patterns in the domestic fowl (brown leghorn), except that hypophyseal activity does not seem to suffer such pronounced seasonal variations as in Pyromelana.

9026 P

Effect of Thyro-Parathyroidectomy in New Born Rats.*

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Rats are particularly adapted for experiments on the effect of very early ablation of the thyroid because they are very immature at birth, and have had a developed thyroid only the last 3 days *in utero*.[1] No previous reports on mammals have dealt with such early ablations. The present experiments deal with the removal of the thyro-parathyroid apparatus in young rats on the first or second day of life. A very few animals were also operated on the seventh and fourteenth days of life. Complete removal is extremely difficult because of the gelatinous consistency of the infantile tissues. Every animal here reported was checked for completeness of removal by microscopic examination of serial sections of the tracheal region made at autopsy. This check was found to be absolutely necessary since in many stunted animals microscopic remnants were found. These will be treated separately as "incompletes."

Of 486 rats thyro-parathyroidectomized on the first or second day of life, 167 survived the critical period of the first post-operative week. Animals were sacrificed at various intervals after data on growth had been secured. The 167 survivors were autopsied and 107 of them have been examined for completeness of removal. Twenty of these show no remnant of the thyro-parathyroid apparatus. Of the 46 animals operated on at 7 or 14 days, verifying examination of the operative field had been completed on only 5. In an operated control series of 38 animals, the thyro-parathyroids were removed on the first day and the glands re-implanted in the same animal[2]; 30 survived beyond the critical week; 28 showed normal

* Aided by a grant from the National Research Council Committee for Research on Problems of Sex, administered by Dr. P. E. Smith.

[1] Kull, Harry A., *Anat. Rec.*, 1926, **32**, 133.

[2] Salmon, T. N., and Severinghaus, A., PROC. SOC. EXP. BIOL. AND MED., 1936, **34**, 251.

growth curves. Some of them have not yet been sacrificed for examination. These animals show that the operation itself is not a factor in causing a retardation of development.

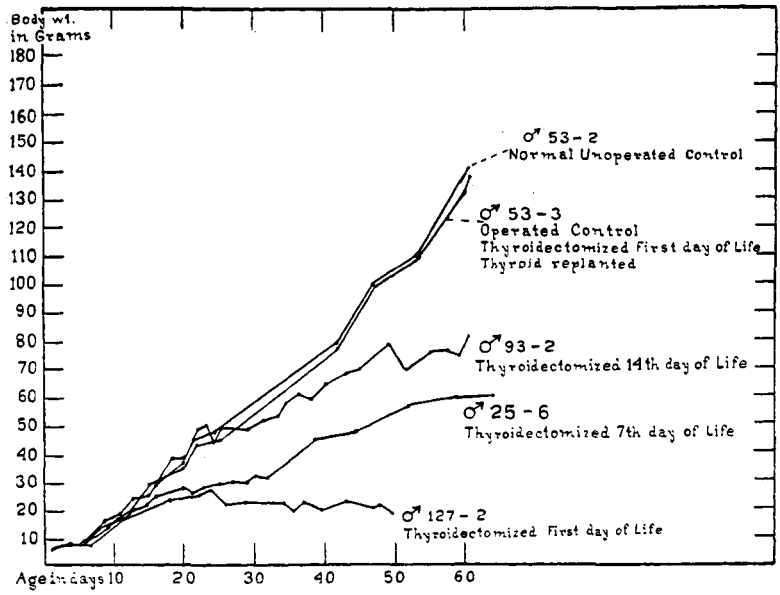

FIG. 1.

Fig. 1 shows the difference in growth response when the thyroid is removed on the first, seventh, and fourteenth days of life. A single animal is allowed to represent its type, since the various animals in each group follow almost exactly the same curve. There is no essential difference between males and females except that after 40 days the weight of the normal males exceeds that of the normal females. All animals completely thyroidectomized on the first or second day of life stop gaining in weight when they attain 20-25 gm. and remain at approximately this weight for the rest of their lives, which are not prolonged beyond 50-60 days because of intercurrent infection.

Only the animals operated on the first or second day of life have symptoms resembling those of human cretinism; including lowered body temperature, sluggish reflexes, awkward muscular movements, lack of response to startling noises (possibly deafness), susceptibility to infection, persistence of infantile skull proportions, and greatly retarded skeletal development. After the early cessation of growth shown by these animals, all anatomical advancement seems to remain at a standstill, suggesting that even if they could be kept alive

beyond 50 to 60 days no further differentiation could be expected from them. They were subject to violent attacks of tetany, which occurred spontaneously or could be induced by ether anesthesia. This made taking measurements of body and tail length at frequent intervals impractical.

The testis weights of the thyroidectomized animals were far below normal, but microscopically the differentiation in experimentals and controls was similar up until the 23rd day, at which time spermatocytes appeared in the periphery of the tubules and a few large degenerating sells were seen in the center. Animals operated on the first or second day of life have not been found to progress beyond this stage, the microscopic appearance of their testes being unchanged at the age of 50 days; whereas the controls by that time show complete spermatogenesis.

In the female the course of follicular development at first resembles that of the normal, but in the experimentals development was arrested after partial antrum formation (14 days).

The thymus was extremely diminished in size, consisting of but a few shreds of tissue. A qualitative examination of the adrenals indicates a reduction of cortical tissue.

9027 P

Action of Merthiolate on Gonadotropic Effect of Anterior Pituitary Extract.

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The germicide, "Merthiolate"* ($C_2H_5H_8S\ C_6H_4COONa$), should be included in the growing list of substances which may enhance the gonadotropic effect of anterior pituitary extract. In using merthiolate as a germicide in aqueous solutions of gonadotropic pituitary hormone, we discovered by accident that the gonadotropic changes were markedly potentiated because of the presence of low concentrations of the drug.

If a dose of anterior pituitary hormone in aqueous solution at a pH of about 7.4 is administered by subcutaneous injections distributed over several days to immature female rats and causes a

* The merthiolate was furnished us through the courtesy of Prof. M. S. Kharasch and the Eli Lilly Co.