

Science News a Century Ago

Submarine Navigation Experiments

The Times on September 1, 1835, said: "According to the Paris papers, some curious experiments have lately been made at St. Ouen near Paris, with a submarine vessel, the invention of M. Villeroy, the engineer. The vessel is of iron, and of the same shape as a fish of the cretaceous tribe. Its movements and evolutions are performed by three or four men, who are inside, and who have no communication with the surface of the water, or the external air. With this machine navigation can be effected in spite of currents; any operations may be carried on under water, and it may be brought to the surface at will, like an ordinary vessel. It was with a machine similar to this that the project was formed in 1821 for getting away Napoleon from St. Helena. The Société Générale des Naufrages (protector, the King) has appointed Admiral Sir Sidney Smith, Count Godde de Liancourt, the Baron de St. Denis and Dr. Daniel St. Antoine to report on the experiments to be made at St. Ouen."

Ireland and the British Association

THOUGH the British Association meeting in Dublin in August 1835 was generally regarded as a success, some adverse comments on it were made in the *Dublin University Magazine*, extracts from which were published in *The Times* on September 4. "We cannot conceal our conviction," the *Magazine* said, "that for the purposes of the advancement of science the association is little better than useless. . . . The association, we prophesy, will soon see its end. . . . We rejoice, however, that it has lived long enough to visit Ireland; we rejoice that its visit to this island has been marked by so many traits that confer honour upon our country and our countrymen. We rejoice in anything that can confer honour upon 'ould Ireland', and so having said enough, perhaps some will think too much, upon a subject which we could not pass over in silence, we will leave the 'savans' and the association to go their ways in peace, and we will return with a good heart and an honest purpose to our own labours—labours that, though we may say it 'that should not say it' will do more than 50,000 British Associations to make that same 'ould Ireland'."

'What she ought to be—great, glorious and free,
First flower of the earth, and first gem of the sea!'

Lyell in Switzerland

ON September 6, 1835, Lyell wrote to Viscount Cole (afterwards Earl of Enniskillen) from Meiringen, giving an account of the work he had done in Switzerland just before he left to attend the meeting of the German naturalists at Bonn. He had visited Berne, made excursions to Neuchâtel and the Jura and had taken soundings in the Lake of Thun. "But I found," he wrote, "when I attempted to understand the geology of the neighbourhood of the lake of Thun, even with Studer's newly published book and map and sections as he calls them in my hand, that I could not at all comprehend it, nor make out what he meant by his numerous formations. I therefore determined to make myself master if possible of the geology of this part of Switzerland, on which much more has now been written than on any other part of the Alps, before I make an attack on less known

districts. This I have in some measure accomplished; but in doing it and climbing the Jungfrau and the Urbach Sattel, I have spent the time which was to have been given to Glaris which I hope, however, is postponed. I must now proceed at once on my way to the Bonn meeting. . . ."

One of Faraday's Mistakes

FARADAY'S entry in his "Diary", on September 6, 1835, opens with the paragraph: "Rose tells me that Berzelius in his annual account objects to my antimony proto sulphuret, and I am therefore hastened to its examination the first thing this autumn, having meant to defer it awhile before Rose told me this."

The supposed new compound had been referred to by Faraday in his "Seventh Series of Experimental Researches in Electricity", published in 1834, and described as having been prepared by fusing together the "ordinary sulphuret of antimony" with metallic antimony. He now, in September 1835, repeated the fusion more carefully, and analysed the product. The result differed from that previously obtained, for on September 12 the entry appears: "My former conclusions appear to be wrong, whatever the cause of this difference may be". He thereupon wrote off to the *Philosophical Magazine* withdrawing the new compound, saying that Prof. Rose on a visit to London had told him of Berzelius's objections, and that he had been "induced to make more accurate experiments on that point, which showed me my error". The letter, with a translation of Berzelius's paper, was duly published in June 1836.

Societies and Academies

PARIS

Academy of Sciences, July 8 (*C.R.*, 201, 105–180). RICHARD FOSSE, PAUL EMILE THOMAS and PAUL DE GRAEVE: The estimation by weight and the identification by elementary analysis of small quantities of formol in very dilute solutions. The method is based on the reaction of formol with β -naphthol, and determines formol at concentrations between 30 and 200 parts per million, with an accuracy of one per cent or less. HENRI DEVAUX: The insolubility of thin plates of albumen. H. GRUYELLE and CHARLES POISSON: The magnetic anomaly of Tsiafajavona. MARC KRASNER: The theory of the ramification of ideals. H. AUERBACH and S. ULAM: The number of generators of a semi-simple group. PAUL MONTEL: Positive harmonic functions. OCTAVE ONICESCU: Holotope functions. ANDRÉ AURIC: An empirical formula giving the distances at which the successive rings of the nebular hypothesis are formed. MLE. MARGUERITE ROUMENS: The systematic inclination to the west of the equatorial solar prominences of mean latitudes. DANIEL BARBIER, DANIEL CHALONGE and ETIENNE VASSY: The continuous spectrum of Nova Herculis. DIKRAN G. DERVICHIAN: The interpretation of the Eötvös constant and of its different values. NICOLAS STOYKO and RAYMOND JOUAUST: The propagation of short radio-electric waves in the region of the polar aurora. LOUIS NÉEL: The number electrons which contribute to the paramagnetism of nickel. The study of nickel alloys shows that an electron of the alloy metal annuls the magnetic contribution of a nickel electron. There is complete continuity between ferro- and para-magnetism, and

the same electrons intervene in both cases. LÉON and EUGÈNE BLOCH: The spectra of zinc, cadmium and mercury in the extreme ultra-violet. GEORGES DÉCHÈNE: The influence of the passage of an electric current on the phosphorescence of zinc sulphide. MAURICE CURIE: The hyperbolic law of the decline of phosphorescence. MAURICE PROST: The radiation accompanying the dehydration of quinine sulphate. The ease with which the radiation can be deflected shows that it is not due to large ions, thus differentiating this emission from that arising from the oxidation of phosphorus. HENRI MOUREU and PAUL ROCQUET: The structure of phosphorus pentachloride and of phosphorus pentamide $P(NH_2)_5$. PIERRE CARRÉ and DAVID LIBERMANN: The reaction of thionyl chloride with *m*- and *p*-aminobenzoic acids. ROBERT LANTZ: Study of the mechanism of the monosulphonation of naphthalene. GEORGES DARZENS and ANDRÉ LÉVY: The action of organomagnesium compounds on methylnaphthalenic and phenanthrenic esters. JACQUES DE LAPPARENT: The stages of the metamorphism of the Samos emeries. PIERRE DRACH: The modifications undergone by the skeleton in the decapod Crustacea before casting the shell. GEORGES A. NADSON and MME. CATHERINE STERN: The action of metals at a distance on germinating seeds. The inhibiting effect on growth produced by plates of various metals is shown to depend on the radioactivity of the surrounding air. MME. VÉRA DANTCHAKOFF: The differences of sensibility of tissue receivers towards folliculin at various embryonic stages. MME. MARIE PHISALIX and FÉLIX PASTEUR: The action of short waves on antivenom snake sera as well as on their neutral mixtures with the corresponding poisons. THÉOPHILE CAHN and JACQUES HOUGET: The transport of lipids in the animal organism. ANDRÉ BOIVIN and MME. LYDIA MESROBEANU: The presence of a 'complete' antigen and of a 'residual' antigen in various bacteria. A. BESREDKA, I. MAGAT and P. BESNARD: The importance of the mode of entrance in the evolution of the Pearce-Brown epithelioma. Testicular epithelioma of the rabbit, resulting in fatal generalised cancer, changes its character when it is inoculated under the skin. The tumour on the skin, although epitheliomatous in structure, is benign and is resorbed. PIERRE LÉPINE: The comparative action of immersion in glycerol and of freezing on the preservation of the virulence of rabic marrows. The usual method of preservation in glycerol at about 0° C. leads to a gradual loss in activity, due to the action of the glycerol. Freezing at -10° C. leads to no loss of activity for at least 70 days. CONSTANTIN LEVADITI, RENÉ MARTIN, ANTOINE BONNEFOI and MME. RACHEL SCHEN: The etiology of mumps. RAYMOND-HAMET: Some pharmacological effects of ergometrine, a new alkaloid from ergot of rye. JEAN CUILLE, CHELLE and BERLUREAU: The identity of French and Algerian ovine anaplasmosis.

LENINGRAD

Academy of Sciences (*C.R.*, 2, Nos. 3-4, 1935). A. GELFOND: Approximations of transcendent numbers by algebraic numbers. J. PRIVALOV: Some questions of the theory of subharmonic functions (2). E. KUZNECOV: The law of probability of an accidental vector. A. POPOV: Some results obtained by V. Brun. I. S. ASTAPOVICH and V. K. FEDYNSKIJ: Heights of meteors. G. KRUTKOV: A note on the

'great complexes' of Gibbs and the method of Darwin and Fowler. W. ARKADJEV: Magnetic and electric spectra in high frequency. V. FREDERICKS, G. MICHAJLOV and D. BENESZEWICZ: Electroconductivity of an anisotropic fluid. V. FESENKOV: Luminosity of the night sky at Kitab, Tashkent and Kuchino. N. N. KALITIN: Intensity of the radiation from the sky at wave-lengths 3292 Å., 3595 Å. and 3944 Å. E. A. SHILOV and G. V. KUPINSKAJÁ: Rate of hydrolysis of chlorine. N. D. ZELINSKIJ: Catalytic aromatisation of benzines. A. L. KLEBANSKIJ, U. A. DRANTCINA and I. M. DOBROMILSKAJA: A new trimeric combination of acetylene, acetylenyldivinyl. N. I. KOBOZEV, S. S. VASILJEV and E. E. HALBRAICH: Catalytic influence of mercury vapour on the cracking of methane in a glow discharge. V. V. TCHELINZEV: Oxonic compounds. Acid compounds of chinones and their chlorination and bromination. G. V. TCHELINZEV and E. D. OSETOVA: The α -benzoylbutyrolactone, γ -benzoyl-propyl-alcohol and γ -benzoyl-propyl-bromide. M. K. DJAKOVA and A. V. LOZOVJOJ: Hydrogenation of Cheliabinsk brown coal. V. TETERIN and A. IVANOV: Investigations on the synthesis of vitamin A. (1) Action of magnesium on a mixture of 1,4-dibrombutene-2 and ionon. A. E. FERSMANN: Energy indices in geochemistry. S. D. CHTVERIKOV and A. F. FIOLETOVA: Celadonite from Koktebel, Crimea. V. I. DANILOVICH: Scheme of stratigraphy of the Khingán complex. O. S. VIALOV: A classification scheme of tertiary strata in Ferghana. O. S. VIALOV, S. F. MASHKOVCEV and G. I. SHATOV: Cretaceous basalt in Ferghana. O. L. EINOR: A detailed stratigraphical section of the super-carboniferous of the Kizel district, Urals. P. P. LAZAREV: The action of a condenser discharge from the point of view of the ionic theory of excitation. D. KOSTOFF and I. A. AXAMITNAJA: Studies on polyploid plants (9). Chemical analysis of diploid and their autotetraploid plants. L. P. BRESLAVEZ: Differential fertilisation of the hemp plant. B. M. GOLUSH: Changes of the plasma permeability induced by temperature effects. R. M. BARCINSKIJ: The agent stimulating sprouting of *Orobancha cumana* seeds. S. V. SOLDATENKOV: Data on the chemistry of the artificial ripening of the Japanese persimmon (*Diospyros kaki*, L.). I. KOZHANCHIKOV: Role of anoxybiotic processes in the larval diapause of some *Pyralidae*. L. K. LOZINA-LOZINSKIJ: The anabiosis of larvae of *Pyrausta nubilalis*, Hübn., after freezing. J. D. KIRSCHENBLATT: The problem of the origin of some nidicoles (nest dwellers). B. A. ZENKOVICH: Whale fetuses.

MELBOURNE

Royal Society of Victoria, July 12. F. CHAPMAN and IRENE CRESPIN: Foraminiferal limestone of Eocene age from North-West Division, Western Australia. Eocene sedimentary rocks have been discovered for the first time in Australia, during the survey by Messrs. E. A. Rudd and D. Dale Condit, of the Bullara Area. Two samples of limestones from slightly different localities contain a foraminiferal fauna of a Lower to Middle Eocene age. R. A. KEBLE: Victorian Tertiary flora and its influence on sedimentation. The plant beds at Narracan, Dargo, Darlimurla, Bogong, Berwick and probably Moonee Ponds are regarded as of Eocene age, those at Bacchus Marsh, Mornington, Haddon and the lignites at Yallourn (Morwell), Altona and other places as Oligocene, the Pitfield plant bed as Lower Miocene, and the Sentinel Rock plant bed as late Miocene. The flora indicates

that a subtropical climate persisted to the middle of the Miocene and the vegetation was similar to that in the region of the Tropic of Capricorn. The Sentinel Rock flora suggests a temperate climate and vegetation similar to that in Victoria and Tasmania.

VIENNA

Academy of Sciences, June 13. ERNST ROUSCHAL: The dependence of the intake of water by entire plants on the temperature. The lowered absorption of water brought about by cooling the roots of plants to 0° C. does not resume its normal value when the temperature is afterwards made normal, and the course of the recovery varies with different plants. GERHARD KIRSCH and FRITZ RIEDER: Disintegration of nitrogen by neutrons. In this disintegration, two processes, both connected with capture of the neutron, take place. In one, an α -particle and B^{11} are formed by emission, and in the other, which is much rarer and is effected mainly by the more rapid neutrons, C^{14} arises, presumably by proton emission. HERBERT SCHÖBER: Measurement of the daily and monthly variation in the length of the ultra-violet for the solar and zenith spectra at Watten (Tyrol). OTTO DISCHENDORFER: Condensation of benzoin and hydroquinone.

Forthcoming Events

[Meetings marked with an asterisk are open to the public.]

Sunday, September 1

BRITISH MUSEUM (NATURAL HISTORY), at 3 and 4.30.—
M. A. Phillips: "Birds".*

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
(NORWICH MEETING)

Wednesday, September 4

At 8.30 p.m.—Prof. W. W. Watts: "Form, Drift and Rhythm of the Continents" (Presidential Address in the Agricultural Hall).

Thursday, September 5

At 10 a.m.—Prof. W. N. Haworth: "The Molecular Structure of Carbohydrates" (Presidential Address to Section B).

Prof. F. Balfour-Browne: "The Species Problem" (Presidential Address to Section D).

Prof. F. Debenham: "Some Aspects of the Polar Regions" (Presidential Address to Section E).

Mr. J. S. Wilson: "Stability of Structures" (Presidential Address to Section G).

Friday, September 6

At 10 a.m.—Dr. F. W. Aston: "The Story of Isotopes" (Presidential Address to Section A).

Prof. G. Hickling: "Some Geological Aspects of Recent Research on Coal" (Presidential Address to Section C).

Prof. J. G. Smith: "Economic Nationalism and Foreign Trade" (Presidential Address to Section F).

Dr. Ll. Wynn Jones: "Personality and Age" (Presidential Address to Section J).

Dr. A. W. Pickard-Cambridge: "Education and Freedom" (Presidential Address to Section L).

At 2 p.m.—Conference of Delegates of Corresponding Societies. Prof. P. G. H. Boswell: "Preservation of Sites of Scientific Interest in Town and Country Planning" (Presidential Address).

At 8.15 p.m. Dr. S. J. Davies: "Diesel Engines and Coastal Shipping" (Agricultural Hall Assembly Room).

Official Publications Received

Great Britain and Ireland

Air Ministry: Aeronautical Research Committee: Reports and Memoranda, No. 1639 (P. 3527 revd.): Wind Tunnel Wall Interference on Pitching Moments of Large Models in Duplex Tunnel. By W. L. Cowley and G. A. McMillan. Pp. 13+4 plates. 9d. net. No. 1648 (T. 3628): Reaction on a Wing whose Angle of Incidence is changing Rapidly; Wind Tunnel Experiments with a Short Period Recording Balance. By W. S. Farren. Pp. 24+30 plates. (London: H.M. Stationery Office.) 2s. 3d. net.

The Harper Adams Adviser. Advisory Report No. 10: A Review of Advisory Work in the West Midland Province, 1934-1935. Pp. 24. (Newport, Shropshire: Harper Adams Agricultural College.)

Mines Department. Thirtieth Annual Report of the Safety in Mines Research Board including a Report of Matters dealt with by the Health Advisory Committee, 1934. Pp. 134. (London: H.M. Stationery Office.) 2s. net.

Department of Scientific and Industrial Research. Report of the Food Investigation Board for the Year 1934. Pp. x+261. (London: H.M. Stationery Office.) 4s. net.

The North of Scotland College of Agriculture. Calendar, Session 1935-1936. Pp. viii+128. (Aberdeen: North of Scotland College of Agriculture.)

Technical Publications of the International Tin Research and Development Council. Series A, No. 19: The Use of Sodium Sulphate as an addition to Alkaline Detergents for Tinned Ware. By Dr. R. Kerr. Pp. 12. Series A, No. 20: The Twinning of Single Crystals of Tin. By Dr. Bruce Chalmers. Pp. 16. Series B, No. 2: Equilibrium Diagrams of Binary Alloys of Tin. By Dr. E. S. Hedges and Dr. C. E. Homer. Pp. 90. Series D, No. 2: Black Spots on Tin and Tinned Ware. By Sven Brenner. Pp. 27. (London: International Tin Research and Development Council.)

Other Countries

Regenwaarnemingen in Nederlandsch-Indië. Vier und vijftigste Jaargang, 1932. Pp. 129. (Batavia: Koninklijk Magnetisch en Meteorologisch Observatorium.)

Colony of Mauritius: Department of Agriculture. Fifth Annual Report of the Sugarcane Research Station for the Year 1934. Pp. 49. (Port Louis: Government Printer.)

Publications of the Observatory of the University of Michigan. Vol. 6, No. 9: An Ephemeris of 467 A.D. By Heber D. Curtis and Frank E. Robbins. Pp. 77-100+2 plates. (Ann Arbor, Mich.: University of Michigan.)

Obras completas y Correspondencia científica de Florentino Ameghino. Vol. 16: Formaciones sedimentarias de Patagonia. Edición Oficial ordenada por El Gobierno de la Provincia de Buenos Aires. Dirigida por Alfredo J. Torcelli. Pp. 747+193 plates. (La Plata: El Gobierno de la Provincia de Buenos Aires.)

Commonwealth Bureau of Census and Statistics, Canberra. Official Year Book of the Commonwealth of Australia. No. 27, 1934. Prepared by E. T. McPhee. Pp. xxxii+942. (Canberra: Government Printer.) 5s.

U.S. Department of Agriculture. Technical Bulletin No. 477: *Apanteles solitarius* (Ratzburg), an introduced Braconid Parasite of the Satin Moth. By D. L. Parker. Pp. 18. (Washington, D.C.: Government Printing Office.) 5 cents.

Publications of the Astronomical Observatory of the Warsaw University. Vol. 9. Pp. iii+76. (Warsaw: Astronomical Observatory.)

Tanganyika Territory: Department of Agriculture. Annual Report, 1934. Pp. 141. (Dar es Salaam: Government Printer.) 4s.

The Imperial College of Tropical Agriculture. The Principal's Report for the Year 1933-34 and the Accounts for the Year ended August 31, 1934. Pp. 34. (Trinidad and London: Imperial College of Tropical Agriculture.)

Statens Meteorologisk-Hydrografiska Anstalt. Årsbok 14, 1932. iv. Meteorologiska iakttagelser i Sverige, Band 74. Pp. x+107. (Stockholm: Statens Meteorologiska-Hydrografiska Anstalt.) 7.00 kr.

Memoirs of the Commonwealth Solar Observatory, Mount Stromlo, Canberra, Australia. Memoir No. 5, Part 1: The Intensity of Fraunhofer Lines in the Region 4036-6600 Å. By C. W. Allen. Pp. 57.

Memoir No. 5, Part 2: Fraunhofer Intensity Tables: (a) General Intensity Table, 4277-6600 Å.; (b) Multiplet Intensity Table, 4036-6600 Å. By C. W. Allen. Pp. 96. (Canberra: Government Printer.)

Institut de France: Académie des Sciences. Annuaire pour 1935. Pp. 407. (Paris: Gauthier-Villars.)

Transactions of the Academy of Science of Saint Louis. Vol. 29, No. 1: Natural History of the Alligator Lizards. By Henry S. Fitch. Pp. 33+4 plates. (St. Louis, Mo.: Washington University.)

Smithsonian Miscellaneous Collections. Vol. 91, No. 21: Reports on the Collections obtained by the First Johnson-Smithsonian Deep-Sea Expedition to the Puerto Rican Deep. Fourteen New Species of Foraminifera. By John A. Cushman. (Publication 3327.) Pp. ii+9+3 plates. Vol. 91, No. 22: Reports on the Collections obtained by the First Johnson-Smithsonian Deep-Sea Expedition to the Puerto Rican Deep. Two New Foraminifera of the Genus Textularia. By Cecil G. Laliker. (Publication 3328.) Pp. ii+2+1 plate. (Washington, D.C.: Smithsonian Institution.)

U.S. Department of Agriculture. Circular No. 349: The Disposal by Burial of Fruit infested with Larvæ of the Mexican Fruit Fly. By C. C. Plummer and W. E. Stone. Pp. 16. (Washington, D.C.: Government Printing Office.) 5 cents.

Ministry of Finance, Egypt: Coastguards and Fisheries Service: Fisheries Research Directorate. Notes and Memoirs, No. 6: The Pharynx and Intestinal Tract of the Egyptian Mullet—Mugil Cephalus and Mugil Capito. Part 2: On the Morphology and Histology of the Alimentary Canal in Mugil Capito (Tobar). By Dr. F. M. Ghazzawi. Pp. ii+31. Notes and Memoirs, No. 7: Repeuplement Poissonnier des sources à l'Oasis de Siwa. Par Dr. H. Faouzi. Pp. ii+12+6 plates.

Rapport sur les Pêcheries d'Égypte en 1932. Par Ibrahim Abd-el-Galil Abou-Samra. Pp. xx+117. (Cairo: Government Press.)