vehicles. In many ways the interests of coal and its derivative electricity appear to be much the same. The demand by electric power stations on the collieries for 'slacks', 'duff' and rough 'smalls' now exceeds the supply, although coal-breaking and crushing plant has been installed at a number of collieries. This would naturally add to the cost of production.

Water-cooled Lamps for Television

A SERIOUS difficulty in television studios is the necessity of providing about double the light required by an ordinary cinema studio without subjecting the occupants and contents to intolerable heat. This difficulty has been largely overcome by the General Electric Co. of America at the television station at Schenectady, New York, by the use of a battery of four water-cooled quartz mercury arc units, containing twelve argon-filled lamps having a light output equivalent to that provided by nearly 30,000 watts of incandescent light, but they give off practically no appreciable amount of heat. According to the *Electrical Review* of August 25, the lamps are about the size of a cigarette and have an exterior of quartz. Surrounding the tube is another quartz jacket through which water passes at the rate of three quarts a minute, dispersing about 90 per cent of the heat generated. The twelve 1,000-watt lamps used have a total light output of about 800 thousand lumens, while the same wattage of incandescent lamps would provide only 330 thousand lumens. The possibility of a burn from incandescent lamps, caused by the infra-red radiation, greatly inconveniences performers who appear before the television camera. In the case of the new lamps, more than 90 per cent of the infra-red radiation is absorbed by the circulating water. The cooling system of the lamps is equipped with a pressure-operated switch and magnetic valve, since the water in the jacket must be moving before the lamp is lighted and because the lamp must be turned off automatically in the event of failure or reduction of the water supply. During operation a pressure of more than 1,000 lb. per sq. in. is developed within the quartz jacket.

Railway Electrification at Home and Abroad

ALTHOUGH the date of opening of the electrified route between Manchester and Sheffield has not yet been fixed, orders have been placed for seventy electric locomotives. This follows on the orders for eight multiple-unit trains between Manchester and Glossop. During the last two months a number of new electric services in Kent have been opened. According to the *Beama Journal* of August, the Southern Railway now possesses 3,189 electrically operated passenger vehicles, of which 603 cars have equipment designed for a maximum speed of 75 miles per hour and the remainder of 60 m.p.h. These speeds appear slow when compared with the rated speeds of Continental expresses. It must be remembered that the Southern Railway undertaking is a huge suburban network, in which high average speed is of the greatest importance. The problem of the London–Brighton railway is very different from that of the line joining Milan and Brescia. For the latter route an electric locomotive with a commercial speed of 94 m.p.h. has just been designed. In preparation for the forthcoming electrified link between Berlin and Munich, the German State Railways have accepted a locomotive with an ordinary speed of 112 m.p.h. and a possible maximum of 140 m.p.h. The use of locomotives of this type will, it is believed, reduce the journey time between Berlin and Munich from eight to five and a half hours.

Health of the Army in India during 1937

STATISTICS of the health of the British and Indian troops in India are contained in the recently issued "Annual Report of the Public Health Commissioner with the Government of India for 1937", 2 (Government of India Press, New Delhi. Rs. 2-6, or 4*s*.). The year 1937 was, from the health aspect, a good year for both British and Indian troops. There was a reduction in hospital admissions among both groups as compared with 1936 (also a good year) of 14·3 per 1,000 of strength among British troops, and 37·0 among Indian troops. Although the admission ratio appears to be on the downward trend, conditions cannot be considered satisfactory according to modern health standards so long as 568 out of every 1,000 British soldiers and 390 out of every 1,000 Indian soldiers are admitted to hospital during the course of a year. Compared with the troops in the United Kingdom, the hospital admission ratio in India is almost exactly double. The reasons are partly climatic, and partly due to the more primitive methods of sanitation, both in the army and among the civil populations in contact with it. There has been, however, a reduction in incidence of such diseases as malaria and the enteric groups of fevers. A new synthetic drug named 'Certuna' has given promising results in the treatment of sub-tertian malaria. Information is given of the work being done to supply pure water to the stations, on conservancy systems, and on the sanitary control of milk and foods.

Work of Indian Medical Institutes

THE reports of the Haffkine Institute for 1938 and of the Pasteur Institute of India, Kasauli, for 1937, have reached us. The Haffkine Institute is the centre for the preparation of Haffkine's preventive plague vaccine, of which 1,137,086 doses were issued during the year. Some trials of the Institute's anti-plague serum were made in a small outbreak of plague, with a mortality of about 26 per cent, compared with a mortality of about 63 per cent with other non-specific treatments. Two of the sulphanilamide drugs, Prontosil and M. and B. 693, so valuable in streptococcal infections, were tried in plague but showed little or no curative power. A number of research studies on plague vaccine and serum, anti-malaria drugs, human and rat leprosy, fleas, and other subjects are summarized. At the Kasauli Pasteur Institute, anti-rabic treatment is carried out. The total number of patients attending the Institute and its centres was 28,076, of whom