

most of the stages of the conversion of reptiles into mammals. Nevertheless, it is extremely probable from the evidence furnished by the ictidosaurs and by the monotremes that the mosaic mode of evolution applied there also.

The emergence of each of the classes of living vertebrates has been characterized by the acquisition of key-characters which have enabled the organisms to become adapted to and radiate widely in an ecological medium previously denied to them: land-and-water, dry land, air. The break-through into the new medium has been made possible by a change in a very small number of pieces of the mosaic, the other pieces remaining as they were for a considerable time. The significance and wide application of the mosaic mode of evolution was clearly recognized by D. M. S. Watson, who provided irrefutable evidence from *Seymouria* in its support, for which reason it is proposed to refer to it as Watson's Principle.

## THE COAST AND THE GEOGRAPHER

IN his presidential address to Section E (Geography), Prof. J. A. Steers points out that the geographer has many, but by no means exclusive, interests in the coast. The borderline between land and sea at any one moment of time may seem relatively stable. But changes, both vertical and horizontal, are constantly going on, and those due to erosion and deposition are clearly noticeable in the course of a few years—and sometimes much less. Vertical changes are measurable locally in decades, and in the period since the beginning of the Ice Age they have been profound.

Vegetation, especially on low coasts, can bring about impressive changes in even a few years, and there is much room for experimental work in this field.

The still wider question of the primary origin of coasts is geological rather than geographical; but the study of off-shore contours and evidence of recent movements of a vertical nature, in so far as they affect an 'original' coastline, are of great geographical interest. Apart from physiological implications, there are many others which concern the geographer. Not least among these is the general picture of the use of the coast by man—ports, industry, dwellings, holidays, etc. The details of planning are scarcely his direct concern; but in presenting an overall view the geographer by his training in the appreciation of regions ought to be able to contribute something of importance.

The geographer can make valuable observations on the factors—waves, winds, tides, etc.—acting on a coast, and since he is probably working on a problem from a purely personal and scientific point of view he is not likely to be concerned only with short-term factors. Hence his contribution to morphology and other aspects of the coast is of use to students in general as well as to engineers.

But when all is said and done, the understanding of the coast is by no means the province of any one group of workers. The more there can be active and friendly collaboration between engineers, geologists, ecologists, and geographers, the better. To achieve this end, there is no need for any very precise organization.

Geographers have great scope for their own particular interests, and the historian or historical geographer has much to give in this respect.

There are many examples in Great Britain, and especially around the Mediterranean and North Seas, where the changes affecting ports and harbours and the growth of deltas need the double approach that a geographer trained in both the historical and physical branches of his subject can make. A great deal of the literature at present dealing with such matters minimizes or even overlooks the significance of this double approach. Moreover, there may well be a practical lesson to be learned from such studies. None, for example, would ignore the long history of change wrought by storm and waves along the East Anglian coast in considering new defence or harbour works.

In tropical waters, too, there is plenty of work for the geographer. Much of the significance of coral reefs, of the sand formations resting in them, and of beach-rock formation has yet to be learned. In this connexion, too, co-operation with a biologist will be more than worth while.

Many of the problems with which the geographer is concerned on a coast may be partly investigated in laboratories in which models of the coast are built. These, however, are expensive and not likely to be made unless valuable land or property is affected. Nevertheless, whenever or wherever it is possible for laboratory experiments to be made, full advantage should be taken of them.

## THE CHANGING STRUCTURE OF THE BRITISH ECONOMY

THE development of an economy is a process of adjustment to changing technology and changing quantities and distributions of materials and skills. The economic structure at any moment reflects only imperfectly the needs of that moment, since structure changes slowly, and only in periods of less rapid change are the ideal and actual structures likely to be similar. The main elements of structure are the patterns of employment and activity, of export and import, and of consumption.

In his presidential address to Section F (Economics), Prof. E. A. G. Robinson points out that these patterns have changed greatly in the United Kingdom during the past two and a half centuries, when their measurement has been reasonably possible. When Gregory King first estimated many of the relevant statistics in 1688, the population of the United Kingdom was about 7.4 millions. Its retained imports were equal to about 5½ per cent of national income; exports were primarily manufactures of indigenous materials; about two-thirds of all manpower was engaged in agriculture, and England was still a net exporter of agricultural produce.

By 1820, the proportion of employment in agriculture had fallen to about 35 per cent; the import ratio had risen to about 12 per cent; manufactures formed about 90 per cent of all exports, and textile manufactures 67 per cent; coal formed about 1 per cent of total exports. Raw material imports were now about 60 per cent of retained imports, of which textile materials accounted for about 24 per cent.

This process of specialization, of dependence on imported materials and on exports of textiles took a more extreme form as the century went on. By 1870 the import ratio had risen to about 28 per cent (its peak was about 33 per cent in the 1880's). The proportion of retained imports represented by food