survival in the experimental animal that has received the same blood. Each horizontal line in Table I represents a single experiment in which aliquots of the same donor blood have been used, and in each instance survival time in the experimental animal was longer than in the homotransfused control.

Summary. Repeated intravenous injections of homologous erythrocytes, begun in the early neonatal period, later resulted in the inability of the recipients to destroy rapidly the same homologous erythrocytes. This behavior contrasted with that of control chickens from the same hatching, which uniformly and rapidly destroyed the same donor blood.

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Thyroxine Secretion Rate of Missouri Valley Mole, *Scalopus aquaticus.* *† (27616)

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Thyroxine secretion rate (TSR) of the mole, *Scalopus aquaticus,* has not been reported. The present paper reports on TSR at room temperature (78°F) and 40°F. In captivity moles eat ½ their weight in food per day(1), and in the wild they are extremely active(2,3). High TSR would be one endocrine mechanism that would partially account for these activity patterns.

Materials and methods. Moles captured in Boone County, Missouri, between July and November, 1961 were maintained in No. 12 galvanized iron wash tubs in 3″ of dirt. They were fed freshly killed skinned rats each day and fresh water was supplied. The moles maintained or gained weight. The animal room was artificially illuminated during regular daylight hours and kept at uniform temperature (78°F ± 1°). The method of Grosvenor and Turner(4) was used to determine TSR on adult (mean body weight 101.6 g) and juvenile (young of the year with mean body weight 90.4 g) moles. Some modifications of this method were employed. On day 1, moles were injected i.p. with 5 μc of carrier-free I^{131}, and 48 hours were allowed for fixation by thyroids. External neck counts were made at this time by anaesthetizing each mole with ether, then placing it on its back with thyroid over scintillation probe containing 2″ NaI crystal. Each mole was injected on day 3 and 4 with 0.5 μg/100 g BW L-thyroxine (T_4) and 0.5 mg tapazole/100 g BW (goitrogen) which blocked recycling of I^{131}. T_4 dose was increased by 0.25 μg increments, each dose being injected for 2 consecutive days, with neck counts being taken on the day of each increase. The dose of T_4 which prevented further thyroidal-I^{131} output (95-100% previous count) was estimated as TSR.

TSR of 3 moles was determined after 14 days at 78°F. Moles were then placed in a 40°F cold room and TSR determined after 10 and 22 days exposure.

Resting O_2 consumption was determined on 4 moles in a post-absorptive state. Each was placed in a 22 mm desiccator containing anhy-

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drous soda lime granules covered by quartz gravel. Ten per cent KOH-soaked filter paper in vials was suspended in the chamber which was immersed in a constant temperature (26°C) water bath, and attached by rubber tubing to mouse spirometer (Model 160, Custom Engineering and Development Co., St. Louis, Mo.) which was charged with 100% O_2 before each run. Active periods were observed and excluded from calculations.

Results. Mean TSR of 12 male moles was estimated at 2.0 μg/100 g BW/day (range 1.75-2.50) and of 8 females, 1.91 μg (range 1.75-2.00). Mean TSR of 8 juveniles was 2.03 μg (range 1.75-2.25), and of 8 adults, 1.91 μg (range 1.75-2.50). No statistically significant difference in sex or age was shown (Table I).

TABLE I. Thyroxine Secretion Rate of Moles (TSR in μg/100 g BW/Day).

Age	No. and sex	Mean body wt (g)	TSR	Temp. (°F)
Juvenile	4 ♂	103.5	2.06	78
"	4 ♀	77.3	2.00	78
Adult	6 ♂	108.8	1.96	78
"	2 ♀	83.0	1.75	78
Unknown	2 ♂	101.0	2.00	78
Unknown	3 (2♀, 1♂)	87.3	1.75	78
"	3 (2♀, 1♂)	95.3	2.17	40 (10 days exposure)
"	3 (2♀, 1♂)	114.7	2.58	40 (22 days exposure)

Mean TSR of 3 moles (2♀ and 1♂) at 78°F was 1.75 μg (range 1.5-2.00). For the same 3 moles at 40°F (10 days exposure), mean TSR was 2.17 μg (range 2.0-2.50) and after 22 days exposure, 2.58 μg (range 2.25-3.0).

Mean O_2 consumption of 4 moles at 26°C (3♂ and 1♀) was 1.6 ml/g BW/hr (range 1.4-1.8). Determination periods averaged 11 hours.

Discussion. The mean TSR of 6 strains of adult male mice determined at 74 ± 1°F was reported(5) to range from 2.1 to 4.2 μg/100 g BW/day. It was between 1.8 and 3.3 μg for adult females. The mean TSR of adult male mice (Swiss-Webster strain) determined at 78 ± 1°F was reported(6) to be 1.20 μg and for females, 1.25 μg. The mean TSR of adult male rats of the Carworth strain determined at 74 ± 1°F was reported(7) to be 2.1 μg; and for females, 2.21-2.56 μg. The mean TSR at 78 ± 1°F of adult male rats of the Sprague-Dawley-Rolfsmeyer strain was reported(8) to be 1.11 μg, and 0.97 μg for adult females. The mole has a higher TSR than rats of the Sprague-Dawley-Rolfsmeyer strain and mice of the Swiss-Webster strain. Considering surface to volume ratio of these animals, the mouse would be expected to have the highest TSR. Lowering environmental temperature results in increased mole TSR.

A previous report of mole O_2 consumption (9) records one 70 g mole having O_2 consumption equal to the meadow mouse. Laboratory rat and mouse have O_2 consumption of 0.88 and 1.69 ml O_2/g BW/hr (10). Mole O_2 consumption (1.6 ml) is higher than that of the rat and about equal to that of the mouse, an animal with relatively larger surface area.

Summary. Estimated L-thyroxine secretion rate (TSR) of 20 moles, *Scalopus aquaticus*, averaged 1.96 μg/100 g BW/day (range 1.5-2.50). No statistically significant difference between sexes or between juvenile and mature animals was noted. Mean TSR of 3 moles increased 67.8% after 22 days exposure to 40°F compared with a mean at 78°F. Mean resting O_2 consumption of 4 moles was 1.6 ml/g BW/hr.

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