

ASTRONOMY

June 22 Gets Most Sun, But Hottest Weather Comes Later

An Amateur Astronomer Makes Interesting Observations On the Effect of Summer and Winter Solstices

SHINING above the horizon for fifteen hours and one minute, in middle latitudes of the United States, on Monday, June 22, the sun will be visible longer than on any other day of the year. Besides thus being the longest day, June 22 will mark the beginning of summer.

The day is longest because the sun is then at the northernmost part of its annual path through the sky—what is called the summer solstice. Astronomers have universally agreed that this shall mark the beginning of summer. It occurs on the 22d, at 4:28 a. m., Eastern Standard Time.

If the matter of clear or cloudy weather did not complicate the situation, the surface of the earth would on this day, receive more heat from the sun than on any other day of the year. Not only is this due to the fact that the sun is above the horizon longer, but the greater height of the sun in the sky causes a concentration of its light and heat over a smaller area. In winter, when the sun is low, even at noon, a yard square beam of sunlight may cover a couple of square yards. Now, at noon, the sun is well overhead, and the same yard square beam covers only a little more than a square yard.

An interesting observation of this phenomena has been made by Harry Paul Eichin, of Chicago. At noon on the day of the summer solstice in June, 1930, Mr. Eichin took a picture of a pipe casting a shadow on a nearby tank. Since the sun was at its maximum height in the heavens the shadow extended almost to the ground.

Six Months Later

Exactly six months later at the winter solstice he returned to the same spot and took another picture. Then, the sun at its lowest point in the heavens cast a shadow entirely unlike the one it threw on the tank six months previously. This shadow was not nearly so elliptical as the other and did not run to the ground. The two accompanying

pictures contrast the summer and winter shadows.

Along the tropic of Cancer, which crosses Mexico, the sun at noon is now directly overhead. This causes the curious phenomenon of vertical objects casting no shadow, or of the sun shining directly down a vertical well. The ancient Mexicans made use of this effect in their religious ritual. At such a time, they said, the sun-god comes to earth.

Heat Stored Up

While the earth receives more radiation at this time than in other parts of the year, it is not the hottest time, as we will realize only too well in August. The reason for this is that the days are so much longer than the nights. During darkness the earth radiates away the heat that it has received during the day, but at present the nights are so short that the sun rises again before all the heat received the preceding day has been lost. Thus, each day becomes a little hotter. Not until the end of the summer does the amount of heat radiated at night begin to surpass the

amount received during the day, thus making possible the advent of colder weather.

Because the movement of the sun in the southern hemisphere is just the reverse of what we observe, our summer solstice marks the beginning of winter in New Zealand, Australia and South Africa. Just now they are having the longest nights, and shortest days of the year. But by next Christmas they will be well into the summer.

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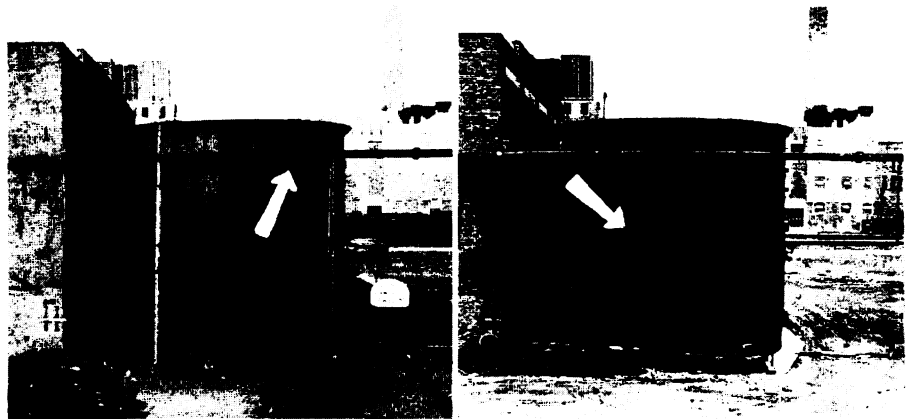
MEDICINE

New Epilepsy Test May Avert Train Wrecks

TRAIN WRECKS, often caused by unsuspected epileptic attacks on engineers, may be averted in the future as the result of a new test for epilepsy discovered by Dr. E. M. Josephson of this city and Dr. M. M. Teplitz of Brooklyn.

Dr. Josephson found he could produce the serious type of epileptic convulsions known as *grand mal* by pressure upon the principal artery of the neck of epileptic patients. In applicants for railroad positions unsuspected epilepsy may be detected by applying this method. If the applicant is suffering from epilepsy in mild form, which even he himself does not know about, pressure upon this artery will show the presence of the disease by producing the characteristic and unmistakable convulsions.

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SUMMER AND WINTER SHADOWS

Photographs taken from the same spot and at the same time of day six months apart. Such picture possibilities are innumerable; they occur wherever the sun casts a shadow. The photograph to the left was taken in Chicago at noon on the day of the winter solstice while that to the right was taken at noon on the day of the summer solstice. The difference in the height of the sun in the heavens at the two seasons caused the shadows to be unlike. Examination by astronomers of photographs containing shadows to determine the time a picture was taken or to check the statement of a witness has figured in important trials.