

deserts suggests affinities of these deserts with those of Central Asia. It is the only tree dominant for thousands of square miles which does not normally receive more than 25 mm. of rainfall annually and is entirely destitute of aboreal plant communities away from wadis, except for *Haloxylonetum persici*; the discovery of this tree also suggests possibilities of economic development of the sterile deserts for fuel, charcoal, food for desert livestock and checking sand movements.

Considerable knowledge of the flora of the Syrian desert in general is being accumulated in the Department of Botany of the Hebrew University, where a mass of new material awaits publication and adds considerably to the information in Dinsmore's 1932 edition of Post's classic "Flora of Syria, Palestine and Sinai", which the American University of Beirut published. Prof. Zohary has carried on the field studies of the late Prof. Eig and notable publications have been his "Geobotanical Analysis of the Syrian Desert" (*Palestine J. Bot.*, Jerusalem Series, 2; 1940) and "To the Knowledge of the Flora of the Syrian Desert" (1; 1939) which covers the flora of the central part of the desert, with a rainfall of 95-210 mm. annually, and where 175 species were collected, 75 per cent of which were annuals, sometimes exclusively predominating over immense stretches. Some three hundred new species have been added to the flora of Iraq, of which about two hundred are new to science. The Syrian desert flora has been divided into three territories: Mediterranean, Irano-Turanian (the most important) and Saharo-Sindian with 520, 588 and 239 species respectively; also there are 24 Sudano-Decanian species, 10 Euro-Sibero-Boreoamerican, and 659 species belonging to two or more groups. Prof. Zohary's paper was the first to treat the vegetative character of the country.

MASS MOVEMENT OF THE WATER SHREW, *NEOMYS FODIENS*

IN the *Journal of the Society for Preservation of the Fauna of the Empire* of June 1945 is a remarkable account by Lady Seton (a keen field naturalist and wife of that well-known observer the late Sir Malcolm Seton) of a movement of the water shrew, *Neomys fodiens*. In it she tells how she saw large numbers of this little mammal swimming up a small stream in Upper Teesdale in what appeared to be a mass migration. Migration is so exceptional among land mammals, if not marine ones (unlike birds in which it is so usual we may say it is the rule rather than the exception), that any instance is of outstanding interest.

Such mammalian migration as occurs is of two types: seasonal on the lines of bird migration, the North American caribou being the classic example, and occasional as in the case of the lemming, *Lemmus lemmus*, with its periodic emigrations from the high fields to the low country. These are seemingly initiated by pressure of numbers and scarcity of food, and the travellers appear to be driven by an urge to go downhill. I have watched the little animals scuttling along, each taking its own course and acting independently of fellow lemmings. I have never seen them moving in droves.

The especially interesting part of Lady Seton's account of the shrews she watched is the mass of animals. This is the more noteworthy for the fact

that though *Neomys fodiens* is widely distributed throughout the mainland of Britain, it is usually only met with in sparse numbers. The only reference to water shrews in any number I can find is in Barrett-Hamilton's "History of British Mammals", wherein he refers to them living in family parties, and adds, "Probably, also, the breeding season brings these shrews together in companies, which would account for the party of nine or ten encountered by the late Canon H. B. Tristram on May 6, as well as for a concourse of twenty or thirty observed in Yorkshire by Mr. W. B. Arundel on the 10th of the same month". But these are not described as being on the move. Migration does not appear to have been noted by previous observers in this or allied species. Thirdly, Lady Seton's water shrews were swimming upstream and therefore uphill, though why and where to we have no clue.

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SERUM PROTEINS IN THE ULTRACENTRIFUGE

THE monograph on the proteins of blood serum by Kai O. Pedersen*, from Prof. Svedberg's laboratory at Uppsala, brings home forcibly the present complexity of the subject. Although any one of the usual methods of analysis gives apparently clear-cut fractions, each fraction when analysed by some other method usually turns out to be a mixture. The obvious remedy, to fractionate by each method in turn, is impracticable because some of the analytical methods are difficult to use in a preparative way. After a heroic attempt to achieve a complete separation, chiefly by means of ammonium sulphate with ultracentrifugal analysis, Dr. Pedersen had to confess defeat.

But a wealth of new knowledge has been gained, such as Dr. Pedersen's discovery of the new low-molecular globulin 'fetuin', which was described in *Nature* of November 4, 1944. This is present in foetal serum of ruminants to the almost complete exclusion of the ordinary globulins and antibodies, which only appear after the animal has received colostrum. The same is true to a less marked extent in rodents and man. The discovery of fetuin is due to the ultracentrifuge, because in salting-out and in electrophoresis it behaves like ordinary α -globulin. A foetal haemoglobin has been known for some time; but a foetal serum globulin was unsuspected.

Dr. Pedersen's study of the 'X-protein' is also illuminating. It has long been known that in undiluted serum some of the globulin sediments at the slow rate characteristic of albumin. This is surprising because a complex of the two proteins would normally sediment more rapidly than either component. Dr. Pedersen's explanation is that there is indeed a complex, but that it contains lipide, which decreases its density and therefore its sedimentation rate. The density is so low in human serum that with added salt the complex sediments upwards and can be isolated. This 'density-effect' cannot be observed in other sera, and similar interactions between apparently lipide-free proteins remain unexplained, so that the story still seems incomplete. 'X-protein' seems to be of physiological importance for lipide transport.

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* Ultracentrifugal Studies on Serum and Serum Fractions. By Kai O. Pedersen. Pp. 178. (Uppsala: Almqvist and Wiksells Boktryckeri AB, 1945.) 10 Swedish crowns.