

pecially dried and preserved, and form a most valuable addition to the herbarium, for few plants have previously been collected from this area. They have not yet been wholly worked over, but it is probable that they contain a percentage of new species which will be of horticultural interest. Seeds of a number of plants likely to prove of horticultural value have been sent and distributed to the more important gardens in the country. The Maharajah of Bhutan kindly granted permission for this expedition to remain longer in the country than originally arranged, and thus enabled collections to be made after the rains were over, which had not been possible in the previous season. Miss Gulielma Lister has presented the 221 original drawings of the "Lister monograph" on Mycetozoa published by the British Museum. The drawings are of considerable artistic beauty and scientific accuracy.

Marine Biology in Ceylon

MR. A. H. MALPAS, acting marine biologist to the Department of Fisheries, in his Administrative Report (Marine Biology) for the year 1933 (Ceylon, Part 4. Education, Science and Art (G), April 1934, Ceylon Government Press, Colombo) expresses his regret at the severe loss the fisheries research in Ceylon has sustained by the departure on leave, preparatory to retirement, of Dr. Joseph Pearson, who has done so much for the fisheries, especially the fish resources of Ceylon. The survey of the pearl banks in 1933 revealed a promising sign of repopulation of the banks, small branches of oysters being found over most of the pair areas, especially over the West Cheval, usually the first pair to receive spatfall after a long period of barrenness. These oysters are not themselves of any fishable value, but are important as they may produce subsequent spatfalls to repopulate the banks. It is anticipated that a considerable area will be covered with spat at the next inspection. Favourable prospects are also shown for a series of fisheries of the window-pane oyster. Experiments were conducted with the view of ascertaining the effects on pearl oysters of abrupt changes of salinity. It was found that oysters kept in a mixture of 1 part of fresh water to 2 parts of sea water were unaffected after several days, while others kept in a mixture of equal parts of fresh-water and sea-water quickly succumbed. Although the experiments are not conclusive they indicate that, as the pearl banks are some miles distant from land, it is not possible for flood-water to bring about such a reduction in salinity as would be harmful to the pearl oysters.

Survey of Salmon and Freshwater Fisheries

PROBLEMS of biological interest are raised in the Ministry of Agriculture and Fisheries Report on the Salmon and Freshwater Fisheries for the year 1933. In at least three rivers, the Wye, the Severn and the Exe, there have been reports that the size and number of smolt shoals migrating seawards in 1933 were well above the average. It is considered that the great majority of these will have arisen from the 1930 spawning, and that year was noteworthy as one

in which the number of fish observed on the spawning beds was unusually low. Under such conditions the eggs will have been relatively undisturbed and well distributed. The possibility arises therefore that the presence of too many fish on the spawning beds may be detrimental by causing disturbance of the already spawned eggs and overcrowding of the newly hatched fry. The production of good broods in years when the breeding stock does not appear to be large has also been observed among some sea fish. A further problem of considerable interest is afforded by the occurrence in 1933 of spring-run salmon in the River Plym, where spring fish are not normally found. Their occurrence follows on the introduction of salmon fry from eggs of early running Scottish fish in 1928. If this is an indication that such fish breed true, always producing spring fish, the results of experiments to eradicate the autumn fish running up after the close season will be watched with interest. Although in the year under review there had been a slight decline in the total catch of salmon and migrating trout, the reported mortality of fish as a result of pollution or from furunculosis has fortunately been low in spite of the dry weather conditions. Much work of interest and value is being conducted at the Alresford Experimental Station from the chemical, botanical and zoological points of view, and the usual surveys of a large number of rivers have been made.

Balance of Life in National Parks

THE institution of animal reserves, on a large or small scale, eventually raises a question as to whether artificial control of conditions should be encouraged or abolished. Everyone will agree with the dictum that the object is "to preserve National Park areas in as nearly as possible their natural condition and at the same time to make them accessible to the people for study, for recreation, and for play". Dr. Joseph Grinnell quotes with approval, and suggests (in a short article in the *Journal of the Society for the Preservation of the Empire*, Jan. 1935, p. 61) that animal life in national parks should simply be left alone. "It can be encouraged in amount and variety most practically by desisting from any avoidable interference with the full range of natural conditions of food and shelter. A *do-nothing* policy is the soundest policy. . . . Also introduction of non-native kinds of animals should be guarded against like the plague." In general, Dr. Grinnell is correct, but the guardian of reserves, especially of those on a small scale, must be on the alert to correct any tendency to extremes in the population. The reason is that no reserve is a thoroughly 'natural area'; it has somewhere a boundary, and at the boundary natural migrations are checked, and unnatural slaughter takes place which rebounds upon the reserve population.

Quality of Wheat

THE quality of wheat as influenced by environment is the subject of a recent paper by F. T. Shutt and S. N. Hamilton (*Emp. J. Exp. Agric.*, 2, p. 119). The question is not one of scientific interest only, but also of the first commercial importance in the flour-