

ASTRONOMY

Astronomers Find Sun Is More Distant Than Thought

New Figure, Arrived at After Decade of Calculation, Of Great Importance as Astronomers' Yardstick

ASTRONOMERS were somewhat shocked to find, according to their most recent measurements, that the sun is more than 100,000 miles farther from the earth than was previously supposed. These measurements now give its mean distance as 93,003,000 miles in place of the formerly accepted 92,870,000 miles.

The layman is not likely to get unduly excited over this correction to a figure that has never meant much to him, especially in these days of terrible world-shaking events, but to the astronomer it is of the utmost importance. The sun's mean distance is the astronomer's yardstick by which he measures everything in the Universe. He calls it the astronomical unit and writes it AU. Any change in this unit means that every other dimension in the Universe has to be changed.

On this unit depend our figures for the masses of the earth, sun and moon, and on these depend in turn the accuracy of tide predictions and of navigations. So, you see, it affects practical matters after all.

Because of the importance of this

unit, the sun's distance, astronomers have been measuring and remeasuring it from the time when the Greek astronomer Aristarchus made the first attempt two and a half centuries before the birth of Christ down to the present time—and always striving for greater and greater accuracy.

Evidence of the vast care and labor which astronomers expend on this task is the fact that the present new figure was arrived at after ten years of calculations. They were based on thousands of observations made on the tiny asteroid Eros on its last close approach to the earth in 1931, when it came to within 16,200,000 miles of us.

The calculations were made by Dr. H. Spencer Jones, Astronomer Royal of England, and were announced at the June and July meetings of the Royal Astronomical Society. They have now been reported in the first issue of the new magazine, *Sky and Telescope*, issued from Harvard College Observatory.

The long time consumed in the calculations, Dr. Jones explained, was due to the fact that the material was gathered

from all over the world, and much of it was late in coming in.

But, after all that trouble and labor, the new figure is not yet definitely accepted by astronomers. The calculations so far have been purely geometric—they have involved only angles, lengths and positions. The same data can be used to determine the gravitational attractions or perturbations of the sun and earth on Eros during the time of its close approach. These give new measures of the masses of the sun and earth from which the distance can be determined. This gravitational method is considered even more accurate than the purely geometrical one. Its results must be awaited before astronomers can make a final decision as to the value of the astronomical unit—the celestial yardstick.

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MEDICINE

Effective Cancer Treatment From Concentration Method

A NEW method of treating cancer of the mouth, pharynx and larynx which appears to be more effective than similar methods now in use is reported by Dr. Max Cutler, of the Chicago Tumor Institute (*Journal, American Medical Association*, Nov. 8).

The new method is called the "concentration method of radiotherapy." It has been given to some 850 patients at the Chicago Tumor Institute and the Hines Veterans Hospital during the last three and one-half years.

"Certain carcinomas (cancers) of the mouth, larynx and pharynx which failed to respond to all other methods of external irradiation have shown marked regression and in many instances have disappeared completely" following treatment with the new method, Dr. Cutler reports. He points out, however, that it is still too soon to know whether or not permanent cures have been achieved by this method.

The method consists in giving higher daily doses of X-rays or radium over a shorter total period of treatment than have been customary, the doses in some cases being increased daily and concentrated on a smaller and smaller area in order to increase the attack on the more resistant part of the cancer. In some cases the treatment is given in two cycles separated by a period of 11 to 15 days. The results so far are sufficiently good to encourage further use of this method.

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FLYING WING

This is the novel design, so long a carefully guarded military secret—the Northrup "Flying Wing," housing motor, personnel and huge cargo space within the airfoil and with radically new control means which do not show in the photograph for military reasons.