hours, the glandular epithelium shows a lower activity than the stroma.

Fallopian tube. The epithelial layer surrounding the lumen shows by far the greatest activity. It appears to be nuclear as well as cytoplasmic, but in the latter primarily in the free border of the cell (Fig. 5).

Discussion and summary. Biochemical and histochemical methods have demonstrated acid phosphatase activity in the vagina, exo- and endo-cervix, the endometrium, and mucosa of the fallopian tube. The enzyme is similar to that in the human prostate but the activity per mg wet weight is lower.

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Effect of Aureomycin in Rats with Chronic Alloxan Diabetes.* (20261)

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Clinical observations on several patients with severe diabetes showed that during treatment with aureomycin a marked improvement of the diabetic condition took place. Since no obvious infection was established by clinical and laboratory means in some of these patients, the impression was gained that aureomycin may have a direct favourable effect on the diabetes. These observations prompted us to study the effect of aureomycin on experimental diabetes in the rat.

Material and methods. Adult male rats weighing 130-160 g were used. Diabetes was induced by a single subcutaneous injection of 230 mg alloxan per kg body weight. Following this, half a unit of PZI was given daily subcutaneously for 7 days. Forty-four rats which were diabetic for 6 weeks were put in special metabolic cages for the following 2 weeks; the urine was collected every 48 hours, measured and examined for sugar, the daily *ad libitum* food intake was measured. The ration consisted of a mixture of ground wholewheat, ground alfalfa, bran, skimmed milk powder, salts and contained 21% proteins. Once a week the rats were weighed. Following the period of 2 weeks the diabetic rats were divided into 2 subgroups, one consisting of 25 rats (subgroup I) was given aureomycin in a dosage of 20 mg per 100 g food for 28 days, and 19 diabetic rats (subgroup II) were not given aureomycin. Nineteen normal non-diabetic male rats of the same stock and age served as control for the diabetic rats, and were given the same ration. Of these, 11 rats (subgroup III) were given the same food plus aureomycin in the same dosage as the diabetic rats, while 9 rats (subgroup IV) were not given aureomycin. In another series of experiments 8 rats which had alloxan diabetes for 6 months were given 40 mg aureomycin per 100 g food for 10 days, and 60 mg per 100 mg food for 6 days. Urinary sugar was determined daily and the bodyweight was measured once a week. *Sugar* in the urine was examined by Benedict's quantitative method.

Results. As shown in Table I the average gain in weight in the 19 diabetic rats of the first series of experiments (subgroup II) which did not receive aureomycin was 9.6 g during 28 days. During this period the average amount of sugar excreted in the urine was 3.75 g per day per animal. The average food intake in these animals amounted to 22 g per day. The average gain in weight in the 25

TABLE I. Average Gain in Body Weight, Average Daily Food Intake, Daily Diuresis and Glycosuria in Normal, Diabetic and Aureomycin-Fed Diabetic Rats.

Rats	Aureomycin	Avg gain in body wt in 28 days	Avg daily food intake	Avg daily diuresis	Avg daily sugar excretion in urine
25 diabetic	+	19.0 ± 2.9	33 ± 3.7	88 ± 13.3	5.0 ± 1.7
19 "	—	9.6 ± 2.0	21.5± 2.6	73 ± 9.2	3.85 ± 1.9
11 normal	+	28 ± 1.07	15 ± 3.1	—	—
9 "	—	28 ± 1.52	14 ± 2.7	—	—

diabetic rats (subgroup I) kept under similar conditions except for the amount of food consumed (*ad libitum*) and the addition of 20 mg aureomycin per 100 g food was 19 g per animal during the 28 days. Glycosuria in these animals increased as compared with the previous control period of the same animals and with animals of subgroup II which did not receive aureomycin. The average amount of sugar excreted per day was 5.0 g per animal as compared with 3.85 g before the administration of aureomycin and 3.75 g of subgroup II. The food intake during this period of increased glycosuria was 33 g per day per animal, as compared with 26 g during the preceding control period of the same group, and with 22 g of subgroup II during the same period of time.

The results of this experiment corroborate with those of another set of experiments with 8 chronic diabetic rats. In this experiment the diabetes was of 6 months duration. The average gain in weight during the 16 days of aureomycin administration was 18 g as compared with 1.1 g gained in 8 days preceding the administration of aureomycin. The gain in weight continued for approximately 7 days after withdrawal of aureomycin during which the average gain per animal was an additional 10 g. During the following 7 days there was a definite decrease in bodyweight averaging 11 g per animal. In this experiment also the period of aureomycin treatment was accompanied by increased glycosuria and diuresis.

The weight curve obtained in the diabetic rats with and without aureomycin were compared with that of normal non-diabetic rats (subgroups III and IV). Non-diabetic rats (subgroup III) which did not receive aureomycin showed an average increase in bodyweight of 28 g per animal during 28 days. Non-diabetic rats (subgroup IV) which received 20 mg aureomycin per 100 g food showed the same increment in bodyweight, that is, 28 g per animal during the same period of observation. The same amount of food was offered to the last two groups.

Discussion. The results of these experiments showed definitely that aureomycin has a favourable effect on the weight curve of rats with chronic alloxan diabetes. The gain in weight was substantial and statistically significant. $P = <0.01$. It did not reach, however, the gain in weight of non-diabetic rats during the same period of time.

Essays with various doses of aureomycin suggested that the optimum dose is 20 mg per 100 g food in a long term experiment.

This effect of aureomycin could be explained either by the "growth-promoting activity" attributed to aureomycin or to a direct and specific effect of aureomycin on the metabolism of the diabetic animal. The possibility that the "growth-promoting factor" was responsible for these gains in weight does not seem probable because the addition of aureomycin in the non-diabetic animals did not cause any added gain in body weight. The lack of the growth-promoting effect in our experiments, contrary to those reported(1-6) may be attributed to the fact that this effect was observed in very young animals only. It is however possible that the growth-promoting factor is still operative in rats of older age who are diabetic as in this experiment because of increased metabolic demands which may render them similar to young growing animals. By this assumption the growth-promoting factor would outweigh the diabetic factor resulting in a net gain in weight.

It is important to note that the increase in body weight in the diabetic rats receiving aureomycin took place in spite of increased

glycosuria and diuresis. Thus there was no improvement in the diabetic state during the period of aureomycin administration as expressed by glycosuria and diuresis. The gain in bodyweight during this period in spite of increased glycosuria and diuresis can be explained by the fact that during this period the animals consumed more food. Obviously at least a part of the additional food was utilized. The cause for the increased food intake during aureomycin administration is not clear. It might be related to a possible specific metabolic effect of aureomycin.

The question of food utilization in chronic diabetic rats receiving aureomycin and the intermediary metabolic effects of aureomycin in diabetes are under investigation.

Summary. 1. Aureomycin given to chronic alloxan diabetic rats caused an average gain in body weight of 19.0 ± 2.9 g during 28 days. Control chronic alloxan diabetic rats gained 9.6 ± 2.0 g during the same period. 2. During aureomycin administration the animals consumed more food and had increased glycosuria and diuresis.

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Effect of Oral Thyroxine and Tri-Iodo-Thyronine on Radioactive Iodine Uptake and Serum Protein Bound Iodine in Normal Human Subjects. (20262)

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Studies of synthetic sodium-levo-thyroxine have shown that, as oral medication in dosage of about 0.5 mg or less daily, it is calorigenic and clinically active(1). In similar dosage it has been shown to reduce the uptake of radioactive iodine(2). Tri-iodo-thyronine, recently identified, synthesized, and demonstrated in human serum(3), also has been shown to be clinically effective(4), and to be several times as potent as thyroxine.

This report is on the effect of these medications, given orally, on the 24-hour uptake of a 5 microcurie tracer dose of radioactive iodine* before and at the end of a week of oral medication. The serum protein bound iodine was also determined.

Procedure. The subjects were normal volunteers at their usual activities as medical students or laboratory workers. Blood was drawn for serum protein bound iodine determinations and about 5 microcuries of carrier free radioactive iodine were given; 24 hours later, the accumulation in the thyroid gland was counted and compared with a dummy. The subjects were then provided with sodium-levo-thyroxine tablets,† in dosages from 0.025 mg to 0.5 mg to take once a day by mouth for a week. On the sixth and seventh days of the week, blood was drawn for serum protein bound iodine and the 24-hour tracer study again was repeated, after a

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