

## ELECTRICAL PROGRESS IN POLAND

IN the *Electrical Times* of August 3, A. G. Moss describes the rapid and confident way-in which Poland is developing hydro-electric power schemes within her boundaries on a long-term basis, and having obviously the utmost confidence in the future. In Great Britain, on the other hand, the tendency at present seems to be to limit financial forecasts to the next few uncertain months due to possibilities of war.

In a recent tour through Poland, Mr. Moss saw the many plans which are being carried out for harnessing the various sources of industrial power in the country for the benefit of the national economic system. Although primarily an agricultural country, Poland was the last of the great European powers to utilize their native fuel and water-power; but now, for about the last twenty years, rapid progress has been made and this notwithstanding the crippling financial burden which the Polish army and arms production has, of necessity, laid on the country during this period.

Poland's power resources consist of great coalfields in the Silesia, Krakow and Dabrowa regions in the south-west. In addition there is hydro-electric power distributed along the rivers of the Carpathian foothills, and, a little farther north, vast fields of natural gas which are easily tapped for direct supply for domestic and industrial use. The presence of these three sources of power might have led, as in other countries, to harmful commercial competition between those specially interested in them. In Poland it was considered that electrical power was much the most desirable.

The Polish Government is therefore considering electrification on a national basis within the next few years. This presents difficulties when we remember that nearly 70 per cent of the population is agricultural and lives at a low peasant standard. Nevertheless, in spite of these serious difficulties, it is going ahead very energetically with this end in view.

In some parts of south Poland, natural gas is tapped straight from fields into the home at a very low cost to the consumer. In some cases, street lamps are left on all day as it is cheaper to let them burn than to pay a man to put them out. Considered from the national point of view, the Government has decided that electricity is the most economical method to use. In an official document published in Warsaw a few weeks ago it is stated "The Polish Republic and the Polish Government fully realize that backwardness in electrification must be made good in the very near future in order to enable due progress to be made by the whole economic life of the country".

The average increase in the electrical output over the last six years amounts to nearly forty per cent. In Belgium the corresponding percentage is 33, and in France 22. It has to be remembered that Poland only recovered its present independence in 1919, and spent the next two years defending it. This increased demand for electricity has already necessitated large-scale extensions to the Polish high-tension zone grid systems and also the construction of a considerable number of new electric power stations.

## SCIENCE NEWS A CENTURY AGO

### Daguerre's Discovery Described

ON August 19, 1839, Arago at a meeting of the Paris Academy of Sciences "in the presence of a crowded audience, which had besieged the doors of the Institute three hours before the commencement of the sitting, divulged the secret of M. Daguerre's invention, which has now, as you are all aware, become public property. Three drawings having been exhibited by way of Specimens, M. Arago began by capitulating the discoveries—or rather hints towards discoveries, of former chemists; he afterwards dwelt upon the progressive experiments of M. Niepce since carried out by M. Daguerre. . . ." After dealing with Daguerre's process Arago proceeded "to speculate upon the improvements which this beautiful application of optics was capable. . . . The question arose, too, whether it will be possible to take portraits by this method. M. Arago was disposed to answer in the affirmative.

"In physics, M. Arago indicated some of the more immediate applications of Daguerreotype. . . . He instanced some of the complex phenomena exhibited by the solar spectrum. We know, for example, that the different coloured rays are separated by black transversal lines, indicating the absence of these rays at certain parts; and the question arises whether there are also similar interruptions in the continuity of the chemical rays? M. Arago proposes as a simple solution of this question, to expose one of M. Daguerre's prepared plates to the action of a spectrum; an experiment which will prove whether the action of these rays is continuous or interrupted by blank spaces" (*Athenæum*, Aug. 24, 1839).

### Completion of Pulkowa Observatory

THE earliest observatory in Russia was built at St. Petersburg in 1725, under the auspices of Peter the Great, and the French astronomer J. N. Delisle (1688–1768) was made director. This observatory was burnt down in 1747, but though reconstructed it remained of minor importance. In 1827 the Academy of Sciences put forward the idea of a new central observatory and three years later the Emperor Nicholas declared through his minister, "that the honour of the country appeared to him to demand the establishment, near the capital, of a new astronomical observatory, conformable to the actual state of the science, and capable of contributing to its ulterior advancement." A site was chosen at Pulkowa, about twelve miles south-west of St. Petersburg, and Fredrick Georg Wilhelm Struve (1793–1864), the director of the Dorpat Observatory, was appointed to superintend the erection of the observatory. "The design of the establishment was upon a scale of unprecedented magnificence. The foundation stone of the building was laid on the 21st of June 1835, and it was finally completed on the 19th of August 1839" (Grant). The instruments installed included a vertical circle and a transit instrument by Ertel, of Munich, a meridian circle and a prime vertical telescope by the Repsolds, of Hamburg, and an equatorial telescope by Merz and Mahler, of Munich. Struve began his observations in September, having among his earliest assistants his son Otto and C. A. F. Peters (1806–80). From its formation the Observatory took a lead in the exact measurements relating to the motion of the earth and the positions of the

principal stars, and it was once called "the astronomical capital of the world". The elder Struve retiring in 1861, he was succeeded in the directorship by his son Otto Wilhelm von Struve (1819-1905) and among his successors have been Theodor Alexandrovitch Bredichin (1831-1904) and Johan Oscar Backlund (1846-1916).

The British Association at Birmingham

Owing to the Chartist riots in Birmingham in July 1839, doubts were expressed as to the advisability of holding the meeting of the British Association, but the meeting took place and was successful. On August 24 the correspondent of the *Athenæum* wrote: "Many circumstances combined to throw a gloom over the opening of the Birmingham session of the British Association. The recent disturbances had rendered it doubtful whether the meeting might not be adjourned to another time and place; foreigners were alarmed by the exaggerated accounts of the riots; and the members of the Local Committee, having their attention engaged by the exciting events around them, could not bestow much of their time in preparations for the reception of the Association. Indeed, under the circumstances, it was surprising that their arrangements were so perfect as we found them. Many members, however, were disappointed at the very limited number of manufactories opened to general inspection; and it was thought to be most strange, and a subject of general remark, that no one of the great engineering establishments, for which Birmingham is so renowned, were found in the list. The Local Committee, however, and all who aided them, deserve great credit for their exertions in collecting together the 'Illustrations of Manufactures, Inventions and Models.'"

## APPOINTMENTS VACANT

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:

LECTURER IN MECHANICAL ENGINEERING at the Hull Municipal Technical College—The Director of Education, Guildhall, Hull (August 22).

DEMONSTRATOR IN BOTANY—The Secretary, King's College, Strand, W.C.2 (August 26).

ASSISTANTS II (Male) in the Meteorological Office—The Under-Secretary of State (S.2.B.Met.), Air Ministry, Adastral House, Kingsway, W.C.2 (August 28).

MASTER TO TEACH MATHEMATICS in the Government Technical School, Baghdad—The Secretary (I.P.R./CA), Board of Education, Alexandra House, Kingsway, W.C.2 (August 28).

A SENIOR SCIENTIFIC OFFICER, A JUNIOR SCIENTIFIC OFFICER, AND AN ASSISTANT I, in the staff for Scientific Research—The Ministry of Supply, Adelphi, W.C.2 (quoting Appts. No. 03/S.E.3) (August 31).

ASSISTANT PROFESSOR OF SOCIOLOGY in the Fuad el Awal University—The Dean of the Faculty of Arts, Giza, Egypt (September 1).

ASSISTANT LECTURER IN ORGANIC CHEMISTRY—The Registrar, University College of the South-West, Exeter (September 9).

VETERINARY INVESTIGATION OFFICER under the Advisory Scheme for the Ministry of Agriculture—The Registrar, University, Leeds (September 13).

LIBRARIAN—The Secretary, Chartered Surveyors' Institution, 12 Great George Street, S.W.1 (September 30).

LECTURER IN PHYSIOLOGY—The Registrar, Municipal College, Portsmouth.

ASSISTANT ENGINEERS for the Posts and Telegraphs Department of Kenya, Uganda and Tanganyika Territory—The Crown Agents for the Colonies, 4 Millbank, S.W.1 (quoting M/8137).

ASSISTANT ENGINEER for the Drainage and Irrigation Department, Malaya—The Crown Agents for the Colonies, 4 Millbank, S.W.1 (quoting M/5765).

## REPORTS AND OTHER PUBLICATIONS

(not included in the monthly Books Supplement)

Great Britain and Ireland

Rubber in Chemical Engineering. By Dr. Henry P. Stevens and M. B. Donald. Pp. iv+53+15 plates. (London: British Rubber Publicity Association.) Free. [118]

The Board of Greenkeeping Research. Report for 1938 and a General Account of the Work in Progress. Pp. 78. (Bingley: St. Ives Research Station.) 2s. [118]

Historic Tinned Foods. (Publication No. 85.) Second edition. Pp. 70. (Greenford: International Tin Research and Development Council.) [118]

### Other Countries

U.S. Department of the Interior: Office of Education. Bulletin, 1937, No. 2: Statistical Summary of Education, 1935-36. Prepared by Emery M. Foster. Pp. 39. (Washington, D.C.: Government Printing Office.) 10 cents. [48]

Proceedings of the California Academy of Sciences, Fourth Series. Vol. 22, No. 8: The Templeton Crocker Expedition of the California Academy of Sciences, 1932. No. 37: The Cyperaceae. By H. K. Svenson. Pp. 187-194. Vol. 22, No. 9: The Templeton Crocker Expedition of the California Academy of Sciences, 1932. No. 33: Fungi from the Galapagos and other Pacific Coastal Islands. By Lee Bonar. Pp. 195-206. Vol. 22, No. 10: The Templeton Crocker Expedition of the California Academy of Sciences, 1932. No. 39: Two New Flagellates from Termites in the Genera *Coronympha* Kirby and *Metacoronympha* Kirby, New Genus. By Harold Kirby, Jr. Pp. 207-220+plates 36-39. Vol. 23, No. 24: Marine Pleistocene Mollusks from the Galapagos Islands. By Leo George Hertlein. Pp. 367-380+plate 32. (San Francisco, Calif.: California Academy of Sciences.) [48]

Smithsonian Miscellaneous Collections. Vol. 93, No. 18: Notes on Hiller's Photographs of the Paiute and Ute Indians taken on the Powell Expedition of 1873. By Julian H. Steward. (Publication 3543.) Pp. 23+31 plates. (Washington, D.C.: Smithsonian Institution.) [48]

Papers of the Michigan Academy of Science, Arts and Letters. Edited by Eugene S. McCartney and Robert Burnett Hall. Vol. 24 (1938). Part 1: Botany and Forestry. Pp. ix+vii+208+35 plates; Part 2: Zoology. Pp. vii+221+6 plates; Part 3: Geography. Pp. ix+134+24 plates; Part 4: General. Pp. vii+152+5 plates+iv. (Ann Arbor, Mich.: University of Michigan Press; London: Oxford University Press.) 21s. net. [88]

Sveriges Geologiska Undersökning. Ser. Ca, No. 29: A General Earth Magnetic Investigation of Sweden, carried out during the Period 1928-1934 by the Geological Survey of Sweden. Part 2: Inclination. By Kurt Mölln. Pp. 119+4 plates. (Stockholm: P. A. Norstedt and Söner.) 10.00 kr. [88]

Union of South Africa. Report of the South African Museum for the Year ended 31st December 1938. Pp. 20+2 plates. (Pretoria: Government Printer.) [88]

University of Illinois: Engineering Experiment Station. Bulletin No. 311: The Surface Tension of Molten Glass. By Prof. Cullen W. Parmelee, Kenneth C. Lyon and Cameron G. Harman. Pp. 47. 55 cents. Circular No. 37: Papers presented at the Second Conference on Air Conditioning held at the University of Illinois, March 8 and 9, 1939. Pp. 151. 50 cents. Circular No. 33: Papers presented at the Twenty-sixth Annual Conference on Highway Engineering, held at the University of Illinois, March 1-3, 1939. Pp. 116. 50 cents. (Urbana, Ill.: University of Illinois Engineering Experiment Station.) [88]

Southern Rhodesia. Memoirs of the Department of Agriculture, No. 1: Studies in the Physiology and Behaviour of *Glossina morsitans*, Westw. By Rupert W. Jack. Pp. iv+203+vii. (Salisbury: Government Stationery Office.) [88]

Ceylon. Sessional Paper XI, 1939: Report and Accounts of the Coconut Research Scheme for 1938. Pp. 22. (Colombo: Government Record Office.) 25 cents. [88]

University of Mysore. Studies in Physics, 1: The Atmospheric Electric Field and the Electric Conductivity of the Air at Bangalore on specified days during the International Polar Year August 1932 to August 1933. By Prof. A. Venkat Rao Talang and A. Ananthapadmanabha Rao. Pp. ii+34. (Bangalore: University of Mysore.) [88]

Bulletin of the American Museum of Natural History. Vol. 76, Art. 3: The Indo-Malayan Species of *Trigona*. By Herbert F. Schwarz. Pp. 83-141. (New York: American Museum of Natural History.) [88]

Instytut Geofizyki i Meteorologii Uniwersytetu Jana Kazimierza. Komunikaty, Tom 10, Nr. 119 do 133: Wynikóv prac Henryka Arctowskiego i jego współpracowników. Pp. v+229. (Lwów: Uniwersytetu Jana Kazimierza.) [88]

Publications of the South African Institute for Medical Research. No. 42: The Larval Trematoda found in certain South African Mollusca, with Special Reference to Schistosomiasis (Bilharziasis). By Dr. Annie Porter. Pp. 492+83 plates. No. 44: Blood Groups in Africa. By Dr. Ronald Elsdon-Dew. Pp. 29-94. (Johannesburg: South African Institute for Medical Research.) [98]

Statens Meteorologisk-Hydrografiska Anstalt. Årsberättelse för 1938. Pp. 20. Årsbok, 18, 1938. 7: Meteorologiska iakttagelser i Riksgänsen. Pp. 44. Årsbok, 20, 1938. 1: Månadsöversikt över väderlek och vattentillgång. Pp. 80. 2: Nederbörden i Sverige. Pp. 16. 2.50 kr. Meddelanden, Band 7, No. 5: Om sambandet mellan islägningen vid Svenska ostkusten och meteorologiska faktorer. Av C. J. Ostman. Pp. 16. 1.00 kr. (Stockholm: P. A. Norstedt and Söner.) [108]

Ministry of Agriculture, Egypt: Technical and Scientific Service. Bulletin No. 195: Sugar Cane Planting Experiments, 1933-1937. By Arthur H. Rosenfeld. Pp. ii+32+8 plates. P.T.7. Bulletin No. 199: A Spacing Experiment with Egyptian Wheats. By Dr. James Philip. Pp. ii+49+38 plates. P.T.10. (Cairo: Government Press.) [108]

Conseil International des Unions scientifiques. Cinquième rapport de la Commission pour l'étude des relations entre les phénomènes solaires et terrestres. Pp. 203+4 plates. (Firenze: Tipografia Barbera.) [108]

Koninklijk Magnetisch en Meteorologisch Observatorium te Batavia. Jaarverslag 1938. Pp. 29. (Batavia: Koninklijk Magnetisch en Meteorologisch Observatorium.) [118]