

Societies and Academies.

EDINBURGH.

Royal Society, July 6.—G. Leslie Purser: *Calamoichthys calabaricus* Smith. Pt. i. The alimentary and respiratory systems. *Calamoichthys* is the less known of the two genera of the Polypterini. The histology of the alimentary tract is not so complex as the anatomy would lead one to expect, as the intestinal epithelium is practically the same throughout its length; and as a whole the digestive tract is of a simple piscine type. Gills are well developed, but in addition there is, opening into the pharynx by a median ventral glottis, a pair of lungs, the minute structure and the vascular connexions of which show how well the pulmonary respiratory mechanism is developed.—W. W. Taylor: The precipitation of sols by polyvalent ions. With the alkali salts of methanetrissulphonic acid and naphthalenetrissulphonic acid, which are neutral, there is only one zone of precipitation of ferric hydroxide sol, which commences abruptly at about 0.002 *N* and extends up to the saturated solution. It is not followed by a zone of no-precipitation. The range investigated was from 7×10^{-8} *N* to nearly 1.5 *N*. They thus fall in line with the neutral chloride and sulphate solutions. The two zones of precipitation, separated by a zone of no-precipitation ("reversal") obtained with sodium phosphate, which contains OH' and no trivalent anion, is ascribed to the OH'. If this be the case, the analogous behaviour of negative sols with ferric and aluminium salts will be due to their hydrolysis. Whether the presence of a polyvalent ion is also necessary is not certain. With the neutral anions, more or less periodic variations in the rate of precipitation were observed; these are not due to errors in procedure. The valency rule does not hold in the case of the above trivalent anions.—E. Neaverson: Ammonites from the Upper Kimmeridge Clay. The Upper Kimmeridge Clay includes a variable series of clays and sands lying between the Gravesia zones of the Lower Kimmeridgian and the base of the Portland Stone Series. The zonal sequence is here tabulated with equivalent stratigraphical terms:

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|-----------------------|------------------------------|
| 5. pallasoides zone | } Hartwell Clay. |
| 4. rotundum zone | |
| 3. pectinatus zone | |
| 2. nodiferous zone | } Kimmeridge Clay (in part). |
| 1. Wheatleyensis zone | |

The ammonites have hitherto been grouped under the name *Ammonites bplex* which, as Lamplugh pointed out thirty years ago, is useless for stratigraphical purposes. Though the forms found in the Hartwell Clay are familiar (but undescribed), those in the lower two zones are practically unknown in literature, and none has previously been described or figured. Some of these ammonites have been recognised in the Upper Kimmeridge Clay (*sensu anglico*) of Boulogne, but their identity with Russian forms (suggested by Pavlov and others) is not accepted. Indeed, palaeogeographical considerations seem to indicate that the British and Russian areas were not in direct communication during the period when these ammonites flourished.—Prof. A. A. Lawson: A contribution to the life-history of *Bowenia*.—J. E. Nichols: Meteorological factors affecting fertility in sheep. The association of climatic conditions at times of service and lambing in a Cheviot and a Blackface flock, kept under the same conditions of pasturage, altitude and management for fourteen years, and data of fertility are examined. Significant evidence of differential responses of the two breeds are presented, and of the meteorological factors considered, the mean tempera-

ture at time of service is shown to exert the greatest influence.

PARIS.

Academy of Sciences, July 15.—G. Bigourdan: The mean errors of the various modes of observation of the time signals. Over their longest paths, the perturbations of Hertzian waves have no influence on the time of transmission exceeding 0.01 sec. The error due to the mode of reception of the waves is of the same order of magnitude.—René Lagrange: The uniform deformation of a beam and the equation $\frac{\partial^4 F}{\partial x^4} + 2\frac{\partial^4 F}{\partial x^2 \partial y^2} + \frac{\partial^4 F}{\partial y^4} = 0$.—Eydoux: The graphical determination of the meridian lines of turbine blades.—P. Choux: The Cupanieae of Madagascar.—A. Tronchet: Vascular acceleration in schizocotyly.—Alexandre Lipschutz: Unilateral phenomena resulting from castration.—Henri Pottevin and Robert Faillie: Work during walking.

CAPE TOWN.

Royal Society of South Africa, June 17.—A. W. Roberts: A statistical inquiry into the population problem in South Africa. The rate of increase of the white population in the Cape Colony is subject to a cyclical variation completed in 170 years. The rate of increase has been decreasing during the past twenty years. In Natal, exact statistics go back to 1860, and again there is evidence of cyclical variation. The rate of increase has been steadily decreasing during the past ten or fifteen years. This condition is also found in the Orange Free State and the Transvaal. Early enumerations of the native population are not available. Those taken in recent years indicate a declining rate in every instance but one, Zululand. The rate is increasing here, but very slowly.—W. J. Copenhagen: A note on Azotobacter in some South African soils. Soils from a number of localities in the Cape Province were examined and records made of the hydrogen-ion concentration, moisture, amount of organic matter, nitrogen per gram, characters of cultures, and nitrogen fixed per culture.—J. Moir: Colour and chemical constitution, Pt. xx.: Some residual problems.

ROME.

Royal Academy of the Lincei, June 5.—P. Burgatti: Conditions of validity of Lagrange's equations.—U. Cisotti: Fundamental equations of potential laminary motions on any surface.—G. Armellini: A theorem on the problem of two bodies of increasing masses.—N. Parravano and G. Malquori: Reactivity of silver with oxygen.—C. F. Parona: New observations on the chalks with *Heterodicerias Luci* of the Parenzo coast in Istria.—Gaetano Rovereto: New observations on the crystalline mass of Savona.—E. Carano: Detailed development of the female gametophyte of *Euphorbia dulcis* L.—Fil. Bottazzi and L. De Caro: Further results on the variations in the electrical resistance of muscles caused by solutions having different P_H values.—A. L. Herrera: Imitation of the smallest details of the Microsporidia by means of calcium fluosilicate.—Gianna Calzolari: Totality of analytical functions.—Mineo Chini: Determination of the geodetics of certain surfaces.—Gaetano Scorza: Complex algebraics connected with groups of infinite order.—Vasco Ronchi: A new stellar interferometer.—A. Ferrari: Crystalline lattices and isomorphism of lithium and magnesium fluorides. The structure of magnesium fluoride is of the rutile type, and the volumes of the elementary cells, containing four

molecules in the case of lithium fluoride and two in that of magnesium fluoride, are practically equal.—G. Canneri and L. Fernandes: Contribution to the study of certain minerals containing thallium: thermal analysis of the systems, $Tl_2S-As_2S_3$ and Tl_2S-PbS .—G. Scagliarini: Complexes of quinquevalent molybdenum.—Ardito Desio: The geological constitution of some of the smaller islands of the Dodecanese.—C. Jucci: Races of silkworms with three or four mutations: Study of crosses.

Official Publications Received.

Journal of the College of Agriculture, Hokkaido Imperial University, Sapporo, Japan. Vol. 12, Part 3: Some Studies on a Japanese Apple Canker and its Causal Fungus, *Valsa mali*. By Kogo Togashi. Pp. 265-324+plates 27-30. Vol. 15, Part 4: On the *Platygodidae* of Formosa; Supplementary Notes on "The *Platygodidae* of Formosa," by Jozo Murayama; Notes on the Japanese *Mantispidae*, with Special Reference to the Morphological Characters. By Saturo Kuwayama. Pp. 197-267+plates 12-16. (Sapporo.)

Proceedings of the Cambridge Philosophical Society. Vol. 22, Part 5, July. Pp. 601-812. (Cambridge: At the University Press.) 10s. net.

Union of South Africa: Department of Agriculture. Science Bulletin No. 89: Streak Disease of Sugar-Cane. By H. H. Storey. Pp. 40. (Pretoria: Government Printing and Stationery Office.) 3d.

Meddelanden från Statens Skogsförsöksanstalt. Häfte 22, No. 1: Grundvattnens rörelser och försurningsprocesser belysta genom Bestämningar av Grundvattnets syrehalt i Nordsvenska Moräner: Grundvatten-bewegungen und Versumpungsprozesse, durch Sauerstoffanalysen des Grundwassers nordschwedischer Moränen erläutert. Av Olof Tamm. Pp. 44. Häfte 22, No. 2: Vaxttidsundersökningar å tall och gran: Recherches sur la marche de l'accroissement chez le pin et l'épicéa durant la période de végétation. Av Lars-Gunnar Romell. Pp. 45-124. (Stockholm.)

The Journal of the Institute of Metals. Vol. 33. Edited by G. Shaw Scott. Pp. xii+710+15 plates. (London: 36 Victoria Street.) 31s. 6d. net.

Eugenics in Relation to the New Family and the Law on Racial Integrity: including a Paper read before the American Public Health Association. Second edition. Pp. 32. (Richmond, Va.: Bureau of Vital Statistics, State Board of Health.)

University of California Publications in American Archaeology and Ethnology. Vol. 22, No. 1: Wiyot Grammar and Texts. By Gladys A. Reichard. Pp. 215. (Berkeley, Cal.) 2.75 dollars.

Aeronautical Research Committee. Reports and Memoranda, No. 963 (Ae. 179): Notes on Stalled Flying. By Squadron Leader E. M. Hill and H. L. Stevens. (A.2.b. Stability-Full Scale Experiments, 22—T. 1757.) Pp. 9+1 plate. 6d. net. Reports and Memoranda, No. 964 (Ae. 180): The Control of a Stalled Aeroplane as affected by the Use of Differential Ailerons. By H. L. Stevens. (A.2.a. Stability Calculations and Model Experiments, 58—T. 1986.) Pp. 5+2 plates. 6d. net. Reports and Memoranda, No. 965 (Ae. 181): Pitching and Yawing Moments with Sideslip on a Model Aeroplane with Zero Stagger. By F. B. Bradfield. (A.2.a. Stability Calculations and Model Experiments, 91—T. 2021.) Pp. 14+5 plates. 1s. net. Reports and Memoranda, No. 970: Report of the Airworthiness of Airships Panel. (D.1. Special Technical Questions, 115—T. 1944.) Pp. 19. 9d. net. (London: H.M. Stationery Office.)

The National Physical Laboratory. Watch and Chronometer Trials, 1923-24. Pp. 7. (London: H.M. Stationery Office.) 6d. net.

Imperial Department of Agriculture for the West Indies. Report on the Agricultural Department, Montserrat, 1922-23 and 1923-24. Pp. iv+50. (Barbados.) 6d.

Otago University Museum and Hocken Library. Annual Reports for the Year 1924. Pp. 16. (Dunedin, New Zealand.)

Society of Chemical Industry: Chemical Engineering Group. Proceedings, Vols. 5 and 6a, 1923-1924. Pp. x+130. (London: Abbey House, Victoria Street.) 10s. 6d.

Empire Cotton Growing Corporation. Report on the Cotton-Growing Industry in Uganda, Kenya and the Mwanza District of Tanganyika; with Map of the Eastern Province of Uganda. By Col. C. N. French. Appendices 1 and 2 by W. C. Jackson. Pp. 44. (London: Empire Cotton Growing Corporation.) 1s. 3d.

The Indian Forest Records. (Silviculture Series), Vol. 11, Part 7: Volume Tables for *Tectona grandis* (Teak) and *Shorea robusta* (Sal) for the Central Provinces. By V. K. Matland. Pp. 8+4 plates. 9 annas; 11d. (Entomology Series), Vol. 11, Part 8: The Economic Importance and Control of the Sal Heartwood Borer (*Hoplocerambyx sinicornis* Newm., fam. *Cerambycidae*). By C. F. C. Beeson and N. C. Chatterjee. Pp. iv+47+8 plates. 1.4 rupees; 2s. 3d. (Calcutta: Government of India Central Publication Branch.)

Forest Bulletin No. 59 (Economy Series): Summary of Results of Treated and Untreated Experimental Sleepers laid in the various Railway Systems of India, brought up to date. By J. H. Warr. Pp. 34+4 plates. 1.4 rupees; 3s. 3d. Forest Bulletin No. 61 (Botany Series): Eucalyptus in the Plains of North West India. By R. N. Parker. Pp. 84. 5 annas; 6d. (Calcutta: Government of India Central Publication Branch.)

Empire Cotton Growing Corporation. Reports received from Experiment Stations for the Seasons 1923, 1924 and 1925 (South Africa only). Pp. 48+9 plates. (London: Empire Cotton Growing Corporation.)

Department of the Interior: Bureau of Education. Bulletin, 1924, No. 39: Visual Education and the St. Louis School Museum. By Carl G. Rathman. Pp. iv+36. Bulletin, 1925, No. 2: Important State Laws relating to Education enacted in 1922 and 1923. Compiled by William R. Hood. Pp. iv+82. (Washington: Government Printing Office.) 10 cents each.

State of Connecticut. Public Document No. 24: Forty-seventh Annual Report of Connecticut Agricultural Experiment Station; being the Annual Report for the Year ended October 31, 1923. Pp. viii+534+xlviii+28 plates. (New Haven, Conn.)

Department of Commerce: Bureau of Standards. Technologic Papers of the Bureau of Standards, No. 284: A Study of the Seasonal Variation of Radio-frequency Phase Difference of Laminated Phenolic Insulating Materials. By J. L. Preston and E. L. Hall. Pp. 223-234. (Washington: Government Printing Office.) 5 cents.

Agricultural Experiment Station: Michigan Agricultural College. Special Bulletin No. 143: Winter Pruning the Black Raspberry. By Stanley Johnston. Pp. 22. Special Bulletin No. 145: Christmas Tree Plantations. By A. K. Chittenden. Pp. 9. Special Bulletin No. 146: Air-Cooled Storage for Apples. By Roy E. Marshall. Pp. 54. Special Bulletin No. 147: Cherry Leaf-Spot; Residual Effects and Control. By W. C. Dutton and H. M. Wells. Pp. 15. (East Lansing, Mich.)

Annual Report of the Board of Regents of the Smithsonian Institution showing the Operations, Expenditures and Condition of the Institution for the Year ending June 30, 1923. (Publication 2758.) Pp. xii+578+100 plates. (Washington: Government Printing Office.) 2 dollars.

The Institution of Civil Engineers. Engineering Abstracts prepared from the Current Periodical Literature of Engineering and Applied Science, published outside the United Kingdom. Supplement to the Minutes of Proceedings of the Institution. Edited by W. F. Spear. New Series, No. 23, April. Pp. 203. (London: The Institution of Civil Engineers.)

Smithsonian Miscellaneous Collections. Vol. 77, No. 5: Solar Variation and Forecasting. By C. G. Abbot. (Publication 2825.) Pp. 27. Vol. 77, No. 6: Solar Radiation and Weather, or Forecasting Weather from Observations of the Sun. By H. H. Clayton. (Publication 2826.) Pp. 64. Vol. 77, No. 7: Solar Radiation and the Weekly Weather Forecast of the Argentine Meteorological Service. By Guillermo Hoxmark. (Publication 2827.) Pp. 23. (Washington: Smithsonian Institution.)

Ministry of Public Works, Egypt: Zoological Service. Publication No. 38: Report on the Zoological Service for the Year 1923, in which is included the 25th Annual Report of the Giza Zoological Gardens. By Major S. S. Flower. Pp. iii+20. (Cairo: Government Publications Office.) 5 P.T.

Diary of Societies.

SATURDAY, AUGUST 29.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (at Southampton), at 3.—Dr. F. A. Dixey: Mimicry in relation to Geographical Distribution (Lecture for Young People).—At 8.—Prof. E. V. Appleton: The Role of the Atmosphere in Wireless Telegraphy (Citizens' Lecture).

MONDAY, AUGUST 31.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (at Southampton), at 10 A.M.—Prof. C. H. Desch: The Chemistry of Solids (Presidential Address to Section B).—Prof. A. V. Hill: The Physiological Basis of Athletic Records (Presidential Address to Section I).—Dr. J. B. Orr: The Inorganic Elements in Animal Nutrition (Presidential Address to Section M).—At 3.—W. H. Barker: The Development of Southampton in relation to World Commerce (Lecture for Young People).—At 5 (Section K).—Dr. D. H. Scott: Some Points in the Geological History of Plants (Lecture).—At 8.—Capt. P. P. Eckersley: Some Technical Problems of Broadcasting (Citizens' Lecture).

TUESDAY, SEPTEMBER 1.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (at Southampton), at 3.—Prof. W. J. Dakin: Whaling in the Southern Ocean (Lecture for Young People).—At 8.—C. J. P. Cave: The Highway of the Air (Citizens' Lecture).

INSTITUTE OF METALS (Autumn Meeting, Glasgow), at 8 P.M.—Sir John Dewrance: Education, Research, and Standardisation (Lecture).

WEDNESDAY, SEPTEMBER 2.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (at Southampton).

INSTITUTE OF METALS (Autumn Meeting, Glasgow), at 10 A.M.—A selection from the following papers:—R. J. Anderson and E. G. Fahlman: The Effect of Low-Temperature Heating on the Release of Internal Stress in Brass Tubes.—Prof. J. H. Andrew and R. Hay: Colloidal Separations in Alloys.—J. S. Brown: The Influence of the Time Factor on Tensile Tests conducted at Elevated Temperatures.—L. H. Callendar: Passivation and Scale Resistance in relation to the Corrosion of Aluminium Alloys.—R. B. Deeley: Zinc-Cadmium Alloys. A Note on their Shear Strengths as Solders.—J. W. Donaldson: Thermal Conductivities of Industrial Non-Ferrous Alloys.—Prof. O. W. Ellis: The Influence of Pouring Temperature and Mould Temperature on the Properties of a Lead-Base Anti-Friction Alloy.—Dr. Marie L. V. Gayler: On the Constitution of Zinc-Copper Alloys containing 45 to 65 per cent. of Copper.—Dr. R. H. Greaves and J. A. Jones: The Effect of Temperature on the Behaviour of Metals and Alloys in the Notched-Bar Impact Test.—Dr. D. Hanson and Dr. Marie L. V. Gayler: On the Constitution of Alloys of Aluminium, Copper, and Zinc.—Dr. J. L. Haughton and W. T. Griffiths: The β Transformations in Copper-Zinc Alloys.—Dr. H. Hyman: The Properties of some Aluminium Alloys.—D. H. Ingall: The High Temperature-Tensile Curve. (a) Effect of Rate of Heating; (b) Tensile Curves of some Brasses.—C. H. M. Jenkins: The Physical Properties of the Copper-Cadmium Alloys Rich in Cadmium.—G. B. Phillips: The Primitive Copper Industry of America.—D. Stockdale: The Alpha-Phase Boundary in the Copper-Tin System.

THURSDAY, SEPTEMBER 3.

INSTITUTE OF METALS (Autumn Meeting, Glasgow), at 10 A.M.—A selection from the papers given above.