

Societies and Academies.

LONDON.

Royal Society, November 20.—J. Barcroft, M. L. Anson, A. E. Mirsky, and S. Oinuma: The correlation between the spectra of various hæmoglobins and their relative affinities for oxygen and carbon monoxide. Hartridge's reversion spectroscopy was used, and it was found that if A be the position of maximum intensity of the α -oxy-hæmoglobin spectral band and B that of CO-hæmoglobin in mammalian blood, and K the equilibrium constant of the equation $\text{CO} + \text{HbO}_2 \rightleftharpoons \text{COHb} + \text{O}_2$,

$$\text{Log } K = 0.05 (A - B),$$

A and B being in angstrom units. The relation is also true of the recrystallised hæmoglobins. Log K is a measure of the change in free energy involved in the reaction. The value of (A—B), called in the paper "the span," varies from 43 to 56 angstrom units in the mammals observed. The variation in individuals in the same species is very marked, and seems to be due to specificity of the globin portion of the molecule. Brown and Hill's observations on effect of temperature on blood have been treated along similar lines.—H. R. Hæwer: On certain abnormalities occurring in the pituitary of the frog. Three types of abnormalities are described in the pituitary of the frog: (a) Proliferation of cells in the *pars nervosa*; (b) formation of non-ciliated cysts in the hypophysial region; (c) formation of ciliated cysts in the same region as in (b). Probably the non-ciliated and ciliated cysts are similar if not identical in origin. The cilia are therefore incidental, and possibly derived from the epithelium enveloping the anterior lobe.—A. Howard: The effect of grass on trees.—J. W. Pickering and F. E. Taylor: Blood coagulation, anti-coagulants, and hæmolysis. Most substances which inhibit the clotting of blood also inhibit hæmolysis. The anti-coagulants employed were potassium oxalate, sodium citrate, "peptone," leech extract, neutralised thymus, and yeast nucleic acids, novarsenobillon, cobra venom, egg-white, and sugars. A general correspondence between anti-coagulants and substances antilytic to platelets does not exist. The phenomena in protection against hæmolysis and clotting are parallel up to the stage of thrombin formation in the latter process, and experimental evidence shows that the inception of the clotting of blood, like hæmolysis, is essentially the lysis of a colloidal complex, and that both these phenomena are inhibited in a similar manner by certain protective substances. These results support the view that the inauguration of the clotting of blood arises from the disassociation of a protective colloid with the clotting complex of the plasma.—R. J. Ludford: The distribution of the cytoplasmic organs in transplantable tumour cells: with special reference to dictyokinesis.—E. Ponder: On the balloon-like structure of the mammalian erythrocyte. In the case of the human erythrocyte, the experimentally obtained figures agree in a striking manner with the figures deduced by considering the cell as a balloon-like body with a membrane for which Poisson's ratio is about the same as for most known substances. From this result it may be deduced that Rollett's view of the structure of the erythrocyte is at variance with the facts, and therefore untenable.—V. B. Wigglesworth: Uric acid in the Pieridæ: a quantitative study. The wings of the male contain 0.5 mg. and of the female 0.3 mg. of uric acid. This sexual difference is due to the greater size of the wing scales. The pupa of *Pieris brassica* contains about 2 mg. of uric acid. This total amount is not changed during development. In the resting pupa most, if

not all, of the uric acid is contained in the fat body. Shortly before emergence, some is deposited in the wings and more is transferred to the gut. There is no evidence for a new formation of uric acid during pupal life. The Pieridæ appear to differ from other families in the use to which uric acid is put, and not in the amount of this substance produced.—G. Lindsay Johnson: Contributions to the comparative anatomy of the reptilian and the amphibian eye, chiefly based on ophthalmological examination.

Linnean Society, November 6.—E. B. Poulton: Mimicry among Fijian butterflies. Of the four species of Euploea, three had, in the western islands, gained pronounced white marginal patterns in mimicry of the fourth (*helcita*), this last being probably kept constant by fresh invasions from the islands farther west. The ancestral forms of the three species, with reduced patterns, still persisted in east Fiji, and occasional intermediates were found in Taveuni, near to the eastern group, and in the isolated Kandavu. *Helcita*, the model of the other three species in the west, became itself a mimic with reduced pattern in the east, although some reciprocal approach appeared to have taken place in the others, especially the females. *Hypolimnas bolina*, an abundant Nymphaline butterfly with a constant male, had produced, among a wonderful series of female forms, one which was a mimic of the dark eastern Euploea, and another mimicking the more strongly patterned species of the west. In some islands, especially Viti Levu, many all-female families had been bred; males occur in the island, although far more rarely than females. There was no reason for supposing that these female families were produced parthenogenetically.—Mrs. W. H. Pearsall and W. H. Pearsall: Phytoplankton of the English lakes. These lakes fall into three groups according to their plankton types: (1) those with green Algæ dominant; (2) those with Dinobryon dominant; (3) those with diatoms and Myxophyceæ dominant. This classification agrees very exactly with their classification according to physical characters, water analyses, and rooted vegetation.—B. M. Griffiths: Studies in the phytoplankton of the Lowland Waters of Great Britain: the phytoplankton of Shropshire, Cheshire, and Staffordshire. The natural waters of Shropshire and Cheshire frequently show "water-bloom," due to a prodigious development of blue-green algæ. The algal flora of the district is poor in desmids. One new desmid, a remarkable twisted form, was found in Marbury Mere, and named *Closterium tortum*. In general, these Lowland waters resemble those of the European plain, and differ from the lakes of the British mountain areas.

Aristotelian Society, November 10.—Judge Dowdall: What is a society? A society is an interrelation of human action which is complementary, or a number of men regarded as standing to one another in that relation. It is based upon a community, community being defined as an abiding system of mental dispositions such that each member of the society is disposed to perform his appropriate part of the interrelated action as occasion requires. The occasion and the action which it requires are determined partly by institution, an institution being defined as a mental structure determining persons to certain types of conduct in certain types of contingency.

Royal Meteorological Society, November 19.—Sir Gilbert Walker: Note on Bjerknes's contribution of 1921 to the mechanics of the general circulation. The object of the note is to elucidate several important

theorems due to Bjerknes; these deal with the slope of surfaces of discontinuity between portions of the atmosphere under various conditions; and so throw light on the general circulation.—W. H. Dines: The correlation between pressure and temperature in the upper air, with a suggested explanation. It has been considered that this correlation is due to the fixed relationship between the pressure at the surface, the pressure at any height, and the temperature of the intervening air column. This relationship partly accounts for the high correlation in the troposphere, but fails entirely to account for that in the stratosphere; similarly with regard to the equation for adiabatic change of temperature with change of pressure. If air is forced outwards from the cyclone towards the anticyclone in the upper half of the troposphere, the observed changes of temperature indicated by the correlation coefficient will be produced. This explanation is also valid for the fall of the tropopause in cyclonic regions.

CAMBRIDGE.

Philosophical Society, October 27.—J. T. Saunders: The hydrogen ion concentration of the waters of Lake Lucerne. Observations of the P_H of Lake Lucerne during July and August 1923 showed that considerable variation occurred at different depths. The P_H of the surface (0 metres) increased from 8.4 at the beginning of July to 8.7 at the beginning of September, and a similar relative increase was found in all layers down to the bottom. The P_H of the water below 30 metres is about 0.45 less than that of the surface, and from this depth to the bottom (100-200 metres) it is the same, except that just over the bottom a slight decrease (0.02-0.05) was observed. The maximum during calm conditions is found in the layer at 5-6 metres, and this is due to the photosynthetic activity of the phytoplankton.—J. Gray: The process of cell division in the eggs of echinoderms. The form of the cleaving egg is due to the growth of the asters and the force exerted by the surface layer of the cell.—V. Nath: Oogenesis of *Lithobius*. The formation of vitelline yolk in the oocytes is preceded by nucleolar extrusions, and the two processes are associated with each other. The fatty yolk is formed from the Golgi rods. Mitochondria are also present.—H. Singh Pruthi: Studies on insect metamorphosis.—I. Prothetely in mealworms (*Tenebrio molitor*) and other insects. Effects of different temperatures.—H. Munro Fox: Chlorocruorin.—C. G. F. James: Characteristics of complexes of conics in space of four dimensions.—T. M. Cherry: On integrals developable about a singular point of a Hamiltonian system of differential equations.—R. A. R. Tricker: A helical method of focussing β -rays.—D. R. Hartree: Some methods of estimating the successive ionisation potentials of any element.—Sir Joseph Larmor: Why wireless electric waves can bend round the earth (*v. NATURE*, November 1, p. 650).

MANCHESTER.

Literary and Philosophical Society, November 18.—G. Andrew: Note on the occurrence of *Pachytheca* in the Buildwas Beds. A single specimen of *Pachytheca* extracted from the Buildwas Beds is, so far as is known, the first specimen from this horizon. The specimen is a black carbonised sphere, diameter about 3 mm., and the surface originally was unbroken, but with a few irregular cracks. Subsequently the outer layer became fractured, displaying the characteristic structure of the organism: a central region, or medulla, surrounded by a cortex about 0.3 mm. thick. The cortex is composed of radiating tubes

of about 8 μ diameter. Since the algal filaments are not shown, and since the specimen is single, it is referred to as *Pachytheca* sp. The Buildwas specimen, associated as it is with a shelly fauna which has not yet been studied in detail from the zonal point of view, cannot be dated accurately. The associated fossils indicate a wholly and definitely marine sediment.—C. L. Barnes: The Ben Nevis Observatory. The proposal to erect an observatory on Ben Nevis was first made in 1877 by Mr. Milne Holme, president of the Scottish Meteorological Society, and plans were drawn up, but no progress was made until 1881. In June of that year the late Mr. Clement Wragge began a series of daily ascents, which were continued by himself or an assistant until October. An observatory was opened in 1883; and put in charge of two salaried observers, whose duties were to read all the instruments, with certain exceptions, every hour of the day and night, and to make notes of phenomena such as fogs, haloes, rain-bows, coronas, etc. A companion observatory was established at Fort William in 1890, as it was thought that simultaneous observations at the two stations would yield valuable results. In 1896 a smaller station was added, half-way up the mountain. The cost of maintaining the three was about 1000*l.* a year, towards which the Meteorological Office contributed 350*l.*, the remainder being subscribed by various societies and by private individuals. Eventually it was decided that the results were not commensurate with the cost, and on October 1, 1904, the observatory was closed down after twenty-one years of continuous work. The records and the log are accessible in the Transactions of the Royal Society of Edinburgh, vols. 36 and 42-44.

PARIS.

Academy of Sciences, November 3.—M. Guillaume Bigourdan in the chair.—L. Lecornu: The deformation of a spherical envelope.—E. L. Bouvier: The nification and the metamorphoses of some saturnian hemileucids.—S. Winogradsky: The study of anaerobiosis in arable soil. An account of results of experiments with natural soil to which one per cent. of mannite or glucose was added. As test organisms, *Azobacter* was chosen as typically aerobic and *Amylobacter* as anaerobic. The moisture content was allowed to vary, loss of moisture giving increased access of air, and the proportions of the test organisms at various levels determined.—Maurice Lugeon and Nicolas Oulianoff: The geology of the neighbourhood of Camarasa (Catalonia).—Arnaud Denjoy: Series of rational fractions.—A. Jygmund: A generalisation of the method of Cesàro.—R. de Montessus de Ballore: The evaluation of $\log n$.—Alexandre Kovanko: Series of functions with one complex variable.—E. Merlin: A geometrical property of curved surfaces.—Bertrand Gambier: The polygons of Poncelet generalised.—D. Riabouchinsky: Some general properties of plane movements of a liquid.—F. Baldet and E. M. Antoniadi: Observations of cloud-capped protuberances which recently appeared on Mars. The positions and movements of these protuberances, observed between October 10 and 13, are shown in seven drawings.—A. Brun: The discovery of a new variable star, with a period probably very short. This star, +80°5030 in the Greenwich catalogue, varies in magnitude between 12.6 and 13.3 in a period of less than two hours.—T. Peczalski and A. Launert: The velocity of cementation of copper as a function of the temperature.—Miles. Marya Kahanowicz and Ada Estrafalaces: The selective absorption of coloured glasses and the radiometric method for the determination of their reflective

power.—J. Cojan : Modification of the method of zones (Ritchey) for the determination of the aberration of optical systems. Its extension to aberrations outside the axis. A series of photographs at different determined positions is taken, and the densities measured by the microphotometer. The accuracy (0.01 mm.) is greater than that obtainable by eye observations.—F. Guéry : The magnetic field of the electron in movement. The conclusion is drawn that the magnetic field of the electron is only a mathematical expression without physical reality.—H. Pied : The precipitation of tantalum and niobium by cupferron and their separation from iron. After removal of iron as the sulphide in a solution containing oxalic and tartaric acids, tantalum and niobium can be completely separated by cupferron. Titanium, if present, is also precipitated.—Mme. P. Ramart and Mlle. Amagat : Molecular transpositions. The preparation and dehydration of some *a-a*-diarylethanols and alkyl-diarylethanols.—Léon Piaux : The action of catalysts on the oxidation of uric acid : copper and cuprous urate. Both copper powder and cuprous urate serve as active catalysts in the oxidation of uric acid in alkaline solution by oxygen. Potassium oxonate and allantoin are produced.—E. Kohn-Abrest : The examination of blood for gaseous poisons. An apparatus is described and illustrated capable of detecting and estimating alcohol, sulphuretted hydrogen, hydrocyanic acid, carbon dioxide and carbon monoxide in 50 c.c. of blood.—Marcel Solignac : The eruptive rocks of the archipelago of Galite.—E. Henrijean and W. Kopaczewski : Colloids and mineral waters. A study of a ferruginous mineral water has proved the presence of a colloid in this water. From its chemical composition, this colloid can be only an electropositive hydrosol of iron.—d'Arsonval and —Bordas : Remarks on the preceding note.—E. Rothé and Mme. A. Hée : The earthquakes observed in France during the year 1923. Fifteen earthquakes were felt in France during the year, the most important being in the Pyrenees region.—Ch. Brioux : The influence of urea, used as manure, on the reaction of the soil. Experiments with soil showed that urea, utilised as manure, behaves at first as an alkali on account of its rapid conversion into ammonium carbonate. As the latter is nitrified, it acts as an acid like other ammoniacal manures.—Jules Amar : Course of the vital coagulation.—Gabriel Bidou : An artificial hand or apparatus for replacing a hand after amputation.—E. Lagrange : A reaction of the testicular hormone.—L. M. Betances : New details on cytohaematogenesis.—Alphonse Labbé : An experimental phylogenetic race. An account of variations in some copepods produced by varying the P_{H_2} of sea water.—E. Gley and J. Cheymol : The presence of iodine in venous blood from the thyroid. It was found that the thyroid gland of the goat yielded sufficient venous blood to permit of the determination of the iodine. The blood in the general circulation also contained iodine. Whilst the proportion of iodine in the blood issuing from each lobe of the gland generally increases with the proportion of iodine in the gland itself, the two are not proportional, and there are probably other controlling factors.—H. Lagatu and L. Maume : The study, by the periodical analysis of the leaves, of the influence of manures containing lime, magnesia, and potash on the vine.—Louis Lapicque : The formula of electrical stimulation as a function of the time.—G. Sanarelli : The so-called "intestinal" anthrax. The enteric secretions of the dog, rabbit, and guinea-pig, although without action on the development of several species of organisms (*Proteus*, *Staphylococcus*, *B. mesentericus*), completely prevent the development of anthrax spores.

These results throw some doubt on the views commonly held on "intestinal anthrax."—C. Levaditi, S. Nicolau, Mlles. J. Salgue and R. Schoen : The mechanism of the action of bismuth in syphilis. The destruction of the treponema *in situ* is the effect of quantities of bismuth too small to detect by chemical methods.

Official Publications Received.

- United States Department of Agriculture. Department Bulletin No. 1238 : The Canker-worms. By B. A. Porter and C. H. Alden. Pp. 38+3 plates. 10 cents. Department Bulletin No. 1243 : Studies of the Mexican Bean Beetle in the Southeast. By Neale F. Howard and L. L. English. Pp. 51+12 plates. 20 cents. (Washington : Government Printing Office.)
- University of Illinois Engineering Experiment Station. Bulletin No. 143 : Tests on the Hydraulics and Pneumatics of House Plumbing. By Prof. Harold E. Babbitt. Pp. 80. (Urbana, Ill.) 40 cents.
- The National Institute of Agricultural Botany. Fifth Report and Accounts, 1923-1924. Pp. 19. (Cambridge.)
- Meddelelser fra Kommissionen for Havundersøgelser. Serie Fiskeri, Bind 7, Nr. 5 : On the Summer- and Autumn-Spawning Herrings of the North Sea. By Dr. A. C. Johansen. Pp. 119. 8 kr. Serie Fiskeri, Bind 7, Nr. 6 : Fish Eggs and Larvæ collected in the Belt Sea in March 1922. By P. L. Kramp. Pp. 19. n.p. (København : C. A. Reitzel.)
- County Borough of Huddersfield. The Tolson Memorial Museum Publications. Handbook 3 : Early Man in the District of Huddersfield. By James A. Petch. With an Appendix on the Nature and Making of Graving Tools, by Francis Buckley. Pp. 95. (Huddersfield.) 1s.
- Commonwealth of Australia. Institute of Science and Industry. Bulletin No. 27 : Australian Clays in the Manufacture of White Pottery Wares. By R. C. Callister. Pp. 87. (Melbourne : H. J. Green.) Gratis.
- Meddelanden från Statens Meteorologisk-Hydrografiska Anstalt. Band 1. No. 5 : Översikt över Sveriges vattankraft. Av Sven Notlindh. Pp. viii+40+3 maps. (Stockholm.) 5.50 kr.
- State of Connecticut. Public Document No. 34 : Biennial Reports of the Storrs Agricultural Experiment Station, Storrs, Connecticut, including the 32nd Annual Report for the Nine Months ending June 20, 1920, 33rd Annual Report for the Year ending June 30, 1921, 34th Annual Report for the Year ending June 30, 1922, 35th Annual Report for the Year ending June 30, 1923. Pp. xiii+323. (Storrs, Conn.)
- Smithsonian Institution : United States National Museum. Contributions from the United States National Herbarium. Vol. 20, Part 13 : Revision of the American Species of *Rinorea*; New Plants from Venezuela; *Hemibaccharis*, a new Genus of *Baccharidinae*. By S. F. Blake. Pp. x+491-554+plates 31-51. (Washington : Government Printing Office.) 20 cents.
- Field Museum of Natural History. Zoological Series, Vol. 10, No. 16 : Contents and Index to Volume 10, Numbers 1 to 15. (Publication 214.) Pp. ix+375-385. Zoological Series, Vol. 15 : The Marine Fishes of Panama. Part 1. By Seth E. Meek and Samuel F. Hildebrand. (Publication 215.) Pp. xi+330+24 plates. Anthropological Series, Vol. 16 : Japanese Sword-Mounts in the Collections of the Field Museum. By Helen C. Gunsaulus. (Publication 216.) Pp. 135+61 plates. Report Series, Vol. 6, No. 3 : Annual Report of the Director to the Board of Trustees for the Year 1923. (Publication 217.) Pp. 167-264+plates 30-46. Zoological Series, Vol. 12, No. 4 : New Birds from Central Peru. By John T. Zimmer. (Publication 218.) Pp. 49-67. Zoological Series, Vol. 12, No. 5 : New Birds from Chile. By C. E. Hellmayr. (Publication 219.) Pp. 69-75. Zoological Series, Vol. 12, No. 6 : Notes on Central American Crocodiles. By Karl P. Schmidt. (Publication 220.) Pp. 77-92+plates 5-9. Zoological Series, Vol. 12, No. 7 : New Salamanders of the Genus *Oedipus*, with a Synoptical Key. By E. R. Dunn. (Publication 221.) Pp. 93-100. (Chicago.)
- Department of the Interior : United States Geological Survey. Bulletin 758 : Bibliography of North American Geology for 1921-1922. By John M. Nickles. Pp. ii+273. 25 cents. Water-Supply Paper 516 : Surface Water Supply of Hawaii, July 1, 1919, to June 30, 1920. Pp. v+159. 20 cents. Water-Supply Paper 518 : Ground Water in Musselshell and Golden Valley Counties, Montana. By A. J. Ellis and O. E. Meinzer. Pp. vi+92+5 plates. 20 cents. Water-Supply Paper 520-C : Power Resources of Snake River Basin between Huntington, Oregon, and Lewiston, Idaho. By William Glenn Hoyt. Pp. ii+27-51. n.p. Water-Supply Paper 535 : Surface Water Supply of Hawaii, July 1, 1920, to June 30, 1921. Pp. iv+151. 15 cents. Professional Paper 127 : The Composition of the Earth's Crust. By Frank Wigglesworth Clarke and Henry Stephens Washington. Pp. v+117. 20 cents. (Washington : Government Printing Office.)
- Department of the Interior : United States Geological Survey. Mineral Resources of the United States in 1923 (Preliminary Summary). Introduction by Frank J. Katz; Statistics assembled by Martha B. Clark. Pp. iv+130A. (Washington : Government Printing Office.) n.p.

Diary of Societies.

SATURDAY, NOVEMBER 29.

- ROYAL IRISH ACADEMY, at 4.15.
- NORTH-EAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS (Graduate Section, jointly with the Mining Institute) (at Bolbec Hall, Newcastle-on-Tyne), at 7.
- HULL ASSOCIATION OF ENGINEERS (at Hull Municipal Technical College), at 7.15.—W. J. Bowtell : Lifting Machinery for Docks.
- SOCIETY OF DYERS AND COLOURISTS (West Riding Section).—Dr. F. M. Rowe and V. Tarbett : The Dyeing Properties of some Azo Derivatives of Tetra Hydro Naphthalene.