

quantities is problematical. In certain deposits they appear to be replacements of diagenetic pyrite but not themselves indisputably diagenetic.

It is pertinent to ask how the great volumes of hot connate brines expressed upwards from compacting sediments differ from the hydrothermal solutions of classical ore genesis. The limited available data regarding composition of mineralizing solutions, from fluid inclusions in ore and gangue minerals and from a recent borehole for geothermal power in southern California, show some remarkable resemblances to deep connate waters. Increased concentrations, relative to chlorine, of potassium and boron, however, suggest additions from some other source.

THE UNITY OF ECOLOGY

DR. F. FRASER DARLING discusses the "Unity of Ecology" in his presidential address to Section D (Zoology).

Both words, 'ecology' and 'economics', stem from the same root, to do with home: both deal with income and expenditure, economics with anthropocentrically considered wealth symbolized as money, ecology in terms of energy and conversion cycles. In communities of plants and animals, ecology is also an observational study of communities which covers the more general definition of ecology as the science of organisms in relation to their environment, and the interrelations of organisms inter- and intra-specifically. Psycho-ecological factors are now being identified and social behaviour can be of critical significance ecologically. Hunting and food-gathering man may be considered a member of the indigenous fauna; agricultural, pastoral, industrial, natural-resource exporting man is like an introduced species, the outstanding difference between him and the rest of creation being his political nature, which is of great ecological significance. The present wave of nationalism in a contracting world could have damaging results on the resource base and the future state of survival of the human species. Man was able to civilize, that is, take advantage of his innate capacity for communicative gregariousness, by learning how to tap the organically derived climax wealth of the planet, thereby giving himself leisure for social and artistic evolution. Originally, the concept of community in ecology was considered in its competitive characteristics; but the fuller present-day thought of plants and animals, including man, being the ecological community embraces co-operative qualities as well, so that the community is greater than the sum of its parts.

There should be no plant, animal and human ecology as separate entities. There is but one ecology, with man being considered actively and historically. History, so commonly recorded politically, might be re-written ecologically, with benefit for the future. The rise and fall of the English wool trade from Saxon times to the end of the medieval period is given as an example. A wider study in space and deeper in time is made of the development of nomadism in the Old World and the place of the horse as a riding animal in triggering the eastward Indo-European migrations and later the westward Mongol movement. Archaeological evidences supplement ecological observations and inference.

Comparison is made of old-world nomadism of domesticated animals moved slowly over wild lands at man's wish, with the North American nomadism with the wild bison which developed when the Indians gained the horse from the Spaniard. The tempo of movement was set by the bison and there was consequently no overgrazing or impoverishment of terrain. This nomadism of wild animals on wild lands could have continued indefinitely as a biological continuum, but it specialized the Plains

Indian and made him more vulnerable in a changing world from which his resource base was removed. Some reflexion is made on the projected cropping of wild animals on the wild lands of Africa. Ecological management is now possible, but historical consideration and comparison are inadequate. Ecology is always concerned with process, and conservation, which is ecology in action, the social application of ecology, must reach deeper into the studies of history, anthropology and archaeology.

BRITISH NATIONAL PARKS

THE national parks of Britain form the subject of Prof. H. C. Darby's presidential address to Section E (Geography). The ten national parks of England and Wales have been created under the National Parks Act of 1949, and they cover about 9 per cent of the country. Much of their character can be explained by two general considerations. In the first place, there is the small size of England and Wales, the limited amount of relatively wild land, and the absence of public domain land from which parks could be created and owned by a national authority as in the United States and elsewhere; the territory within a British national park remains in private ownership. In the second place there is the existence not only of a highly developed system of local government but of very extensive planning legislation, consolidated and extended by the Town and Country Planning Act of 1947. The National Parks Act of 1949 in no way replaced the existing machinery of planning. Planning control within the parks, as elsewhere, remained in the hands of local authorities. It is true that a National Parks Commission was established; but this is essentially an advisory body, and its role is to see that the interests of amenity and access are not lost amid the clamour of many competing claims.

It must be said that the machinery created by the Act of 1949 has the merit of ingenuity. It has made the most of a limited area of land, and it has taken advantage of an established system of planning. It has skilfully used the principle of multiple land use, and it has sought to combine local and national interests in the management of the parks themselves. Yet when all is said, the fact remains that something is not well. Successive debates in both Houses of Parliament have directed attention to weaknesses in National Park arrangements. Wherein does the failure lie? In the Act itself? In the operation of the Act since 1949? Or in both?

The Act certainly contained within itself the seeds of difficulty. It charged the Commission it created with two divergent tasks: (a) the preservation and enhancement of natural beauty in England and Wales; (b) the encouragement of facilities for open-air enjoyment in National Parks. The challenge thus presented to the planner was that of reconciling the different purposes of amenity and access. If this was the challenge presented in 1949, How much greater is it to-day? Only too often a crowd transforms what it has come to enjoy and destroys what it most admires. Rising standards of living, holidays with pay, and about three times the number of motor-cars on the road, have greatly increased the pressure on the remaining areas of open country and especially on the coast. Furthermore, the whole tempo of national life has changed, and may yet change to a far greater degree. Some of the main intrusions into the countryside come from Government Departments themselves and from the great statutory undertakings and large private developers—from oil refineries, for example, from water authorities, from the Service Ministries and from the Central Electricity Generating Board. It is inevitable that many proposals for development within a park should come into conflict with the aim of maintaining the scenic beauty and rural solitude of this or that area.