



FOR NAVIGATION ALOFT

A new navigation instrument suitable for the aerial voyager is the bubble sextant held by Lt. Com. P. V. H. Weems, of the U. S. Navy. Examining it are George W. Gallasch, of the Bausch and Lomb scientific bureau (left) and Carl L. Bausch, director of research and engineering for that company.

internal bubble as a sharply defined circle to the center of which the heavenly body is brought to coincidence.

For use at night the bubble is illuminated by the light of a small flashlight bulb whose battery is carried inside the handle of the instrument. Filter glasses, to cut down the brilliance of the sun or

moon where necessary, can be quickly swung into place on the equipment by the turn of a knob.

Such well-known aviators as Lindbergh, Gatty, Ellsworth and Goebbel have tested the new sextant in aerial flight.

Science News Letter, May 30, 1936

PHYSIOLOGY

Study of Thyroid Gives New Idea of Gland Mechanisms

NEW experiments on the mechanism by which glands of internal secretion send their powerful chemicals through the body have been reported by Prof. J. F. McClendon of the University of Minnesota to *Science*. Prof. McClendon's studies, which confirm Uhlenhuth's theory, may solve one of the outstanding puzzles of medical science. He has made a 15-year study of the thyroid gland.

In the course of the experiments Prof. McClendon whirled bits of thyroid gland in a centrifuge so that the force acting on the cells was sometimes equivalent to 200,000 times gravity.

The thyroid and other glands of internal secretion control and regulate

growth, development, sex and other body processes by means of powerful chemicals which they produce. Unlike other glands, however, the glands of internal secretion have no apparent ducts or passages from the body of the glands to the rest of the body. They are called ductless glands for that reason. Prof. McClendon's latest study of the thyroid suggests how these ductless glands send their secretions into the body.

The process, in the thyroid gland at any rate, seems to depend on the fact that the cells of the gland which produce the important chemical are loosely held together, so that the chemical itself can escape by finding passages between the cells and thus eventually make its

way out to the rest of the body. To understand this mechanism, Prof. McClendon has discovered, it is necessary to have in mind a picture of thyroid gland architecture.

A slice of the gland looked at under the microscope is seen to consist of many little sacs lined with secreting cells and filled with a jelly-like material called colloid. The reserve supply of the thyroid secretion or hormone is dissolved and stored in this colloid. The entire gland is enclosed in a capsule of connective tissue in which there are lymph spaces and blood vessels. Once the hormone-containing colloid escapes from the cells into this connective tissue, the blood and lymph streams may carry it through the body.

The problem of how the colloid with its supply of hormone gets into the connective tissue is what Prof. McClendon investigated. He placed thyroid gland tissue of animals in a special centrifuge and subjected it to a centrifugal force 10,000 times gravity. This force is not sufficient to make the colloid material pass through the connective tissue capsule at any appreciable rate. It is sufficient, however, to make a number of cells of the thyroid's secreting sacs break loose and fall through the colloid, leaving a hole for the colloid to escape through into the connective tissue with its blood and lymph vessels. Prof. McClendon was able to observe the passage of the colloid through such holes.

The cells themselves are not injured by a centrifugal force 200,000 times gravity although they are separated by much lesser centrifugal force. This indicates, Prof. McClendon says, that the cells are held together relatively loosely, and that the hormone-containing colloid can probably pass out between the cells, although it could not pass through the cell walls.

Science News Letter, May 30, 1936

THE IDENTITY THEORY

By Blamey Stevens

Propagations

All phenomena of the ether are due to propagations, and these in turn depend on a differential equation that expresses the identity of space and time. The detailed nature and path of the propagated entity is determined by the initial conditions. These are only required upon integration of the differential equation, and are therefore unnecessary to the expression of the fundamental postulate of space-time identity.

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