



☆ \* ○ ● SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

some system by which, measuring the distance your finger seems to shift, you could tell how far it was from your eyes, though naturally, if you wanted to find out, it would be much easier to use a tape measure.

We cannot, however, extend a tape measure out to the stars, so this method is practicable for finding their distances. Instead of blinking from one eye to the other, we take photographs of the stars six months apart. In the meantime the earth has moved half way around in its orbit, about 186,000,000 miles away from its former position.

For the nearer stars, this is enough to produce a minute but perceptible difference that can be detected by very careful technique. The shift is called the star's parallax, and is larger the nearer the star.

Though the measures are made from observations taken when the earth is on opposite parts of the orbit, the parallax is expressed as half the actual shift, that is, the difference between the view from the earth, and that from the sun.

No star is close enough to have a parallax as large as a second; and a sec-

ond is the angle that a penny would seem to have when held up at a distance of 2.45 miles! Alpha Centauri, visible from the southern hemisphere, is closest, with largest parallax — about three-quarters of a second.

The parallax of Arcturus is .087 seconds, and converted into light years (the distance — about 6,000,000,000 miles—that light will travel in a year) its distance is 37.46. There is a little uncertainty in this figure, but it is not likely to be as much as 40. Perhaps, for the purpose of a World's Fair, this was close enough!

#### Celestial Time Table for June

Friday, June 5, 5:26 p.m., Moon in last quarter. Wednesday, June 10, 1:28 a.m., Moon passes Venus. Friday, June 12, 3:55 a.m., Moon passes Saturn. Saturday, June 13, 3:00 p.m., Moon farthest, 252,700 miles; 5:02 p.m., New moon. Wednesday, June 17, 3:06 a.m., Moon passes Mars. Sunday, June 21, 4:44 p.m., Moon in first quarter; 9:17 p.m., Summer commences. Thursday, June 25, 1:00 p.m., Jupiter in line with sun. Saturday, June 27, 9:00 p.m., Moon nearest, 222,000 miles. Sunday, June 28, 8:09 a.m., Full moon. Monday, June 29, 4:00 p.m., Venus passes Uranus.

*Science News Letter, May 30, 1942*

Confident prediction of long-range fluctuations in the heat radiated by the sun can be made because of the many thousands of accurate readings of solar heat, taken daily with specially designed, highly sensitive instruments, in observatories at Mt. Montezuma in Chile, Mt. Saint Katherine in the Sinai wilderness, and Table Mountain in the Mojave Desert of California. These have been carefully tabulated and are published, with interpretations, in vol. 6 of the *Annals of the Astrophysical Observatory of the Smithsonian Institution*, just off the press.

Study of this mass of data shows that there are 14 distinguishable intensity cycles in the sun's radiation. Some of them are of only brief duration, others require years for the swing from high to low. Once every 23 years, all the lows come in together, and that combination low-point is due in 1945.

There seems to be little direct relation between solar radiation per se and the number of sunspots. Sunspots, however, do have their own effect on the earth's weather. They give off vast streams of electrically charged particles that shoot through space. Some of them, entering the earth's atmosphere, serve as nuclei for the condensation of water vapor in the upper atmosphere and thus lead to the increase of cloudiness and of rainfall, which may be entirely independent of heat effects.

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#### PSYCHIATRY

### Self Analysis May Be a Possibility in Psychiatry

PSYCHOANALYSIS for millions instead of millionaires is the possibility opened up by Dr. Karen Horney, New York psychoanalyst, in her new book *Self-Analysis*, (*Reviewed, SNL, this issue*).

Self analysis, within limits, is not only possible but desirable, Dr. Horney concludes. Many people could benefit from psychoanalysis who are now excluded by its almost prohibitive cost in time and money.

Her conclusions suggest that under "favorable conditions" much of the psychoanalytic work can be done by the patient alone, with the analyst serving as trainer and guide rather than constant companion. While this would probably lengthen the total time required, nevertheless many people could afford a few months of intensive analysis and subsequent check-up visits who cannot afford

#### ASTRONOMY

## Sun's Temperature To Reach 23-Year Low Point in 1945

THE SUN will be at its lowest ebb, thermally speaking, in 1945. This is indicated by data compiled by Smithsonian Institution observers in many parts of the world, and by Dr. Charles G. Abbot, Secretary of the Institution, together with L. B. Aldrich and W. H. Hoover. After that, our planetary system's central furnace will begin to warm up again.

The relation between the sun's radiation and the earth's temperature is not direct, however. Cooling off of the sun might even result indirectly in warming up of certain parts of the earth, by reducing the amount of cloudiness and thereby letting the sun's rays, even though diminished, shine longer on the earth's surface.