ments, performed in the same way as those illustrated in the tables, gave similar results. It would therefore seem that an injection of corpus luteum extract tends to counteract the hypertrophy-producing effect of the oestrin or follicular hormone in mice.

The authors furthermore made studies of a similar nature in regard to the feeding of follicular hormones and extracts of corpus luteum. This was done by sprinkling on a slice of bread a solution of oestrin alone and of oestrin together with lutein and feeding the different groups of mice. After 10 days very little effect was noted, but, on continuing the feeding experiments for periods of from 2 to 5 weeks and examining the animals after killing them, it was found that there was a distinct difference in the size of the uteri and in the ratios obtained between uterine and body weights. In Table III is illustrated one series of such experiments in which oestrin alone in doses of from 2 to 5 mouse units was devoured by each mouse daily, on the one hand; and, on the other, in which the same quantity of the oestrin was fed with 0.5 cc. of the lutein solution on bread. It may be added that injections of corpus luteum extracts alone produced no appreciable change in the size of the uteri of control mice. Investigations are being continued and it is hoped that this method may furnish a practical way of evaluating the physiological activity of corpus luteum preparations.

5542

Reaction of Blepharisma to Golgi Impregnation Methods.

IMOGENE MOORE. (Introduced by L. L. Woodruff.)

From the Osborn Zoological Laboratory, Yale University.

From a study of the normal and regenerating contractile vacuoles *in vivo,* evidence was obtained that the normal contractile vacuole in *Blepharisma undulans* is not a permanent cell organ, but a system of temporary, potentially independent fluid vacuoles.[1] In view of the fact that conflicting opinions concerning the permanence of contractile vacuoles have arisen from the failure of investigators to study both living and stained preparations, the above conclusions have been tested by a study of fixed material, derived from the pedigreed cultures. The Nassanov methods and the original Kolatschev technique were employed, not only because of their proved

[1] Moore, I., *Anat. Rec.*, 1930, **47**, 346.

success in demonstrating contractile vacuole structure, but also because by their use the Blepharisma vacuole could be examined in the light of the Nassanov homology.

In the several series of preparations which were made, Paramecia, mixed with the Blepharisma prior to fixation and treated identically step by step, were used as controls. Although the contractile vacuoles of the Paramecia showed the characteristic blackening, those of the Blepharisma failed to do so. In general, where osmication was continued until the whole cytoplasm was darkened, the food and contractile vacuole walls in the Blepharisma were likewise blackened, but upon differentiation of such preparations in turpentine, these walls became bleached as quickly as the surrounding cytoplasm. Particularly careful examination of the preparations showing darkened vacuolar walls for any sign of the old primary vacuole wall which, if present, should form a small dark mass close to the anal spot, revealed no trace of that structure. However, sparsely distributed through the entire endoplasm of the Blepharisma were small, globular bodies which did show a typical Golgi impregnation. These bodies with their osmiophile cortices and osmiophobe centers resembled both in structure and staining reaction Golgi bodies which have been described for several other Protozoa.[2] Particularly does the situation in Blepharisma recall that in *Amoeba proteus,* Pallas, as described by Brown.[3] However, absolutely no evidence indicating that in the osmiophile bodies lay the origin of the contractile vacuole was found in Blepharisma.

Accordingly, further proof of the temporary character of the Blepharisma contractile vacuole has been obtained. Moreover, since this vacuole reacts negatively to the Golgi techniques, it must be considered as an exception to the Nassanov homology.

My thanks are due to Prof. J. Bronté Gatenby for suggestions concerning the Golgi methods as well as for critical examination of the osmic preparations, and to Prof. L. L. Woodruff, under whose direction the entire research is being carried out.

[2] Bowen, R. H., *Anat. Rec.*, 1928, **40**, 225.

[3] Brown, V. E., *Biol. Bull.*, 1930, **59**, 240.