losses varying from that stated above to a fall of 83% of its initial amount in the course of 8 weeks with administrations of the dye at intervals of 2 or 3 weeks. In this animal the red blood corpuscle count remained practically the same throughout the experiment.

Examinations of blood smears show progressive achromia paralleling the hemoglobin loss. Changes in the size, shape and staining reaction of the red cells were noted early in some and later in others, without apparent relation to the rate or degree of hemoglobin loss.

The white blood count varied from time to time in the same animal, but all the counts remained within normal limits for each animal. The smears studied showed nothing extraordinary, except that after dye injection it seemed that the small lymphocytes were rarer than before; there were no constant signs of effect of the dye upon any of the leucocytic series as demonstrable by the smear.

It may be well to bear this rather unsuspected effect in mind when clinical and experimental studies based upon the assumption that it is an inert substance are being made.

4039

Effect of High Temperature on the Gonads of Frog Larvae.

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Frog larvae *(R. sylvatica)* which had been raised under nearly optimal conditions up to the 7th week were subjected after the 34th day to the maximal temperature they can endure permanently, *i. e.*, 32° C. The gonads of both males and females grow much slower than those of normal controls. However, the spermatogonia of the testis are of about normal size and the seminiferous tubules differentiate in a typical way. The reactions of the ovaries are more complex and more important. At the time when the temperature was raised the ovaries contained large numbers of young ovocytes in the synapsis stage. Two weeks later this type of germ cells has completely disappeared. The ovogonia are still present and the deeper layers of the cortex contain now large auxocytes. The latter, however, are in way of degeneration. Their nucleoli are extremely large and basophilic and the ovoplasm contains coarse granules. During 2 more weeks the eggs disappear completely, the ovogonia being the only germ cells spared from degeneration.

Immediately after the differentiation of further ovocytes has come to an end, the medullary part of the ovaries starts to grow rapidly. Within a few weeks the ovarial sac *(rete ovarii)* transform into a typical rete testis, vasa efferentia and seminiferous tubules. At first the latter lack completely any germ cells. However, sooner or later the ovogonia migrate from the cortex to the medulla, and after having entered the seminiferous tubules transform into spermatogonia.

Thus the experiment leads to the total reversal of sex of the females. The normal controls consisted of 100 females and 96 males. The experimental group contained no typical females after the 2nd week of rise in temperature; but between the 15th and the 33rd day 53 females in different stages of sex transformation and 62 typical males were preserved.

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Interrelation of Pituitary and Thyroid in Metamorphosis of Neotenic Amphibians.

W. R. INGRAM. (Introduced by W. W. Swingle.)

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While it has been known for some time that transplants of anterior lobe of the pituitary of adult frogs would cause accelerated growth in small tadpoles[1] no attempt has been made to show the relation of this gland to the condition of partial neoteny existing in some anurans. Neotenic amphibians exhibit prolonged retention of larval form. Total neoteny, of which the Mexican axolotl is an example, is characterized by the failure of such animals to metamorphose spontaneously. Among the anurans *Rana catesbiana* and *Rana clamata* show greatly prolonged larval stages which mark them as partially neotenic types. In the totally neotenic axolotl, metamorphosis upon injection of anterior lobe extracts has been reported by some workers[2, 3] and denied by others.[4]

1 Allen, B. M., *J. Physiol. Zool.*, 1928, i, 153.

2 Hogben, L. T., *Proc. Roy. Soc. B.*, 1923, xciv, 204.

3 Uhlenhuth, E., *Brit. J. Exp. Biol.*, 1927, v, 1.

4 Smith, P. E., *Brit. J. Exp. Biol.*, 1926, iii, 239.