by Prof. Braun, of Strassburg, who employs three vertical antennæ placed at equal distances, and sets up in these oscillations having certain assigned differences of phase. Hence, by the interference of these oscillations, the resultant radiation is made a maximum in a certain direction and zero in an opposite one.

In conclusion, some questions were dealt with concerning the varying opacity of our atmosphere to long electric waves and the effects of sunlight and radio-active matter in hindering their transmission. Although much valuable invention and discoveries in connection with this subject have rewarded the labours of workers in many lands, a glance round shows innumerable unsolved problems still remaining. Having regard to its importance for naval and maritime communication, scientific research in connection with wireless telegraphy is not merely desirable, but a positive duty, and it is to be hoped that the tendency to legislate for it by Acts of Parliament or international conferences will not impose shackles upon the freedom of investigation or of commercial work which alone can conduct us to the satisfactory solution of the difficulties and problems which yet remain.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

BIRMINGHAM.—Mr. S. S. Dawson has been appointed to the chair of accounting vacated by Prof. Dicksee.

A sum of about 10000*l.* has been given by the Birmingham Chamber of Commerce to found a scholarship in the faculty of commerce.

MANCHESTER.—During recent years, with the increasing number of students who come from other parts of the country and from abroad, the accommodation in the two halls of residence for men students has had to be extended on several occasions. The opening of the new buildings of Hulme Hall in Victoria Park on July 6, which are to displace the older buildings in Plymouth Grove, marks an important advance, and rooms are immediately available for forty students, whilst this hall will later be extended to accommodate sixty.

ST. ANDREWS.—An important addition to the equipment of the Gatty Marine Laboratory has just been made by the presentation of the late Mrs. Alfred Gatty's extensive collection of British and foreign marine algæ by her daughter, Mrs. Horatia Eden, of Rugby. Begun in 1848 at Hastings, this important collection was constantly added to during the life of the accomplished author of the "British Seaweeds." Moreover, Miss Catherine Cutley, of Exmouth, a well-known algologist, Prof. W. Harvey, Prof. Agardh, and others, largely increased its value by liberal donations. The collection is arranged, though not completely, according to Prof. Harvey's "Index Generum Algarum," and is accompanied by a valuable series of books of reference, many of them finely illustrated, by Greville, Harvey, Turner, Agardh, J. E. Gray, Frauenfeld, Mrs. Gatty, and others. The foregoing, with the collections of algæ by Mrs. McIntosh, Charles Howie, W. Knight, Dr. Drummond, &c., previously in the laboratory, will, with the rich living series in the bay, give workers in algology facilities of no ordinary kind.

THE King will open the new buildings of University College School, in Frognal, Hampstead, on Friday, July 26.

THE Right Hon. Ailwyn Fellowes will distribute the diplomas and prizes on Wednesday, July 24, at the South-Eastern Agricultural College, Wye, Kent.

DR. S. G. RAWSON has been appointed principal of the Battersea Polytechnic in succession to Mr. Sidney H. Wells, who has been principal since the foundation of the institute in 1893, and is resigning to take up the position of director-general of the Department of Agriculture and Technical Education for Egypt. Dr. Rawson is at present director of education for Worcestershire, and was formerly principal of the Technical College, Huddersfield, and lecturer at Liverpool University.

A COMMITTEE has been appointed by the Treasury to inquire and report upon the character of the work accomplished by the University of Wales and its constituent colleges, the financial position and lines of development of the colleges, and their probable requirements for staff or otherwise. The members of the committee are:—Sir T. Raleigh, K.C.S.I. (chairman); Sir John Rhys, Principal of Jesus College, Oxford; Principal D. MacAlister, Glasgow University; Mr. F. G. Ogilvie, C.B.; Prof. W. S. McCormick; and Dr. Alexander Hill, Master of Downing College, Cambridge. Mr. G. L. Barstow, of the Treasury, will act as secretary to the committee.

THE Board of Education has issued its regulations for next session in connection with the work of technical schools, schools of art, and other day and evening schools and classes for further education. A prefatory memorandum directs attention to the changes introduced; but, before enumerating these, some remarks are made on the general condition of the work of the schools concerned. The experience of towns which have provided systematic and graded courses of instruction shows that a good supply of well-considered educational facilities may be made to foster a demand for these advantages without the application of compulsion in the matter of attendance. Another interesting fact is to find it specifically stated that it is regarded as one of the functions of the Board's inspectors to advise educational authorities, where evening and other schools are not so popular as they might be, as to the changes which would probably lead to improvement and to inform them where successful schools may be found. A note has been added to the regulations with the object of making clear to local authorities that the classification of subjects and courses is in no sense a restriction upon the free adjustment of the subject-matter and methods of instruction in any class to the particular circumstances of the students. The necessity for keeping rural interests well in view throughout all educational work in country districts is now fully recognised, and the continuing need for Saturday and holiday courses for teachers who desire to improve their qualifications for duty in such areas is again pointed out.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, May 2.—"The Spontaneous Crystallisation of Binary Mixtures. Experiments on Salol and Betol." By Prof. H. A. **Miers**, F.R.S., and Miss F. **Isaac**.

The authors have inferred from their experiments upon certain salts that a cooling supersaturated solution can at first only be made to crystallise by inoculation with a crystal of the solute, until a perfectly definite temperature is attained at which a mechanical stimulus, *e.g.* shaking or friction, will suffice to produce crystallisation. The temperature of this "spontaneous crystallisation" depends upon the strength of the solution as determined by a curve which they name the "supersolubility curve." They have now traced the complete freezing-point curve, and also the supersolubility curves for mixtures in all proportions of salol and betol, choosing these substances merely because they melt at convenient temperatures and do not form compounds or isomorphous mixtures. Salol melts at 42½°, betol at 92°. The eutectic contains 78 per cent. salol, and freezes at 32½° by inoculation only.

Salol freezes spontaneously at 33°, betol at 79°; the supersolubility curves of their mixtures meet in the "hypertectic" mixture, containing 74 per cent. salol, for which the two substances freeze together spontaneously at 15°.

The freezing-point curve was determined by immersing a minute crystal in the cooling liquid and noting the temperature at which it just ceased to dissolve and began to grow.

The temperatures of spontaneous crystallisation were determined (1) by the crystallisation of the liquid on shaking or scratching when enclosed in a sealed tube, and also (2) by the dense shower of crystals which appears at the same temperature when the liquid is stirred in an open vessel.

The actual change of constitution of the liquid in the crystallising mixture was traced by means of the refractive index.

These experiments show that a binary mixture has, in general, four freezing points. For example, the mixture containing 90 per cent. salol may yield crystals of salol by inoculation at 38°, and by stirring at 28°; crystals of betol by inoculation at 17½°, and by stirring at 10½°.

The actual temperatures of crystallisation in binary mixtures are given by the supersolubility curves.

May 23.—"Studies on Enzyme Action. X.—The Nature of Enzymes." By Henry E. **Armstrong** and E. Frankland **Armstrong.**

The study of enzymes has now reached a stage at which it appears to be desirable to consider what is established and to direct attention to some of the principal issues which remain to be elucidated. The action which each enzyme exercises is clearly specific and limited to compounds of a particular type; the apparent exceptions to this statement in the case of sucroclastic enzymes have been investigated and eliminated: there is little doubt that maltase is capable of hydrolysing α-glucosides alone, whilst emulsin hydrolyses only β-glucosides. Further experiments have been made with carefully purified materials to ascertain what substances control the action of each sucroclastic enzyme; the evidence that enzyme and hydrolyte must be in complete correlation appears to be little short of absolute.

A special study has been made of the hydrolysis of cane sugar by invertase: apparently, glucose and fructose alone retard the action of this enzyme; it would seem to follow that it is so constituted that it can adapt itself to both sections of the biose. Cane sugar, though a derivative of α-glucose, is not a simple α-glucoside, nor is it an α-fructoside: consequently there is little room for doubt that the action of invertase is altogether peculiar and that the enzyme extends its influence over the whole of the cane-sugar molecule. Maltose and lactose differ from cane sugar in that they are hydrolysed by enzymes which also act on the corresponding simple glucosides.

It is conceivable that the enzymes themselves are subject to hydrolysis and simplification—in other words, that a biose may give rise to a monase. The existence of monases in admixture with biases is therefore to be expected. There can be little doubt that the sucroclastic enzymes are products of hydrolytic changes in the protoplasm conditioned by enzymes—mainly proteoclasts.

"Studies on Enzyme Action. IX.—The Enzymes of Yeast: Amygdalase." By R. J. **Caldwell** and S. L. **Courtauld.**

Amygdalin, which on complete hydrolysis yields two molecular proportions of glucose, is only partially hydrolysed by the enzymes extracted from dried yeast, mandelonitrile glucoside and glucose being formed:—

$$C_6H_5CH(CN)O—C_{12}H_{21}O_{10}+H_2O \rightarrow C_6H_5CH(CN)O—C_6H_{11}O_5+C_6H_{12}O_6.$$

The enzyme which effects this decomposition is specific, but being accompanied by *maltase* has been generally supposed to be identical with it. This conclusion, however, appears unwarrantable in view of the evidence recently advanced by the authors that amygdalin is not a derivative of maltose, and in the light of recent work on the specific character of the enzymes (E. F. Armstrong).

Systematic experiments with yeast extracts led to the conclusion that true maltase is without action on amygdalin, for the maltase could be destroyed by heating at 50°, whilst the activity towards amygdalin was unimpaired. Proof was thus obtained of the existence of a specific enzyme not hitherto recognised as a constituent of yeast, which is the active agent in the separation of glucose from amygdalin. This enzyme, "*amygdalase*," is present in larger proportion in top yeasts than in bottom yeasts, and appears to be equally well extracted at all temperatures from 15° to 45°, whereas for the extraction of maltase there is a distinct optimum temperature depending on the variety of yeast.

Although completely freed from maltase by heating at 50°, yeast extract retains not only its power to hydrolyse amygdalin, but also a diminished activity towards methyl-α-glucoside, and unaltered activity towards cane sugar. The inference that methyl-α-glucoside is attacked by the two enzymes maltase and amygdalase cannot well be disputed, particularly as amygdalin is more slowly hydrolysed in presence of methyl-α-glucoside, whereas maltose has no influence. The alternative explanation is that there is yet another *α-glucase* existing side by side with maltase and amygdalase. The enzyme which attacks amygdalin is not identical with *invertase* as Marino and Sericano have recently declared, for a high temperature (60°) quickly destroys amygdalase, leaving active invertase in solution.

Amygdalase, like maltase and invertase, is present in the yeast in the form of a "*zymogen*" or more complex proteid molecule. This zymogen can be dissolved out at 0°, and its hydrolytic activity developed by heating the solution for a short time at 45°. Unlike maltase, amygdalase is not destroyed during autolysis of yeast, but may be precipitated with the invertase by means of alcohol.

June 20.—"Studies of the Processes operative in Solutions."

(2) The Displacement of Chlorides from Solution by Alcohol and by Hydrogen Chloride. By H. E. **Armstrong,** Dr. J. V. **Eyre,** A. V. **Hussey** and W. P. **Paddison.**

(3) The Sucroclastic Action of Nitric Acid as Influenced by Nitrates. By R. **Whymper.**

(4) The Hydrolysis of Methylic Acetate in Presence of Salts. By H. E. **Armstrong** and J. A. **Watson.**

(5) The Discrimination of Hydrates in Solution. By H. E. **Armstrong** and R. J. **Caldwell.**

(2) The effect of different proportions of the non-electrolyte alcohol and of the electrolyte (in solution) hydrogen chloride in displacing ammonium, sodium and potassium chlorides from their saturated solutions has been determined and the proportion of water calculated which it may be supposed is withdrawn by the precipitant in each case. The results afford an interesting picture of the state of the salts in the various solutions; in particular, they show that sodium and potassium chlorides are present in saturated solutions in an easily precipitable, slightly hydrated form and that they pass into a more soluble and more hydrated form as the amount of precipitant is increased. Except that alcohol has less dehydrating power than hydrogen chloride, no distinction can be drawn between the two as precipitants of chlorides.

(3) The method developed in part i. of these studies by R. J. Caldwell has been applied to nitrates, *i.e.* the average concentrating effect which a number of these salts produce has been determined by hydrolysing cane sugar with nitric acid in their presence and ascertaining the extent to which the solution must be diluted in order to reduce the rate of change to the value which it has when the salt is not present. The average degree of hydration deduced for the various salts is as follows:—

$AgNO_3.5H_2O.$
$NH_4NO_3.7H_2O.$
$KNO_3.8H_2O.$
$NaNO_3.11H_2O.$
$LiNO_3.13H_2O.$
$Sr(NO_3)_2.18H_2O.$

(4) To ascertain whether the method followed in (1) and (3) of these studies can be applied to hydrolytes other than cane sugar, the investigation has been extended to the hydrolysis of methylic acetate by chlorhydric acid in presence of various chlorides. The results arrived at are as follows:—

$NH_4Cl.5H_2O.$
$KCl.8H_2O.$
$NaCl.10H_2.$
$BaCl_2.18H_2O.$
$CaCl_2.20H_2O.$

These values are slightly lower than those deduced with the aid of cane sugar. It is suggested that the chlorides enter to some extent into competition with the acid for the ethereal salt and that, consequently, they partially prevent hydrolysis. Nitrates have a still greater effect in competition with nitric acid, the apparent hydration values being $NH_4NO_3.2H_2O$, $LiNO_3.0H_2O$, $KNO_3.1H_2O$ $NaNO_3.3H_2O$.

(5) The results arrived at in these studies and in those

on enzyme action carried out at the Central Technical College are discussed with reference to the general problem of chemical interchange in solution. It is argued that not only is the ionic dissociation hypothesis irrational and unsupported by chemical evidence which compels its acceptance but that proof is not wanting that it is untenable; that the selective action of enzymes as hydrolysts, the action of salts and other dehydrants, in promoting hydrolysis by acids and the similar behaviour of non-electrolytes and electrolytes in precipitating substances from solution are all cases of change which it is easy to explain on the assumption that association takes place, although incompatible with the view that dissolution involves separation into free ions. The importance of the part played by hydrates in solution is considered and the evidence bearing on their composition is analysed—especially that to be derived from the change in the solubility of gases produced by salts, &c. It is contended that the values deduced by the cane-sugar hydrolysis method are rational values. Finally, reference is made to the nature of electrolytes and it is argued that it is incumbent on physicists to reconsider the arguments which lead them to accept the hypothesis of ionic dissociation, in order that they may substitute some more suitable hypothesis.

Royal Microscopical Society, June 19.—Lord Avebury, F.R.S., president, in the chair.—A slide of cow's hair presented by J. E. **Lord.** The hair, which showed a wool-like structure, was taken from the flank of the cow. Hair of this description is used in the manufacture of felt for exportation to a foreign port, where, owing to the prohibitive tariff, it has to be free from wool. The felt was refused admittance, except on a higher scale of tariff, on the ground that it contained wool. This led to an examination of the constituents of the felt, and the wool was traced to the cow. Hair is found on many goats, the llama, and the camel, which is commercially known as wool.—Slides of fluid crystals: Dr. **Hebb.** An intermediate physical state exists between the solid and liquid forms of matter, *i.e.* some substances present themselves as liquids whilst retaining certain characteristics of their solid state. This intermediate state has been found to occur in animal tissues, and it is to Adami and Aschoff that we owe the demonstration of potential fluid crystals in certain organs, *e.g.* the adrenal gland. The slides exhibited were sections cut from the fresh tissue of the adrenal gland. In one illuminated by ordinary light the sphero-crystals were indistinguishable from common fat globules, but in one illuminated by polarised light they evidently possessed the power of double refraction, and exhibited a well-marked black cross.—A slide of a group of six specimens of Stephanoceros, mounted: Mr. **Rousselet.**—Eye-pieces for the microscope: E. M. **Nelson.** The paper had reference to a new eye-piece calculated by Mr. Nelson and described by him in his presidential address in 1900. The author said that in his own work these eye-pieces have quite superseded those of the compensation form. There is no reason why they should not be produced at a price only slightly in excess of that of the ordinary Huyghenian, as they are composed of only two biconvex lenses. In these eye-pieces the refractions are equally divided between the two lenses, and the equation for achromatism given by Coddington and others is also satisfied.—The life-history of the tiger beetle: F. **Enock.**

Royal Meteorological Society, June 19.—Dr. H. R. Mill, president, in the chair.—Weather and crops, 1891–1906: F. C. **Bayard.** An analysis was given of the agricultural and horticultural tables which are included in the annual phenological reports. The author had sorted out the various crops into "good," "average," or "bad" for each district, and against each he had placed the temperature, rain, and sunshine for the four seasons, and whether these statistics were above or below the average. Tables were given showing the general results with regard to wheat, barley, oats, beans, peas, potatoes, turnips, mangolds, hay, clover, apples, pears, plums, raspberries, currants, gooseberries, and strawberries.—The relation of the rainfall to the depth of water in a well: Dr. C. P. **Hooker.** The author gave the weekly measurements of the depth of water in a well 101 feet deep at Further Barton, Cirencester, compared with the weekly rainfall for the years 1903–6. The results included the remarkably wet year 1903, and the droughty summer and autumn 1906.—The "step" anemometer, an instrument designed to obviate the "sheltering" error of the Robinson's cups: W. **Child.**

Royal Anthropological Institute, June 25.—Mr. F. W. Rudler, ex-president, in the chair.—A series of lantern-slides illustrating aboriginal rock paintings discovered by him in Western Australia: F. S. **Brockman.** The objects depicted consist of human figures, animals, and hands, the former being the more interesting. The figures, which are dressed in a long jacket and trousers, are very crudely drawn and painted in red, black and white pigment. A peculiar feature is that the mouth is not shown. There is some difficulty in determining whom the figures represent, but it is clear that they are not Australians and it seems most probable that a party of shipwrecked Europeans served as the original model.—A collection of so-called Kanaka skulls from the south of New Caledonia: Dr. David **Waterston.** The skulls were very varied in type, but some showed distinct Polynesian and others Melanesian features, while one was of Australoid and another of negroid character.—Instruments employed to obtain contour tracings of the different aspects of the skull: Prof. **Cunningham.** The instruments included Broca's original stereograph, Lissauer's instrument, Rudolf Martin's Kubuskraniophor, and an American periglyph.

Challenger Society, June 26.—Sir John Murray in the chair.—Dr. **Calman** exhibited and made remarks on some plates of tropical Cumacea, followed by a discussion on the comparative rates of growth of the fauna in warm and cold seas.—The secretary reported on the commencement of the society's "Bibliography of Marine Zoology, 1846–1900," of which Mr. L. A. Borradaile has been appointed editor; the bibliography will enable a worker to find readily the faunistic papers on any area or of any group in which he is interested.

DUBLIN

Royal Dublin Society, May 21.—Prof. S. Young, F.R.S., in the chair.—Some devices for facilitating the study of spectra: Prof. W. N. **Hartley.** The author described the infusible materials used as supports instead of platinum in high-temperature flames, such as carborundum points and quartz fibres. For solutions, quartz tubes with a capillary orifice were used. The use of the Mecke burner was shown both with and without the air-blast. For the production of chloride spectra, an arrangement was shown by which a bye-pass carried a portion of the gas supply through a bottle containing sponge saturated with chloroform. The Mecke blast burner was shown with the blast produced by a water-blower; the pressure should be 2 kilos. per sq. cm. Photographs were shown of spectra of lime and calcium chloride taken with two hours' exposure.—Note on the spectra of calcium and magnesium: Prof. W. N. **Hartley.** In photographing the spark spectrum of metallic calcium in an atmosphere of hydrogen, and also in a vacuum, without a jar in circuit, it was found always very difficult to obtain precisely the same spectrum with the same exposure. The principal features were the bands in the red, orange, and green, with the line λ 4226; also in one instance there appeared the lines at 3968·6 and 3933·8, but these were very feeble. At pressures less than 5 mm. there was no distinct passage of the spark between the electrodes. They glowed with a violet light; bright stationary spots of white light were seen on the negative electrode, and a great number of scintillations, less bright on the positive electrode, not in one spot, but all over it. At intervals there was a small flame of red light lasting a few seconds, evidently due to the calcium, which apparently passed from the positive electrode; but this ceased after a few seconds. Similar observations were made on magnesium electrodes under the same conditions. The phenomena are believed to be connected with discharge of negative electricity from hot calcium and from lime, described by Dr. F. Horton at the meeting of the Royal Society on January 31.—The free gases contained in monazite: R. J. **Moss.** The gas

liberated when Norwegian monazite is ground *in vacuo* consists chiefly of hydrogen and helium, with atmospheric gases. One volume of helium so obtained is associated with about six volumes of hydrogen. It is shown that this evolution of gas is not due to the heat mechanically produced; the gases are probably present in the free state. When the mineral is heated very little hydrogen can be detected in the gas at first evolved, but at a temperature of about 600° C. nearly half the gas evolved is hydrogen. It was found that at temperatures as low as 275° C. some of the oxides present in the mineral were reduced by hydrogen, with the production of water, hence the relatively small quantity of hydrogen in the gas at first evolved in heating the mineral. Hydrogen in other radio-active minerals may escape detection for the same reason.

PARIS.

Academy of Sciences, July 3.—M. Henri Becquerel in the chair.—Some formulæ relating to the number of classes of quadratic forms: G. **Humbert.**—The *rôle* of the spleen in trypanosomatous diseases: A. **Laveran** and M. **Thiroux.** Among animals the spleens of which have been removed, the development of the disease is not sensibly modified.—The direct hydrogenation of the anhydrides of formenic acids: Paul **Sabatier** and A. **Mailhe.** The general method of hydrogenation over finely divided nickel can be systematically applied in this case.—The synthesis of secondary isoamyl alcohol,

$$(CH_3)_2{=}CH{-}CHOH{-}CH_3:$$

Louis **Henry.**—A prehistoric syphilitic skull: L. **Lortet.**—A mineralogical study of the silicated products of the eruption of Vesuvius (April, 1906), and conclusions to be drawn therefrom: A. **Lacroix.**—Finger-prints as a method of identification: M. **Dastre.** The finger-prints of any particular individual, from the youngest age to the most advanced, are invariable, and the concordance of the impressions of the ten digits would constitute practical certainty of identification, the calculable chance of error being less than one part in sixty-four billions.—The evolution of forces: Gustave **Le Bon.**—The integrals of the differential equation $y^1+A_2y^2+A_3y^3=\delta$: Pierre **Boutroux.**—A mechanism which allows the maintenance of a train of prisms rigorously at minimum deviation: Maurice **Hamy.**—The ionisation of air: L. **Bloch.** A current of air across ordinary or, better, distilled water acquires a negative charge, which is, however, a difference between two unequal charges. The intensity of the ionisation thus implied is greatly augmented with increased pressure.—The electrolysis of very dilute solutions of silver nitrate and oxide: MM. **Leduc** and **Labrouste.** There is little doubt but that silver liberated by electrolysis under a sufficient voltage behaves as an alkaline metal reacting upon water to produce an oxide.—The absolute atomic weight of chlorine: G. D. **Hinrichs.**—The volumetric estimation of phosphorous acid: C. **Marie** and A. **Lucas.**—The action of chlorine and sulphur chloride on some oxides: F. **Bourion.**—The atomic weight of hydrogen: Daniel **Berthelot.** The mean result as deduced from the densities of nitrous oxide, nitric oxide, and nitrogen is calculated to be 14·005.—The specific heat and cryoscopic constants of mercuric iodide: M. **Guinchant.**—Diglycollic acid and its homologues: E. **Jungfleisch** and M. **Godchot.**—Synthesis by means of mixed organometallic derivatives of zinc. Unsaturated $\alpha\beta$-acyclic ketones: E. E. **Blaise** and M. **Maire.**—Some new bromo-derivatives of pyridine: L. **Barthe.**—The action of some γ and δ-bromo-ethers on cyanoacetic, malonic, and methylmalonic ether: G. **Blanc.**—The alkaline rocks of Central Africa: A. **Chudeau.**—A new Myxosporidia parasite in the sardine: L. **Léger** and E. **Hesse.**—The genital organs of the *Taenia nigropunctata*: Pasquale **Mola.**—The action of low temperatures on the eggs of *Paralipsa gularis*, Zeller: J. **de Loverdo.**—Calcification and decalcification in man: P. **Ferrier.** There exists naturally in certain organisms an epoch in life when an elimination of chalk is necessary. This can be brought about by the use of inorganic acids, sodium and magnesium sulphates, sodium phosphate, and alkaline sulphides.—Artificial serums: C. **Fleig.**—A new method of measuring the surface of the human body: M. **Roussy.**

NEW SOUTH WALES.

Linnean Society, May 23.—Mr. A. H. Lucas, president, in the chair.—Special meeting to mark the occasion of the bicentenary of Carl von Linné (1707–1778).

May 30.—Mr. A. H. S. Lucas, president, in the chair.—Studies in Australian entomology, No. xiii., new genera and species of Carabidæ, with some notes on synonymy (Clivinini, Scaritini, Cunipectini, Trigonotomini, and Lebiini): T. G. **Sloane.**—Dimorphism in the females of Australian Agrionidæ (Neuroptera: Odonata): R. J. **Tillyard.** In *Ischnura heterosticta* the male is bronze and blue; of the females, form A (ordinary) is dull black, and form B (dimorph) imitates the male; and the proportion of form B to total number of females is 30 per cent. to 40 per cent. In *I. delicata*, ♂ red and blue; ♀ form A, dull black or olive-green; form B, imitates ♂; 10 per cent. in S.W. Australia. In *Agriocnemis pruinescens*, ♂ black with grey bloom; ♀ form A (wanting); form B, orange; 100 per cent. In *A. splendida*, ♂ bronze and blue; ♀ form A, similar to ♂; form B, red; 40 per cent. In *A. argentea*, ♂ silvery-white (ground colour black); ♀ form A, black; form B (wanting); 0 per cent. In *A. velaris*, ♂ bronze with red tip; ♀ form A (wanting); form B, red; 100 per cent.—The Lake George Senkungsfeld: a study of the evolution of Lakes George and Bathurst, N.S.W.: T. G. **Taylor.** Lake George, situated twenty-five miles south-west of Goulburn, is the largest lake in New South Wales. It is bounded on the west by a *fault scarp* nearly thirty miles long and about 400 feet above the level silt-bed of the lake. The rivers running into the lake originally entered the Yass River but have been blocked by the fault. The old outlet, 300 feet above the lake, is represented by alluvial boulders up to 2 feet in diameter, which can be traced for three miles across the fault scarp. The second portion of the paper deals with the origin of Lake Bathurst. This is a broad valley probably blocked by the talus and débris carried down by the Mulwaree River.

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