2 (527)

An inquiry into the nature of the changes in non-regenerating animals.

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It was shown in a recent publication,[1] that very diverse groups of animals, that ordinarily regenerate such organs as the head, tail, leg, etc., could not be prevented from so doing by destruction of that part of the nervous system supplying the amputated region and adjoining parts. And vice versa, that the lack of regeneration was not due to the absence of stimuli passing through the central nervous system.

The present studies pertain to the adult frog, selected as an example of an animal heretofore not known to replace a missing organ, such as the leg. A large series of sections of the amputated region of the leg, prepared at intervals of several days to over nine months, were studied and compared with similar sections of the leg of the newt, which regenerates its limb quite readily. Perhaps the most striking observation centers about the changes of the bone. In brief the evidence supports the view that that which retards or prevents the growth of the bony tissues correspondingly retards or prevents the growth of the adjoining tissues. It was found that while ordinarily no regeneration occurs, yet each of the tissues could, under appropriate conditions, replace the parts originally removed.

These conditions are twofold. In the first place, regeneration of the limb seems to be dependent upon the development of the bony tissues. Ordinarily the exceedingly large growth of periosteum and cartilage is succeeded by regressive changes resulting in a "callous" like structure. When this occurs all further growth changes in other tissues thereupon cease. In one particular instance, the periosteum grew so rapidly that the "anlage" of the leg and foot were distinctly differentiated before the degressive changes set in.

[1]A. J. Goldfarb, The Influence of the Nervous System in Regeneration, *Journal Exp. Zool.*, vii, 1909.

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