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I. Effects of Injected Extracts of Fresh Pineal Glands of the Cow on Growth of Immature White Mice.*

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The rôle of the pineal gland in growth both before and after puberty is still a controversial subject, and it was with the hope of throwing some light on the question that these experiments were performed.

The mice used were bred in this laboratory from a selected standard stock, this procedure being essential to insure uniform results. Injections were begun after weaning at 21 days of age and continued for periods of 28 days. Conditions of diet, temperature, and cages were kept uniform for each group of 20 mice used. As a further check each litter was kept in a separate cage. Injections were made 3 times a week subcutaneously, each injection of 0.15 cc. containing 2 mg. of protein material and being equivalent to 0.03 gm. of gland. Weight measurements were made before each injection. In the preparation of the extract, sterile technique was used throughout except for sterilization of the extract itself, the method of preparation being to grind the material with twice its weight of clean sand, extract with distilled water and centrifuge. Control injections of sterile physiological saline were made.

At the end of 24 days of injection, during which time no retardation or acceleration of growth beyond that of the group of 20 control mice injected with physiological saline was observed, the mice, with no evidence of infection, showed a characteristic syndrome, became cachetic, and died within a day or two. To check again on the method of preparation and injection 2 additional series of 20 mice each were injected respectively with neutralized acid and alkaline extracts of the fresh gland of the cow. The protein content was made the same as before. In the case of the neutralized acid extract injections no cachexia or death was had at the end of a 28-day period. On the other hand, the toxic principle seems to go over into the alkaline extract inasmuch as this on being neutralized and injected leads to cachexia. Growth on injection of either neutralized acid or alkaline extracts is again neither accelerated nor retarded. One constant feature of this condition of cachexia is the

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assumption of a gross reddish brown appearance by the adrenal glands. Microscopic examination failed to bring out anything of significance, when sections of the reddish brown glands were compared with those of normal, cream colored adrenal glands. Fat stains of frozen sections were not made. The controls and mice injected with neutralized acid extract of equal protein content do not give this appearance of the adrenals.

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II. Effects of Injected Extracts of Fresh Pineal Glands of the Young Calf on Growth of Immature White Mice. Effects on Sexual Apparatus.*

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Interest in this phase of the problem was stimulated by the clinical correlations of sexual precocity with tumors of the pineal gland. The experimental conditions were maintained exactly as for the preceding experiments. Some variation was necessary in that the young calves' pineal glands required were unobtainable in Baltimore, it being necessary to have them shipped on ice once weekly from Armour and Company in Chicago, to whom we are indebted for this valuable material. The glands were in a perfect state of preservation for preparation of the extract 48 hours after being removed from the animals. The extract was kept frozen between injections to preserve it for the remainder of the week. There was observed neither stimulatory nor retarding effect on the growth of immature white mice. A toxic principle was found in this case also on injection of the saline extract and the 20 animals after a preliminary period of apparent perfect health presented a condition of cachexia to all appearances identical with that mentioned in the preceding paper. Sufficient material was not available to determine the effect produced by alkaline or acid extracts. The weights of the testicles of the males taken in proportion to body weight after a period of injection of 24 days were found to be neither increased nor diminished beyond the weights of testicles of control mice injected with physiological saline over a like period.

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