of beef and sheep. Six immature white leghorn cockerels, 5 weeks old, were injected with doses of 20, 30, and 50 mg. of alkaline human A.P. extract for 10 days. These doses were not sufficient to increase the weight of the testes markedly, but on histological examination, the tubules were greatly enlarged and contained many mitotic figures. The response with the smaller doses was almost negligible, resembling the controls, but 30 to 50 mg. doses gave a very pronounced histological change. Testes of birds in the same group were unaffected following treatment with prolan.

Thus by 3 different test methods has the human hypophysis been found to be different in its physiological action from prolan.

The human pituitaries were obtained through the kindness of Dr. Kurzrok, of the Department of Obstetrics and Gynecology of the College of Physicians and Surgeons, and Mt. Sinai Hospital.

6880

Increased Skeletal Effects in A. P. Growth-Hormone Injections by Administration of Thyroid in Hypophysectomized, Thyro-Parathyroidectomized Rats.

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It has been shown (Smith[1]) and confirmed by a number of investigators that the injection of beef A.P. growth preparations, or the daily implantation of rat pituitaries caused a resumption of growth in rats dwarfed by hypophysectomy. Thyroid administration does not cause growth in the absence of the A.P. (Smith, Greenwood, and Foster[2]). It has been further shown (Flower and Evans[3]) that the A.P. growth hormone induces growth in rats dwarfed by thyroidectomy, a finding in harmony with the fact that A.P. extracts cause growth in hypophysectomized rats even though they may not repair the atrophied thyroids. It thus seems clear that of these 2 glands the A.P. only is essential for growth.

These findings, however, do not demonstrate that the thyroid may not normally aid the growth action of the pituitary or may

[1] Smith, P. E., *J. Am. Med. Assn.*, 1927, **88**, 158; *Am. J. Anat.*, 1930, **45**, 205.
[2] Smith, P. E., Greenwood, C. F., and Foster, G. L., *Am. J. Path.*, 1927, **3**, 669.
[3] Flower, C. F., and Evans, H. M., *Anat. Rec.*, 1925, **29**, 383.

not increase the effectiveness of preparations made from it. I have attempted to secure evidence upon this by giving growth hormone* with and without concurrent thyroid feeding in a series of rats in which both the hypophysis and thyroid (as well as the parathyroids) had been removed during the active growing period. All members of each series received the same dosage of growth hormone, one member receiving, in addition, thyroid. A dosage of thyroid was administered which did not prevent an increase in

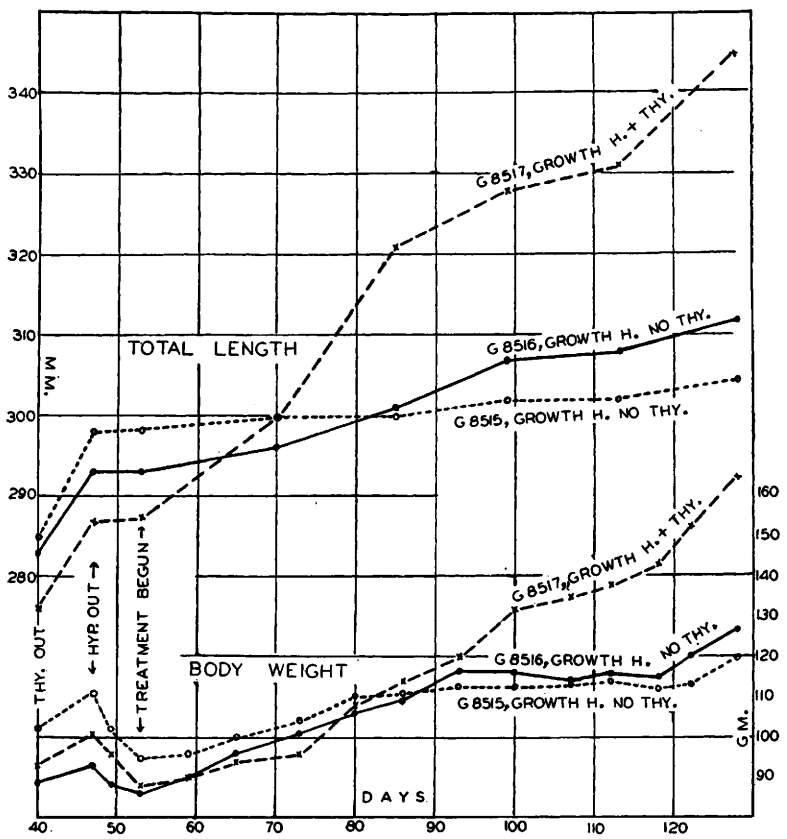

FIG. 1.

Curves showing total lengths and weekly averages of daily weighings of 3 littermate sisters which were hypophysectomized and thyro-parathyroidectomized. All 3 received the same dosage of growth hormone, one of them, in addition, receiving thyroid by mouth. They were 40 days old at beginning of the experiment.

* Growth hormone extracts of E. R. Squibb & Sons and Parke, Davis & Co. have been used. Appreciation is expressed to Drs. J. A. Morrell and O. P. Kamm for supplying these extracts.

weight (100 mg. powder 2-3 times per week). Four series of animals have been treated over a period of several weeks.

In each case the skeletal growth of the rats receiving thyroid in addition to the A.P. extract was distinctly above that of the rats receiving the extract only. In 3, the weight increases were greater also. The graph shows the characteristic effect.

These results suggest that the resumption of growth in thyroidectomized animals with thyroid feeding may not be due solely to a stimulation of the hypophysis but to a synergistic action of the thyroid. It also suggests that greater effects in human pituitary dwarfs might be secured by the concurrent administration of thyroid.

6881

Relative Amount of Mucin in Thick and in Thin Egg White.

EDMUND MC NALLY. (Introduced by Paul E. Howe.)

From the Poultry Physiology Laboratory, Bureau of Animal Industry, U. S. Department of Agriculture, Beltsville, Md.

The white of a hen's egg is readily separated into two portions, the thin white and the thick white. The yolk appears to be floating in thin white enclosed in a sac of thick white and this thick white is suspended in another (outer) layer of thin white.[1]

Previous studies of egg white have not demonstrated the nature of the difference between thick and thin white. In studying the proteins of egg white we have found that the thick portion of the white contains a much higher proportion of a protein possessing the properties of mucin than the thin white. This protein is soluble in an excess of mineral acids, insoluble in an excess of acetic acid, has a low nitrogen content (12.9%), and has the general physical properties of mucin. Examination of the eggs of some other birds indicates that this unequal distribution of mucin is not confined to the egg of the hen. Table I shows the mucin content of the eggs of the hen, pigeon and duck.

The whites of the eggs were separated on a screen as described by Holst and Almquist.[2] The thin white separated by this method con-

[1] Almquist, H. J., and Lorenz, F. W., *Poultry Science*, 1933, **12**, 83.

[2] Holst, W. F., and Almquist, H. J., *Hilgardia*, 1931, **3**, 49.