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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.

Science News Letter, May 30, 1942

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.



three or four analytic hours every week for two or three years.

If Dr. Horney's conclusions are substantiated by the observations of other psychoanalysts, they may have an important effect on the practice of psychoanalysis. If self analysis could be used as a supplementary procedure, it would leave the analysts free to treat more patients. This would be particularly valuable in wartime when doctors are scarce and patients plentiful.

One illuminating case of self analysis is reported by Dr. Horney in full detail.

This was a young woman who, after a year of psychoanalysis, continued it by herself during the next two years. By a fairly systematic process of writing down her free associations and examining them later, she managed to free herself from her lifelong habits of submission and dependency, to become a reasonably

happy and self-reliant adult, and to develop a previously inhibited capacity for original, creative writing. This seeming miracle was accomplished by an exceptional combination of courage, honesty and a determination to get well. In other words, "conditions were favorable."

Dr. Horney cites several cases in which "occasional self analysis" was helpful for specific problems. A business man of her acquaintance, for instance, was able to cure himself of superficial headaches. While he had never been analyzed, he was familiar with the psychoanalytic viewpoint and had an honest desire to discover the psychological reasons for his headaches. However, Dr. Horney emphasizes that in most cases attempts at self analysis are fruitless without previous psychoanalytic experience.

Science News Letter, May 30, 1942

VOLCANOLOGY

Bombing Lava Stream Deflects Flow in Harmless Direction

Hardened Crust of Lava Is Often From Six Inches To Two Feet Thick, But Easy to Break With TNT

BOMBING a lava stream to keep it from destroying a city is more or less like blasting a levee to relieve the pressure of a river in flood, except that a lava river builds its own confining embankments.

Lava of the type that Mauna Loa sent to threaten the city of Hilo early this month rapidly forms a crust on its outer surface as it flows, explained Dr. E. S. Shepherd, Carnegie Institution of Washington volcanologist. It not only builds up side walls but even roofs itself over.

This produces some impossible-appearing results, including the ability of the advancing stream to climb slight rises and to ignore side slopes that would deflect a stream of any normal, unconfined liquid.

These confining walls of hardened lava crust are often thick — from six inches to two feet—but the rock is brittle and readily breached by heavy explosive charges. All that is necessary is to drop a few moderately heavy bombs—say 500-pounders—against the side wall at a point where the break will permit the lava to drain down a slope into an unoccupied valley.

It is even possible, Dr. Shepherd

said, to deflect such a lava flow with a firehose, by directing the stream on one part of the front to cause the more rapid formation of the confining crust there, permitting the lava to move in the desired direction at another point. The trouble is, however, that there is neither water nor firehose in most of the area ordinarily traversed by Mauna Loa's lava flows.

Bombing volcanoes to provoke eruptions in enemy territory, Dr. Shepherd added, is not a very promising tactic. The biggest air bombs would probably have no effect at all if dropped directly into either Japanese or Hawaiian volcanoes, or indeed into any of the volcanoes in the whole Pacific region.

Only one type of volcano might conceivably have its outburst triggered by an outside explosion. That is one in which the lava column rises close to the very rim of the crater, and then hangs there for several days before beginning active eruption. If bombed at just that time, the outbreak might be speeded. Obviously, such an opportunity comes too seldom, and is never timed just the way an attacker might want it.

Science News Letter, May 30, 1942



Everybody's Flower

ROSES crown the whole round world in June. Roses grow and are high favorites in the cool lands of the North, like Britain and Scandinavia; they thrive even more luxuriantly, and are loved no less, in the warmer lands edging down toward the tropics, like Persia and Spain. Only in Japan are they thrust aside by another flower, the chrysanthemum; and even there the cherry blossom, a near relative of the rose, runs close with second honors.

There seems to be something strongly appealing to a basic human sense of symmetry and rhythm in the crown of five petals that is the basic rose design. This pentamerous pattern repeats itself in all sorts of art designs, from beautifully modeled Chinese bronzes to the great rose windows above the doors of some of Europe's medieval cathedrals. And when Dante wanted a blazing symbol of the striving of innumerable souls toward the throne of God, he conjured up his unforgettable image of the Mystical Rose.

Roses have grown in gardens ever since gardens were first planted. And where gardens are oldest, in the Asiatic lands where civilization had its dim beginnings, roses are most highly cultivated and farthest developed. Most of the rose stocks of our gardens and greenhouses, with their rich array of colors and delicate nuances of shades and tints, their extraordinary development of double petals, are derived from these southern Asiatic species.

This effort toward wide variation in coloring and artificial perfection in form, centered on roses from warm-temperature lands, has given rose lovers their severest problem: lack of hardiness in the finest horticultural varieties. Over wide