

## 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