

has become almost impossible. Importation of plants from New Zealand has been attempted, but without marked success; and efforts have been made to establish seed-beds at Hermansburg Mission Station in Central Australia, where possibly infestation may not occur. Happily a means of overcoming the difficulty appears to have been demonstrated by Dr. H. R. Angell, of the Council for Scientific and Industrial Research. His method is to allow benzol (or certain other hydrocarbon mixtures) to evaporate in the seed-beds during the night time and on dull days when the beds are under cover. While neighbouring untreated control beds may be completely destroyed, those subjected to the vapour remain healthy; in fact, no development follows even from artificial inoculation. During the present season extensive trials have been made in New South Wales, Victoria, South Australia and Western Australia with uniformly successful results. It is true that there remains a risk of infection when the seedlings are planted out, but this is relatively slight compared with the danger in the seed-beds; and it would appear that an economical, practical and effective means of destroying what is perhaps the greatest obstacle in the way of stabilising the tobacco industry in Australia has been developed and proved.

Importance of Small Coal

WHEN Dr. F. S. Sinnatt addressed the Institution of Civil Engineers on "Some Major Problems in the Utilisation of Coal" on March 17, he gave first place to the choice of coal suitable in composition, properties and preparation for the purpose in view, and emphasised the importance of collecting such information. Quoting examples from the work of the Coal Survey, he showed the great diversity of properties, even in one seam, and over comparatively small distances. Until these variations are exactly established, progress in rational marketing will be hampered. The needs of the consumer change. Large coal is in less demand, and is to an increasing extent being actually broken. The technique of mining, which has been designed to conserve lump coal, may be radically altered in favour of machine mining, which is prone to produce more fine coal. The breakage of coal is becoming of paramount importance to the coal industry, and involves many problems still requiring solution, and these are chemical, physical and particularly engineering. The disposal of fine coal dust involves consideration of the combustion of pulverised fuel, which steadily extends, hitherto mainly in large units. For small units, coal can now be obtained ready pulverised, and the Fuel Research Station has developed a new burner with which it can be burnt with a short flame. The use of pulverised fuel in Lancashire boilers thus becomes practicable, with advantage to the performance. Apparently output of steam may be doubled without loss of efficiency. The development of firing with pulverised fuel in small units will call for means for retaining the emission of grit and sulphur, and although this has been solved so far as large power stations are concerned, there is still scope for plant suitable for smaller units.

Atmospheric Pollution

THE twenty-first report of the Investigation of Atmospheric Pollution issued by the Department of Scientific and Industrial Research (H.M. Stationery Office. 5s.) may be summarised in one sentence: "The general cleanness of our atmosphere is not improving"—a statement opposed to an impression widely held. The observations recorded in London seem particularly to point this way, and to show that while Metropolitan conditions get worse, provincial conditions improve. Some of the worst figures are recorded at London stations, compared with which the industrial areas in the provinces appear relatively good. This must be disquieting to residents of the Metropolis, and emphasises the need for more energy to promote the consumption of fuel by methods which minimise the emission of tar, soot and sulphur acids. Some of the anomalies suggest the need for caution in interpretation. After all, the figures relate only to the sites where examples are taken, and these are relatively few, and a statistical analysis by Mr. B. H. Wilsdon shows that other factors such as rainfall influence the results. The report deals with observations made for the year ending March 1, 1935, and it may be that increased industrial activity has involved an increased consumption of fuel which has compensated for some improvement in method of combustion.

Cine-Radiography

RÖNTGEN announced his discovery of X-rays late in 1895. A few years afterwards, attempts were made to get cinematograph records of the pictures obtained by them; but they were crude. It was found that a speed from a $\frac{1}{2}$ to 1 second is perfectly effective for a good many movements. In a paper read to the Institution of Electrical Engineers on March 19, Mr. Russell J. Reynolds gave the latest developments in cine-radiography. There are two methods in general use. In the direct method, a band of film is placed in the position normally occupied by the fluorescent screen. This has the disadvantage that the dimensions of each exposure must be at least 4 in. \times 5 in. A film of this size is very costly, and an apparatus capable of moving it at the rate of 8 or more exposures per second is cumbersome and difficult to design. In the indirect method, the image on the fluorescent screen is photographed with an ordinary cinematograph apparatus. The chief difficulty in obtaining a sufficiently brilliant image on the screen lies in the fact that the film is minute and moves at a high speed. The heavy currents necessary wear out the tubes quickly, and it is dangerous to expose the patient to intense radiation for the time necessary to take the film. It has to be remembered also that the effect of the rays is cumulative. Mr. Reynolds gives full particulars of the apparatus he has evolved to overcome the difficulties of the indirect method. It gives a sufficiently brilliant screen picture to impress itself satisfactorily on the film when exposed for only a small fraction of a second. The film is protected from exposure to the rays, and the exposure of the patient to the rays is harmless. By this apparatus the radiologist obtains a rapid, inexpensive