

water or those occurring periodically without swallowing, except as to their point of origin.

Restlessness of the starved decerebrate bird may be clearly periodic or more or less continuous. If it tends to be continuous picking up the bird and holding it in the hand for a moment and then freeing it will end the restlessness, unless contractions of the crop are occurring at the same time. If the crop is actively contracting the bird will continue his fruitless wanderings.

66 (1130)

Oxygen consumption in regenerating tissue.

By G. G. SCOTT.

[From the United States Fisheries Biological Station, Woods Hole, Mass.¹]

Little knowledge has been obtained as to the rate of metabolism of regenerating tissue as compared with that of normal tissue. Child, '15,² has found that susceptibility or physiological resistance of organisms varies directly with the rate of metabolism. He found, in practice, that a measure of the resistance to cyanide poison was an efficient method for determining the rate of metabolism. In experiments of regenerating tissue of *Planaria* (flat-worm) he concluded that immediately after operation, the rate of metabolism fell below normal, remained there for a few days, then arose above normal where it remained for some time after regeneration was complete, when it gradually approached normal. I obtained the same result with *Sagartia*, a small *anemone* (Coelenterate). In my method the rate of metabolism was measured by determining the amount of oxygen consumed by the regenerating animals as compared with the normal animals. Oxygen determinations were made by means of the Winkler method. The experiment continued for twelve days. Determinations were made every twelve hours. Table I shows percentage consumption

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² Child, C. M., "Senescence and Rejuvenescence," University of Chicago Press, 1915.

of oxygen by regenerating animals as compared with normal animals for each twelve hour period.

TABLE I.

1.	Reg. <i>Sagartia</i> consumed 109% of amount of oxygen consumed by nor. <i>Sagartia</i> .
2.	Reg. <i>Sagartia</i> consumed 96% of amount of oxygen consumed by nor. <i>Sagartia</i> .
3.	Reg. <i>Sagartia</i> consumed 82% of amount of oxygen consumed by nor. <i>Sagartia</i> .
4.	Reg. <i>Sagartia</i> consumed 95% of amount of oxygen consumed by nor. <i>Sagartia</i> .
5.	Reg. <i>Sagartia</i> consumed 97% of amount of oxygen consumed by nor. <i>Sagartia</i> .
6.	Reg. <i>Sagartia</i> consumed 93% of amount of oxygen consumed by nor. <i>Sagartia</i> .
7.	Reg. <i>Sagartia</i> consumed 99% of amount of oxygen consumed by nor. <i>Sagartia</i> .
8.	Reg. <i>Sagartia</i> consumed 111% of amount of oxygen consumed by nor. <i>Sagartia</i> .
9.	Reg. <i>Sagartia</i> consumed 165% of amount of oxygen consumed by nor. <i>Sagartia</i> .
10.	Reg. <i>Sagartia</i> consumed 142% of amount of oxygen consumed by nor. <i>Sagartia</i> .
11.	Reg. <i>Sagartia</i> consumed 140% of amount of oxygen consumed by nor. <i>Sagartia</i> .
12.	Reg. <i>Sagartia</i> consumed 135% of amount of oxygen consumed by nor. <i>Sagartia</i> .
13.	Reg. <i>Sagartia</i> consumed 117% of amount of oxygen consumed by nor. <i>Sagartia</i> .
14.	Reg. <i>Sagartia</i> consumed 130% of amount of oxygen consumed by nor. <i>Sagartia</i> .
15.	Reg. <i>Sagartia</i> consumed 187% of amount of oxygen consumed by nor. <i>Sagartia</i> .
16.	Reg. <i>Sagartia</i> consumed 135% of amount of oxygen consumed by nor. <i>Sagartia</i> .
17.	Reg. <i>Sagartia</i> consumed 125% of amount of oxygen consumed by nor. <i>Sagartia</i> .
18.	Reg. <i>Sagartia</i> consumed 124% of amount of oxygen consumed by nor. <i>Sagartia</i> .
19.	Reg. <i>Sagartia</i> consumed 144% of amount of oxygen consumed by nor. <i>Sagartia</i> .
20.	Reg. <i>Sagartia</i> consumed 129% of amount of oxygen consumed by nor. <i>Sagartia</i> .
21.	Reg. <i>Sagartia</i> consumed 125% of amount of oxygen consumed by nor. <i>Sagartia</i> .
22.	Reg. <i>Sagartia</i> consumed 119% of amount of oxygen consumed by nor. <i>Sagartia</i> .
23.	Reg. <i>Sagartia</i> consumed 122% of amount of oxygen consumed by nor. <i>Sagartia</i> .

The result is parallel to that found by Child with *Planaria*. While extensive morphological studies on regeneration have been made, it is necessary that a more complete study of the physiological processes involved should also be made.