

Raw egg-white can be made digestible through coagulation by heat; by precipitation with alcohol, chloroform, or ether; by incubation with dilute acids or alkalies; by partial digestion by pepsin; by conversion into alkali meta-protein.

The indigestibility of native egg-white probably lies either in its antitryptic content or in its chemical constitution. Its physical texture appears to play a minor part in its behavior.

Of the individual proteins constituting egg-white, the albumin fraction appears to be the indigestible component.

The whites of the hen's egg and duck's egg act alike in causing diarrhea and in being poorly utilized.

Egg-yolk either raw or cooked is excellently utilized. It sometimes causes digestive disturbances in dogs, apparently because of its high fat content.

A review of the literature shows that dietitians have relied, in general, upon the early observations of Beaumont as support for the use of raw eggs. These observations were in the main exact; but, so far as the digestibility of raw egg-white is concerned, were misinterpreted.

In current dieto-therapy raw whole eggs, raw egg-white and albumen-water are extensively prescribed. There appears to be little in their conduct as foodstuffs, however, to warrant such faith in their nutritive value or ease of assimilation.

87 (1151)

The position of the head after experimental removal of the otic labyrinth.

By A. L. PRINCE. (By invitation.)

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In the vertebrates usually employed in the physiological laboratory, unilateral destruction of the otic labyrinth is immediately followed by a permanent torsion of the head to the injured side.¹ In a series of experiments on cats, I have found that this posture is associated with diminished tonus in the cervical

¹ Wilson and Pike, *Philosophical Transactions of the Royal Society*, London, 1912, series B, Vol. 203, pp. 127-160.

musculature on the side of the lesion. Although this investigation is as yet incomplete, it is considered desirable to report the following facts.

As a means of determining the effect of impaired tonus on torsion of the head, apart from that arising from destruction of the labyrinth, the following procedure was adopted:

1. UNILATERAL SECTION OF THE DORSAL ROOTS OF THE CERVICAL NERVES.

Accompanying the impairment of muscular tonus occasioned by this procedure, there is torsion of the head to the side of the injury. This torsion can only be attributed to the unbalanced activity of the neck muscles on the intact side. It is to be noted that the character of torsion following section of the dorsal roots of the cervical nerves does not differ greatly from that seen after unilateral removal of the labyrinth. In a dog, which has not yet come to autopsy, section of the dorsal roots was followed by torsion of the head to the side away from the lesion.

The remaining series illustrate the torsional effect of various combined lesions.

2. UNILATERAL REMOVAL OF THE LABYRINTH AND SECTION OF THE DORSAL ROOTS OF THE CERVICAL NERVES ON THE OPPOSITE SIDE.

As stated before, unilateral removal of the labyrinth is followed by torsion of the head to the side of the injury. Upon subsequent section of the dorsal roots of the cervical nerves on the opposite side this torsion is greatly reduced and in some cases entirely disappears. Reversal in the order of the experiment does not affect the end result; the torsion resulting from the first procedure is always decreased or abolished by the second.

3. UNILATERAL REMOVAL OF THE LABYRINTH AND SECTION OF THE DORSAL ROOTS OF THE CERVICAL NERVES ON THE OPPOSITE SIDE FOLLOWED BY EITHER (a) REMOVAL OF THE REMAINING LABYRINTH, OR (b) SECTION OF THE REMAINING DORSAL CERVICAL ROOTS.

In these experiments the final procedure is followed by a reappearance of the head torsion. The direction of the torsion, however, is always to the side on which two lesions are combined.

4. UNILATERAL REMOVAL OF THE LABYRINTH AND SECTION OF THE DORSAL ROOTS OF THE CERVICAL NERVES ON THE SAME SIDE.

When these procedures are successively applied to the same side, the degree of head torsion brought on by the first procedure is always accentuated upon application of the second. As in the experiments of the series 2, the order of the experiment can be reversed without influencing the results.

5. UNILATERAL REMOVAL OF THE LABYRINTH AND SECTION OF THE DORSAL ROOTS OF THE CERVICAL NERVES ON THE SAME SIDE, FOLLOWED BY EITHER (a) REMOVAL OF THE REMAINING LABYRINTH, OR (b) SECTION OF THE REMAINING DORSAL CERVICAL ROOTS.

In this series the accentuated torsion appearing after the second procedure is decreased on applying the third.

These results indicate that the torsion of the head resulting from destruction of the labyrinth is caused by an impairment of tonus in the neck muscles on the side of the lesion. The cervical musculature involved in torsion of the head is influenced by two distinct tonus mechanisms. The afferent impulses of the first mechanism arise in the otic labyrinth; those of the second arise in the peripheral endings of the fibers of the dorsal roots of the cervical nerves. Injury to either of these two mechanisms does not result in absolute loss of tonus in the cervical musculature, for when destruction of the labyrinth and section of the dorsal roots of the cervical nerves are combined on the same side, the degree of head torsion brought by the first lesion is somewhat accentuated by the second.

The relation of possible cerebellar paths to the labyrinthine head torsion is now under investigation. The data available at present are outlined below.

6. UNILATERAL REMOVAL OF THE LABYRINTH AND SECTION OF THE INFERIOR CEREBELLAR PEDUNCLE ON EITHER SIDE.

The torsion resulting from destruction of the labyrinth is not modified to any considerable extent by section of the posterior cerebellar peduncles.

CONCLUSIONS.

The torsion of the head after unilateral removal of the labyrinth is due to the preponderating activity of the muscles of the intact side. The afferent impulses concerned come largely from the labyrinth, the muscles, the tendons of the neck, and the articulations of the cervical vertebræ.

88 (1152)

Is uterine activity subject to cerebral control?

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Although morphin is known to delay the progress of labor we have hitherto been unable to detect any inhibitory influence of this drug upon the tone or activity of the uterus in animals. It causes rather an increase in tone in the isolated uterus of cat and guinea pig,¹ and often in the intact uterus of the decerebrate cat or anesthetized rabbit.² The only inhibition of the uterus by morphin which we have observed previous to the present work has been accounted for by circulatory collapse.

Conditions of anesthesia or decerebration under which the morphin was given in our previous work have, by exclusion, led us to the belief that morphin, in clinical doses, inhibits uterine activity by a purely cerebral action. Desiring more direct evidence on this point we were led to inquire into the nature of cerebral control of the uterus, if any exists.

To this end we have begun by the employment of a method subjecting a part of the cortex and basal ganglia to the influence of cold and heat. This is done by means of a double metal tube fixed in the skull of a rabbit, on one side, anterior to the coronal suture and passing through the anterior portion of the corpus striatum to the base of the skull. The lateral ventricle is usually entered. This procedure, which was first employed by one of us

¹ Barbour, H. G., and Copenhaver, N. H., *Journ. Pharm. and Exp. Ther.*, 1915, VII, 529.

² Barbour, H. G., *Journ. Pharm. and Exp. Ther.*, 1915, VII, 547.