entitled "Obliviscence and Reminiscence," for which he obtained the degree of D.Lit. in 1914.

The annual report on the work of University College has just been issued. The total number of students on the college books for the academic year 1915–16 was 1133 (including 51 refugee students), whereas the normal number is about 2200. Of the 1133 there were 535 men (including 36 refugee students); of the 535 men, only 222 were in attendance throughout the session, the remainder taking up military or naval service or some special form of war-work. The normal fee revenue is upwards of 29,000*l.*; the fee revenue for 1915–16 was 14,983*l.* By means of drastic economies and postponement of expenditure, and with the help of generous donations from members and friends of the college, supplemented by the special Treasury grant, expenditure was kept within income. The financial outlook for the current session (1916–17) causes anxiety, the fee revenue having further declined. The chairman and the acting treasurer are asking for help to meet the threatened deficiency, and also to cover the expenditure on the new chemistry buildings that has not yet been provided; this amounts to 15,000*l.* The third issue of the *Pro Patria* list, with the supplement recently prepared, contains 1554 names of members of the college, 1516 of whom are on active service. Of these, 122 have fallen in the war.

OXFORD.—The Departments of Geography and Anthropology have published their arrangements for next term. In geography, lectures will be given on map projections, the historical geography of Europe, the West Indies, and British lands round the Indian Ocean. Practical classes, field work, and informal instruction are also announced. The list of lectures in anthropology includes human anatomy, ethnology, the distribution of man, comparative technology, stages of human culture, the Bronze and early Iron ages, and questions relating to ancient Egypt. Lectures and informal instruction are also announced on various topics of social anthropology and on primitive language in its relation to thought

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THE presidential address delivered by Prof. A. N. Whitehead to the Mathematical Society last January is printed in the current issue of the *Technical Journal*. The subject of the address was the relation of technical education to science and literature, and Prof. Whitehead's ideas deserve wide and careful consideration. The immediate need of the nation, he maintains, is a large supply of skilled workmen, of men with inventive genius, and of employers alert in the development of new ideas; and there is only one way to obtain these, namely, by producing workmen, men of science, and employers who enjoy their work. The basis of the growth of modern invention is science, and science is almost wholly the outgrowth of pleasurable intellectual curiosity. A technical education which is to have any chance of satisfying the practical needs of the nation must be conceived in a liberal spirit as a real intellectual enlightenment as to principles applied and services rendered. There can be no adequate technical education which is not liberal, and no liberal education which is not technical; that is, no education which does not impart both technique and intellectual vision. In any system of technical education, training should be broader than the ultimate specialisation, for the resulting power of adaptation to varying demands is advantageous to the workers, to the employers, and to the nation. Prof. Whitehead applies his generalisations to the specific cases of pupils of thirteen who have completed their elementary education, and those of seventeen whose technical education, so far as it is compressed within a school curriculum, is ended.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, March 15.—Sir J. J. Thomson, president, in the chair.—Prof T. H. **Havelock**: The initial wave-resistance of a moving surface pressure. Hitherto the wave-resistance associated with the motion of an assigned pressure system over the surface of water has been studied only in the steady state for uniform motion. The present work is an attempt to calculate this quantity at any time for a system which has been suddenly established and set in uniform motion at a certain instant.—Prof. S. W. J. **Smith** and H. **Moss**: Experiments with mercury jets. (i) The relation between the jet-length and the velocity of efflux. (ii) A comparison with jets of other liquids. It has probably been noticed by those who have worked with mercury "dropping electrodes"—in which the mercury issues in a narrow stream from the drawn-out end of a vertical tube—that the length of the jet alters in a peculiar way with the length of the mercury column producing it. The results of a study of this phenomenon are given.—Prof. W. H. **Young**: The mode of approach to zero of the coefficients of a Fourier series.—R. O. **Street**: The dissipation of energy in the tides in connection with the acceleration of the moon's mean motion. On the hypothesis of non-turbulent motion harmonic with espect to the time with a period of twelve hours, an expression is obtained for the mean rate of dissipation of energy by viscosity in a portion of the ocean in the form of a surface integral over that area of a function of the surface current-velocities only. This integral has been evaluated over the greater part of the Irish Sea, the mean rate of dissipation obtained being 5×10^9 foot-poundals per second. In the absence of external forces, this rate of dissipation would cause the energy to be reduced in the ratio e to 1 in about two hours. If the rate of dissipation per unit area for the whole ocean were the same as in the Irish Sea, the total frictional loss of energy by the tides would be at the mean rate 6×10^{13} foot-poundals per second. If the apparent lunar acceleration is attributed to a slowing of the earth's axial rotation, a retardation of the order four minutes of arc per century per century is necessary for its explanation. This retardation implies a decay of the earth's kinetic energy of rotation at the rate of $1{\cdot}6 \times 10^{13}$ foot-poundals per second, which is about a quarter the mean rate of dissipation of tidal energy on the above hypothesis. A maximum surface current velocity of 2 ft. per second over the whole ocean would give rise to sufficient dissipation to account for this retardation of the earth.

Optical Society, March 8.—C. L. **Redding**: A simple method of determining the size of the tool required for a given block of lenses. When a new system of lenses has to be worked, it is desirable to select the best method of blocking, and to make the diameter of the tool equal to the diameter of the complete block. The size of the tool may be determined by calculation or by previous experience, but the author described how this may also be done by making use of any concave tool of known radius.—T. F. **Connolly**: A variable angle collimator. The instrument described differs from an ordinary collimator in having a bi-prism introduced between the diaphragm and the object-glass. The effect of this is to produce two separate images of the central wire, which images are collimated by the object-glass as though they were real wires. The bi-prism is mounted in a short tube sliding within the collimator body, and its position is indicated on the outside of the collimator on a longitudinal scale. A movement of the bi-prism

varies the distance between the images as it slides along, and this variable separation of the collimated images provides a convenient means for angular measurement. If the scale is graduated to correspond with angular separation, it can be used as a standard of angular measurement for such purposes as marking off or checking stadia intervals on levels or theodolites, or for checking the graticules in prism binoculars.—P. F. **Everitt**: The design and testing of telescope objectives. The author first described the four principal aberrations of the telescope objective, proceeding from them to others of less importance, and finally reducing the problem to the fulfilment of three or more of six conditions which it is desirable to satisfy. After referring to the existing tables of approximate solutions, trigonometrical formulæ are given by means of which selected rays are accurately traced through an objective, and the aberration is shown numerically in an example in which the chromatic aberration of an objective is altered at will. A short description of the main types of objectives was given, showing the purposes for which they are best adapted, and also some methods of testing, including the Hartmann system.

Physical Society, March 9.—Prof. C. V. Boys, president, in the chair.—Dr. P. E. **Shaw**: To measure the pressure in a high vacuum by observations of logarithmic decrement. In experiments on the Newtonian constant (*Phil. Trans.*, May, 1916) the author used a torsion balance in a vacuum which varied in different cases from 15 mm. to 0·00001 mm. pressure. Before sealing the vessel the pressure was determined by a McLeod gauge. Values of the pressure after sealing off were deduced, in the case of the higher vacua, from observations of the damping of the torsion system. The formula employed is due to the late Prof. Poynting, and can be expressed in the form

$$P = 35{\cdot}6\,\frac{I}{sa'T}\lambda,$$

where I = moment of inertia of suspended system, s = area of surface (supposed plane) which is experiencing the resistance, a = mean distance of plane from centre of rotation, T = period of oscillation, and λ = the observed logarithmic decrement. A table and curve are given showing the relation between P and λ.—A. W. **Clayden**: A diffraction colour box. The apparatus consists essentially of a very simple concave grating spectroscope, of which the slit and grating are situated at opposite diameters of a circle, the spectrum being formed on the arc of this circle. Two independent arms carry fittings on which may be placed either telescope eyepieces or small electric lamps. With the slit of the instrument illuminated by a suitable source, the eyepieces can be set so that any two desired wave-lengths are in the centres of their respective fields of view. The eyepieces are then replaced by the small lamps (the filaments coinciding with the previous positions of the cross-lines), and the grating is observed with a small telescope pointed towards the widened slit; the whole of its surface is seen to be illuminated with a mixture of the two colours on which the eyepieces were originally set. The "concave grating" employed consists of a Thorpe replica of a Rowland plane grating of 14,475 lines to the inch, mounted with its ruled surface in contact with the surface of a concave mirror of 4-ft. focal length. This forms an admirable substitute for the more expensive concave grating. The author prefers to state results in terms of the number of oscillations per unit of time. Observations showed that the smallest change of wave-length which could be recognised by the eye as a change of colour was greater than that which corresponded to a change of period of 10^{12} vibrations per second, or to a change of one vibration more or less in $1/10^{12}$ second.—Prof. W. M. **Coleman**: An apparatus for studying the effect of Hertzian waves on the heart. A simple pendulum, consisting of a cylindrical brass bob terminating in a pointed wire coaxial with the bob, hangs by a piece of string above one of the terminals of an induction coil, so that in its lowest position the point of the bob is within sparking distance of the terminal and vertically above it. The bob is connected by a piece of flexible wire to the other terminal of the coil. When the pendulum is set oscillating there is a shower of sparks every time the bob passes its lowest position. The frequency of intermittence can be varied by altering the length of the suspension. By adjusting the period of the pendulum nearly to the time of a heart-beat any possible effect on the rate of the beating may be observed. The condensed discharge from two Leyden jars is employed.

Geological Society, March 14.—Dr. A. Smith Woodward, vice-president, in the chair.—L. M. **Parsons**: The Carboniferous limestone bordering the Leicestershire coalfield. The inliers of Carboniferous limestone situated along the northern border of the Leicestershire coalfield crop out in two well-defined series: a western series composed of almost horizontal beds exposed by stream-erosion, and an eastern series in which the limestone is highly inclined and complicated by faulting. The thinly bedded limestones, shales, and dolomites of the western inliers are of a slightly higher horizon than that of the uppermost beds of the more massive dolomites seen at Breedon and Breedon Cloud farther eastwards. In no part of the district is the base of the Carboniferous seen, although borings have shown that the limestone rests upon pre-Cambrian rocks in the neighbourhood of Charnwood Forest.

Linnean Society, March 15.—Sir David Prain, president, in the chair.—C. E. **Jones**: Methods of preparing plants for exhibition. The experiments described have been carried out in connection with the exhibition of plants in the Department of Botany, Natural History Museum, South Kensington, where specimens of the results can be seen (see also NATURE, November 9, 1916, p. 191).—Dr. R. R. **Gates**: A systematic study of the North American Melanthaceæ from the genetic standpoint. The author's point of view is the assumption, based upon experiment during the last fifteen years, that the variations which mark species have not been universally continuous and infinitesimal, but often definite and discontinuous. Definite variation is not necessarily orthogenetic variation, but marked variation which may occur in any, or in many, directions simultaneously. The experience gained in work on the mutations in Œnothera are turned to account in this group of Liliales which has not hitherto been the subject of experiment. Pairs of species have been taken and investigated on this basis. Related genera showing marked differences in structure often co-exist side by side, showing that these differences cannot be claimed as of selective value, but have arisen from "spontaneous variation" and have been perpetuated by heredity.

Mineralogical Society, March 20.—Mr. W. Barlow, president, in the chair.—A. **Holmes** and Dr. H. F. **Harwood**: The basaltic rocks of Spitsbergen and Franz-Joseph Land, with conclusions regarding the Brito-Arctic Tertiary Petrographic Province. These rocks, which were obtained respectively from Prof. Garwood and the Geological Survey of England and Wales, are very similar not only to the basaltic rocks previously described from neighbouring localities, but

also to the basalts of the whole Arctic region stretching from Dickson Harbour to West Greenland. The essential minerals are labradorite, rich in the anorthite molecule, pyroxene of the enstatite-augite type, and titaniferous magnetite. The province as a whole displays significant variations both in time and space. The earliest eruptions are generally poor in alkalies, but tend to become more alkaline as the present period is approached. Thus, the later eruptions of Spitsbergen gave rise to olivine trachydiorites instead of basalt. Jan Mayen still possesses an active volcano, and its rocks are unusually alkaline basalts. Similarly, the later rocks of Iceland and, to a lesser extent, of Skye and the Small Isles follow the same course. In space the most remarkable variation is seen in the distribution of titanium, the percentages of titanium oxide being high in the rocks of Greenland and the Iceland Ridge, and falling away regularly on each side. The Brito-Arctic Petrographic Province can be subdivided into five regions, viz. the British, the Icelandic (including the Faroe Islands and the Scoresby Sound district), the West Greenland, the Jan Mayen, and the Spitsbergen—Franz-Joseph Land—Dickson Harbour, and the differences subsisting between them are related to the processes whereby the igneous activity was initiated. It is suggested that a petrographic province consists of a number of adjacent regions of igneous activity, in which similar rocks, or similar series of rocks, have been produced, whence it follows that the processes by which the magmas have been formed, differentiated, and intruded must be similar, and the underlying materials on which these processes have acted must also be similar.—Dr. J. W. **Evans**: A general proof of the limitation of the symmetry-numbers of crystals. On the assumption that crystals are composed of cells identical in all respects, then, if n be the degree of the symmetry of an axis and d an integer, the equation

$$\cos\frac{2\pi}{n}=\tfrac{1}{2}(1-d)$$

must be satisfied. The only possible values of d are 3, 2, 1, 0, the corresponding values of n being 2, 3, 4, 6.—E. S. **Fedorov**: The numerical relation between zones and faces of a polyhedron. The numerical relation shown by axes of symmetry situated in planes of symmetry pointed out by G. Cesàro in 1915 is only a particular case of the more general one deduced by the author in 1885.—A. **Lcdoux**, T. L. **Walker**, and A. C. **Wheatley**: The crystallisation of parahopeite. Crystals in the Royal Ontario Museum of Mineralogy from the original locality, Broken Hill, North-Western Rhodesia, are triclinic with the axial ratios $a:b:c=0{\cdot}7729:1:0{\cdot}7124$; $\alpha=93^\circ\ 22'$, $\beta=91^\circ\ 12'$, $\gamma=91^\circ\ 22'$. Thirty-two forms are recorded. The crystals have perfect cleavage parallel to the brachypinacoid, and show lamellar twinning parallel to the macropinacoid. The angle of optical extinction on the cleavage is 10° with reference to the twin-lamellæ.

Royal Meteorological Society, March 21.—Major H. G. Lyons, president, in the chair.—Major G. I. **Taylor**: The formation of fog and mist. Fogs are due either to precipitation of water in the air or to a condition of the atmosphere which prevents smoke from being dispersed from the air close over the roofs of a town. The two necessary conditions for the formation of a smoke fog are that the wind velocity must be very small and the air near the ground must be relatively cold compared with the air higher up for a period sufficiently long to collect enough smoke to form a fog. The formation of fog at sea can usually be traced to the cooling of the surface air when it flows from a place where the sea is warm to a place where it is cold, but sometimes a fog is caused by air flowing from a cold to a warm part of the sea. In the former case the fogs are usually low-lying and thick, while in the latter they are more frequently light fogs which stretch up to a considerable height. Fogs consisting of small drops of water are formed on land, too, by the cooling of surface air, but in this case the air usually stays still, while the lowering of the temperature of the ground by radiation to the sky at night cools the air near the surface. Fogs of this type are not formed until the temperature has fallen considerably below the dew-point of the air during the day. This is because the formation of dew dries the air near the ground. Theoretical considerations show that the amount by which the temperature must fall below the dew-point before fog is produced depends on a complicated series of causes, but an empirical method has been devised for estimating whether, on any given night, there is enough water vapour in the air to form a fog if other conditions are suitable. This method can be used for local forecasting.

CAMBRIDGE.

Philosophical Society, February 19.—Dr. Marr, president, in the chair.—B. **Sahni**: 1. An Australian specimen of *Clepsydropsis*. 2. Observations on the evolution of branching in ferns. The evolution of the branching of the fern stem is discussed for the first time from the point of view of vascular anatomy. It is concluded that dichotomous branching is primitive and that monopodial branching is derived from it by the successive intercalation, at the base, of a series of stages, each morphologically less complex than the preceding. The process has thus been one of retrogressive evolution in the basipetal direction.—C. P. **Dutt**: Some anatomical characters of coniferous wood and their value in classification. The author directs attention to the confusion in existing accounts of the pitting associated with medullary ray cells and gives the result of an investigation on the same subject. Conclusions are drawn as to the value of such pitting as a diagnostic character.

MANCHESTER.

Literary and Philosophical Society, February 20.—Prof. S. J. Hickson, president, in the chair.—Dr. W. **Makower**: The photographic action of α rays. The first important investigation of the photographic action of α particles was made in 1910 by Kinoshita, who succeeded in showing that whenever an α particle strikes a grain of silver haloid in a photographic plate, that grain is afterwards capable of photographic development; moreover, this was true throughout the range of the α particle. Later it was shown by Reinganum and others that when α particles are projected tangentially to a photographic plate, after development the film shows definite trails of grains of silver halide, which can readily be distinguished under the microscope. These trails are produced by the impact of the α particles on the haloid grains as they pass through the film, and their length represents the range of the α particles in the film of gelatine. Photomicrographs showing the paths of α particles through photographic films were first published by Walmsley and Makower, and soon afterwards by Kinoshita and Ikeuti. The method adopted by the latter was to activate the tip of a sewing-needle by gently rubbing it on a surface coated with the active deposit of radium or some other source of α radiation. In this way a trace of active matter was transferred to the point of the needle, which was then placed for a short time in contact with a photographic film. The grains affected by the α particles can be clearly seen radiating out in straight lines from centres representing the points at which the needle had been brought into contact with the films.

EDINBURGH.

Royal Society, February 5.—Dr. Horne, F.R.S., president, in the chair.—Prof. A. A. **Lawson**: The gametophytes of the Psilotaceæ. This paper was a continuation of previous work, filling in a number of details, especially with regard to the sexual organs. The most important fact was the establishment of the structure of the protruding neck of the Archegonium, differing from that of other Pteridophytes in being evanescent. After fertilisation it falls away, leaving the basal tier of cells, which are persistent and were at first held to represent the whole neck. Important researches in the embryology will form the subject of a later paper.—J. McLean **Thompson**: The anatomy and affinity of *Stromatopteris moniliformis*, Mett. This curiously specialised fern is from the arid commons of New Caledonia. It shows many signs of reduction, and is specialised for a xerophytic existence. The construction of the stem indicated a Gleicheniacean affinity, and the form and construction of the spore-producing members confirmed this relationship. But the special form and peculiar appendages seemed to confer an individuality on the plant which could not be overlooked, and the opinion was expressed that Stromatopteris was a distinct and monotypic genus closely allied to Gleichenia.—Prof. and Mrs. A. D. **Ross**: Preliminary note on the peculiarities of the tides round Western Australia. Among the peculiarities mentioned was the frequent occurrence of daily tides instead of half-daily; a sufficient explanation was given in terms of the moon's declination. The whole subject demanded a careful investigation, which the authors were now entering on.

February 19.—Sir E. A. Schafer, vice-president, in the chair.—Dr. J. **Horne** and Dr. B. N. **Peach**: The bone cave in the valley of the Allt nan Uamh (Burn of the Caves), near Inchnadamff, Assynt, Sutherlandshire; with notes on the bones by E. T. Newton. The bone-cave, which is situated on the north side of the valley, was evidently initiated at a certain stage in the history of the Glacial period, after the deposition of some ground moraine in the valley. It yielded a series of deposits, some of which are of exceptional interest. The oldest date back to a late stage in the glaciation of the region, and point to a partial erosion of the drift during a recession of the ice. Two of the six layers in the cave, viz. the third and fifth in descending order, have furnished the remains of a northern lynx, the Arctic lemming, the northern vole, the brown bear, reindeer, red deer, and other mammals, with the bones of a number of birds, those of ptarmigan occurring in profusion. The lynx, lemming, and northern vole give a boreal aspect to the fauna. In the south of England these mammals are regarded as Pleistocene forms. Between the third and fifth layers occurs a layer of compact grey clay, with quartzite stones, which have been transported from the high ground to the east (Breabag). This material is regarded as of morainic origin, produced during a re-advance of the local glaciers. In the upper mammaliferous deposit, which is a genuine cave earth, or *terra rossa*, there is evidence, at various levels, of human occupation in the form of layers of charcoal and split and burned bones. No artifacts were recorded. Overlying the cave earth there is a lenticular bed of shell marl, composed of the remains of land shells.—A. M. **Williams**: The adsorption of sulphur dioxide by charcoal at $-10°$ C. The aim of the research was to find out how the heat evolved on the adsorption of a vapour varied with the amount adsorbed. Measurements were taken of the amount adsorbed, the pressure, and the isothermal heat of adsorption at constant volume. The adsorption isotherm was a typical adsorption curve, similar to that found by Trouton for the adsorption of water vapour. The heat of adsorption curve passed through a minimum and a maximum and, finally, ran parallel to the adsorption axis. A tentative explanation was offered.

PARIS.

Academy of Sciences, February 12.—M. A. d'Arsonval in the chair.—G. **Lippmann**: Some decisions taken by the Governments of Great Britain and the United States. An account of the Government measures for utilising scientific methods for increasing the national security and prosperity. An account is given of the constitution of the Imperial Trust and Advisory Council, the scope of its work, and the funds at its disposal. In the United States the National Research Council, nominated by the Washington Academy of Sciences, is working on the same lines.—G. A. **Boulenger**: The nuptial tubercles simulating teeth in an African fish of the genus Barbus.—M. **Balland**: Soya as a French foodstuff. The soya bean contains 40 per cent. of nitrogenous material and 20 per cent. of fat, as against 20 per cent. of nitrogenous material and 2 per cent. of fat in French haricots. Soya has already been successfully employed as a foodstuff in France, and analyses of this and other foreign leguminous foodstuffs are given.—M. **Mesnager**: A simple solution of Mathieu's problem A.—A. **Ledoux**: New method for the determination of the refractive index of liquid substances.—MM. **Massol** and **Faucon**: Absorption of the ultra-violet radiations by some chlorine derivatives of ethane, ethylene, and acetylene. No absorption bands were given by hexachloroethane and tetrachloroethane. With tetrachloroethylene in 1 mm. layer all radiations starting with $\lambda=271$ are absorbed. Acetylene in acetone or acetone-alcohol solution shows a considerable absorption, but no bands.—J. **Bougault**: Mixed anhydrides derived from benzoylacrylic acid Some new examples of a reaction previously described, together with a discussion of the mechanism of the reaction.—V. **Commont**: The tufas of the valley of the Somme: Neolithic and prehistoric tufas, and tufa of the historic period. The tufas of the Somme valley were formed at various times in the Neolithic, protohistoric, and Gallic periods. The peat and tufa were formed simultaneously. The marine shells found are the *débris* of Gallo-Roman cooking.—M. **Russo**: Geological observations on the Tadla synclinal (western Morocco).—L. **Daniel**: The influence of grafting upon the adaptation products of the cactus. A morphological examination alone is insufficient for drawing definite conclusions as to the integral conservation of the characters peculiar to the grafted plants, since microchemical analysis of their tissues may reveal changes which, without it, would escape the notice of even a practised observer.

February 19.—M. A d'Arsonval in the chair.—The president announced the death of M. Bazin.—G. **Bigourdan**: Some observatories of the northern part of France in the seventeenth century. Details are given of work done at Blois and Caen.—M. **Fournier**: A problem in the design of the hull of a ship.—C. **Camichel**: The calculation of large extra pressures in water-mains furnished with an air reservoir.—Ch. J. **Gravier**: The association of a siliceous sponge, of a sea-anemone, and an annelid in the depths of the Atlantic.

PETROGRAD.

Imperial Academy of Sciences, Physico-Mathematical Section, November 16.—A. A. **Bělopolskij**: Researches on the spectrum of the variable γ Boötis.—V. **Chlopin**: Boron and its occurrence in Russia.—E. **Eremina**: Fluorspar in Russia.—I. **Ginsburg**: Mica, its properties, uses, and occurrence in Russia.—G. Ju. **Vereščagin**: Report on the work carried out at Lake Baikal in the summer of 1916.—N. F. **Kaščenko** and

M. P. **Akimov**: *Rhinolophus bocharicus*, n.sp.—M. D. **Zalèsskij**: A marine sapropelite of the Silurian period formed by a cyanophycean alga.

December 3.—A. A. **Bělopolskij**: Researches on the spectrum of δ Cassiopeiæ.—A. M. **Liapunov**: A formula of analysis.—P. **Krylov** and E. **Šteinberg**: Contributions to the flora of the Kansk district, province of Jenissei.—E. **Eremina**: Genesis of fluorspar in Russia.—M. A. **Rakuzin**: Absorption in petroliferous strata.—H. **Baklund**: Fall of a meteorite at Boguslavka, neighbourhood of Vladivostok.—N. V. **Nasonov**: The Turbellaria fauna of Finland.—V. I. **Bianchi**: (1) The birds of the Government of Tver. (2) Our present knowledge of the avifauna of the Government of Olonetz. (3) Geographical distribution of birds in North-West Russia-in-Europe. (4) Synoptic table for determining the Chiroptera of Russia-in-Europe. (5) The nidification of the birds of the Government of Petrograd. (6) Preliminary notes on Russian Chiroptera.—G. B. **Florovskij**: The mechanism of reflex salivary secretion.—N. S. **Kurnakov** and S. F. **Žemčužnij**: The magnesium salt lakes of the Perekop group.

HISTORICO-PHILOLOGICAL SECTION, November 29.—S. F. **Oldenburg**: Short description of a small collection of Khotan antiquities belonging to D. V. Kossikovskij.

December 7.—V. M. **Ionov**: The study of the pre-Christian faith of the Yakuts.—K. A. **Inostrancev**: A few remarks on the religion of the ancient Turks.—A. A. **Šachmatov**: Note on the language of the ancient Bulgars.—F. I. **Ščerbatskoj**: The doctrine of the categorical imperative among the Brahmans.—A. D. **Rudnev**: Cha-Ošir. Translation of a fragment of a Buriat epic.

BOOKS RECEIVED.

The Idea of God in the Light of Recent Philosophy. By Prof. A. Seth Pringle-Pattison. Pp. xvi+423. (Oxford: At the Clarendon Press.) 12*s.* 6*d.* net.

The Combination of Observations. By D. Brunt. Pp. x+219. (Cambridge: At the University Press.) 8*s.* net.

The Psychology of Sound. By Dr. H. J. Watt. Pp. vii+241. (Cambridge: At the University Press.) 10*s.* 6*d.* net.

Domestic Economy: a Text-book for Teachers and Students in Training. New edition Part i., Theory. By M. G. Bidder. Pp. vi+167. Part ii., The Practice and Teaching of Domestic Economy. By F. Baddeley. Pp. vi+189. (Cambridge: At the University Press.) 2*s.* 6*d.* net each.

The British Journal Photographic Almanac and Photographer's Daily Companion, 1917 Pp. 779. (London: H. Greenwood and Co., Ltd.) 1*s.* net.

British Museum (Natural History). Report on Cetacea Stranded on the British Coasts during 1916. By Dr S. F. Harmer. (London: British Museum (Natural History); Longmans and Co., and others.) 1*s.* 6*d.*

Year-book of the Royal Society of London, 1917. Pp. 235. (London: Harrison and Sons.) 5*s.*

The Order of Nature. By L. J. Henderson. Pp. v+234. (Cambridge, Mass.: Harvard University Press; London: H. Milford, Oxford University Press.) 6*s.* 6*d.* net.

The Banket: a Study of the Auriferous Conglomerates of the Witwatersrand and the Associated Rocks. By Prof. R. B. Young. Pp. xv+125+plates xxviii (London: Gurney and Jackson.) 8*s.* 6*d.* net.

The Calculation and Measurement of Inductance and Capacity. By W. H. Nottage. Pp. 137. (London: The Wireless Press, Ltd.) 2*s.* 6*d.*

DIARY OF SOCIETIES.

THURSDAY, MARCH 29.

ROYAL SOCIETY, at 4.30.—The Fourth Colourless Sensation in the Spectrum Sensation Curve when Measured in the Centre of the Retina: Sir William Abney.—Magnetic Inertia: G. W. Walker.—The Selective Properties of the Copper-ferrocyanide Membrane: F. Tinker.—X-Ray Analysis of the Crystal-structure of Rutile and Cassiterite: C. M. Williams.—Discontinuous Fluid Motion: Dr. J. G. Leathem.

ROYAL INSTITUTION, at 3.—Telephony: Prof. J. A. Fleming.

AERONAUTICAL INSTITUTE, at 8.—The Necessity for New and Special Treatment of Metals Employed in Aircraft Construction: J. de Kozlowski.

INSTITUTION OF NAVAL ARCHITECTS, at 11 a.m.—Further Experiments upon Wake and Thrust Deduction Problems: W. J. Luke.—Some Experiments on the Influence of Running Balance of Propellers on the Vibration of Ships: J. J. King-Salter.—Theory of Wave Motion on Water: Sir George Greenhill. At 3 p.m.—Marine Application of Reduction Gears of Floating Frame Type: J. H. Macalpine.—Launching: P. A. Hillhouse and W. H. Riddlesworth.—Buoyancy and Stability of Submarines: Prof. W. Hovgaard.

LINNEAN SOCIETY, at 5.—Prof. T. H. Morgan's Work on the Mechanism of Heredity: W. Bateson.

FRIDAY, MARCH 30.

ROYAL INSTITUTION, at 5.30.—Recent Developments of Molecular Physics: Prof. J. H. Jeans.

GEOLOGISTS' ASSOCIATION, at 7.30.—Cephalopoda, and their Value in Geological Study: W. F. Gwinnell.

SATURDAY, MARCH 31.

ROYAL INSTITUTION, at 3.—Russian Idealism: S. Graham.

MONDAY, APRIL 2.

ROYAL GEOGRAPHICAL SOCIETY, at 5.30.—Two Journeys in the High Atlas: Capt. A. J. A. Douglas.

ARISTOTELIAN SOCIETY, at 8.—Is There any Justification for the Conception of Ultimate Value? W. A. Pickard-Cambridge.

TUESDAY, APRIL 3.

RÖNTGEN SOCIETY, at 8.15.

ZOOLOGICAL SOCIETY, at 5.30.—Big-Game Shooting in India: A. Ezra.—Notes on some of the Viscera of an Okapi, *Okapia johnstoni*: R. H. Burne.

WEDNESDAY, APRIL 4.

ENTOMOLOGICAL SOCIETY, at 8.

CONTENTS.

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