

of 200-250 horse-power; also a larger turbine of the reaction type. A high-speed paraffin engine of 40 horse-power and a four-cylinder petrol motor have been presented recently to the laboratory. The development of the college has kept pace with the increased accommodation. Last year a school of navigation was established, and its success has justified the governors in contemplating the purchase of a sea-going training vessel. A lectureship in sugar manufacture has also been instituted. Mr. Alfred Campion, who was appointed lecturer in metallurgy two years ago, has been raised to the rank of professor.

A MEETING of the Association of Teachers in Technical Institutions was held on May 20 at the Cardiff Technical School to consider the formation of a South Wales branch of the association. There was a representative attendance of technical teachers from Cardiff, Swansea, Newport, and the county of Glamorgan. An address was delivered by Mr. P. Abbott, the honorary secretary of the association, on "The Aims and Work of the Association." Mr. Abbott said technical education was the last branch of education to be organised, and consequently technical teachers were the last to band themselves together for the purposes of joint action. The organisation of technical education has not yet gone far, and it is probably safe to say that in this respect we are ten years behind Scotland and twenty years behind Germany. It must be recognised that conditions are changing, and that the extent of the prosperity of a country in the future will be determined more and more by the number of skilled and highly trained industrial experts that it possesses. If this work of organising technical education is to be efficient there must be cooperation. On one hand are those whose business it is to organise, administer, and finance technical education; on the other there are the teachers with an acquaintance with the calibre and the economic conditions of the students. The two classes are complementary, and for true progress the teachers must make their contributions to the solution of the problems involved. Facilities must be provided for the interchange of views and the formulation of opinions. Hence the association has the highest of all claims for the support of technical teachers. Mr. Abbott dealt at some length with the work done by the association, and especially in connection with examinations and curricula. In many respects, he said, the technical teacher is to-day in a relatively worse position than any other section of the teaching profession. Returns showed that the full-time technical teacher is usually paid worse than the secondary-school teacher. In conclusion, Mr. Abbott emphasised the national character of the association. A resolution was passed unanimously in favour of the formation of a South Wales branch.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society May 18.—Sir Archibald Geikie, K.C.B., president, in the chair.—Prof. W. M. Bayliss: The properties of colloidal systems. II.—On adsorption as preliminary to chemical reaction. The existence of an "adsorption compound" containing acid and base uncombined chemically, and which can be isolated, is described, together with the manner of its conversion into the true chemical compound or salt. It is shown that a similar kind of compound is formed between an enzyme and its substrate, preliminary to the particular chemical change brought about by the enzyme in question. Adsorption between enzyme and substrate as affected by the presence of neutral salts is investigated, and found to follow the laws of "electrical" adsorption. The relation between the concentration of an enzyme and its activity is shown to be expressed by an exponential formula, the value of the exponent varying considerably according to circumstances. In certain conditions it may be unity, and in others the square root, but is usually between the two. Accordingly, the view that the rate of an enzyme action at any given moment is a function of the amount of the adsorption compound of enzyme and substrate in existence at that time is to be regarded as fairly well established.—S. M. Jacob: Inbreeding in a stable simple Mendelian population, with special reference to cousin

marriage. The paper investigates, on the basis of Mendel's conception of the segregation of unit-characters, the proportions of different types among the offspring resulting from alliances of various degrees of inbreeding. A detailed examination is made of the consequences of first-cousin marriages, the form of inbreeding most frequently met with in actual human populations, while unions of other degrees of affinity, both those closer and those more remote, are also considered. The important point is brought out that for an evil which is a Mendelian recessive and is of common occurrence, a first-cousin marriage will not be much more likely to produce defective offspring than any other kind of marriage, but that a very rare recessive evil is relatively far more readily developed by such a consanguineous marriage. Now it is probable that there are very many of these rare defects latent in man. As the chance of a *particular* one of these appearing is increased by cousin marriage, the appearance of any random one of the large number is rendered much more probable by such a union. The same is true, on the Mendelian hypothesis, for any desirable qualities when such can be shown to be recessive. It is also established that the relative frequency of the appearance of the allogenous constituent in the offspring of related pairs diminishes by about one half for each grade of cousinship, so that the efficacy of cousin marriages in developing the recessive character diminishes with the grade of the marriage. In general, inbreeding accentuates both the pure dominant and the pure recessive strain to the same extent and at the expense of the hybrid element.—Miss M. Wheldale: The direct guaiacum reaction given by plant extracts. Previous work on oxidising enzymes has led to the interpretation of the direct blueing action in terms of the activity of a system consisting of an organic peroxide in conjunction with a peroxidase. The author finds that the power to give the direct action possessed by water-extracts of tissues is accompanied by another phenomenon, *i.e.* the formation of brown or reddish-brown pigments in the tissues on exposure to chloroform vapour. Both phenomena are characteristic of certain natural orders, but are absent from others or are characteristic of certain genera only in an order. When the direct action is not given, the plant extract will blue guaiacum on addition of hydrogen peroxide (indirect action), and the tissues do not show change of colour in chloroform vapour in the same period of time. The phenomenon of direct blueing of guaiacum is considered by the author to be the outcome of the presence of the dihydric phenol-pyrocatechin in the plants examined. Pyrocatechin is oxidised on the death of the tissues, and then acts as a peroxide, enabling the peroxidase, which is almost universally present, to transfer oxygen to the guaiacum. These conclusions are based on the following evidence:—(1) that pyrocatechin can be detected in plants (such as have been examined) which give the direct action and show change of colour in chloroform, whereas it cannot be detected in plants lacking these characteristics; (2) that solutions of both chemically prepared pyrocatechin and the actual plant product, after oxidation in air, will give a direct action with guaiacum and peroxidase only. The same result is not obtained with phenols having the hydroxyl groups in other positions. Hence the *direct* guaiacum reaction has, in all probability, no real significance as such in plant metabolism, but is merely the outcome of the presence of a certain metabolic product.—Dr. A. Theiler: Transmission of amakebe by means of *Rhipicephalus appendiculatus*, the brown tick. This is an account of experiments carried out at Pretoria, confirming the result arrived at by the Sleeping Sickness Commission during 1909, that the disease of calves in Uganda, known as amakebe, is in reality East Coast fever. It was arranged with the Government veterinary surgeon in Uganda, Mr. Hutchins, to send to Dr. Theiler nymphæ of *Rhipicephalus appendiculatus*, the brown tick, collected from calves in Uganda suffering from amakebe. On several occasions Mr. Hutchins forwarded ticks, which arrived at Pretoria alive and in good condition. The nymphs in transit moulted into the adult stage. Two experiments were performed to ascertain whether brown ticks, collected as nymphæ in Uganda from a calf suffering from amakebe, will transmit the disease when placed on susceptible calves in the

Transvaal. The first experiment, a bull calf, born and reared in Onderstepoort, was infested on January 23 with ten adult brown ticks, forwarded from Entebbe, Uganda, and received in the Transvaal on January 4. The ten ticks were found attached to the calf the following day. The animal died on the twenty-third day after tick infestation, and from the course of the disease and the *post-mortem* examination, a diagnosis of East Coast fever was concluded. Koch's bodies were found *post mortem* on microscopical examination of preparations of the lymphatic glands and spleen. The second experiment was carried out in a similar manner. On February 14 a calf was infested with ten adult brown ticks of the same batch, obtained from Uganda. On February 15 seven of the ticks were found attached. After an incubation period of thirteen days, a typical fever curve ensued. The animal died on the twenty-fourth day. During the course of the disease, Koch's bodies were found in the glands, and *Theileria parva* in the red cells of the blood. A diagnosis of East Coast fever was also concluded from the *post-mortem* examination in this case. Koch's granules were frequently found *post mortem* in the lymphatic glands and spleen.—S. J. Meltzer: Distribution and action of soluble substances in frogs deprived of their circulatory apparatus.—Dr. F. W. Edridge-Green: The discrimination of colour. If a definite portion of spectrum be isolated it will appear monochromatic, the size of the monochromatic region varying with the luminosity and wave-length of the light and the colour perception of the observer. Lord Rayleigh has expressed the opinion that he can discriminate between the colours in a monochromatic region even to the extent of distinguishing between the colours of the two D lines. The author does not find this possible when special precautions are taken to have a pure spectrum and to avoid the physiological effect of contrast through varying intensities of the areas to be compared. The monochromatic area may be magnified without altering its monochromatic appearance, the intensity of the light source being increased to compensate for the diminished luminosity. The monochromatic area may also be examined through a double-image prism, or be projected by means of a double-image prism upon a screen, so that the violet side of one area is adjacent to and just touches the red side of the other area. In this way the monochromatic area may be made as large as desired, the intensity of the source of light being increased as required. An arc light gives two very bright areas of colour. This method is the most favourable for the detection of any difference; the monochromatic areas, however, still remain monochromatic.

Royal Meteorological Society, May 17.—Dr. H. N. Dickson, president, in the chair.—Dr. H. R. Mill and C. Salter: The frequency and grouping of wet days in London. The purpose of this paper is to place on record certain facts, derived from the long homogenous records of rainfall kept at Camden Square, bearing on a recent scheme for insurance against rain risks. Days with a rainfall exceeding .20 in. only are dealt with, as this is the limit adopted in several of the policies of insurance. The discussion is, of course, strictly applicable to London only, but it will probably apply fairly well to other inland stations in the south-east of England. The authors have examined a number of instances in which an insurance under one or two of the forms of policy offered would have resulted in a claim had a person in London insured every day for the week commencing that day during the whole period of fifty-two years. The actual compensation yielded by each 1l. invested during each seven-day period from 1859-1910 would have been as follows:—

Policy	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
A ...	8/8	6/5	6/10	4/1	4/9	11/3	10/7	11/1	10/1	18/10	15/9	11/1	10/-
B ...	9/1	8/6	7/10	7/7	9/1	11/3	11/4	10/10	10/-	13/10	12/8	10/8	10/9

E. Mawley: Report on the phenological observations for 1910. The most noteworthy features of the phenological year ending November, 1910, as affecting vegetation were the continuous and heavy rainfall in February, a sudden change from cold to warm weather in the middle of May, the great dryness of September, and the heavy rains and low night temperatures in November. During the greater

part of the year wild plants came into blossom behind their usual time, the departures from the average being greatest at the end of April and the beginning of May. Such early spring migrants as the swallow, cuckoo, and nightingale made their appearance at about their usual dates. The only deficient farm crops were wheat, barley, and peas. On the other hand, the yield of oats, beans, potatoes, turnips, mangolds, and hay were above the average, and more especially beans, turnips, and hay. The crop of apples, pears, and plums was much under average, while all the small fruits, except strawberries, which yielded well, were also rather under average.

EDINBURGH.

Royal Society, March 20.—Prof. T. Hudson Beare, vice-president, in the chair.—Dr. J. R. Milne: Measurements on the scattering of light by "ground" glass. Certain preliminary experiments on the scattering power of various kinds of ground glass were described, as well as the form of apparatus which had been designed for the purpose of the research.—Margaret B. Moir: The magnetic properties of certain steels at moderate and high temperatures. The experiments were made in the physical laboratory of Glasgow University. In every case the specimen was rendered neutral at the new temperature previous to carrying out the tests. It is essential that this point should be attended to, and much of the previous work on magnetisation at various temperatures left a good deal to be desired in this respect. One result of interest was the discovery of a transformation point for carbon steel in the neighbourhood of 200° C. The changes in susceptibility which accompany the transformation are very distinct in cast iron and high carbon steels, not so marked for medium carbon steel, and imperceptible for soft iron.—Dr. J. A. Gunn: The pharmacological action of harmine. In this paper the actions of harmine were shown to be qualitatively very similar to those of harmaline, previously described by the author.

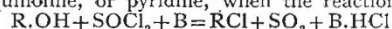
PARIS.

Academy of Sciences, May 8.—M. Armand Gautier in the chair.—P. Appell: The linkages expressed by the non-linear relations between the velocities.—Ch. Lallemand: The survey of the levels of Alpine valleys, with especial reference to the water-courses.—A. Michel Lévy and A. Lacroix: The materials of the rhyolitic and trachytic eruptive explosions of the volcano of Mont Dore. Details and discussion of two complete analyses of the rhyolitic pumice and four of the trachytic pumice.—A. Müntz and A. Lainé: The phenomena of the purification of sewage by the soil and by bacterial beds. It has been shown in a recent paper by the authors that in bacterial beds the destruction of organic matter by direct combustion takes place, and that this effect is greater than the nitrification. A study has now been made of purification by soil under ordinary agricultural conditions, and it has been found that the conditions of purification are different; in the bacterial beds combustion preponderates and nitrification is a secondary phenomenon, in soil nitrification predominates. The conclusion is drawn that soil is much superior as a nitrifying medium to bacterial beds.—M. de Forcrand: The hydrates of rubidium and caesium fluorides.—Paul Sabatier and A. Mailhe: The catalytic decomposition of formic acid. From the reactions already known, formic acid might be expected to split up under the action of catalytic agents in three ways, giving carbon dioxide and hydrogen, carbon monoxide and water, or formaldehyde, carbon dioxide, and water respectively. The change into carbon dioxide and hydrogen is produced by platinum sponge, reduced copper, nickel, cadmium, and the oxides of zinc and tin. The second reaction is furnished by titanium dioxide and by the blue oxide of tungsten. Many substances, including thorium oxide, give all three reactions simultaneously.—L. Cailletet: The origin of the carbon assimilated by plants. The plants used in these experiments, according to the conditions of illumination, could take their carbon either from atmospheric carbon dioxide or from the organic material contained in the soil, or from both at once.—C. Juët: Simple cubic surfaces.—H. Larose: Trigonometrical developments with non-orthogonal components.—Georges Rémondos:

The minimum modulus of integral functions.—**M. Riquier**: The existence of integrals satisfying given conditions along a contour.—**Michel Plancherel**: The application of Laplace's series to the method of summation of *M. de la Vallée-Poussin*.—**Louis Roy**: Viscosity in the motion of flexible wires.—**H. Vergne**: A development in series and its application to the problem of liquid waves by emersion.—**L. Hartmann**: The mechanism of the permanent deformation in metals submitted to extension. A description of the application of the method previously published to aluminium, nickel, two ferro-nickel alloys, copper-nickel, and other alloys.—**J. Olive**: Experiments made with the installation for aerodynamical measurements of the aviation establishment of Vincennes. The installation has for its object aerodynamical measurements on apparatus of full size displaced in calm air. Results are given for a Wright aeroplane.—**M. Rabut**: Partial tunnelling under the Rue de Rome and Boulevard des Batignolles. In the extension of the width of the line it was necessary to cut under these streets, portions of which were then supported on brackets of reinforced concrete.—**L. Houllévigie**: A radiation emitted in the interior of incandescent lamps.—**A. Leduc**: The work of magnetisation.—**H. Woltereck**: The production of ammonia and the economy of nitrogen in peat. It is shown that the treatment of peat by steam alone produces only one-third the quantity of ammonia obtained under similar conditions by the use of a mixture of steam and air.—**G. Charpy** and **S. Bonnerot**: The gases contained in steels. A source of error noted in these experiments was the slow evolution of gas due to a reaction between the heated metal and minute traces of water given off in the mercury pump. Extra precautions against this water vapour gradually diminished the continuous evolution of gas, but it could not be completely stopped.—**Ed. Chauvenet**: The action of carbon oxychloride on artificial and natural sulphides. The action of carbon oxychloride upon nine sulphides of different metals has been studied. The temperature of the reaction was in no case higher than 450° C., and in each case the normal chloride was the sole product. Examples are given of the application of the reaction in quantitative analysis.—**F. Bodroux** and **F. Taboury**: The bromination of some hydroaromatic compounds. Cyclohexane, prepared by the Sabatier and Senderens method, is not sensibly attacked by bromine in the dark at the temperature of the boiling point of the hydrocarbon. In sunlight the action is regular, hydrobromic acid being evolved and a good yield of cyclohexyl bromide being produced. Ultra-violet light cannot replace sunlight in this reaction. Higher bromine derivatives were also prepared.—**M. Lanfry**: A dinaphthothiophene.—**P. Freundler**: Researches on the oxyindazoles.—**G. Gauthier**: The synthesis of tertiary α -ketonic alcohols. Cyanhydrins are first prepared by the interaction of hydrocyanic acid and ketones, and these treated with an alkyl magnesium iodide. Three examples of the application of this general method are given.—**A. de Schulten**: The crystallographic examination of some fluorides obtained by **M. Henri Moissan** and his pupils.—**V. Vermorel** and **E. Dantony**: An anticryptogamic colloidal copper solution. Full details are given for the preparation of the new solution, which possesses certain advantages over those in current use.—**M. Marage**: Contribution to the study of consonants.—**N. A. Barbieri**: The mobility of neuroplasma.—**Pierre Lesne**: The battle against the caterpillar *Zeuzera pyrina*.—**E. Bataillon**: Embryogenesis provoked in the virgin egg of Amphibia by inoculation with the blood or sperm of a mammal. Traumatic parthenogenesis and impregnation without amphimixia.—**MM. Bordas** and **Touplain**: The original acidity of milk. The original acidity of milk, using phenolphthalein as indicator, is due exclusively to the free casein.—**M. St. Mostowski**: The glycogenic property of dioxacetone.—**E. Kayser**: Beer yeast juice.

May 15.—**M. Armand Gautier** in the chair.—**H. Deslandres** and **V. Burson**: The laws relating to the movements of the solar protuberances. A study of the displacement of the K_3 line. The variations observed appear to correspond with the assumption that the velocity of rotation increases with the altitude, at least in the layers immediately above the chromosphere. No light has

been thrown on the question as to whether the displacements east and west are equal or unequal.—**J. Carpentier**: The ophograph, designed by **M. Guillery**. An account of an instrument for drawing tangents to a given curve by mechanical means. By means of this instrument, given a curve representing a function, the curve of the first differential of this function can be obtained graphically.—**A. Blondel**: Harmonic functions determined by certain conditions at the contour.—**A. Chatelet**: Abelian bodies of the third degree.—**Ch. Bertin**: A table of positions for purposes of navigation.—**Captain Duchène**: Good control of the aeroplane in air in motion. A description of two additions to an aeroplane, one designer or preserving longitudinal equilibrium, the other for transversal equilibrium.—**M. Yvon**: Cataphotography. Remarks on a recent publication of **M. Guillaume de Fontenay**.—**Guillaume de Fontenay**: Cataphotography. Acknowledging the priority of **M. Yvon**.—**M. de Broglie**: A particular case of distribution of ionisation in a gas. A very thin superficial layer containing ions of both signs. In the case of the ionisation of air by sulphate of quinine at the surface of the salt during the variations in hydration, there is an infinitely thin layer containing a high density of ions of both signs.—**L. Décombe**: A physical interpretation of non-compensated heat.—**H. Pélabon**: The resistivity of the selenides of antimony. From measurements of the specific resistances of various fused mixtures of antimony and selenium it was hoped to get some evidence as to the existence of definite compounds of these two elements. It was found, however, that the differences in resistance caused by tempering or annealing were so large that no definite conclusions could be deduced from the experimental figures.—**A. Rosenstiehl**: Some historical data relating to osmotic pressure.—**Marc Landau**: The action of the ultra-violet rays upon lactic acid. The gas evolved was mainly carbon dioxide, with some carbon monoxide. Ethyl alcohol, together with traces of pyruvic acid and an aldehyde, were detected.—**Camille Matignon**: The presence of zinc nitride in zinc dust and in commercial zinc. Zinc nitride appears to be present in all commercial samples of zinc dust. It is also met with, although in extremely small quantities, in certain solid zincs.—**Pierre Jolibois** and **Eugène L. Dupuy**: The definite compounds of arsenic and tin. From the metallographic study of a series of alloys of tin and arsenic only two compounds could be clearly defined. These had the composition of Sn_4As_3 and SnAs .—**G. Darzens**: A new method for the esterification of alcohols by the hydracids. The alcohol is treated with thionyl chloride and a tertiary base (B) such as diethyl-aniline, quinoline, or pyridine, when the reaction



takes place quantitatively. A similar reaction with SOBr_2 gives good yields of bromides.—**A. Petit**: The fixing of phosphoric acid by the organic matter of the soil. Soils rich in organic matter do not fix any appreciable amounts of phosphoric acid.—**Paul Becquerel**: The supposed production of new plant forms by the method of traumatism. The author concludes that neither in his own experiments with *Zinnia* nor those of **M. Blaringhem** with maize have new forms been really produced.—**H. Hallopeau**: The region of primary invasion of syphilis.—**Albert Berthelot**: Researches on di-iodotyrosine and its possible utilisation in therapeutics. Experiments made with 3:5-di-*l*-iodotyrosine showed that it is well tolerated by man and by animals, and promises to be a useful means of introducing relatively large quantities of iodine into the body without prejudicial after effects.—**Jules Amar**: Walking on an inclined plane.—**P. Achalme** and **M. Bresson**: The influence of the viscosity of the medium upon diastatic actions. An increase in the viscosity of the liquid, produced by the addition of glycerol, exerts a reducing influence on diastatic action which is very great compared with the variations introduced by other factors. The full discussion of the theoretical bearing of these experiments is reserved for a later paper.—**Armand Juillet**: Comparative observations on the relations between the lungs and the aërial sacs in birds.—**J. Wolff**: Some phenomena of reduction of oxyhaemoglobin. If the colouring matter is repeatedly reduced by ammonium sulphide and oxidised by shaking with air, after twenty-five or thirty times the

blood pigment is entirely destroyed. When, however, a biological reducing agent, such as the coccus obtained from a maceration of cheese, is employed, the alternate reduction and oxidation can be reproduced almost indefinitely.—Augustin **Wroblewski**: The soluble ferments of the brain. The presence of catalase, peroxidase, and lipase was proved.—Gabriel **Bertrand** and M. **Javillier**: The influence of zinc and manganese on the mineral composition of *Aspergillus niger*.—Jules **Stoklasa**: The physiological importance of manganese and aluminium in the plant cell.—R. **Lehmann** and C. **Vaney**: Percentages and qualities of the skins attacked by larvae of Hypoderma in the Lyonnaise district.—Jules **Chalande**: Segmentary division in the myriopods.—E. **Roubaud**: The biological and morphological variations in *Stomoxe mutin* in tropical Africa.—A. **Gruvel**: Contribution to the systematic study of the Palinuridae.—Pierre **Kenel**: The adipo-lymphatic bodies of some batrachians.—A. **Dehorne**: Nuclear permutation in the conjugation of *Colpidium colpoda*.—G. **Le Cadet**: The registration of a seismic shock by the large Richard barograph at the central Observatory of Indo-China.

DIARY OF SOCIETIES.

THURSDAY, MAY 25.

ROYAL SOCIETY, at 4.30.—Experiments on the Compression of Liquids at High Pressures: Hon. C. A. Parsons, F.R.S., and S. S. Cook.—Energy Transformations of X-rays: Prof. W. H. Bragg, F.R.S., and H. L. Porter.—Spectroscopic Investigations in connection with the Active Modification of Nitrogen. I. Spectrum of the Afterglow: Prof. A. Fowler, F.R.S., and the Hon. R. J. Strutt, F.R.S.—An Optical Method of Measuring Vapour Pressures; Vapour Pressure and Apparent Superheating of Solid Bromine: C. Cuthbertson and Mrs. M. Cuthbertson.—The Vacuum-tube Spectra of Mercury: Dr. F. Horton.—The Production of Characteristic Röntgen Radiations: R. Whiddington.

ROYAL INSTITUTION, at 3.—Air and the Flying Machine. II. Conditions of Safety for Floaters and Fliers: Dr. W. N. Shaw, F.R.S.

ROYAL SOCIETY OF ARTS, at 4.30.—N.W.F. Province of India: W. R. H. Merk.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—The Heating of Cables with Current: S. W. Melsom and H. C. Booth.

SATURDAY, MAY 27.

ROYAL INSTITUTION, at 3.—Phases of Bird Life. II. Migration: W. P. Pycraft.

ARISTOTELIAN SOCIETY (at Oxford in conjunction with Mind Association).—A Symposium on the Relation of Psychology to Metaphysics: G. F. Stout and A. Smith.

MONDAY, MAY 29.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—The Geographical Conditions affecting the Development of Canada: Prof. W. L. Grant.

ARISTOTELIAN SOCIETY, at 8.—A New Law of Identity: Miss E. E. C. Jones.

TUESDAY, MAY 30.

ROYAL INSTITUTION, at 3.—The Ancient Volcano of Charnwood Forest (Leicestershire): Prof. W. W. Waits, F.R.S.

WEDNESDAY, MAY 31.

INSTITUTION OF MINING AND METALLURGY, at 8.—Future Economies in Rand Reduction Plants: C. O. Schmitt.—The Roasting of Complex Ores in Gold Assaying: A. C. Hoare.—A Prospector's Method of Gold Assay: G. M. Austin.

THURSDAY, JUNE 1.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: Experiments on the Restoration of Paralysed Muscles by means of Nerve Anastomosis: Dr. R. Kennedy.—The Mechanism of Carbon Assimilation. Part III: F. L. Usher and J. H. Priestley.—The Action of Radium Radiations upon some of the Main Constituents of Normal Blood: Miss Helen Chambers and Dr. S. Russ.—The Pathogenic Agent in a Case of Human Trypanosomiasis in Nyasaland: H. S. Stannus and Dr. W. Yorke.—The Experimental Transmission of Goitre from Man to Animals: Capt. R. McCarrison.

ROYAL INSTITUTION, at 3.—Changes Effected by Light: T. Thorne Baker.

RÖNTGEN SOCIETY, at 8.15.—On a Possible Therapeutic Use of Strongly Ionised Air: C. E. S. Phillips.—Photographic Action of the Positive Brush Discharge: Charles W. Raffety.

LINNEAN SOCIETY, at 8.

INSTITUTION OF MINING ENGINEERS, at 11 a.m.—A Flame Test for the Estimation of Oxygen and Black-damp in Naked-light Mines: Dr. J. S. Haldane, F.R.S.—An Experiment on the Effect of Reversing the Main Air-current: James Bain and Dr. J. S. Haldane, F.R.S.—Notes on Contrivances Designed to Prevent Overwinding, with some Instances of their Failure: W. H. Pickering and Granville Poole.—The Otto-Hilgenstock Direct-recovery Process and its Application: Ernest Bury.

FRIDAY, JUNE 2.

ROYAL INSTITUTION, at 9.—Radiotelegraphy: Commendatore G. Marconi.

SATURDAY, JUNE 3.

ROYAL INSTITUTION, at 3.—Types of Greek Women: Dr. W. L. Courtney.

FORTHCOMING CONGRESSES.

MAY 30.—International Sanitary Conference (Prevention of Plague). Paris.

JUNE 28 and 29.—Conference on Education and Training of Engineers. London. President: Mr. Alexander Siemens, President of the Institution of Civil Engineers. General Secretary: Dr. J. H. T. Tudsbury.

JULY 18-22.—International Association of Seismology. Manchester. President: Prof. Arthur Schuster, F.R.S.

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JULY 25-28.—British Medical Association. Birmingham. President: Dr. H. T. Butlin, Pres.R.C.S.

JULY 26-29.—First Universal Races Congress. University of London. President: Lord Weardale. General Secretary: G. Spiller, 63 South Hill Park, Hampstead, London.

JULY 29 TO AUGUST 5.—Congress of French Geographical Societies. Roubaix. President: Prince Roland Bonaparte.

JULY 30 TO AUGUST 2.—Annual Meeting of the Swiss Society of Natural Sciences. Soleure. President: Dr. A. Pfäehler. Inquiries to Secretaries: Dr. Küng (German) and Prof. Brönnimann (French).

AUGUST.—Centenary of the University of Breslau.

AUGUST 12-18.—First International Congress of Pedology. Brussels. President: M. Alexis Sluys. Secretary: M. Vital Plas, 35 Avenue Paul de Jaer, Brussels.

AUGUST 13-20.—Prehistoric Society of France. Nimes.

AUGUST 31 TO SEPTEMBER 6.—British Association. Portsmouth. President: Sir William Ramsay, K.C.B., F.R.S. Address for inquiries: General Secretaries, Burlington House, W.

SEPTEMBER 4-6.—Centenary of the University of Christiana. President of Festival Committee: Prof. Brögger.

SEPTEMBER 9-20.—International Congress of the Applications of Electricity. Turin. President of the Committee of Honour: H.R.H. the Duke of the Abruzzi. Honorary Secretary of the Committee: Signor Guido Semenza, Via S. Paolo 10, Milano. International Secretary: Col. R. E. Crompton, C.B., R.E., Crompton Laboratory, Kensington Court, W.

SEPTEMBER 24-30.—International Congress on Tuberculosis. Rome. Address for inquiries: Honorary Secretary of the National Association for the Prevention of Consumption, 20, Hanover Square, W.

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