

of the famous Dinotherium skull at Eppelsheim by Klipstein and Loup induced Klipstein to contribute a more careful stratigraphical account of the strata in the Mainz basin, and he paralleled the bone-bearing sands of Eppelsheim with the gypsum of Montmartre, and the limestone strata under the bone-bearing sands with the coarse limestone beds of Paris."

Yarrell's History of British Fishes

AMONG the books on natural history published in 1836 was the "History of Fishes" by William Yarrell (1784-1856), an original member of the Zoological Society and at one time treasurer to the Linnæan Society. In a review of his work in the *Athenæum* of September 10, 1836, it was said the book was "intended to form a continuation of Bewick, whose beautiful woodcuts, occasional vignettes and *naïve* descriptions will ever be ranked among our standard works . . . and we can safely say, to all those who possess Bewick's works, that their collection is not complete without adding Mr. Yarrell's fishes to the birds and beasts.

"The description of species are 226 in number, but as several of them are figured in various stages of growth, the representations amount to 240—all made under the superintendence of the author; besides which there are more than 140 vignettes of modes of fishing, boats, nets, etc., foreign and English."

Societies and Academies

Paris

Academy of Sciences, July 15 (*C.R.*, 203, 137-216).

GABRIEL BERTRAND and LOUIS DE SAINT-RAT: A new colour reaction of copper with urobilin. This reaction is more sensitive and more specific than other reactions in use for the detection of traces of copper. 0.0001 mgm. of copper in 1 ml. of solution can be detected with certainty.

GABRIEL BERTRAND: Pentacetylxlite. Details of the preparation and purification of the acetate.

ROBERT LESPIEAU: The synthesis of *r*-arabite.

SERGE BERNSTEIN: Some extremal properties of successive integrals (correction).

CHARLES PISOT: Certain characteristic properties of algebraic numbers.

FRID BOULAD BEY: The canonical forms of equations of nomographic order 6 and 5 representable by nomograms with symmetrical scales.

CHRISTIAN PAUC: Directions, contingent and paratangent in *distanciés* spaces.

V. A. KOSTITZIN: The differential equations of the problem of Mendelian selection.

GINO ARRIGHI: The expression of the energy of acceleration.

JEAN JACQUES TRILLAT and Mlle. RENÉE VAILLÉ: The unctuousity of mineral lubricating oils.

MME. H. EMMANUEL-ZAVIZZIANO and M. HAÏSINSKY: The electrolysis of solutions of titanium salts. By varying the conditions of the electrolysis, compounds of Ti^{II}, Ti^{III}, Ti^{IV} and of pertitanic acid can be prepared.

MICHEL KANTZER: The optical absorption of the vapours of tellurium dichloride and oxychloride.

PIERRE LAMBERT and JEAN LECOMTE: Description of a recording spectrometer with a grating and its use for the determination of the absorption spectra of benzene derivatives in the 3000 cm.⁻¹ region.

AUGUSTIN BOUTARIC and JEAN BOUCHARD: Study of the fluorescent power of some fluorescent solutions excited by ultra-violet rays.

Mlle. YVETTE CAUCHOIS: Study of the *L* spectra of emission and absorption of rhenium (75) I.

MARCEL LECOIN: The form of the continuous β -spectrum of radium E. The method was based on the use of a Wilson chamber placed in a magnetic field. The results are given as a curve, and differ considerably from the values found by the method of coincidences.

CHARLES HAENNY: The secondary radiation emitted under the action of neutrons.

MAURICE E. NAHMIA and ROBERT J. WALLEN: Some short periods in artificial radioactivity.

HENRI MURAOUR and GABRIEL AUNIS: The laws of combustion of colloidal [explosive] powders.

Mlle. NIUTA KLEIN: The transformation in glass.

Mlle. VALERIE DEUTSCH: The absorption of proteins. Crystallized hæmoglobin from the horse.

EDOUARD RENCKER and PIERRE DUBOIS: The hydrates of manganous sulphate. The only definite hydrates are those containing 7, 5, 4, 3 and 1 molecules of water.

ALFRED MAILLARD: The system monomethylamine-calcium chloride.

MAXENCE MEYER: A new method of preparation of the diethoxysuccinic esters.

LÉON ENDERLIN: Contribution to the study of the reversible oxidizability of organic compounds. Iso-oxybis-*p*-bromphenyldiphenylnaphthacene.

LÉON DENIVELLE: The sulphate of *o*-phenylene or sulphurylpyrocatechol.

CHARLES COURTOT and MOHAMMED GHOLI BASTANI: Introduction to the study of the chemistry of diphenylene telluride.

Mlle. BERTHE DELAPORTE: Cytological researches on the group Coccacæ.

WILLIAM HENRI SCHOPFER: Researches on the nitrogen metabolism of a micro-organism.

CHARLES CHABROLIN: The germination of the seeds of the orobanche bean (*Orobanche speciosa*). The substance which induces the germination of the seeds of the orobanche bean diffuses round the roots of certain plants and can be washed out with water.

PAUL BERTRAND: The embryos of angiosperms, ferns and lycopods.

FRANCIS RATHERY, ANDRÉ CHOAY and PIERRE DE TRAVERSE: The comparative action of insulin and of the hypoglycæmic principle of the jejunum in the depancreated dog.

RAYMOND-HAMET: A new method of showing sympatheticolytic power.

GUSTAVE GUITTONNEAU and RENÉ CHEVALIER: The utilization of salicylic acid as an energy producing food by *Azobacter* in the soil.

ANTHELME ROCHAIX and PIERRE RIVOLLIÉ: A dissociation of the staphylococcus.

Washington, D.C.

National Academy of Sciences (*Proc.*, 22, 327-434, June 15).*

DAVID I. MACET and RAYMOND E. GARDNER: Phytopharmacological reactions of normal, toxic and atoxic sera. The phytotoxic index is defined as the ratio of the rate of growth in the dark for 24 hours at 12° C. of roots of seedlings of *Lupinus albus* immersed in a solution to be examined to the rate

* Continued from p. 378.

of growth of controls in a nutrient solution under the same conditions. Normal human blood and blood sera from a number of animals gave an index averaging 75 per cent. Reptilian blood was very toxic, as was also that of sera from cases of pernicious anaemia, pemphigus and leprosy. Virus diseases gave sera less toxic for plant growth than normal blood sera.

ALBERT W. HULL: Changing direct current to alternating current by means of thyratrons. Constant voltage 3-phase a.c. was changed to constant current by a 'monocyclic network' of capacitors and reactors. This current was converted by a conventional circuit of radio type into a constant direct current. The direct current is changed back into alternating current by an exactly similar circuit, with thyratrons in place of rectifiers. Special tubes were developed for the purpose, and in a circuit described, 15,000 volts at 200 amp. peak is rectified to 200 amp. at 30,000 volts d.c., and the latter 'inverted' to alternating current.

FRANCIS G. BENEDICT and JOHN M. BRUHN: Chimpanzee metabolism. Twenty-two animals ranging in age from two months to fifteen years were used. Respiratory exchange was measured with an open-circuit respiration chamber, the out-coming air being sampled. The average heat production of a chimpanzee per $10 \times w^{2/3}$ (where w is weight), ranges around 1,000 calories. Unlike man, it is not unusually high in infant and pre-adolescent years.

C. P. HASKINS and E. V. ENZMANN: A determination of the magnitude of cell "sensitive volume" associated with the white-eye mutation in X-rayed *Drosophila* (2)

C. P. WINSOR and ANNA-BETTY CLARK: Dark adaptation after varying degrees of light adaptation. The shape of human dark adaptation curves changes with the degree of initial light adaptation. The results are consistent with Wald's view that three substances are involved in the visual purple cycle.

FRANCIS G. BENEDICT and ROBERT C. LEE: Studies on the body temperatures of elephants. The temperature of urine taken immediately it was voided averaged 35.9°C .; that of the feces was 0.7°C . higher, due to fermentation. The elephant thus has the lowest body temperature of any of the large animals (man 37°C ., birds 42°C .).

MORGAN UPTON: Differential sensitivity in sound localization. When the two ears are stimulated by equal energies at 800 cycles, the apparent sound is localized in the median plane of the head. The ratio of energy increment required to produce a noticeable shift of localization to original energy is large for low levels of energy, small for intermediate levels and increases again for very high levels. The results cannot be described in terms of the Weber-Fechner law.

W. J. CROZIER: On the sensory discrimination of intensities. The increment of light intensity which is just detectable is variable and should be treated statistically. The relation of sensory intensity (effect) to stimulating intensity should be discussed as a 'band' which measures the probability of occurrence of the index response.

MORGAN UPTON and W. J. CROZIER: On auditory intensity discrimination. A theoretical discussion of Upton's results (above). The energy increment involved can only be regarded as related to the mechanism of excitation so long as its statistical character is recognized.

J. VAN OVERBEEK: Light growth response and auxin curvatures of *Avena*.

JAMES BONNER: Plant tissue cultures from a hormone point of view. Parenchyma tissue from the lining of the 'cups' left when immature seeds are removed from bean pods has shown cell elongation and cell division *in vitro* in a culture medium to which an alcohol extract of fresh beans was added. The cell mass continued to grow as parenchyma, and a limited number of sub-cultures could be made, but from the central tissue only. Some chemical properties are given of the factor which seems to make growth possible.

CARL IVER HOVLAND: 'Inhibition of reinforcement' and phenomena of experimental extinction.

KENNETH W. COOPER: Demonstration of a hatching secretion in *Rana pipiens* Schreber. The jellies and vitelline membranes of early tail-bud larvæ were removed, and the freed embryos were kept in water until normal embryos of similar age had hatched. The contents of dishes containing free embryos were filtered and the filtrate centrifuged and decanted. This liquid was able to remove the jellies from fertilized eggs, etc., the vitelline membrane swelling away from the egg or rupturing, at stages when manipulative removal is very difficult.

Vienna

Academy of Sciences, June 12.

JOVAN JURISIĆ: Morphology and biology of *Bryophyllum Daigremontianum* (Hamet and Perrier de la Bathie).

HEINZ HOBNINGER: Geometrical theory of reflection at curved surfaces.

WALTHER RUZICZKA: Accumulation of iodine by coumarin derivatives.

LEOPOLD SCHMID and HUGO KÖRPERTH: (1) The colouring matter of the poppy. (2) Extracts of petals.

F. WESSELY, A. MÜNSTER, and K. SCHÖNOL: The bitter principle of Columbo wood. (4). Hydration of columbin and isocolumbin.

RICHARD SCHUMANN: The moon, sun and variation of latitude (2).

OTTO REDLICH, TRUDE KURZ and WALTER STRICKS: Raman spectra and constitution of hexabromostannic ion and hypophosphite ion. The occurrence of five fundamental frequencies in its Raman spectrum shows that the hexabromostannic ion has D_{3h} symmetry.

O. FRIEDRICH: Geology of the gravel bed of the Gross-Arl valley.

ELFRIEDE EYSANK: Coloration of fluorite and rock salt. Fluorite has an absorption band between 575 and 650 $m\mu$ and another between 380 and 405 $m\mu$. The properties of these two bands are studied.

IRMBERTA LEITNER: Quantum yield in the coloration of rock salt by X-, γ -, and β -rays. X-rays produce 10^4 - 10^5 and β - or γ -rays 10^2 - 10^3 colour centres per quantum. High energy quanta probably act through the secondary radiation they produce.

E. GUTH and S. ROGOWIN: Mechanical properties of threads and films of cellulose derivatives.

KARL SCHWARZ and FRANZ EBSTER: The possibility of producing multiply ionized atoms of very high energy.

O. BRUNNER and W. KLEINAU: Visual purple (2). Mechanism of the bleaching process.

FRIEDRICH HARTMANN: The most general case of breaking of rods of structural steel.