projects were liable to failure, with very grave consequences for both the Colonies and for Britain.

Mr. F. H. C. Butler, director of the Council for the Promotion of Field Studies, explained how this five-year-old body functions, and described how the centres which the Council operates at Flatford Mill, Juniper Hall, Malham Tarn, and Dale Fort might be used to increase the variety of types of field work now possible. These offered to school-children, university students and private individuals alike the opportunity of doing supervised work in the field on biological and related subjects, of observing the interaction of these studies and so counteracting the tendency towards over-specialization. Dr. E. A. Ennion, warden of the Council's centre at Flatford Mill, gave an account of the way in which work there is carried out, stressing in particular the precautions which are taken to ensure that the natural life of the environment is conserved and that rare species are not rendered extinct by over-zealous collecting.

This particular example of a more general danger led the Association to consider the topic of the conservation of the wild life of England and Wales, Capt. C. Diver describing the proposals of the Wild Life Conservation Special Committee. These include the setting aside of certain parts of Britain as Nature reserves and the starting of a State biological advisory service. A specific instance of the way in which properly trained biologists could act to ensure efficient public services and economy of public money was given by Prof. E. A. Spaul, of the University of Leeds, who described some of the work done by zoologists there on the biology of sewage and sewage disposal, much of which has been shown to depend upon the animal population of the filters. Mr. R. S. R. Fitter gave some examples of the type of problem—bird migrations, liberation of populations of known genetic constitution—to which answers might be found by the use of the special category of experimental Nature reserves which are also proposed.

NATURAL SELECTION OF *DROSOPHILA*

RECENT studies on wild populations of *Drosophila* are shedding considerable light on the effects of natural selection. By means of the cytological examination of salivary gland chromosomes, it is possible to analyse the nuclear constitution more precisely than in other living forms. For example, an inversion of part of a chromosome *abcde* to form a different chromosome *adcbe* is not infrequent, and may be quickly detected in the hybrid between two *Drosophila* containing these respective chromosomes. Generally there is no apparent difference in the characters of the individuals carrying normal or inverted chromosome arrangements. Occasionally, however, a large position effect is noted such as in 'roughoid' (Gruneberg, 1939).

Dobzhansky[1] and Dubinin and Tiniakov[2] have shown that the proportion of individuals carrying an inversion alters with time and place in wild populations of *D. funebris* and in *D. pseudoobscura*. For example, Dubinin and Tiniakov show that the proportions of individuals of *D. funebris* with inversions is lower in urban than in rural districts, and that under the intense natural selection of winter conditions the inversions III, II2 and II4 were greatly reduced in proportion, whereas the inversion IV1 increased slightly. On the other hand, these inversions increased rapidly in proportion during the summer up to a maximum when the population was at its prime.

Similarly, Dobzhansky has shown that cyclic changes with the seasons took place in a wild population of *D. pseudoobscura* at Pinon Flats, California. These changes were on the whole constant during the years 1939–46. There was no trend towards one particular chromosome arrangement, although the proportions in the population were significantly different at different times of each year. This evidence becomes more significant when it is found that the same chromosome arrangements do show a definite trend at Keens Colony, which is 15 miles from Pinon Flats. During the years 1939–46 the standard arrangement increased in the population from 30 to 50 per cent, whereas the 'Arrowhead' arrangement decreased from 30 to 15 per cent. In all these cases no detectable difference in the morphology or physiology of the animals with different chromosomes has been observed.

In *D. pseudoobscura* the inversion heterozygotes are adaptively favoured in comparison with both the homozygotes; but in *D. funebris* there appears to be no difference between the inversion homozygote and the inversion heterozygote in respect of survival value. In each of the above cases either one simple or one compound rearrangement is present on one chromosome; it is expected and found that there is a consequent instability and increased plasticity of the population.

Recently a constant breeding population of *D. funebris* consisting entirely of individuals heterozygous for three inversions on chromosome 5 has been found near Manchester by Berrie and Sansome[3]. The three inversions are evenly placed on the chromosome, and no homozygotes have as yet been obtained among the forty individuals caught, or in their progeny. A multiple, probably successive, series of chromosome arrangements had occurred and a highly stable heterozygous system was the result. Obviously, the creation of such a system must be fortuitous, at least in respect of the occurrence of the inversions; but natural selection could control the trend of the subsequent evolution. F. W. SANSOME

[1] Dobzhansky, Th., *Heredity*, 1, 56 (1947).
[2] Dubinin, N. P., and Tiniakov, G. S., *Amer. Nat.*, 79, 785 (1945) *C.R. Acad. Sci., U.S.S.R.*, 51, 155 (1946); *J. Gen.*, 48, 11 (1947).
[3] Berrie, G. K., and Sansome, F. W. (in the press).

ORIBATID MITES AND THEIR ECONOMIC IMPORTANCE

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REVIEWING some of the literature on Tyroglyphid mites, Lapage[1] directed attention to their role in pulmonary acariasis of man, in addition to destruction of stored food-products. The Oribatids are allied to these cheese- and flour-mites and to the well-known harvest- and chigger-mites, and have been, until a few years ago, of comparatively little economic significance. Otherwise known as moss-mites and beetle-mites, they have been studied for many years and from all over the world. They are mostly microscopic in size, free-living and terrestrial, although a few are aquatic and crawl on weeds. Their activity is greater in darkness, when they swarm out in search of food, and progression is