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Compensatory Eye Positions in Complete Torticollis in Rabbit.

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An albino rabbit showed drooping of the right ear, then developed torticollis, which progressed until the head and neck became twisted 90° to the vertical. The right eye was directed straight upward. In this head posture the position of both eyes were normal, no vertical deviation being present. But when the head was forcibly brought back into the normal posture, (the axis of the body remaining the same), the right eye rolled upward and the left eye downward. This reversal of the compensatory vertical eye positions is in striking contrast to the observations of Magnus¹ on unilaterally labyrinthectomized rabbits. When head and neck were allowed to assume their original posture, both eyes moved back into their normal positions.

Four weeks later the animal's head recovered its normal posture and both vertical and rotatory compensatory eye positions were found to be normal.

The cause of this remarkable disturbance was a tumor of the middle ear, which destroyed adjacent structures.

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Certain Characteristics of Formation of Conditioned Reflexes in Sheep.

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The defensive reaction evoked by the application of an electric shock to the sheep's foreleg is a convenient unconditioned reflex from which to develop various conditioned reflexes. Six lambs born in May, 1928, were, after about 18 days preliminary training in August, caused to develop auditory conditioned reflexes of the simultaneous type. That is, the auditory stimulus signalling an electric shock preceded the shock by a short, variable interval of 2

¹ Magnus, *Koerperstellung*, 1924, 166. Berlin.

to 6 seconds. The conditioned stimulus for 2 of the lambs was the sound of a buzzer. For the others it was the sound of the metronome beating twice per second. The conditioned reflex appeared in the 6 animals after 3 to 7 combinations of sound and shock and became relatively stable (11 or more positive conditioned responses in succession) after 18 to 43 combinations. The development of a conditioned reflex of the type described and a simple maze habit exhibit a common characteristic. Both show a period of instability between the first appearance of the new response and the final, more or less stereotyped, reaction.

The most interesting feature of the formation of the conditioned reflex was the concentration of the motor response with increasing training. At first, the reaction involved a widespread activity of the skeletal musculature. The leg receiving the shock might be extended instead of flexed as the animal struggled in the harness. Later, and usually before the conditioned reflex was stable, the response was gradually concentrated in the leg stimulated by the electric current and the sound now evoked a brief and precise leg movement. The reaction of the other skeletal muscles at this stage served to give the body a posture in which the foreleg could be vigorously flexed.

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Note on Tea as a Source of Vitamin C.

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With the exception of cabbage and lettuce the leaves of plants have not been examined quantitatively for their content of vitamin C. The observations of Miura¹ indicated that different kinds of tea possessed widely different amounts of vitamin C, and the quantity found in green tea compared favorably with the content of the usual anti-scorbutic foodstuffs. Fermentation and its accompanying oxidative changes are a part of the commercial processes of tea manufacture and it seemed desirable to confirm Miura's observations with the possibility of correlating the data with the accepted facts relative to the oxidative destruction of vitamin C.

¹ Miura and Tsujimura, *Proc. Jap. Assoc. Agr. Chem.*, 1924, i, 1; Miura and Okabe, *Publ. Assoc. Tea Merchants*, Feb., 1926.