji Islands, by Mr. E. L. Layard, in which the following species are described :—*Platycercus taviunensis, Myiolestes macrorhynchus, M. compressirostris, Pachycephala torquata.* Additional notes on other birds are given, including *Lamprolia victoriæ*.—Mr. H. Durnford has ornithological notes from the neighbourhood of Buenos Ayres, in which the habits of the birds of the district are briefly described.—Mr. R. Ridgway writes on the genus *Helminthophaga*, precisely defining the distribution of the ten species and their specific characters.—Mr. H. E. Dresser continues his notes on Severtzoff's "Fauna of Turkestan," the species of birds most lengthily noticed being *Leptopoecile sophiæ, Anthus pratensis*, and *Lanius isabellinus*, together with *Caprimulgus pallens* and *C. arenicolor*.—Mr. F. Barratt gives ornithological notes made during trips between Bloemfontein and the Lydenburg gold-fields, figuring *Bradypterus barrati*.—Messrs. H. Seebohm and J. A. Harvie Brown continue their notes on the birds of the Lower Petchora, figuring the eggs of *Squatarola helvetica*.—Mr. J. H. Gurney continues his notes on Mr. Sharpe's "Catalogue of the Accipitres in the British Museum," devoting himself on this occasion to the American Buzzards.—Mr. P. L. Sclater gives an interesting account of the recent ornithological researches of Beccari, D'Albertis, and von Rosenberg in New Guinea, and Count Salvadori writes on two New Guinea species, *Sericulus xanthogaster* and *Xanthomelus aureus*.—Canon Tristram describes a collection of birds from New Hebrides, among which is a new species of *Porphyrio, P. aneiteumensis.*

Poggendorff's Annalen der Physik und Chemie.—Ergänzung, Band vii., Stück 4.—We have here a valuable second memoir by M. Chwolson on the mechanism of magnetic induction, which process he seeks to explain by the supposed existence of molecular magnets that are turned by the external force in one direction. In his former paper he dealt with the case of temporary induction in soft iron; he here treats of magnetic induction in steel. The paper is in five chapters: in the first are summarised the results obtained by previous observers, those of Jamin being given with special fulness. In the second the author describes his experiments, which require a modification of Jamin's theory. Of Jamin's two laws relating to the action of positive and negative currents on permanently magnetised bars, M. Chwolson finds the first absolutely correct; the second incorrect. Jamin's mistake he considers to be in the supposition that the negative current only acts on the surface layers, leaving those below untouched; it is shown, on the contrary, that the least negative current acts on all the layers and diminishes their intensity. Then he gives a mathematical theory of induction in steel; supposed the first attempt of the kind (if Maxwell's but partly successful one be excepted). In the fourth chapter he explains, on the basis of theory, the various experimental results got by different observers; and in the fifth, shows how certain results that might *à priori* be foreseen, from the theory, have been verified.—M. Holtz has a paper on some changes of form of the Leyden battery (with a view to extending the length of spark), and its use with influence-machines; and he describes some good phenomena of discharge. The remaining papers are extracts.

Der Naturforscher, February.—In this number we may note an account of observations by M. Mallard on the velocity of inflammation in a mixture of fire-damp and air. The various mixtures were set in motion with different velocities, and that velocity at which the zone of combustion remained stationary measured the velocity sought. The highest velocity of inflammation was 0·560 metres in a second, and it occurred in a mixture of 0·108 vol. of fire-damp in one volume of the mixture. On increasing or diminishing the proportion of fire-damp, the velocity in question diminished very rapidly, becoming *nil* with a proportion of 0·077 vol. on the one hand, and 0·145 vol. on the other, below which the mixtures are neither explosive nor inflammable. It is notable that a variation of even 0·01 in the proportion of fire-damp is sufficient to convert an absolutely indifferent mixture into a highly dangerous one.—In geology there is an adverse criticism of Mr. Mallet's theory of volcanic action, by M. Roth, and an experimental inquiry by M. Hoppe-Seyler into the formation of dolomite. The latter points out that wherever, on a sea-bottom covered with chalk or limestone, eruptions of lava occur, dolomite is a necessary product, the lava supplying the temperature (which must be high), the limestone the calcium and carbonic acid, and the sea-water the magnesium.—From twenty years' observations in St. Petersburg, M. Rikatcheff draws some conclusions as to the influence of cloudiness on the daily variations of temperature.—We further note an abstract of a recent *brochure* by Prof. Lommel, on the interference of reflected light (the author developes variously a well-known experiment of Newton), and a summary of an interesting lecture by M. Löwe to the Physiological Society of Berlin, on the theory of descent.

March.—The formation of cheese has lately engaged the attention of Prof. Ferd. Cohn in connection with his researches on the lowest forms of plant life; and he has made personal observations on the manufacture, as carried on in Switzerland. The phenomena accompanying the process are thus described: The rennet contains a liquid ferment which causes coagulation of the milk; also ferment-organisms (Bacillus), which probably bring on butyric-acid fermentation, and cause the slow maturing of the cheese. It is their resting-spores that, enclosed by the dry cheese substance, resist boiling heat for a long time, and, in a suitable nutritive liquid, may afterwards develop to bacillus rods. (One of Dr. Bastian's results is thus explained.)—In a paper by M. Rosenthal, the action of the automatic nerve-centres is explained as dependent, not on some immanent property of the nerve apparatus, but on the nature of the blood. To account for the rhythmus of the movements in breathing, he supposes a constant resistance opposed to the constant excitation, and illustrates the case by supposing a vertical tube closed below by a plate which is pressed against it by a spring, while a constant stream of water flows in from above. When the liquid reaches a certain height the spring yields, and some water escapes; then the spring forces back the plate, and the process is repeated, thus giving a rhythm. From experiments made by M. Bartoli, in Italy, it is inferred that all solid and liquid substances, whatever their nature, have, in air, a damping influence on the oscillations of a magnetic needle suspended over them, and that this action depends on the air that is between the two surfaces. Among other subjects handled in this number may be mentioned those of irregularities of the sea-level (Hann), the molecules of isomeric and allotropic bodies (Smit), the physical properties of litter in woods (Ebermayer), and decomposition of albuminous matter in animal bodies (Drechsel).

SOCIETIES AND ACADEMIES

LONDON

Royal Society, May 4.—Supplementary note "On the Theory of Ventilation" (see NATURE, vol. xi. p. 296). By Francis S. B. François de Chaumont, M.D., Surgeon-Major, Army Medical Department, and Conjoint Professor of Hygiene, Army Medical School. Communicated by Prof. Stokes, Sec. R.S.

In his previous paper the author endeavoured to establish a basis for calculating the amount of fresh air necessary to keep an air-space sufficiently pure for health, taking the carbonic acid as the measure. The results showed that the mean amount of carbonic acid as respiratory impurity in air undistinguishable by the sense of smell from fresh external air was under 0·2000 per 1000 volumes. His object in the present note is to call attention to the relative effects of temperature and humidity upon the condition of air, as calculated from the same observations.

Linnean Society, June 1.—Prof. Allman, president, in the chair.—An interesting series of photographs illustrating coffee cultivation in Ceylon, an enormous banyan tree and other tropical vegetation, were shown by Mr. J. R. Jackson, of the Kew Museum; Mr. W. Bull's exhibition of several fine healthy, growing plants, and the seeds of his lately introduced *Coffea liberica* and of *C. arabica* for comparison came in most *à propos* to the above.—The Rev. G. Henslow read a paper on floral æstivations, in which, after giving the eight kinds, viz., distichous, tristichous, pentastichous, half-imbricate, imbricate proper, convolute, valvate, and open, he explained their origin, and specially dwelt upon the new term *half-imbricate*, which he applied to a very large number of cases ranging from perfect regularity to extremely irregular and zyomorphic flowers of the pea and snap-dragon. The author then showed how that, as well as the fifth and sixth kinds were successively deducible from the third or pentastichous (quincuncial) by merely shifting one edge of the *second* part *under* the adjacent edge of the *fourth* part. The author added a note on a new theory of the cruci-

ferous flower, based on a quinary type, and which, by *symmetrical reduction* (*i.e.*, the fifth part of each whorl would be suppressed) the remaining fours would, by further arrest, due to adaptations to insect agency, form the normal flower. He also disputed the tenability of *Chorisis* in the pairs of long stamens, regarding their occasional union as indicative of evolutionary advance and not retrogression; as cohesion is a subsequent stage to freedom, except in the rare cases of atavism indicated by solution and dialysis. The author called in question the justness of Pfeffer's view of the corolla of primula, being an outgrowth of the Androecium, by showing (*a*) the position of the stamens to be explained by the staminodia of Samolus, (*b*) that the corolla appearing subsequent to the stamens is no anomaly, (*c*) that the fibro-vascular bundles are ten in number, of which five are intermediate, and (*d*) that phyllotactical æstivation were those of true leaves; so that all these facts conspired to render the theory untenable. Mr. J. G. Baker read a paper on a collection of ferns made by Mr. Wm. Pool in the interior of Madagascar. Altogether 114 species have been obtained, of which fifteen are entirely new and twenty-eight prove to be varieties of already known forms. Some examples, *e.g.*, *Asplenium trichomanes*, *Nephrodium felix-mas*, and *Aspidium aculeatum*, are thoroughly temperate types.—Mr. Francis Darwin read an account of some researches of his on glandular bodies on *Acacia sphærocephala* and *Cecropia peltata*, serving as food for ants. The structures in question were discovered by Mr Belt (Nicaragua), and subsequently further observations made by Fritz Müller (Brazil), while Mr. Darwin has more particularly entered into their minute composition. In Acacia they are of two kinds (*a*) nectar-secreting glands situate at the base of the petiole, (*b*) small, somewhat flattened, pear-shaped bodies, which tip six or seven of the lowermost leaflets of the bipinnate leaves. In Cecropia cylindrical bodies are developed in flat cushions at the base of the leaf-stalk. Mr. Darwin shows the microscopical structure of all of these to be homologous in kind, cellular, protoplasm, and containing oil globules. He infers, moreover, they bear a relation to the serration-glands of Reinke, in certain cases afterwards being converted into stores of nutriment, which undoubtedly the ants live on, and in their turn protect the trees from the ravages of the leaf-cutting ants.—A notice of the lichens of Madagascar collected by Mr. W. Pool, by the Rev. J. M. Ceromble, was taken as read.—Prof. Wyville Thomson, of the *Challenger* Expedition, addressed the meeting, giving the results of two communications by him; one on new living Crinoids belong to the Apiocrinedæ, the other on some peculiarities in the mode of propagation of certain Echinoderms of the Southern Seas.

Royal Astronomical Society, June 9.—William Huggins, D.C.L., president, in the chair. A paper by Prof. Simon Newcomb was read on a hitherto unnoticed apparent inequality in the longitude of the moon. The inequality was, it appeared, brought to light in the course of an investigation which has recently been made by Prof. Newcomb, of the corrections to be applied to Hansen's "Tables de la lune," in order that they may be used for the determination of the longitudes of the transit of Venus stations. Prof. Newcomb set himself to compare the places derived from Hansen's Tables with the series of lunar observations made at Greenwich and Washington between the years 1862 and 1874. The residual errors of the moon's place showed a systematic inequality which could not be got rid of by any new assumption as to the value of the corrections of the lunar elements. There can be no serious doubt about the existence of the inequality, because both the Greenwich and Washington observations agree in showing it, and a close investigation shows that the errors are periodic and depend upon the moon's longitude. In order to make the investigation more complete, Prof. Newcomb has determined the corrections for the years 1847 to 1858, for which period the residual errors of Hansen's Tables are given in the Greenwich observations of 1859. A table of the resulting corrections is given in the paper, and it appears that the period of the chief term of the new inequality is $16\frac{2}{3}$ years with a probable error of half a year. The corresponding period of the inequality in longitude is 27·4304 days ∓ 0·0040 days, and there is a large preponderance of probability against the real period being less than 27·42 days, or more than 27·44 days. No known term in the moon's longitude falls within these limits. The moon's sidereal period is 27·32 days and the anomalistic period is 27·55 days, so that the new term falls half way between the two. The non-accordance of this period with any term heretofore sought for, is the probable reason why this term has not before been noticed; a term if unknown would not be remarked unless its value was such as visibly to effect the individual comparison of theory with observation, and Hansen's tables as corrected are the first of which the residual errors are so small that a term of 1″·5 would be remarked in the comparison with observations. Prof. Adams said that he was at a loss to imagine what the cause of this inequality can be, he was rather inclined to suppose that it may have something to do with the effect of the figure of the earth on the motion of the moon, but this was only an idea thrown out on the spur of the moment.—Lord Lindsay exhibited an adaptation of the ordinary altazimuth instrument designed to give a rough equatorial motion; to the base of the altazimuth pillar is fixed an iron bar, through a hole in which a string or wire is attached to the object-glass end of the telescope. The only adjustments that are necessary are that the horizontal bar shall be placed approximately north and south, and that the distance from the base of the altazimuth pillar to the hole in the bar through which the string passes shall be equal to the height of the pillar into the cotangent of the latitude of the place of observation.—Mr. Plumber read a paper on photometric experiments upon the light of Venus. By comparing the shadow of a wire cast by the light of the planet with the shadow of a similar wire cast by a candle at a known distance, and again by comparing the light of the candle with the light of the full moon, he came to the conclusion that the light of Venus at its greatest brilliancy was equal to $\frac{1}{799{\cdot}5}$ of the brightness of the full moon, and by a similar method found that the light of Jupiter at mean opposition was equal to $\frac{1}{6430}$ of the light of the mean full moon.

Chemical Society, June 15, Dr. J. H. Gladstone, F.R.S., vice-president, in the chair.—A large number of communications were read, this being the last meeting of the season. The first paper, by Prof. Dewar, entitled "Chemical Studies," was chiefly devoted to an account of several interesting lecture experiments.—Dr. H. E. Armstrong then gave a short account of his elaborate researches on the reduction of nitric acid and on the oxides of nitrogen, part i., on the gases evolved by the action of metals on nitric acid, made in conjunction with Mr. Accworth.—Mr. C. T. Kingsett then read a paper on the composition and formula of an alkaloid from Jaborandi.—There were also papers on the simultaneous action of iodine and aluminium on ether and compound ethers, by Dr. J. H. Gladstone and Mr. A. Tribe; on compounds of antimony pentachloride with alcohols and with ethers, by Mr. W. C. Williams; on the volatility of barium, strontium, and calcium, by Prof. J. W. Mallet; on the action of chlorine on acetamide, by Dr. E. W. Prevost; note on the perbromates, by Mr. M. M. P. Muir, and a communication on a new and convenient form of areometer for clinical use, by Dr. J. G. Blackley.

Geological Society, June 7.—Prof. P. M. Duncan, F.R.S., president, in the chair.—John Thos. Atkinson, Edmund Clark, Frederick Derry, Walter S. Gervis, Thos. Jones, Baldwin Latham, and Edward Sewell, were elected Fellows of the Society.—On the British fossil cretaceous birds, by Prof. H. G. Seeley, F.L.S. In this paper the author gave an account of the remains of birds which have been collected from the Cambridge Upper Greensand. The bones are so fragmentary that the size of the animal can only be given roughly as similar to that of the Diver, but with a shorter neck. The affinities of the animal are strongest with *Colymbus*. It also closely resembles Prof. Marsh's cretaceous genus *Hesperornis*, and like that genus may be supposed to have had teeth. The species were described as *Enaliornis Barretti* and *E. Sedgwicki*. Some bones were also described thought to indicate birds in which the extremities of the bones remained unossified throughout life.—On two chimæroid jaws from the Lower Greensand of New Zealand, by E. T. Newton, F.G.S., of H.M. Geological Survey. The two jaws which were the subject of this communication form part of the collection of fossils from the Lower Greensand of New Zealand deposited in the British Museum by Dr. Hector. One of the specimens, a right mandible, was referred by the author to *Ischyodus brevirostris*, Ag., a species from the Gault of Folkestone, hitherto known only by name, no description or figure of it having been as yet published. The second specimen, a small right maxilla, possessing but one tooth, and this of a peculiar form, was compared with the corresponding form in *Ischyodus*, *Edaphodon*, *Elasmodus*, *Ganodus*, *Chimæra*, and *Callorhynchus*. Reasons were given for

believing that it differed generically from all other known forms of Chimæroid jaws; and the author therefore proposed to call it, in allusion to the form of the tooth, *Upsilodus Hectori*.—On a bone-bed in the Lower Coal-measures, with an enumeration of the fish-remains of which it is principally composed, by J. W. Davis, F.L.S. In this paper the author described a thin bed composed chiefly of remains of fishes, which rests immediately upon the "Better-bed coal" of the Lower Coal-measures in Yorkshire.—Note on a species of Foraminifera from the Carboniferous formation of Sumatra, by M. Jules Huguenin. Communicated by Prof. Ramsay, F.R.S., V.P.G.S. The author described some globular Foraminifera, belonging or allied to *Fusulina*, from a carboniferous deposit containing *Producti* and *Phillipsiæ*, which occurs north-east of Padang and south of the lake of Singkarak in Sumatra. The author described the structure of these fossils, which he compared with *Fusulina cylindrica* and *F. depressa*, and arrived at the conclusion that they belong to a new genus, to which perhaps the North American *Fusulina robusta* also belongs.—On the Triassic rocks of Somerset and Devon, by W. A. E. Usher, F.G.S. The author stated that the Trias of Devon and Somerset was divisible into three groups, occupying distinct areas. The first lies north of the Mendip Hills, where the Trias is thinnest and assumes its simplest characters, consisting of marls and Dolomitic conglomerate. The second area embraces the country south of the Polden Hills as far as a north and south line through Taunton. The chief portion of the Trias in this area, as in the northern, consists of marls. The third area, bounded on the north by the Bristol Channel, on the south by the English Channel, on the east by the Blackdown range, and on the west by the Culm and Devonian highlands, presents the most complex relations of the Trias in the south-western counties.

Victoria (Philosophical) Institute, June 19.—A paper by Prof. Morris, M.D., of Michigan University, on the theory of unconscious intelligence as opposed to theism, was read. The paper discussed the theories which have been put forward on the subject. The professor laid down the proposition that consciousness and intelligence imply one another, and that, therefore, "unconscious intelligence" is a self-contradictory phrase.

PARIS

Academy of Sciences, June 12.—Vice-Admiral Paris in the chair.—The following papers were read:—Experimental critique on Glycemia (continued). Physico-chemical and physiological conditions to be observed in searching for sugar in the blood, by M. Cl. Bernard. The sugar found normally in blood of animals ranks among glycoses. M. Bernard shows how its properties may be demonstrated after coagulation of the blood, by superheated steam, by alcohol, or by sulphate of soda. He then details his mode of finding the amount of sugar.—On the absorption of free and pure nitrogen and hydrogen by organic matters, by M. Berthelot. White filter paper, slightly moist, placed in pure nitrogen, under influence of the effluve or silent discharge, absorbs a considerable quantity in eight or ten hours. Oxygen does not hinder this (in 100 vols. air, 2·9 hundredths of nitrogen and 7·0 of oxygen were absorbed in about eight hours). Hydrogen is absorbed even more rapidly than nitrogen by benzene, terebenthene, acetylene, &c.—On the formation and the decomposition of binary compounds by the electric effluve, by M. Berthelot. In principle the reactions are the same as those with the spark, but the longer duration of the spark and the heating it produces are adverse to the formation of condensed products, such as arise under the effluve.—Presentation of solar photographs of large dimensions, by M. Janssen. In these the disc is 22 centimetres in diameter, yet there is great distinctness. M. Cornu hopes shortly to have photographs from the focus of a telescope of 36 centimetres aperture.—On electric transmissions through the ground, by M. du Moncel. From experiments he shows how unequal moisture about the electrodes, unequal heating of these, and unequal size, are physical causes which intervene, more or less, causing variations in intensity of currents transmitted through the ground. A general conclusion is, that it is not advantageous to interpose earth in a circuit unless when its resistance exceeds 10 or 15 kilometres of telegraph wire.—On some new experiments made with Crookes's radiometer, by M. Ledieu. In the first experiment rotation was obtained from a beam of luminous rays falling parallel to the axis (though less rapid than when it falls at right angles). In the second, the two sides of the vanes were kept bright; and here the vanes moved as if repelled by the luminous ray meeting them. (The ray should be made to strike the vane next the light at a small angle, and the two opposite vanes, with reference to the plane of the ray and the axis, be shaded by a screen. The place should be quite dark.)—On amber, by M. Reboux.—On the law of Dulong and Petit, by M. Terreil. The product of specific heat by chemical equivalent is a constant, provided all the bodies are taken with the same gaseous volume, and before any condensation. The specific heat of simple bodies, taken with the same volume and gaseous state, is inversely proportional to their chemical equivalents; so is that of compound bodies, and it is proportional to the condensation of the gaseous volumes of the constituent simple bodies in combining. Simple or compound bodies which have lost the gaseous state have a specific heat double that which they have in this state.—Letter to M. Dumas on Phylloxera, by M. Fatis. The cycle of metamorphoses may, in certain circumstances, occur entirely under ground without intervention of the perfect winged form.—On the employment of sulphide of carbon against Phylloxera, by M. Allies.—Another on the same subject, by M. Marion.—On the pantanemone, an apparatus acting in all winds, without orientation and without reduction of surfaces, by M. Sanderson.—Ephemerides of the planet (103) Hera, for the opposition of 1877, by M. Leveau.—On the presence of magnesium in the sun's limb, by M. Tacchini. The magnesium gains in intensity and elevation where the flames of the chromosphere present most vivacity. While there is at present a minimum of spots, protuberances, hydrogenic clouds, and metallic eruptions, the circulation of magnesium still retains a certain energy capable of rising to a maximum as in previous years.—Phenomena of electric oscillation, by M. Mouton.—On the propylenic chlorhydrines and the law of addition of hypochlorous acid, by M. Henry.—Elementary analysis of electrolytic aniline black, by M. Goppelsroeder.—On anthraflavone and an accessory product of the manufacture of artificial alizarine, by M. Rosenstiehl.—On the internal membrane of a chicken's gizzard as an osmotic partition, by M. Carlet. Interposed between water and alcohol in the normal conditions of osmose, this membrane is always traversed by a dominating current from the water to the alcohol; it is therefore not (as generally supposed) an exception among animal membranes.

VIENNA

Imperial Academy of Sciences, Feb. 17.—The following (among other) papers were read:—Further observations on the formation of a rational space curve of the fourth order, on a conical section, by M. Weyr.—On the distribution of the colouring matter in ovules during the process of division, by M. Schenk. The ovaries and testicles of *Echinus saxatilis* are commonly yellowish, but some species have reddish violet ovaries; M. Schenk studies the changes wrought by artificial fecundation of the ovules in these latter with sperma from the yellow testicles.

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