ing property of the colloid secretion of the thyroid vesicles from basophilic to acidophilic reaction over a period of 5 weeks after the injection. These findings, however, gradually began to disappear and complete recovery took place 6 weeks after the injection.

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Effect of Thallium Acetate on the Basal Metabolism of Rats.

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Leigheb[1] and others have observed that the administration of thallium acetate to rats and guinea-pigs produces extensive degenerative changes in the thyroid gland. In view of these observations, the following experiments were undertaken to study the basal metabolism of animals treated with the drug.

Four white rats of the same breed and of approximately the same age were injected subcutaneously with thallium acetate in aqueous solution. Three of the animals received 12 mg. of the thallium salt per kilo of body weight and one, 8 mg. per kilo. Before the administration of the thallium acetate, 4 observations were made on the basal metabolism of each animal at intervals of 3 or 4 days. After the administration of the drug, the basal metabolism was studied at similar intervals, until the basal metabolic rate returned to normal. The technic used for determining the basal metabolism was that described by Wu and Chen.[2] For each experiment there were from 6 to 8 determinations. The average of only those determinations (usually 3) taken at the time the animal was quiet was used as the final result of the experiment.

All of the rats showed diminution of their basal metabolic rates, in parallel with which, defluvium of hair on the back and less briskness of the animals were noticed. In the 3 rats injected with 12 mg. of thallium acetate per kilo of body weight, the basal rates began to diminish from the 8th to the 15th day after the administration of the thallium salt. One of the animals died at the end of the experiment on the 21st day after the injection of the drug, at

[1] Leigheb, V., *Gior. ital. di dermat. e. sifil.*, 1928, lxix, 960. (Abstract, *Brit. J. Dermat. and Syph.*, 1929, xlvi, 129, and *Arch. Dermat. and Syph.*, 1929, xix, 295.)

[2] Wu, H., and Chen, T. T., *Chin. J. Physiol.*, 1929, iii, 307.

which time the basal metabolic rate was at its lowest. Post-mortem examination revealed no gross abnormality in the organs, but histological examination showed flattening of the cells in the thyroid gland. In the other 2 rats, the decrease in rate persisted for 55 and 66 days and returned to normal on the 70th and 74th day of the experiment respectively. In one rat the rate on the 25th day was 32% less than its normal, at which time there was marked falling of hair. The observations on this animal are illustrated by curve B on the chart. In the rat injected with 8 mg. of thallium acetate per kilo of body weight, the decrease of the basal metabolic rate commenced on the 6th day after injection and lasted for 33 days. Return to normal was reached on the 39th day. The lowest rate, which was 25% less than the normal, occurred on the 19th day and was accompanied by extensive defluvium of hair. Curve A on the chart shows the variations of rate observed in this animal.

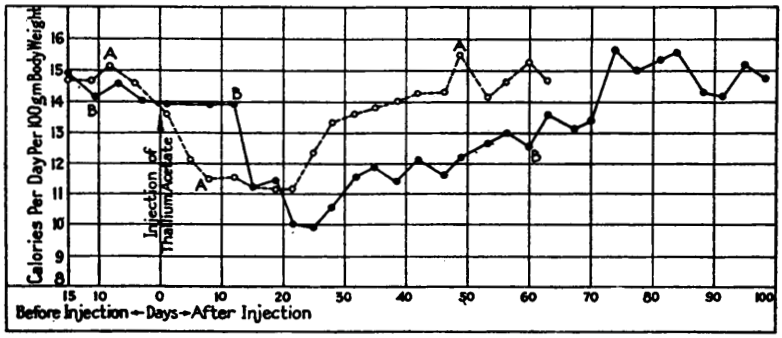

FIG. 1.

Variation of metabolic rate in rats A and B following the administration of 8 mg. and 12 mg. of thallium acetate per kilogram of body weight respectively.

Summary. Thallium acetate when injected subcutaneously into rats in doses of 12 and 8 mg. per kilo of body weight caused definite but transitory diminution of their basal metabolic rates between the second and eleventh weeks after the administration of the drug. The diminution was more marked and more persistent following the use of the larger dose. During the time of the depression of the basal metabolic rate, the animals became inactive and there was also falling of hair, particularly when the metabolism was at its lowest level. In view of the observations in these experiments and the morphologic cellular changes observed in the Golgi complex and mitochondria of the thyroid gland,[3] we are inclined to attribute the variations of the metabolic rate to direct action of the thallium on the thyroid gland.

[3] Ma, W. C., and Mu, J. W., PROC. SOC. EXP. BIOL. AND MED., 1929, xxvii, —¶