itary principles having action on the gonads of mammals. The suggestion of Dresel that lactation anestrus in mice is induced by prolactin is supported by these tests on mature non-parous rats. But under effective prolactin dosage the corpora of rats remain large, and at the age of 10-12 days their large cells show no clear evidence of degeneration. The failure of daily injections of low or moderate doses of progesterone to affect the estrous cycles of rats suggests that in this rodent, though the corpus luteum hormone plays its part, it is perhaps not the hormone primarily responsible for the anestrous of either gestation or lactation.

8827 P

Removal of Corpora Allata on Egg Production in the Grasshopper, *Melanoplus Differentialis*.*

ISABELLE G. WEED. (Introduced by J. H. Bodine.)

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It has been shown by Wigglesworth[1] that in *Rhodnius prolixus* the corpora allata secrete a hormone which is necessary for the production of eggs. In order to determine whether these glands have a similar function in the grasshopper, females were operated as shown in Table I. For comparison, unoperated adults were killed at intervals from one to 42 days after moulting. Camera lucida drawings were made of the largest eggs in each of the above animals, egg length was measured, and the oviducts were examined to determine whether the secretion produced by the anterior portions of the oviducts was present. This secretion forms the ootheca.

There was great variation in the development of the ovary in unoperated adults autopsied from 28 to 42 days after moulting. However, of the 43 specimens examined, 35 contained eggs which were more than 1 mm. in length. Of these, the eggs of 8 were fully developed and had passed into the oviducts. The operated controls at autopsy also contained eggs exceeding 1 mm. in length and in one instance the fully developed eggs had entered the oviducts.

The eggs of the animals from which both corpora allata had been removed, however, were less than .9 mm. in length at autopsy in all

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[1] Wigglesworth, V. B., *Nature*, 1935, **136**, 338.

cases except those which had been operated at 16 and 23 days, suggesting that development of the eggs was suppressed by lack of the corpora allata. The slightly larger size of the eggs in those animals operated at 16 and 23 days was probably because they had reached a higher stage of development before operation, since a number of unoperated females killed between 16 and 23 days were found to contain eggs exceeding .9 mm. in length.

TABLE I.

No. Unoperated Animals Observed	Operated Animals No. of Glands Removed	Days after Moulting		Length of eggs in mm.	Secretion in Oviducts
		Operated	Autopsied		
	2	*	34	.79	Absent
	2	4	35	.61	"
	2	4	40	.68	"
	2	4	42	.77	"
	2	4	42	.50	"
	2	5	33	.83	"
	2	5	42	.50	"
	2	6	35	.48	"
	2	6	42	.52	"
	2	6	46	.86	"
	2	7	28	.59	"
	2	11	35	.82	Present
	2	13	35	.65	Absent
	2	14	42	.86	Present
	2	16	42	1.00	Absent
	2	23	42	1.08	Present
	1	6	28	.81	"
	0	4	28	2.82	"
	0	6	28	1.84	"
	0	7	35	1.28	"
	0	12	42	4.33†	"
8			28-42	4-5.5†	"
5			"	4-5	"
6			"	3-4	"
8			"	2-3	"
8			"	1-2	"
8			"	0-1	"

*Operated 4 days after entering the final nymphal stadium.
†Eggs fully developed and in the oviducts.

At autopsy, secretion was lacking in the oviducts of all the animals operated up to 11 days after moulting. This indicates that formation of the secretion is also inhibited by removal of the corpora allata, since both the operated and unoperated controls, as well as the animal from which only one gland had been removed, contained secretion in the oviducts at autopsy, even in those cases where the eggs had remained small. Secretion had probably already started in the oviducts of the animals operated at 11, 14, and 23 days and had not in those operated at 13 and 16 days. This is evidenced by

the fact that secretion had begun in some of the unoperated animals examined at from 10 to 23 days, while in others it had not.

The results obtained in the above preliminary experiments, therefore, suggest that in *Melanoplus differentialis,* as in *Rhodnius prolixus,* the corpora allata are necessary to normal development of the eggs, and that, further, secretion in the glandular portion of the oviducts is also influenced by the corpora allata.

8828 P

Experimental Study of Moulting in the Grasshopper, *Melanoplus Differentialis.**

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Wigglesworth,[1,2] working on a blood sucking hemipteron, *Rhodnius prolixus,* found that if the head were taken off before a certain "critical period" in a nymphal stadium, the animal did not moult, but if the head were removed after this time, the animal moulted as usual. On the basis of these and other experiments he concluded that a hormone is secreted in the head, probably by the corpus allatum (a single structure in *Rhodnius*), which induces moulting.

In view of this work it seemed of interest to determine whether moulting is controlled by the corpora allata in the grasshopper, *Melanoplus differentialis.* Therefore, the corpora allata (paired structures in this animal) were removed from a number of nymphs from 1 to 9 days after they entered the 6th and final stadium.

Since most of the unoperated nymphs observed spent from 15 to 20 days in the 6th stadium, it might be expected that animals operated up to the 5th day of this period would fail to moult, yet as shown in Table I, all of the nymphs from which both glands had been removed, including 3 specimens which were operated at one day, moulted from 17 to 23 days from the beginning of the stadium. In addition to the above animals, 8 others were operated at from one to 5 days and 6 at 6 to 7 days, but in these cases there was some doubt whether both glands had been removed, although in most

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1 Wigglesworth, V. B., *Quart. J. Micr. Sci.,* 1934, **77**, 191.

2 Wigglesworth, V. B., *Nature,* 1935, **136**, 338.