

Various operations were performed with a view to preventing an early "callous" formation, and inducing a rapid growth of periosteum and thereby permitting the growth of the other tissues. Most of the legs operated in this way grew distinct "buds" or cones or various malformed or not fully developed limbs.

This incomplete or teratologic regeneration seemed to be due to the influence of a second factor, namely the rate and manner of growth of the connective tissue. This tissue is differentiated quite early, grows about and soon completely surrounds the developing embryonic tissues, apparently preventing their further growth.

Experiments are now under way, to control not only the growth of the periosteum but also this connective tissue, so as to permit, if possible, the complete regeneration of the leg.

3 (528)

Does the pituitary body compensate for thyroid insufficiency?

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Exactly one year ago we submitted to this society the results of some experiments performed on sheep with a view to throw light on the question of the vicarious relationship between the thyroid and pituitary glands. Herring and others had found histological appearances in the pituitary of thyreodectomized animals which suggested a compensatory hypertrophy in that gland, and our object was to determine whether iodine appears in the pituitary of animals from which the thyroid gland has been removed.

The operation of total thyroid extirpation was performed on ten sheep, and the pituitaries removed at death were found to contain no iodine, but we felt at the time that our results were not conclusive, and for three reasons—*first*, five of our sheep died early (six to thirty-two days) from a parasitic infection quite unassociated with the operation; *second*, the available amount of dried pituitary from the ten sheep (1.02 gram) was only sufficient

for a single analysis, and *third*, we had no sure evidence that iodine was being ingested in the food.

In order to be in a position to give a more decisive answer to the question, we have since repeated our experiments on a much larger scale. We removed the thyroid glands completely from eighteen lambs (seven to eight months old) and twelve adult sheep. After the operation they were divided into two groups and boarded out at separate farms in the vicinity of Ithaca, N. Y. The lambs (group I) were fed on clover hay, oats, beets, turnips and small quantities of cotton seed meal; the adult sheep (group II) in addition to this received daily, mixed with their food, half a gram of sodium iodide, to ensure that iodine was being ingested.¹

No marked symptoms followed the operation either in group I or group II and they were killed at the end of five to six months. The pituitary glands were removed, desiccated, and examined for iodine by Hunter's method.² The amount of dried pituitary obtained from each group was sufficient for two analyses (four in all) and no iodine was found.

In order to give ample time for the elimination of all circulating iodine, no sodium iodide was administered to group II for ten days before their slaughter.

Our experiments therefore prove conclusively, we believe, that no iodine appears in the pituitary of the sheep after complete removal of the thyroid gland, and assuming that the iodine containing body is the physiologically active constituent of the thyroid gland, as it is claimed to be by Reid Hunt³ and others, it would appear that the pituitary does not compensate for thyroid insufficiency.

¹In group I in addition to the eighteen lambs from which the thyroids were removed, one normal lamb was kept as a control. When killed along with the others, the amount of iodine found in the thyroid of this lamb (3.33 mg.) was three times as great as the average (1.11 mg.) for the eighteen at the time of thyroectomy, five to six months previously. This showed that the natural food did contain iodine although none had been mixed with it as in the case of group II.

²Hunter, *Jour. Biol. Chemistry*, vii, May, 1910.

³Reid Hunt, Public Health and Marine Hosp. Publications, Bulletin 47, Washington.