

animal and producing the condition, thus solving an age-old problem. The experimental work on the elucidation of the nature of rickets and scurvy as being due to vitamin deficiency, on the discovery of drugs curative for streptococcal infections, such as puerperal fever and pneumonia, and on the nature of cancer, were described. Finally, Sir Edward pointed out both the importance and the limits of clinical observation, and discussed some of the criticisms and failures of the experimental method.

#### Early Cultural Relations in Central America

AMONG communications dealing with the archaeology of Central America presented to the Twenty-seventh International Congress of Americanists, which met in Mexico City on August 5-15 (see NATURE, Aug. 19, p. 319), there were several, it would appear from a preliminary report issued by Science Service of Washington, which brought forward suggestions and advanced conclusions of considerable interest in reference to the cultural relations of, and cultural successions among, the early inhabitants of Mexico and the adjacent regions. Dr. Alfonso Caso, president of the Congress, for example, in describing the results of his excavations on Monte Alban, not only argued for the common origin of the culture of that site with that of the not far distant ruined city of Mitla on the evidence of architectural affinities, but also put forward the conclusion that three stages of development are to be distinguished, which can be linked respectively with the Archaic culture of Mexico, dating from before the Christian era, the Toltec of Teotihuacan, and the Aztec. Further, Dr. A. V. Kidder, reporting on his excavations in pit-tombs near Guatemala city, assigns their builders to a period corresponding with the middle period at Monte Alban, or when the great Toltec civilization of central Mexico was approaching its decline. It would appear that the pottery from the Guatemalan pit-tombs provides a key which links the tomb builders with other early cultures of tropical central America. Some light was also thrown on the development of agriculture among the early peoples by Dr. Pablo Martínez del Rio, who advanced the theory that agriculture may have had a more rapid rise in the New World than in the Old, on the ground that differences in methods of seed selection and cultivation speeded up results for the Indian farmer, so that it was not necessary to postulate, as some botanists have done, an extremely long period of development.

#### Electrical Development in Iraq

IN a paper communicated to the *Electrical Review* of August 18 by W. H. Peters of Baghdad, a review is given of the post-War development of Iraq. Both Baghdad, the capital city, and Basra, its modern seaport, were left electricity systems installed by the British Army during the occupation. Being war products, they were limited in capacity and of antiquated design. During the past fifteen years these supply undertakings have been transferred to concessionaries or to the Government. The most

provincial of the centre towns have shown initiative in the promotion of schemes for small plants primarily to serve the requirements of the administrative authorities for fans and for street lighting. The largest supply undertaking is that in the capital city, Baghdad, the population of which is about 250,000. It is directed by the Baghdad Light and Power Co., which is registered in the United Kingdom. It is the only supply station left which is of foreign ownership. The main thoroughfares of the city are copiously lighted, the load exceeding 300,000 watts. The port of Basra set up an efficient power station five years ago and the sale of energy in the port and the municipal area which it supplies has exceeded all expectations. The rate at which it sells power is 4½d. per unit for lighting and 2½d. per unit for domestic power.

WITHIN a year the 'Iraqi State Railway will be finally completed to the northern city of Mosul and will permit of railroad goods traffic both westwards to Syria and southwards to Basra passing en route Basra, Baghdad, Syria, Turkey and so on to Europe. This great need once fulfilled is almost certain to develop the import and export trade of Mosul, thereby increasing its prosperity. Until three years ago all the Diesel power stations were run by plant entirely of British origin, but recently German plant has made considerable headway. Iraq's exports of oil and agricultural progress show a very satisfactory increase year by year and these contribute to increased national wealth and a higher standard of living. This increase in the standard of living is not confined to the property owners and married classes, but is apparent almost everywhere. It is noteworthy that Britain has hitherto enjoyed no commercial privileges in Iraq.

#### Coal Utilization by Electricity

ACCORDING to the *Electrical Review* of September 1, Mr. M. Anderson, the director of the Coal Utilisation Council, estimated that to keep the public properly warm would necessitate the consumption of eight million more tons of coal per annum. To raise the standard of 'heat comfort' was one of the principal aims of the plan of campaign outlined at the last National Coal Convention. Since the success of the campaign would depend largely upon the development of the domestic and industrial demand for electric power and especially that used for 'space heating', convenience rather than necessity would be the controlling influence in regulating the demand for coal for power. Mr. Anderson referred to several other methods of increasing the coal output to compensate for the falling off in the direct demand for coal owing to the increasing use of electric power and heating in many trades. Trolley buses, also, although they have greatly diminished the demand for electric tramways and in spite of the competition of oil-engine buses, have probably increased the total demand for electric power from the public mains and consequently for coal. Trolley-buses move faster and give a much better service than almost any other

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 4s.). 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