

ment of the absolute photometric intensity of the light, it is inferred that the excited atoms that emit the light are produced continuously during the night, the energy coming from energy of dissociation or ionisation stored up during the day. The level of the emission may be assigned as between 100 km. and 200 km.

¹ Abstract of the Bakerian Lecture delivered before the Royal Society on June 25, by Prof. S. Chapman, F.R.S.

Birthdays and Research Centres.

Sept. 14, 1849 (old style), or Sept. 26.—Prof. I. P. PAVLOV, For.Mem.R.S. and Nobel laureate in 1904 for physiology and medicine, director of the Institute of Experimental Medicine, Leningrad.

I am continuing the investigation of the highest nervous activity by the method of conditioned reflexes. This investigation includes in its scope the study of the normal activity, as well as that of different pathological states, which we are provoking intentionally, and the recovery of the normal after them.

Sept. 17, 1859.—Prof. F. D. ADAMS, F.R.S., emeritus professor of geology, dean of the faculty of applied science, and vice-principal of McGill University.

I am at present engaged in a study of the historical development of our knowledge of certain phenomena of physical geology and of our views on the nature and classification of minerals in the time antedating the rise of historical geology at the close of the eighteenth century; also in a study of certain points in connexion with the geological relations and petrography of the Palæozoic intrusions of the Monteregian Hills.

One of the most important pieces of work which could be undertaken at the present time in geology would be a comparative and at the same time comprehensive study of the great developments of the Pre-Cambrian exposed in certain typical areas such as those in North America (the Canadian Shield), Finland and Scandinavia (the Baltic Shield), and in South India and Ceylon, as recently suggested by Dr. Sederholm, of Helsingfors, with the view of advancing, so far as possible, our knowledge of the geological succession as set forth in these ancient records of the beginnings of the history of the earth.

Sept. 17, 1870.—Lieut.-Col. S. P. JAMES, F.R.S., I.M.S. (retired), medical officer and adviser on tropical diseases, Ministry of Health.

At the Malariotherapy Centre which was established by the Ministry of Health and the London County Council at Horton in 1925, psychiatric studies on the effect of induced malaria on general paralysis go hand in hand with investigations into the malarial infection itself, its natural history in man and in mosquitoes, its treatment, and its prevention. Recently attention has been devoted chiefly to chemotherapeutic experiments with a view of improving the treatment of obstinate cases of malignant tertian malaria, and to chemoprophylactic experiments having for their object to ascertain whether any known or reputed antimalarial remedy is a true preventive of human malarial infection contracted in the natural way by the bites of mosquitoes. The former experiments have not, as yet, yielded a noteworthy result, but from the latter the striking fact has emerged that the German synthetic preparation 'plasmoquine', when taken in suitable doses before and after a person is bitten by infective mosquitoes, possesses the remarkable property of preventing him from becoming infected.

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These and other experiments now being conducted at Horton indicate that a subject to which attention might usefully be given is the revision of the classical chemotherapeutic method of testing antimalarial drugs (the method devised and practised so diligently by the late Dr. Roehl) in the light of the new knowledge that not all the different phases or forms of the malaria parasite which occur in the human host are amenable to the same drug, and that the problem of controlling malaria by the use of drugs is not so much a problem of finding a drug which is more effective than quinine against the fever-producing forms of the parasite as it is of finding other drugs that will be effective against the sporozoite stage, the sexual stage, and the stage responsible for relapses.

Sept. 18, 1854.—Sir RICHARD GLAZEBROOK, K.C.B., F.R.S., formerly director of the National Physical Laboratory.

The date that stands above, Sept. 18, 1854, will tell my friends that I can no longer ask their interest in or their support for personal investigations. The time for these is over, but in the future there are many problems I would wish them to carry forward to a complete solution.

Thirty years of a not inactive life have been given to the endeavour to bring home to all the need that, if we are to maintain our place in the world, we dare no longer trust to the natural advantages of our position and to the fact that during the past century great Englishmen have been the foremost to advance natural knowledge. We must apply to our daily wants the truths they wrested from Nature.

This lesson was never more necessary than to-day. There are among us men most skilled in unveiling Nature's secrets; others there are well fitted to apply the knowledge so gained to the problems of each day's life. I wish to see the work of these men helped onwards by all means in our power, while at the same time our leaders, and those they lead, grasp the truth that it is on such foundations that they must build.

Sept. 18, 1865.—Sir ALEXANDER HOUSTON, K.B.E., C.V.O., F.R.S., director of water examinations, Metropolitan Water Board.

Systematic search might usefully be made for the presence and numerical abundance of the microbes of epidemic water-borne disease (typhoid and paratyphoid) in sewages, sewage effluents, and in sewage polluted rivers. Very little is known of this subject despite the pioneer work carried out by Wilson, Gray, Begbie, and Gibson, and the Metropolitan Water Board.

The extensive work already achieved in the examination of the dejecta of enteric fever patients and of 'carriers' should be greatly extended in the direction of estimating the number and not merely the presence of the germs of enteric disease. In positive cases, the opportunity should be seized of determining the vitality of these 'uncultivated' pathogenic organisms in the materials examined at different temperatures.

Turning next to a totally different problem. Is there not room for further research on the cause, prevention, and treatment of that painful and often most intractable disease herpes zoster, and its alleged relationship with chicken-pox?

Sept. 18, 1881.—Prof. ARTHUR M. TYNDALL, Henry Overton Wills professor of physics, and director of the Wills Physical Laboratory, University of Bristol.

The activities on the physical side of the Wills Physical Laboratory at Bristol are mainly concentrated upon three subjects: spectroscopy, magnetism

and conduction through gases. In each of these branches groups of workers are engaged. My own investigations lie in the last of these, and in the mobility of gaseous ions in particular. We have recently shown that minute traces of impurity may have a profound effect upon the mobility of positive ions. Thus the mobility of positive ions in helium is raised fourfold by the elimination of all impurities. We are therefore engaged upon a re-investigation of the whole subject with improved technique. We also find that the method may be used to analyse the ions present in the various inert gases when contaminated by small amounts of known impurities, and we are thereby obtaining useful information on the phenomena of electron capture and of ionisation by collisions with metastable atoms.

Societies and Academies.

PARIS.

Academy of Sciences, July 15.—The president announced the death of Albert A. Michelson, foreign associate.—**Ch. Fabry**: An interferential level without an air bubble. A liquid, preferably oil, is contained in a vessel the bottom of which is a platinised glass spherical surface of very large radius (500 metres). By means of the interference rings produced, this can be used as a level of high precision.—**C. Camichel and P. Dupin**: The various modes of contraction of a liquid stream at the commencement of an efflux.—**Henri Lagatu and Louis Maume**: The variation of the physiological relations between the mineral constituents of a plant species.—**M. Ghermanesco**: The n -metaharmonic functions.—**René Pallu**: Study of the system H_3PO_4 , $Ba(OH)_2$, CO_2 , H_2O .—**Agostino Puppo and Pietro Longo**: The storm of July 24, 1930, in the Treviso-Udine district. A correction of a misprint in the *Comptes rendus*, June 8, 1930.—**A. Guilliermond**: The mode of formation of the anthocyanic pigments in the flower of *Iris germanica*. The anthocyanic pigments in the flower of *I. germanica* are preceded by the production of oxyflavonols.—**Léon Binet and J. Magrou**: Sulphur and growth. The high proportion of glutathione in tissues during the period of proliferation suggested a study of the influence exerted on growth by various sulphur compounds. The activating action of sodium hyposulphite on growth has been demonstrated in the case of cress and of the tadpole.—**C. Levaditi, J. Bardet, A. Tchakirian, and A. Vaisman**: The distribution of gallium in the organism. From the point of view of its distribution in the blood and tissues (rabbits) gallium behaves like bismuth, tellurium, and mercury.—**Bordier**: The remarkable action of diathermic d'Arsonvalisation at a distance.

July 20.—**G. Ferrié**: *Compte rendu* of the general meeting of the International Radio-Scientific Union held at Copenhagen on May 27–June 6, 1931. Details of the various committees and the work allotted to each.—**L. Blaringhem**: A mutation of the common wall-flower (*Cheiranthus Cheiri*).—**Gabriel Bertrand and P. Serbescu**: The toxic power of aluminium compared with that of iron, nickel, and other metals. Aluminium and iron possess about the same toxic power, both much less than that of nickel and copper. There is no definite proof that small repeated doses of aluminium are toxic.—**M. de Broglie and L. Leprince-Ringuet**: The artificial disintegration of aluminium.—**C. Sauvageau**: The rôle of Aglaozonia of parthenogenetic origin.—**H. Milloux**: Certain integral functions and their derivatives.—**Lucien Féraud**: Arithmetical study of the permanent stability in the neighbourhood of an

equilibrium point.—**Alfred Rosenblatt**: The movements of viscous liquids symmetrical with respect to an axis.—**Pierre Dive**: An exclusive property of ellipsoidal homoids.—**G. Fayet**: The orbits of the planets Neptune and Pluto.—**Auguste Claude**: The use of geometric loci for the representation of observations of passage in the meridional telescope.—**L. Bouchet**: The electromotive forces of two liquid batteries and their variations with the dilution of the solutions.—**F. Holweck and P. Chevallier**: A 150-kilowatt triode capable of being taken apart.—**Horia Hulubei**: A system of bands of mercury in the neighbourhood of its resonance ray.—**J. Cabannes and Mlle. D. Osborne**: The depolarisation of lines of the CO_3 ion in the spectrum of the light diffused by a calcite crystal.—**Jean Becquerel and Louis Matout**: The decomposition of the absorption bands of xenotime by a transverse magnetic field. The conditions of symmetry in relation with the crystalline symmetry. A new interpretation of the magneto-electric effect.—**Constantin Salceanu**: The invariant of magnetic rotation of some organic substances in the fused state.—**Mlle. Quintin**: The hydrolysis of copper sulphate.—**René Audubert**: The rôle of water in photovoltaic cells. The experiments detailed establish that water plays an essential part in photovoltaic phenomena, its influence being mainly exercised in the adsorption layer at the surface of the electrode.—**Tcheng Dat-chang**: The purification of the protactinium fixed on tantalum oxide, with reference to the estimation of protactinium in radioactive minerals. In determining the proportions of protactinium present in radioactive minerals, it is essential that radium, ionium, and polonium should first be removed. Details of satisfactory methods of separation of these three elements are given.—**Albert Portevin and Pierre Chevenard**: The graphitisation of steels at a low temperature.—**P. Laffitte and M. Patry**: The deflagration and detonation of mercury fulminate.—**Georges Lévy**: α -Ethyl-naphthalene and its hydrogenation products.—**A. Mailhe and Creusot**: The transformation of toluene and of xylene into methane. A quantitative study of the hydrogenation of these two hydrocarbons in the presence of reduced nickel as catalyst at varying temperatures.—**Émile André and Charles Vernier**: The rotatory power of ricinoleamide.—**F. Dupré la Tour**: The polymorphism of malonic, succinic, and glutaric acids as a function of the temperature. Each of these acids exists in two forms, with a definite transition temperature.—**Louis Glangaud**: The structure of the primary massif of Algiers.—**J. Malavay**: The geology of Mauritania of the Nord.—**Y. Milon and M. Sire**: The interdependence of the Tertiary and Quaternary formations in the Vilaine and Mayenne valleys.—**Ch. Poisson**: Phenomena due to the meeting of a monsoon and a trade wind on the southern Indian Ocean.—**H. J. Maresquelle**: The action of *Bacterium tumefaciens* on regeneration, in the root of *Taraxacum dens leonis*.—**Pierre Gavaudan and Robert Cazalas**: New observations on the spermatogenesis of the Characeæ. The nature of the granulated band and the appearance of carotene and of chlorophyll in certain spermatocytes.—**Charles Pérez**: Organogenesis of the substitution buds in *Chlorogaster*, parasite of the hermit crab.—**A. Policard**: Histochemical researches on the initial lesions of experimental pulmonary silicosis (silica plaques).—**Aloncle**: The synergism of hypophyisine and thymine.—**A. Leulier, B. Pommé, and R. Delaye**: The distribution of potassium in healthy or pathological muscle.—**E. Roubaud**: Cyclic evolutive fatigue and tireless strains in the common green fly *Lucilia seratica*.—**E. Chatton and Mme. M. Chatton**: The conjugation of *Paramœcium caudatum* determined