the northern hemisphere could some time or other visit Australasia. Prof. Lawson, in the name of the University, offered the full hospitality of the botanical laboratory to visiting botanists.

The Botany School of the University of Sydney is a monument to the zeal, capacity, and artistic sense of Prof. Anstruther Lawson. The school has already a large and growing body of students and a highly creditable list of published researches.

E. C. J.

Animal Breeding Research Department, University of Edinburgh.

WE have received from the Director, Dr. F. A. E. Crew, the sixth annual report of the Animal Breeding Research Department of the University of Edinburgh. This department has recently received two large benefactions, namely, £10,000 from Lord Woolavington toward a fund for converting the directorship into a University chair, and £30,000 for general purposes from the Rockefeller Fund, so that the Department has the happy prospect of enlarging the scope of its work.

The report before us contains the list of a large number of problems of inheritance which are being attacked, but the progress made with the solution of any of them seems to be but moderate. All of them will require a long stretch of years before any considerable advance is made towards their solution, and in the case of domestic animals, the numbers with which it is possible to deal are too small to justify a successful analysis into Mendelian 'factors.'

More striking results are obtained from the investigation of endocrine reactions. We may direct attention to some extremely interesting results of extirpation of gonads in the mouse obtained by Mr. Kasur. The weight of the male remains unchanged, that of the female increases, but the kidney of the normal male is much heavier than that of the normal female, whereas the thymus and spleen of the former are considerably lighter than those of the latter. After castration the kidney of the male decreases whilst the thymus and spleen increase in weight, so that in all these respects the animal approaches the female type.

Another thought-provoking result was obtained by Mr. A. W. Greenwood acting in collaboration with the Director. He grafted into the body of a female chick four days old, after removing her ovaries, the testes of her brother. The bird assumed the plumage of the cock. This is in accordance with Zawadovsky's interesting results, in which he converted a cock into a hen and vice versa by the transposition of the gonads. But in the case under consideration the bird, after a subsequent moult, reverted to the plumage of the hen. A post-mortem examination revealed the fact that a small fragment of the functional left ovary had been left in the body by the operation, but that this remnant had degenerated. Not only, however, had the testis grafts survived and produced an abundance of testicular tissue, but ovariotomy had stimulated the vestigial right ovary to activity and it had also produced testicular tissue, so that the bird was in fact over-masculinised. Messrs. Greenwood and Crew advance the hypothesis that the ovary exercises a heavier drain on metabolism than the testis, and that the distinction between male and female secondary sexual characters is due to the degree of strain exercised on the organisation by the respective gonad in each case. If the testis is artificially increased in bulk beyond the normal, it exercises a strain equal to that of the ovary, and hence the secondary sexual characters of the female are produced.

E. W. M.

Experiments on Molecular Complexity.

PROF. H. BRERETON BAKER, for his presidential address at the annual general meeting of the Chemical Society on Mar. 24, chose as his theme "Experiments on Molecular Complexity." He had claimed that, like Sir Isaac Newton, "hypotheses non fingo," but, speaking later at the anniversary dinner, admitted that he was an inveterate maker of hypotheses, which, however, he forbore to publish.

The investigations described in the address arose out of the observation, some five years ago, that if liquids of very varying types were subjected to prolonged drying, the boiling points were raised to a very considerable extent. This rise, ascribed to an increase in the complexity of the molecules, takes place with typically unassociated liquids; hence it may be that all liquids are capable of association. Since water can also promote dissociation, it is conceivable that its absence might influence the molecular complexity in opposite directions; so far, however, dry liquids boiling at subnormal temperatures have not been obtained, although dry benzene has been separated into fractions boiling at 80° and 118° respectively. Further researches were carried out to see if catalysts other than water are effective, the experimental methods involving measurements of vapour density and surface tension.

Preliminary experiments in barometer tubes with very pure sugar charcoal gave definitely positive, although not quantitatively reproducible, results. For example, the vapour pressure of ethyl ether at 16° was raised by 25 mm., of methyl alcohol at 35° by 12 mm., and of benzene at 23° or 37° by 2 mm. Prolonged experiments with Smith and Menzies' methods still gave variable results—a circumstance which has led Prof. Baker to two somewhat important deductions. First, a catalyst evidently acts very slowly, and sometimes in a direction contrary to that shown in the final equilibrium; secondly, a pure liquid appears to have no constancy of composition, but possesses a vapour pressure which depends on the history of the specimen. It therefore became necessary to employ a method by which the vapour pressure of the liquid could be balanced against that of the liquid with the catalyst.

Such a method made use of a U-tube containing mercury, the horizontal upper ends each carrying a pair of bulbs, and being connected by a capillary tube. The liquid could thus be distilled on to a catalyst, the capillary junction closed, and the difference arising between the vapour pressure of the pure liquid and that in contact with the catalyst could be directly measured. Acetic acid, benzene, methyl alcohol, ether, and bromine were examined, the catalysts being charcoal, platinum black, or thoria. In every case the catalyst caused an increase in the vapour pressure of the liquid; such a difference was, indeed, clearly apparent in a sample tube exhibited. An even more striking exhibit was a two-limbed tube in which, three weeks previously, accurately measured equal volumes of bromine had been placed, one of the limbs also containing charcoal. After evacuation, the tube had been sealed; so much bromine had afterwards distilled from the limb containing the catalyst that the charcoal was left almost dry. A refinement of the barometer tube method showed that the difference was increased by heating and diminished by cooling; heating and afterwards cooling to 20° always caused an increase in vapour pressure, and cooling the reverse, the original value for a particular catalyst being restored only after some weeks.

For the surface tension measurements Ramsay and Shields' method was employed, the diameters of the

specially resistant capillary tubes being determined directly to one-thousandth part of a millimetre. Comparison tubes were, of course, always used. It was noteworthy that the pure liquid, for example, acetic acid, does not reach its normal value until three weeks after filling the tube, the process of boiling to remove air clearly causing dissociation. Thus, after 2 days the molecular weight was $1{\cdot}568 \times 60$, and after 3 weeks or 9 months, $2{\cdot}097 \times 60$. Heating for a short period in most cases increased the molecular complexity, whilst heating for a long period decreased it. The catalyst, which gave a molecular weight value for acetic acid (measured after 3 weeks) of $2{\cdot}525 \times 60$, did not immediately produce its maximum effect on the complexity of the molecules.

Prof. Baker considers that all liquids may be regarded as analogous to a dissociable gas such as nitrogen tetroxide, the processes of association and dissociation, however, being much slower for liquids than for gases. The effect of the presence of solid catalysts, as would be expected, is much slower for the liquid than for the gaseous condition, and it is difficult to understand how their special influence is exerted. The president acknowledged the help given to him by his assistant, Miss Margaret Carlton, who has done a considerable portion of the experimental work.

University and Educational Intelligence.

EDINBURGH.—Mr. V. Gordon Childe has been appointed by the University Court as the first occupant of the Abercromby chair of archæology. This chair was founded in 1925 in accordance with a provision for its endowment in the will of the late Lord Abercromby, the well-known archæologist and authority on the pottery of the bronze age in Britain. Mr. Childe was educated at the University of Sydney, where, after taking his M.A. degree, he was awarded a classical scholarship tenable at Oxford. He became a member of Queen's College, Oxford, in 1914, took his B.Litt. in 1916, and a first class in the honours school of *Literæ Humaniores* in 1917. After a short period spent in Australia, Mr. Childe returned to England, and since then has been engaged in archæological research and has acted as librarian of the Royal Anthropological Institute. He has published a number of papers in archæological periodicals and two books of great erudition and originality in the History of Civilisation Series—"The Dawn of European Civilisation" and "The Aryans."

LEEDS.—The Miners' Welfare Committee has offered a contribution of £10,000 towards the cost of erection of a new building for the Mining Department of the University. This shares with the Department of Coal Gas and Fuel Industries a building which was erected in 1906, but now, owing to the growth of both departments, it has become inadequate. The Department has received loyal support from the industry. Since 1899 the West Yorkshire Coal Owners' Association has made an annual grant, and has recently contributed £25,000 to the University Development Fund, while contributions from individual members of the mining industry amount to more than £2500. The support thus given by the industry may not improbably result in the Mining Department being the first part of the building scheme to be undertaken.

LONDON.—Mr. W. E. Le Gros Clark has been appointed as from Sept. 1 to the University chair of anatomy tenable at St. Bartholomew's Hospital Medical College. In 1924 Mr. Clark was awarded the Hunterian Medal for anatomical research, and was elected a member of the Board of Examiners for the Fellowship of the Royal College of Surgeons. He has published numerous contributions on the skulls of primates in the *Proceedings of the Zoological Society*, *Journal of Anatomy*, and similar publications.

Dr. Hamilton Hartridge has been appointed as from Sept. 1 to the University chair of physiology tenable at St. Bartholomew's Hospital Medical College. Dr. Hartridge has been a fellow of King's College, Cambridge, since 1912, and was awarded the Horton Smith Prize in 1918. Since 1919 he has been lecturer on organs of special sense and senior demonstrator in physiology at the Physiology Laboratories, Cambridge. He has published numerous papers in *Proceedings of the Royal Society*, 1922–25, *Philosophical Magazine*, 1923, and the *Proceedings of the Cambridge Philosophical Society*.

The following Doctorates have been conferred: D.Sc. in statistics on Mr. A. E. R. Church (University College), for a thesis entitled "On the Means and Squared Standard Deviations of small Samples from any Population"; D.Sc. in physics on Dr. R. C. Johnson, for a thesis entitled "The Structure and Origin of the Swan Band Spectrum of Carbon," and other papers.

OXFORD.—The Delegacy for Extra-Mural Studies has arranged a special course of zoology, primarily for teachers of science in secondary schools, on Aug. 2-12. The course, which is part of the annual summer meeting organised by the Delegacy, will deal mainly with recent developments in zoology. Further particulars and application forms can be obtained from the Rev. F. E. Hutchinson, Acland House, Broad Street, Oxford.

THE annual value of the Beit memorial fellowships for medical research has been increased and will take effect as from October 1 next. An election of junior fellows will take place in July next. Applications upon a prescribed form must be sent on or before June 1 to Sir James K. Fowler, Honorary Secretary, Beit Memorial Fellowships for Medical Research, 35 Clarges Street, W.1.

THE Air Council has decided to increase the number of prize cadetships in the Royal Air Force offered for competition annually from three to twelve. These cadetships enable boys to complete the two years' course at the R.A.F. Cadet College, Cranwell, at a cost of only £40 in all to their parents. Candidates are selected at an examination held by the Civil Service Commission in June and November; they must be between 17½ and 19½ years of age, and must be in possession of School Certificate A or B. Applications for the June examination must reach the Civil Service Commission on or before May 4. Further information can be obtained on application to the Secretary, Air Ministry, London. W.C.2.

THE list of "Students from other Countries in the Universities and University Colleges of Great Britain and Ireland in October 1926," issued by the Universities Bureau of the British Empire (50 Russell Square, London, W.C.1), contains more than its title suggests. It is a register of the names of students from other countries attending each institution of university rank, and may appear, therefore, to have either the virtues or vices of a public card-index according to the purpose or predilection of the person seeking the type of information afforded by a list of actual names. It is to be noted, however, that on one page the number of students from each country is set out. The following extracts from that page may not be without significance: Africa, 1054; America, 824; Asia, 1754; Europe, 643; The Pacific, 321.