

within 5% in the case of *Vibrio phosphorescens* though the agreement was not as close in the case of *Achromobacter fischeri*, in which the endogenous O₂ uptake was quite small and difficult to measure accurately.

The results are summarized in Table I. It is difficult to find any important correlations between the molecular configuration of the substrate and the ability of the organism to oxidize it. From the work that has been carried out thus far, however, it would seem that the primary limiting factor in both species is the number of carbon atoms, since only those compounds having 3 or 6 carbons are utilized. In the case of the disaccharides, those with beta linkages apparently are not utilized, while those with alpha linkages may or may not be utilized, irrespective of whether they are reducing sugars. (The type of linkage in sucrose, which is oxidized by the fresh water species, is not known.) Raffinose, which has a beta and a sucrose linkage, is oxidized only very slowly by the fresh water, and not at all by the marine species.

The results obtained by the respirometers were checked by acid production from the various substrates, under conditions of partial anaerobiosis. The method employed will be published shortly. The only discrepancy was in the case of glycerine, which is readily oxidized aerobically, but apparently not under conditions of limited oxygen supply.

8054 P

Effect of Experimental Hypothyroidism on Period of Gestation in the Rabbit.*

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In some unpublished data obtained in this laboratory, it was found that thyroid removal in the pregnant female albino rat resulted in abortion or resorption of the fetuses, provided this operation was done before the first two-thirds of the gestation period.¹ Because the rabbit possesses a somewhat different type of ovarian activity than does the rat, it was thought to be of interest to determine

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¹ Eckert, J. F., and Mazur, H.

whether the pregnant female rabbit would react to thyroidectomy in a similar manner. The results of this preliminary study indicate that contrary to the reaction obtained in the rat, thyroid removal has little if any effect on the period of gestation in the rabbit.

Although 33 New Zealand does, ranging in age from 7 to 18 months, were used as experimental animals, complete data on only 15 are reported here. The results on the remaining 18 animals will be reported when the data are completed. Ten additional normal females served as controls. Each doe was mated, being allowed to copulate twice, and the thyroid glands removed at definite intervals after mating. This interval in some cases was as short as 2 hours, while in other cases the time was extended to 12 days. The length of the period of gestation was then noted. The controls were mated but were not subjected to operative procedures and the duration of gestation also noted. As can be seen from Table I, no apparent differences between the length of the gestation period occurred in operated and unoperated animals.

It appeared possible that all of the thyroidectomies might not have been complete, and that regeneration of thyroid remnants might have occurred. In 6 animals (Nos. 3, 7, 8, 34, 40, and 54) which were sacrificed, the entire thyroid region was removed, fixed, and a

TABLE I.
Effect of Thyroid Removal on Period of Gestation and Rate of Oxygen Consumption in Rabbits.†

Animal No.	Interval between mating and thyroidectomy	Days gestation	Remarks	Rate of O ₂ consumption per kilo. per hr. compared with normal (%)
45	2 hr.	31	4 young	69
54	6 "	30	3 "	78
40	6 "	31	4 "	70
32	10 "	—	Not preg.	79
39	10 "	32	5 young	71
49	1 day	31	4 "	67
34	1 "	30	?	86
41	1 "	—	Not preg.	70
7	2 "	30	4 young	73
8	2 "	31	5 "	78
36	2 "	—	Not preg.	—
11	4 "	—	Died 31 days after mating. Uteri contained 8 young	—
6	11 "	30	11 young	80
3	12 "	33	3 "	72
5	12 "	32	6 "	81

†Ten normal female rabbits used as controls showed an average period of gestation of 31 days with a variation from 29 to 32 days. The normal rate of oxygen consumption, taken as 100%, was determined from the average rate of 10 normal, non-pregnant females.

careful search made for traces of thyroid tissue under a binocular dissecting microscope. In animal No. 54, one relatively small piece, and in animal No. 34, two small pieces of thyroid material were found. In the remaining 4 animals no traces of the gland tissue were observed.

That these animals were definitely hypothyroid is shown by the decrease in their rate of oxygen consumption per kilogram per hour. This rate was determined by a modified Benedict apparatus for 10 normal, non-pregnant rabbits, and the average for the group was taken as normal. The decrease, determined one month after delivery of young and shown in the table, varied from 14 to 33%, indicating that all experimental animals exhibited some degree of hypothyroidism.

These results are not in agreement with the work of Ukita, who reported an increase in the period of gestation to from 60 to 70 days in rabbits thyroidectomized from the 7th to 10th day of pregnancy.² Our results indicate that experimental hypothyroidism produced after mating apparently had little effect on the duration of the gestation period in the rabbit.

8055 P

Growth Factors in Relation to Development of Certain "Fastidious" Bacteria.

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It is well known that many of the more fastidious bacteria require special media such as fresh meat infusions for their development and refuse to grow, or at best grow poorly, on the ordinary standard agar and broth made with peptone and meat extract. These organisms, almost without exception, also refuse to grow in a chemically definite or synthetic medium. The nature of the necessary substances in the more complex media is largely a matter of conjecture at present, although it constitutes one of the very important problems of bacterial nutrition.

In the present investigation we have attempted to separate from

² Ukita, T., *Physiol. Abst.*, 1920, 5, 39.