

now no longer necessary for stimulating interest in the question of technical education or for promoting legislation. But, in the course of its existence, the association has done more than this; it has become the centre to which local authorities engaged in the work have been accustomed to look for advice, for information, and, to a certain extent, for guidance. Much of the work of the association is capable of being performed by the Government department. But from some communications which he had with the Board of Education a year or two ago, the Duke of Devonshire found that the department did not consider itself then in a position to undertake the whole of what is done by the association. It is, perhaps, possible that the present Treasury may take a different view, and that the Board of Education may be permitted by the Treasury to undertake a part of the work which has hitherto been exclusively carried on by the association. He therefore suggested that during the next year, in which provision is made for the continuance of the efficient work of the association, the executive committee should ascertain, by communication with the Government, how far the Board of Education is in a position to take up any part of the functions which the association has hitherto assumed; and if it should be found that those functions can be more usefully discharged in the future by a private association than by a department of the Government, practical consideration must be given to the manner in which it may be possible to secure a larger amount of assistance from the public. Lord Avebury and Sir Henry Roscoe also addressed the meeting.

#### SOCIETIES AND ACADEMIES.

LONDON.

**Royal Society**, May 3.—“The Action of Pituitary Extracts upon the Kidney.” By Prof. E. A. Schäfer, F.R.S., and P. T. Herring.

Intravenous injections of saline extract of the infundibular part of the pituitary body produce dilatation of kidney vessels accompanied by increased flow of urine; *i.e.* the extract has a diuretic action.

With the first injection this result is accompanied by rise of blood-pressure and contraction of systemic arteries. With subsequent injections the diuresis is usually attended, not by a rise of blood-pressure, but by a fall. This furnishes evidence that the diuresis is independent of the effects upon blood-pressure, and leads one to suppose that it is produced by a special constituent of the extract.

This conjecture is confirmed by the result of treating the extract with certain reagents which tend to abolish the rise of blood-pressure which is produced by a first injection, but leave the diuretic effect of the extract unaltered.

The diuretic as well as the pressor and depressor constituents of the extract are not destroyed by boiling. They dialyse through parchment paper. They are insoluble in absolute alcohol and ether.

Intravenous injections of extracts from the anterior or epithelial lobe of the pituitary body do not produce diuresis; these extracts exhibit no physiological activity.

It is concluded that the infundibular part of the gland produces an internal secretion which passes into the blood, and which, both indirectly owing to its general action upon the vascular system and directly by its special action on the renal vessels and renal epithelium, assists in promoting and regulating the secretion of urine; in other words, the internal secretion of the gland is ancillary to the renal functions.

May 10.—“A Variety of Thorianite from Galle, Ceylon.” By Wyndham R. Dunstan, F.R.S., and B. Mouat Jones.

Specimens of thorianite from the Galle district of Ceylon were found to contain from 58.84 per cent. to 63.36 per cent. of thoria associated with from 32.7 per cent. to 27.9 per cent. of oxide of uranium. Ordinary thorianite from the Balangoda district contains 78.98 per cent. of thoria and 13.40 per cent. of oxide of uranium. The authors direct attention to the inter-replacement of thorium and uranium in the mineral, and conclude that the oxides of the two elements are present in isomorphous mixture, and are not chemically combined.

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**Chemical Society**, June 7.—Prof. R. Meldola, F.R.S., president, in the chair.—Ammonium selenate and the question of isodimorphism in the alkali series: A. E. H. **Tutton**. Normal ammonium selenate crystallises differently from the seven rhombic normal sulphates and selenates of the alkalis already investigated, namely, in monoclinic prisms or tables. Rhombic mixed crystals of ammonium selenate and sulphate have been obtained, and it is concluded that ammonium selenate is dimorphous, and that the whole series of sulphates and selenates is probably isodimorphous.—The vapour pressures of binary mixtures, part i., the possible types of vapour-pressure curves: A. **Marshall**. By differentiating the equation of Duhem and Margules,  $x d \log p_1 + (1-x) d \log p_2 = 0$ , it has been found possible to classify the total pressure curves into twelve types, all of which are known to occur. The vapour pressures of the following pairs of liquids have been investigated experimentally:—nitroglycerol and acetone, diethylamine and acetone, ethyl alcohol and methyl ethyl ketone, water and methyl ethyl ketone, water and methyl acetate, water and ether, water and amyl alcohol.—The behaviour of acetylene with electrical discharges of high frequency: H. **Jackson** and D. N. **Laurie**. A semi-solid brown substance is formed when acetylene is subjected to discharges from an ordinary high-frequency apparatus, which sets to a hard and very insoluble solid on exposure to air. It is apparently a polymeride of acetylene. It absorbs oxygen readily up to about 8 per cent.—The behaviour of the vapours of methyl alcohol and acetaldehyde with electrical discharges of high frequency: H. **Jackson** and D. N. **Laurie**. Working with discharges of very short duration, the first change in the vapour of methyl alcohol is the formation of carbon monoxide and hydrogen; in the case of acetaldehyde the greater part of the vapour breaks up into methane and carbon monoxide, but acetylene and water are also produced in smaller quantities.—Note on 4-bromo-2-nitro-1 $\alpha$ -naphthylamine: R. **Meldola** and H. G. **Dale**.—Dinitroanisidines and their products of diazotisation (second communication): R. **Meldola** and F. G. C. **Stephens**.—The action of sulphur dioxide and aluminium chloride on aromatic compounds: S. **Smiles** and R. **Le Rossignol**. The authors have previously shown that thionyl chloride reacts with phenetole in the presence of aluminium chloride, giving rise successively to a sulphoxide and a sulphonium base; it has since been found that this reaction may be brought about by sulphur dioxide with the aid of the same condensing agent.—Action of sodium on  $\alpha\alpha$ -dichloropropylene: Miss I. **Smedley**.—Resolution of lactic acid by morphine: J. C. **Irvine**. Fermentation lactic acid may be readily resolved into its active components by the crystallisation of the morphine salts.—Brazilin and hæmatoxylin, part viii.: W. H. **Perkin**, jun., and R. **Robinson**.—A study of the reaction between hydrogen peroxide and potassium persulphate: J. A. N. **Friend**. It is shown that solutions of hydrogen peroxide and potassium persulphate interact according to the equation  $H_2O_2 + K_2S_2O_8 = 2KHSO_4 + O_2$ . The reaction, however, is monomolecular, due to the formation of an intermediate and highly unstable compound.—The action of magnesium methyl iodide on dextro-limonene nitrosochlorides: W. A. **Tilden** and F. G. **Shepherd**. The same compound is formed from the  $\alpha$ - and  $\beta$ -nitrosochlorides. It is insoluble in aqueous alkalis and in acids, though easily soluble in the usual organic solvents, and has the formula  $C_{10}H_{12}ON_2Cl_2$ .—Electrolysis of potassium ethyl dipropyl malonate: D. C. **Crichton**. A concentrated aqueous solution of potassium ethyldipropylmalonate yields on electrolysis the ethyl esters of  $\alpha$ -propyl- $\beta$ -ethylacrylic acid, dipropylglycollic acid, tetrapropylsuccinic acid, and probably dipropylacetic acid.—A new method for the measurement of hydrolysis in aqueous solution based upon the consideration of the motion of ions: R. B. **Denison** and B. D. **Steele**.—The oxidation of hydrocarbons by ozone at low temperatures: J. **Drugman**. Ozone acts slowly on saturated hydrocarbons, and the process is one of gradual hydroxylation. The reaction with an unsaturated hydrocarbon, such as ethylene, is instantaneous, even at temperatures far below 0°, and a very explosive addition compound is first formed.—Reactions involving the addition of hydrogen cyanide to carbon compounds, part v., cyanodihydrocarvone: A. **Lapworth**.—

Thiocarbamide as a solvent for gold: J. Moir. Two new complex gold salts have been obtained by dissolving gold in an acid solution of thiocarbamide. Their formulæ are  $C_6H_{20}N_{12}S_6Au_2(SO_4)$  and  $C_8H_{26}N_{16}S_8Au_3Cl_2$ , respectively.—An improved Beckmann apparatus for molecular weight determinations: J. McConnell Sanders.

**Linnean Society, June 7.**—Prof. W. A. Herdman F.R.S., president, in the chair.—*Exhibit.*—Tubes showing stages in the metamorphosis of a young flat-fish (*Pleuronectes platessa*), the plaice, leading from the symmetrical larva to the asymmetrical young flat-fish: the President. These fish were hatched and reared in the Port Erin Biological Station. Reference was also made to the operations conducted this year in hatching and liberating some millions of young plaice.—Two new species of *Populus* from Darjeeling: H. H. Haines. *Populus ciliata*, Royle, was re-described, and the two new species characterised, namely, *P. Gamblei*, which may or may not be the species described by Dode from imperfect material, and *P. glauca*, Haines.—Two reports dealing with Biscayan plankton collected during a cruise of H.M.S. *Research* in 1900: Dr. G. H. Fowler. (1) The Cephalopoda: W. E. Hoyle. Among seventeen specimens, five genera and two species were recognised; all but one (750 fathoms to 500 fathoms) apparently belonged to the epiplankton; not a single specimen was captured at the actual surface. (2) The Medusæ: E. T. Browne. As the area investigated was oceanic, the neritic Anthomedusæ were represented by only three species; while the Trachomedusæ and Narcomedusæ, which are essentially oceanic, were represented by seven and three species respectively, three species of Trachomedusæ furnishing 85 per cent. of the total specimens captured. Four rarities were recorded; one Narcomedusan was apparently new to science, and of interest as showing medusa-buds (which were not parasitic) developing as outgrowths of the stomach pouches.—The Conifers of China: Dr. M. T. Masters. The paper described the whole coniferous flora now known, including the discoveries of Messrs. E. H. Wilson and B. Hayata; eight new species are fully set out, five of these being of the genus *Picea*.

**Royal Astronomical Society, June 8.**—Mr. W. H. Maw, president, in the chair.—The ancient eclipses of the sun: E. Nevill.—Mr. Cowell's discussion of ancient eclipses of the sun: S. Newcomb. The above papers were discussed by Mr. Cowell in reference to his corrections to the secular acceleration. He concluded that, with the exception of the eclipse of Archilochus, which Mr. Nevill had shown to be entirely uncertain, they agreed with the theory, which was also supported by the Chinese eclipses now brought forward by Mr. Nevill.—Errors in the tabular places of Jupiter from photographs taken with the astrographic refractor at the Royal Observatory: **Astronomer Royal.**—Notes on polarisation phenomena in the solar corona, 1905 August 30: H. F. Newall.—Photographs of the corona of 1905 August 30, taken at Sfax, Tunis: **Astronomer Royal.**—In an oral communication Prof. H. H. Turner brought forward some results of his polarisation observations during recent solar eclipses, considered in reference to the constitution of the corona. Father Cortie said that we should consider the effect of explosive outbursts on the solar surface, and not regard the coronal phenomena as due only to the pressure of light.—A spherical slide-rule, consisting of two superposed stereographic projections of the sphere, arranged for solving various problems in spherical trigonometry: W. B. Blaikie.

## CAMBRIDGE.

**Philosophical Society, May 14.**—Dr. Fenton, vice-president, in the chair.—The influence of a very strong magnetic field on the spark spectra of palladium, rhodium, and ruthenium: J. E. Purvis. The strength of the field was 39,980 units, and the general results are:—(1) Most of the lines divide into triplets, and several become quadruplets. (2) The value of  $d\lambda/\lambda^2$  was calculated from the measurements of the distances of the constituents, and in several quadruplets the value is the same; the general appearance in intensities and polarisation of the separate constituents is also very similar. This is well seen in the quadruplets

from palladium 3460.4 and 3258.7 when compared with the quadruplets from rhodium 3502.7 and 3474.7. In the triplets there are also lines which may be classified in the same way. (3) The displacements of the constituents of some of the divided lines are simple multiples of one another.—Experiments on the band spectrum of nitrogen in a magnetic field of 41,000 units: J. E. Purvis. The bands in the red, orange, and yellow become very weak, whilst those in the green, blue, and violet are brighter and stronger. But there was no shift of the bands, nor did there appear to be any widening or division of the lines forming the bands.—The ionisation of gases exposed simultaneously to Röntgen rays and the radiation from radioactive substances: T. Noda.

## EDINBURGH.

**Royal Society, May 28.**—Sir John Murray, K.C.B., vice-president, in the chair.—Life in reservoirs in relation to water supply in towns: James Murray. The paper was a detailed discussion of the types of life met with in reservoirs, the time needed for new reservoirs to become stocked with animal life, and the conditions under which such life might do harm to the water. Rise of temperature was always followed by a great increase in the number of animals in the water, but so long as the loch or reservoir was large there was little chance of any serious results. The conditions under which animal life might possibly get into the mains were also discussed, and it was pointed out that Nature herself supplied a preventive in the tendency of free-swimming animals to swim against the current.—The Rotifera of the Scottish lochs: James Murray. Of the 177 species which had been discriminated, five were new. Many new observations on the structure and habits of the various species were recorded.—The Tardigrada of the South Orkneys: James Murray. Fourteen forms, obtained from a single tuft of moss, were more or less fragmentary. Two had been known before, but only three could be described as new.—The temperature of fresh-water lochs of Scotland, with special reference to Loch Ness: E. M. Wedderburn. The paper discussed the temperature distribution in the loch at different times and in different months. In addition to the usual type of sounding thermometer, a platinum thermometer was used in conjunction with Callendar's self-recording apparatus. The record showed on certain occasions the very rapid change of temperature which may take place at depths of 150 feet or 200 feet. This was traced to the slight rise or fall of the layer of water in which the temperature is changing most rapidly with depth, the so-called "Sprungschicht." Clear evidence was also obtained of the temperature seiche, first noticed by Mr. Watson. The observed period was in fair agreement with that calculated from the theoretical formula. At a depth of 5 feet very rapid changes of temperature were sometimes observed during night time, due clearly to convection currents. A sunshine recorder could, when required, be connected with the self-recording apparatus instead of the thermometer. At a few feet depth the effect of the direct action of the sun was very small. At a depth of only 2 feet it was impossible to detect the passage of a cloud in front of the sun. An estimation of the amount of heat which entered the water of the loch during the day was made, and came out at about a sixth or seventh part of the whole amount of solar heat available, according to Knott's calculation.

## PARIS.

**Academy of Sciences, June 5.**—M. A. Chauveau in the chair.—The utilisation of turf for the intensive production of nitrates: A. Müntz and E. Lainé. The authors, continuing their researches on the artificial production of nitrates, find that if the animal charcoal used in their former work is replaced by turf as the medium for the growth of the nitrifying bacteria the yield is multiplied eight times. Fresh salts of ammonia can be added to the weak nitrate solution resulting from the first nitrification, and this again passed through the turf bed, and this process can be repeated until the percentage of nitrate present in the liquor is sufficient for its economical extraction commercially. The possibility of the turf itself furnishing the necessary ammonia compounds is discussed, and a



method of distillation of the turf in superheated steam has been worked out, by means of which the yield of ammonia is greatly increased.—The dry avalanches and mud torrents in the recent eruption of Vesuvius: A. **Lacroix**.—The occurrence of crystals of sylvite in blocks thrown out by the recent eruption of Vesuvius: A. **Lacroix**. The crystals of sylvite (potassium chloride) were remarkable for their size, forming cubical crystals of more than 2 cm. in the side. In several specimens the sylvite crystals were covered with large cubical crystals of halite (sodium chloride). A description is also given of a rare mineral consisting of a chloride of sodium, potassium, and manganese.—Researches of the hydroxides of rubidium, caesium, and lithium; M. **de Forcrand**. The hydroxides of rubidium and caesium obtainable commercially both contain one molecule of water of crystallisation; the anhydrous hydroxides can be prepared from the commercial products by heating in a silver crucible, an atmosphere of hydrogen being necessary in the case of the caesium compound to prevent the formation of higher oxides of caesium. Anhydrous lithium hydroxide is readily prepared from the hydrate. The heats of dissolution of the three hydroxides were measured.—A theorem on plane algebraic curves of order  $n$ : G. B. **Guccia**.—An azimuth circle with reading microscopes for technical survey work: Ch. **Lallemand**. The circles are divided into tenths of degrees, and are read by estimation by bent microscopes carrying a cross-wire. The arrangement has the advantage of rapidity and simplicity, and a comparison with the various types of instrument in common use showed that it is only surpassed in accuracy by instruments furnished with reading microscopes carrying a micrometer screw.—The electrical control of synchronised clocks: Jean **Mascart**. A discussion of the possible accidents to a synchronised clock system, and the various means that have been adopted to inform the public that the electrical control of one of the clocks on the system has failed.—An experiment due to Hittorf and the generality of Paschen's law: E. **Bouty**.—The properties of surfaces for which the apparent angle of contact of water is zero: H. **Ollivier**.—The action of silicon chloride on nickel: Em. **Vigouroux**. By the action of silicon tetrachloride upon heated nickel two substances have been isolated,  $\text{SiNi}_1$  and  $\text{SiNi}_2$ . That the former silicide is homogeneous and free from metallic nickel is rendered probable by the fact that it is not magnetic.—The decomposition of copper sulphate by methyl alcohol: V. **Auger**. A basic copper sulphate is formed, the sulphuric acid removed probably forming methyl-sulphuric acid.—Dibromodimethyl- and dibromodiethyl-amidobenzoylbenzoic acids and their derivatives: E. **Séverin**.—The variations in the size of the particles in colloidal hydrochloric-ferric chloride solutions: G. **Malfitano**.—A new micro-organism producing acetone: L. **Bréaudat**. The chromogenic organism described was found in the drinking water of Saigon, Cochinchina, and is capable of producing acetone from proteid material. The name proposed for the new species is *Bacillus violarius acetonicus*.—Contribution to the study of the soluble albuminoid materials of milk: M. **Lindet** and L. **Ammann**. It is shown that the casein of milk is, in part, dissolved by the calcium phosphate present. Experiments are described throwing light upon the causes of clotting of milk.—Contribution to the cytological study of bacteria: S. **Guilliermond**. The author concludes from his observations that a true nucleus does not exist in bacteria, and considers that the nuclei described by various authors are due to misinterpretation of the facts observed.—A new parasitic copepod of *Amphiuva squammata*: E. **Hérouard**.—A new type in the family of the Virgularidae: Ch. **Gravier**.—The excretion of the endogenous purins and uric acid: Pierre **Fauvel**. The quantity of endogenous purins and uric acid is constant even for a subject whose diet is free from purins, and this is still the case whether a milk diet, strictly vegetarian diet, or mixed milk-vegetarian diet be followed. This quantity varies little with the individual, and averages 0.4 to 0.5 gram of purins and 0.28 to 0.35 uric acid in twenty-four hours.—The state of the adductor muscles during life in the acephalous molluscs: F. **Marceau**.—Pulmonary tuberculosis in the tiger: P. **Achalme**.—A new explanation of glacial erosion: Jean **Brunhes**.

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## DIARY OF SOCIETIES.

THURSDAY, JUNE 21.

ROYAL SOCIETY, at 4.30.—The Transition from the Liquid to the Solid State and the Foam-structure of Matter: Prof. G. Quincke, For. Mem. R.S.—Experimental Evidence of Ionic Migration in the Natural Diffusion of Acids and Salts: R. G. Durrant.—On the Behaviour of Certain Substances at their Critical Temperatures: Prof. M. W. Travers, F.R.S., and F. L. Usher.—Note on the Phenomenon of Opalescence at the Critical Temperature: Prof. S. Young, F.R.S.—Ionic Velocities in Gases at Different Temperatures: P. Phillips.—The Action of Radium and Certain Other Salts on Gelatin: W. A. Douglas Rudge.—Barometric Variations of Long Duration over Large Areas: Dr. W. J. S. Lockyer.—On the Electric Inductive Capacities of Dry Paper and of Solid Cellulose: A. Campbell.

CHEMICAL SOCIETY, at 8.30.—The Cleve Memorial Lecture: Prof. T. E. Thorpe.—The Constituents of the Essential Oil from the Fruit of *Pittosporum undulatum*: F. B. Power and F. Tutin.—Mobility of Substituents in Derivatives of  $\beta$ -Naphthol: J. T. Hewitt and H. V. Mitchell.

LINNEAN SOCIETY, at 8.—On the Botany of Southern Rhodesia: Miss L. S. Gibbs.—On the Authentic Portraits of Linnæus (lantern slides): W. Carruthers, F.R.S.—Plantæ novæ Daweanæ in Uganda lectæ: Dr. Otto Stapf.—On the Genitalia of Diptera: W. Wesché.

FRIDAY, JUNE 22.

PHYSICAL SOCIETY, at 5.—The Effect of Radium in Facilitating the Visible Electric Discharge *in vacuo*: A. A. Campbell Swinton.—A Comparison between the Peltier Effect and other Reversible Heat Effects: A. O. Allen.—The Effect of the Electric Spark on the Activity of Metals: T. A. Vaughton.—Dielectric Strength of Thin Liquid Films: Dr. P. E. Shaw.—The Effect of Electrical Oscillations on Iron in a Magnetic Field: Dr. W. H. Eccles.

WEDNESDAY, JUNE 27.

GEOLOGICAL SOCIETY, at 8.—Interference-Phenomena in the Alps: Dr. Maria M. Ogilvie Gordon.—The Influence of Pressure and Porosity on the Motion of Sub-surface Water: W. R. Baldwin-Wiseman.

THURSDAY, JUNE 28.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: Sex-determination in Hydatina, with some Remarks on Parthenogenesis: R. C. Punnett.—On the Julianiaceæ, a New Natural Order of Plants: W. Botting Hemsley, F.R.S.—On Regeneration of Nerves: Dr. F. W. Mott, F.R.S., Prof. W. D. Halliburton, F.R.S., and A. Edmunds.—The Pharmacology of Ethyl Chloride: Dr. E. H. Embley.—The Alcoholic Ferment of Yeast Juice, part II., The Coferment of Yeast Juice: Dr. A. Harden and W. J. Young; and other papers.

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