

cervical nerves have been included in the section than if the thoracic nerves alone are affected.

3. The results of combined section of the dorsal roots of the spinal nerves and the vagi are similar to the effects of combined section of the brain stem below the corpora quadrigemina and the vagi. Transection below the corpora quadrigemina adds little or not at all to the severity of the effects following section of the dorsal roots.

4. Costal respiratory movements are resumed after section of dorsal roots, brain stem below the corpora quadrigemina and phrenics if the vagi are intact.

We believe that these experiments bring the intercostal muscles into line with the other skeletal muscles so far as the functional relations of afferent to efferent spinal nerve roots are concerned.¹

We believe also that the experiments show that it is necessary that afferent impulses shall not merely have access to the central system, but that they shall go to a particular part of the central system in order to fulfill their function. In the case of the respiratory movements, afferent impulses from the intercostal muscles must go as far up as the corpora quadrigemina. The medulla oblongata seems sufficient for the establishment of any necessary connection of the vagi with efferent paths to the respiratory muscles.

142 (1320)

A case of hereditary ataxia (?) in pigeons.

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From an egg produced under the weakening influences of "reproductive overwork" a female pigeon was hatched (in 1914) which showed a marked lack of power over the voluntary movements of the head and body. This lack of coöordination was

¹ Sherrington, Schafer's "Text Book of Physiology," London, 1900, vol. ii, p. 797.

practically completely lost in the adult bird. The affected female was bred to two different males. The derangement has been inherited through four generations descended from either male.

The affected offspring have shown many degrees of the lack of muscular control (birds demonstrated). Some have shown marked disturbances when young and have later recovered. Others have at first been classed as normal and have later developed marked irregularity of movement. The more usual manifestations of the disorder are: Nodding of the head, or nodding and swaying of the head and neck; unsteady gait; tipping (somersaulting) backwards or forwards; falling on the side; very irregular flight, the bird even flying backwards. The same bird often exhibits two, three or perhaps all of these irregularities. Practically all affected birds are unable and uninclined to sit on a perch, remaining constantly on the ground, or on a flat ledge. In the most affected individuals there seem to be no movements whatever of wholly normal coördination; in average cases, however, the disturbances are much increased under excitement, fear, or any attempt at increased or more vigorous movement. In a few cases the movements have seemed fairly normal when the bird was at perfect rest. Several of the affected birds have mated and produced young. Offspring from two affected birds have not yet been obtained.

About 175 young have been reared to the age at which the disorder might be exhibited. Of this number 119 were classed as normal and 46 as affected. The first mating of the original female gave 33 normal and 3 affected. The affected offspring when mated to their unaffected relatives gave 11 normals to 14 affected. Similar affected individuals outcrossed have yielded 4 normals to 0 affected. There is some evidence that more of the affected individuals than normals die before attaining the age required for classification. The details bearing on the method of inheritance (chart demonstrated) make it appear that the new character is, with some irregularities, a Mendelian recessive.

The data are not sufficiently complete to permit a final statement concerning the inheritance of the character as limited by sex. That it is not wholly thus limited seems clear; possibly the sons of unaffected mothers exhibit the disorder more often than do

the daughters. The variation (mutation) has persisted through four generations.

143 (1321)

Chemical pneumonia.

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The use of chloramine T solution in the treatment of inflammations of the nose and throat suggested to us that the solution might be useful in the curative treatment of pneumonia experimentally produced in dogs.

By intrabronchial insufflation of a definite dose per kilo of a virulent pneumococcus culture, it was possible to cause a pneumonia which proved fatal to dogs in about 36 hours. Insufflation of 5 c.c. per kilo of 1 : 10,000 solution of chloramine T in dogs previously insufflated with pneumococci brought out the fact that the treated dogs were harmed instead of benefited. The chloramine T was then used alone in normal dogs. In doses of 5 c.c. per kilo of a 1 : 10,000 solution it produced consolidation of the greater part of one or more lobes, with marked congestion and edema of both lungs. Microscopically the lesion was a broncho-pneumonia, with some intra-alveolar hemorrhage. Dakin's hypochlorite solution used in the same way caused a similar lesion, even in dilutions of 1 : 20,000. Bichloride of mercury in 1 : 10,000 solution produced rather more hemorrhage than the chlorine compounds did. Cultures made from the consolidated areas of all the lungs failed to grow. The pneumonia produced by these chemical substances was sterile.