and the time of preservation. We thank Dunlop Malayan Estates, Ltd., for permission to publish these preliminary findings.

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The Protein from *Balanites aegyptica*

THE only reported study of the protein of *Balanites aegyptica* is an abstract from a thesis by Despujols¹, who showed the presence of two fractions, 70–75 per cent of balanine ("insoluble in water in the presence of salts") and 25–30 per cent of aegyptine (soluble under the same conditions). It was claimed that the two fractions can be separated by dialysis, but the use of salts did not give a complete separation. No details regarding the method of extraction of the protein from the nut were given. In this communication a brief ultracentrifugal study of a saline extract of the protein is presented.

The nuts of *Balanites aegyptica* from Sudan (lalob nuts) were shelled, ground and the oil removed with petroleum ether. Using a 1:10 meal:liquor ratio, the de-oiled meal, containing 8.6 per cent nitrogen, was extracted with 10 per cent (w/v) sodium chloride solution, the protein precipitated by saturation to 85 per cent with ammonium sulphate and purified by a similar reprecipitation from 10 per cent sodium chloride solution. The nitrogen content of the protein was 17.1 per cent and its partial specific volume $0.685 (\pm 0.005)$.

Examination of the protein after dialysis against phosphate buffer (ionic strength, $I = 0.5$, $pH = 8$) in the 'Spinco' Model E ultracentrifuge at $c. 200,000 g$ showed the presence of two main components, of sedimentation constants (s) 12.3 and $c. 2.S$ (Svedberg units, Fig. 1a). The fractions precipitating from a 10 per cent sodium chloride extract at between 0–40 and 40–85 per cent saturation with ammonium sulphate were redissolved in 10 per cent sodium chloride, reprecipitated and, after dialysis, were examined in the same buffer in the ultracentrifuge. Fig. 1b shows the sedimentation diagram of the 0/40 fraction, which consisted mainly of the $s_{12.3}$ component with a small amount of s_{18} and some s_2 component. The 40/85 fraction, on the other hand, contained most of the slowly sedimenting material, and also a small amount of s_8 material as well as the

$s_{12.3}$ component. The fractionation, however, was by no means sharp.

No appreciable changes in the sedimentation diagram of any of the fractions were observed on lowering the ionic strength to 0.05. Thus, dissociation-association reactions brought about by ionic strength changes, which are characteristic of some other proteins, appear to be absent in this system.

In the absence of sufficient published data, no correlation of the sedimenting components reported in this work with the fractions of Despujols has been attempted.

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¹ Despujols, J., "L'Année Biologique", 24, 203 (1948).

Rabbit Fleas on Wild Rabbits and the Transmission of Myxomatosis

DURING the course of investigations into myxomatosis on the Heisker or Monach Isles, North Uist, it was suspected that the rabbit flea, *Spilopsyllus cuniculi* (Dale), was responsible for the carry-over of the disease during the winter of 1952–53. Laboratory experiments confirmed that the rabbit flea could transmit the disease, and this was also shown by Lockley¹. Since December 1953 a census of the flea population on wild rabbits has been carried out on an estate near Aberdeen, and the accompanying histogram (Fig. 1) illustrates the results.

Fig. 1. Total number of fleas taken from twenty rabbits at fortnightly intervals

The census is being continued for a further period in order to establish whether or not the increase in the population during March and November is characteristic of this species.

It is of interest to record that it has been found that, under laboratory conditions at least, *Ixodes reduvius* can also be a vector of myxomatosis virus.

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¹ Lockley, R. M., *Vet. Rec.*, 66, No. 30 (1954).

Fig. 1. Sedimentation diagrams of protein fractions from *Balanites aegyptica* in phosphate buffer, $I = 0.5$, $pH = 8$. Protein concentration = 0.8 gm./100 ml. (a) 0/85 fraction; (b) 0/40 fraction; (c) 40/85 fraction. Numbers above peaks refer to rounded sedimentation constants in Svedberg units