

# SCIENCE

VOL. 85

FRIDAY, MAY 7, 1937

No. 2210

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SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. MCKEEN CATTELL and published every Friday by

## THE SCIENCE PRESS

New York City: Grand Central Terminal  
Lancaster, Pa. Garrison, N. Y.  
Annual Subscription, \$6.00 Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary, in the Smithsonian Institution Building, Washington, D. C.

## MEDALS OF THE NATIONAL ACADEMY OF SCIENCES<sup>1</sup>

### PRESENTATION OF THE JAMES CRAIG WATSON MEDAL TO ERNEST WILLIAM BROWN

THE problems of motion in the solar system have challenged the ingenuity of the greatest mathematicians and theoretical astronomers. Of those who have contributed to their solution none has attained the precision in representing the observed positions of the moon that Ernest W. Brown has achieved in his well-known theory. In 1907 he received the Gold Medal of the Royal Astronomical Society on the completion of the literal and numerical theory.

At that time about a dozen lunar theories had been produced. Of these that of Hansen held its place in the nautical almanacs. Before Brown's theory could replace that of Hansen it was necessary for him to make his theory accessible in the form of tables. The invention and testing of practical devices for this purpose engaged him for a number of years until the

tables appeared in 1920. Hansen's approximate theory included 500 terms as against Brown's 1,500 terms. An ephemeris based on his theory would have required a hundred to two hundred hours' work for a single position. The numerical operations necessary for an hourly ephemeris extending over a year would demand at least a million hours of work. On the basis of a 40-hour week and a 50-week year, medical men would have to extend the span of life of a single computer to five hundred years to enable him to accomplish the task. With the aid of the tables the task can now be accomplished by a single computer in from six to nine months.

On the achievement of this second step in his lunar theory Dr. Brown was awarded the Bruce Gold Medal of the Astronomical Society of the Pacific. His tables have been uniformly used in the nautical almanacs since 1923 and predicted the 1923 eclipse with surprising accuracy. The honors which Brown has received were prompted not only by his lunar theory, although he had made it his principal task since 1890.

<sup>1</sup> Presented at the dinner of the academy, Washington, D. C., April 27, 1937.

# Science

**85 (2210)**

*Science* **85** (2210), 433-460.

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