Land Transport

IN his presidential address on October 15 to the Institute of Fuel (see NATURE, October 31, p. 752), Sir Philip Dawson dealt with the subject of transport on land. The end of the nineteenth century may be called the electrical age, but so far as Great Britain is concerned, since electrical power is mainly produced by steam, its application to traction only means the consumption of fuel transferred from the rolling vehicle to the power-house producing electricity. In countries where electricity can be produced by water-power, this agency may largely affect the total consumption of solid and liquid fuel. Hence the French call water-power *la houille blanche* (white coal). We are faced to-day with the fact that, despite the high efficiency in producing light, heat and power now obtained in the combustion of coal, the output of coal in Great Britain has diminished from 287 million tons in 1913 to 223 million tons in 1935.

In 1921, there were 269,000 horse-drawn vehicles on the roads; in 1934 there were only 23,000. There are now nearly 2,500,000 vehicles on the road propelled by internal combustion engines. The use of internal combustion engines burning heavy oil has been slowed down by the tax of 8*d*. per gallon imposed on Diesel oil. In Germany the use of this kind of engine is advancing rapidly. The risk of fire and explosion of heavy oil is much smaller than with petrol, and this would be a great advantage in time of war. Transport by road both for passengers and goods is rapidly increasing. This is due mainly to the increased facilities which the road offers both to the passenger and the trader. There were no less than 435,000 goods vehicles employed on the road last year. There are nearly twice as many people employed directly and indirectly in road transport as in railway transport. The motor-spirit and fuel-oil consumed last year exceeded two million tons, and increased by their taxation the revenue of the Government by forty million pounds. It is estimated that Germany will consume more than two million tons of light synthetic oil this year, more than half of which will be home-produced.

Much could be done in Great Britain to encourage the domestic supplies of petrol by the increased production of benzol by the gas and coke industries. Diesel-electric trains are coming into favour both in Germany and the United States. The great disadvantage of the steam locomotive as compared with Diesel and electric traction is that it consumes fuel when not actually performing useful work.

The electrification of railways, main line as well as suburban, is constantly increasing throughout the world. In Great Britain, the Southern Railway has made the greatest progress in this direction. All the electricity it uses for traction is supplied by the Grid from steam-operated power plants. Sir Philip quoted with approval the Weir report, which stated that electrification places in the hands of the traffic manager a new system which enables him to offer a more attractive transport proposition to the public and the characteristics of which are capable of extensive development. The adoption of electric haulage for metropolitan and suburban lines nearly always produces increased traffic. The additional cost of the increased train mileage has been much less than the increase in the revenue resulting therefrom. Even in countries where electricity is generated by steam, its largely increased use in industry and for haulage must bring about a decrease in the use of coal in consequence of the greater efficiency realized.

In conclusion, Sir Philip said that every effort must be made in Great Britain to utilize the thermal energy contained in coal for the production of all forms of power, so as no longer to have to rely on fuel imported from overseas, as we have to-day, for operating services which are vital to our national existence and commercial prosperity.

Maya Culture in the Highlands of Guatemala

THE Carnegie Institution of Washington, which under its Section of American Aboriginal History is conducting a comprehensive investigation of the anthropology of Central America, covering the archæology, history under Colonial administration, and physical characters and constitution, linguistics, and social conditions of the modern inhabitants, has undertaken a further investigation in the highland zone of Guatemala. Here a year of mound excavation has already made a substantial advance towards a settled chronological sequence in culture, which is one of the principal aims in present-day archæological research in Central America.

A mound in the neighbourhood of Guatemala city, to be known in future as "Haminaljuya", the "Hills of the Dead", is now being excavated by Dr. A. V. Kidder on behalf of the Institution and at the invitation of the distinguished archæologist, Dr. Antonio Villacorta, Minister of Public Education, and his son, Sr. Carlos Villacorta, director of the National Museum of Guatemala. This mound is one of a hundred situated within a restricted area of half a mile by one and a half miles. The area, as part of the highland region, is already characteristically known to archæologists as a source of material of the 'archaic' period, for which evidence is also forthcoming from other sites, such as the Valley of Mexico, and from the lowest levels of Uaxactun in the Province of Peten. Certain indications, however, had led Dr. S. K. Lothrop some years ago to infer that remains of a later period might occur in the area, perhaps even so late as the Maya Old Empire; and only last year Dr. Kidder himself, while pointing out that the highland region had served more as a highway for trade and migration than the lowland jungle country, suggested that its sites might be expected