

(for example) of the effective reduction of the number of Great Powers to two.

The causes and consequences of regional differentiation can only be understood in relation to the globe viewed as an organic whole. The concept of 'global thinking' goes back among geographers to the late eighteenth century traveller von Humboldt. As thus envisaged, geography shares with sociology the methodological difficulties arising from the impossibility of isolating 'pure' problems, with the consequent need to call upon a number of diverse skills and specialisms. The present climate of thought is, however, unfavourable to group research (employing specialists from different fields) and even to team research (employing specialists within the same field), and successful examples of such work are few. Nevertheless archaeologists, historians, economists, sociologists and physical planners have recently shown an increasing disposition to seek the collaboration or advice of geographers, no doubt because, now that a second generation of trained geographers is coming to maturity, the output of work reaching an acceptable standard of scholarship is increasing. Examples of such work with a particular social bearing include analyses of the geographical circumstances of 'problem' areas—the Italo-Yugoslav boundary, Palestine, the march-lands of Russia, the 'special areas' of Britain—studies in micro-climatology, in coastal morphology, in land-utilization, areas of urban circulation and influence, and so on. The value of maps, not merely as a means of exposition, but also as a tool of research, is also increasingly appreciated.

A world war has for the second time emphasized the need for 'terrain' geography and exposed the gaps in geographical knowledge. New methods of air photography—stereoscopic survey, colour and infrared photography—are capable of supplying data by which those gaps could be rapidly filled. The interpretation of such data occupied many geographers during the Second World War. Beach reconnaissance, involving a land, sea and air complex, as a preliminary to military landings, called for novel methods of research, and led to new knowledge of shore-line processes and coastal morphology. The use of rockets and unpiloted aeroplanes lends a new importance to exact knowledge of the shape and dimensions of the geoid. The need for popular education in world geography lays upon geographers the duty of designing maps and globes which give a world picture appropriate to an 'air age'

PROGRESS IN MODERN ENGINEERING

CIVIL engineering aspects of progress in modern engineering is the principal topic of the presidential address to Section G (Engineering) by Sir William Halcrow. An analysis of engineering evolution involves consideration of mental conditioning in the past as well as of achievement. Society as a whole did not become mechanically minded until after the First World War, and the progress was slow. American influence is considerable, and we must understand the conditions which have led to their lavish use of machines and materials. Reference to the progress of prime movers, of constructional materials, and of some recent developments in technique follows.

The steam engine has been highly developed for many years; but the steam railways require consider-

able improvements to cater for modern traffic intensities. The great operational inflexibility of the system can only be relaxed by changes in track layout, signalling systems and dead weight of stock.

Steam turbines are our main prime mover for the generation of electricity. Fuel ancillaries are inherently heavy and bulky, however, and the gas turbine, which will soon be in economical operation in aircraft, may challenge the steam turbine on these grounds. At present, however, its life is too short for purely industrial purposes.

The water turbine has been highly developed for some considerable time. Intensive hydro-electric development is taking place in the Highlands of Scotland; but the great Severn Barrage tidal scheme still awaits official approval. With 800,000 kW. installed capacity, it could produce some 2,300 million units of electricity per annum at 0.2d. per unit and save one million tons of coal a year.

Our mechanical civilization did not attain a high rate of development until the latter half of the nineteenth century, when iron and steel could be produced in large quantities. The present century has seen the great development of alloy steels, and we may be approaching the end of the age of simple mild steel. The use of light alloys has greatly increased, and it is not generally realized that aluminium production depends entirely on large amounts of cheap hydro-electric power.

Modern cement dates from about 1850; and although its chemistry is still not fully understood, high grades are available in large quantities. A recent advance is the production of low-heat cement. The use of reinforced concrete is widespread, and latterly the technique of pre-stressing has resulted in considerable savings in materials in some cases.

Earthwork has only been scientifically treated since the early 1920's, when Dr. Terzaghi began to publish his penetrating analyses. Some problems still await solution, but we understand their limits and tendencies. Tunnelling is highly mechanized at present and rapid progress is possible. In soft ground, by use of a shield, a 12-ft. Tube railway tunnel in London clay can be advanced by as much as 160 ft. a week.

Prefabrication was used on a large scale for marine works during the War; for example, in the well-known invasion harbours and the lesser-known permanent military ports in some of the Scottish sea lochs.

We have had to develop analysis by experimental methods to a considerable pitch. Electrical resistance strain gauges and photo-elastic methods are useful. In aircraft the piercing of the sonic barrier depends greatly on model and wind-tunnel research. In hydrodynamics, models are most useful for determining hull forms, wave action, silting and erosion in harbours, spillways of dams and similar problems.

ANTHROPOLOGICAL APPROACH IN SOCIAL SCIENCE

IN his presidential address to Section H (Anthropology), Prof. C. Daryll Forde discusses the anthropological approach to the social sciences. The social sciences are often regarded as comprising all scholarly studies contributing to the portrayal of social conditions, including historical or descriptive accounts and those directed towards the solution of