the first tasks would have been a careful study of the literature of the subject and particularly of the results already obtained from the experiments in the art of ruling which have been made in other countries. This procedure, however, does not appear to have been followed. Even the Commission which recently worked under the able guidance of Sir John Simon was not empowered to study constitutional developments in other Asiatic countries, otherwise " they might well have hesitated before recommending even a moderate extension of the franchise". The matter, however, has gone too far for such studies to be undertaken. The new constitution will shortly be established : the results will soon be clear to all. If it succeeds, all criticism will be laid to rest by the one unanswerable argument—success. If it fails, a new Indian Civil Service, in which it is hoped that science will take its proper place, will have to be re-established.

A High-Efficiency Gaseous Lamp

MESSRS. Philips Lamps, Ltd., are introducing a new lamp which has an efficiency of about eight times that of a gas-filled lamp taking the same power. A description of the lamp is given in the *Electrical Times* for July 14. In the new lamp an electric discharge passes through a rare gas ' filling ' with a small quantity of metallic sodium. There is an oxide cathode with one or two anodes. The bulb of the lamp is in the shape of a cylinder, which has to be heated up to a certain temperature sufficient to vaporise the sodium. The lamp is enclosed in a second cylinder, which accelerates the heating and keeps the temperature constant. The discharge and consequently the emission of light depend mainly on the sodium vapour. The colour of the light is yellow and practically monochromatic. This colour is favourable to good visibility and therefore the lamp is very suitable for street lighting. A photograph taken at night is shown of a long length of road in Holland illuminated by the new gaseous lamps. It has been noticed that drivers of fast cars when entering the newly lighted part of the road switched off their headlights unasked. Hence there is no ' dazzle ', the elimination of which is one of the greatest problems of night driving. The candle-power of the lamps is 500-600 for the smallest size made, which take 100 watts. These lamps will be useful where colour is of minor importance. For domestic use a whiter light is more desirable.

Modern Developments in Precision Clocks

THE most accurate timekeepers of to-day are divided into two classes, depending on whether the restoring force of the oscillator is gravity, as in pendulum clocks, or elasticity, as in quartz crystal oscillators. In a monograph by A. L. Loomis and W. A. Marrison on precision clocks, published in the *Transactions of the American Institute of Electrical Engineers*, an account is given of the performance of a set of 100,000-cycle quartz oscillators built by the Bell Telephone Laboratories for use as a primary frequency standard. The frequency of quartz oscillators is practically independent of the amplitude. They are not affected by gravity or magnetic fields and can be easily shielded from electrostatic fields. They are practically unaffected by heavy traffic in neighbouring roads or by the vibrations near earthquake zones. A crystal clock standard is more costly than a pendulum clock of the highest precision, but it can be used for many purposes. For example, an absolute comparison of crystal clocks can be made with an error of less than one hundred-thousandth part of a second, and can be maintained continuously. For short time comparisons an inaccuracy not greater than 1 in 10^{10} has been obtained. The high accuracy of comparison is due chiefly to the fact that the number of vibrations is 200,000 times greater than with a ' seconds ' pendulum. A comparison made of the data obtained by observing the difference in the rates of a crystal clock and three pendulum clocks revealed for the first time a lunar day variation. This is due to the fact that the crystal does not respond to variations in the gravitational effect of the moon, while the pendulum does. The difference in the rates of the clock and the crystal timekeeper thus contains a term depending on the period of the lunar day.

Jubilee of the Ferranti Works

THE late Dr. S. Z. de Ferranti at the age of eighteen was the principal founder of the original company of Ferranti, Thomson and Ince in Charterhouse Square, London, in 1882. It is a little difficult to realise that there was then a great demand for electric meters. Messrs. Ferranti, Ltd., now of Hollinwood, Manchester, held an exhibition at Bush House, London, during June to commemorate their jubilee. The fifty years' life-story of the firm shown by the historical exhibits is largely a history of the development of public electricity supply. A particularly interesting exhibit was the earliest models of Ferranti meters, some of which have only recently been taken out of service. The new methods of hardening the pivots and burnishing them so as to get the exact shape with the help of a micrometer jewel examiner with a powerful microscope were shown in action. New devices rendered necessary by the 132-kilovolt grid scheme in Great Britain were shown in action. An even more recent development is the manufacture of electric clocks, which are now made quite cheaply, of all sizes and shapes with cases of bakelite, wood, or metal. A prominent feature of the radio exhibit was a new seven-valve receiving set. A full range of water heaters and fires were shown. A working model of the Ferranti hot-water system for a house employing those heaters was shown. The ' Era ' fire which Ferranti's make is said to be ideal for devices for hatching chickens (chicken brooders). The machines used at the Ferranti works in Hollinwood are of the most modern design, and employ more than five thousand workmen.

Tuberculosis in England and Wales

THE Report on Tuberculosis by Dr. A. S. MacNalty to the Ministry of Health (Reps. on Pub. Health and Med. Subjects, No. 64. H.M. Stationery Office. 3*s*. net.) may be regarded as an ' audit ' of the present position of the tuberculosis question in Great Britain. Tuberculosis is a disease not only of medical interest but also of wide sociological and economic importance. Anti-tuberculosis measures cost the country a great deal ; for example, some 2½ million