typical anaphylactic lungs, and the other going into collapse with marked dyspnea and finally recovering. These 2 animals established the fact that sensitization could be accomplished by inhalation of pomace.

Of the remaining 35 animals, 17 died 6 to 7 days after the sensitizing inhalation of pomace, with definite evidences of ricin poisoning. However, besides the classical abdominal pathology of ricin poisoning, we noted in many of the animals a severe hemorrhagic condition of the lungs. We first attributed this lung condition to the entrance of ricin through the nasal passages but we obtained similar results later when the pomace extract was injected.

After an incubation period of 2 to 3 weeks, the remaining 18 animals were again placed in the cage to determine whether we could demonstrate the symptoms of respiratory anaphylaxis (bronchial asthma). Unmistakable signs of respiratory anaphylaxis were shown by these animals. Later, however, 10 of the 18 died from ricin poisoning with the pathological findings noted above. The remaining 8 were injected intravenously with pomace extract and showed typical symptoms of anaphylaxis.

In testing the toxicity of the pomace extract used, we readily discovered that the normal animal died from typical ricin poisoning in about 12 hours after an intravenous injection of the extract. It was interesting, however, to note that the primary toxicity was never manifested immediately after injection and never in the same manner in which anaphylaxis was manifested. Further control tests with ricin gave results identical with those obtained with pomace.

From the 8 cases noted above which showed typical anaphylaxis on injection of pomace extract, a definite immunity to ricin poisoning was demonstrated. In 3 of these animals there was no evidence of ricin poisoning even after prolonged contact with the pomace.

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Effects of Experimental Block of the Amphibian Nervous System.

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Experiments previously reported[1] have shown that the cut ends of the spinal cord can be prevented from reuniting by the removal

[1] Nicholas, J. S., *Anat. Rec.*, 1928, xxxviii.

of a comparatively large amount of the nervous system and the implantation into the wound of the anlage of the limb and pronephros.

The responses of such an embryo during early stages are strictly in keeping with the findings of Coghill and Harrick. The uninjured portions of the nervous system behave as individual units and take up their function with a very slight delay over the normal. As the animals differentiate, a complex series of reactions occurs by means of which stimuli are transmitted across the gap in the nervous mechanism. This transfer of stimuli takes place through the intermediation of the musculature which is in that region.

The first integration of response was noticed in the reactions occurring after stimulation in the head region. The sensory pick-up is mediated through the uninjured medulla giving rise to a motor response through the 7th cranial nerve which activates the gular musculature and the arcuate muscles of the gills. This reaction is transmitted to the anterior trunk region where the sensory pick-up acts in the pectoral region to transmit the stimulus to the uninjured cord of the trunk. This motivates the musculature of the flank and tail and gives rise to distinct swimming movements.

The limbs which have been transplanted into the wound area develop synchronously with the normal limbs. They are generally single and although they develop in close proximity to the gills, show no trace of the developmental dominance of that tissue. In every case the laterality of these limbs has been that of the side from which they were taken.

The innervation of the transplanted limbs is through the 7th nerve. They possess to some degree all the primary movements found in the limb in this form. For a long period after the operation, the transplanted limb moves only when there is movement of the gills, but in later stages the limb is capable of flexion and extension of the whole limb or any of its parts without perceptible motion in the gills.

Other authors have stated the conditions which may limit the movement of transplanted limbs,[2] and have shown that function may be limited by the morphological deficiencies of the transplanted parts as well as due to nervous deficiencies. The present experiments show that a transplanted limb even with a very abnormal nervous supply is capable of having all the primary movements. The amount of movement, however, is quantitatively incomplete.

[2] Detwiler, S. R., *J. Comp. Neur.*, 1925, xxxviii.