

ASTRONOMY

Orion Forecasts Winter

Warrior will shine in east on November evenings after a summer vacation from visibility. A partial eclipse of the sun may be seen on Nov. 23.

By JAMES STOKLEY

► FOR THE FIRST time since last April, the constellation of Orion, the warrior, appears on the maps accompanying these articles—a certain forecast, if it were needed, of the approach of winter. This figure appears to the southeast, just above the horizon, the three stars that mark Orion's belt standing vertically. To the left is Betelgeuse, in his shoulder, and to the right Rigel, in one leg, so that Orion is on his back in a rather unwarriorlike position.

The brightest star on the maps (which are drawn for 10:00 p.m. about Nov. 1 and 9:00 p.m. in the middle of the month) is Vega, in Lyra, the lyre, in the northwest. Above this group is the northern cross, part of Cygnus, the swan, with first magnitude Deneb at the head of the cross. To the left is Aquila, the eagle, with Altair.

But it is to the east that our finest display of bright stars appears. There, in addition to the two mentioned in Orion we have, above, Aldebaran in Taurus, the bull, and Capella in Auriga, the charioteer. And if you happen to stay up late some November night and see a still brighter star below Orion, that will be Sirius, the dog star, which does not now rise in time to be placed on the maps.

November this year is not a good month for planets, as only Saturn becomes visible at any time during the night. It is in Cancer, the crab, which is next door to Gemini, and below the horizon until about midnight. By then, Saturn will be visible, and will remain in view the rest of the night.

For the first time this year an eclipse of the sun will be visible in the United States and Canada in November, but it will not attract the interest of astronomers, as did that of July 9, 1945. That was total over a path crossing the northwestern parts of the United States. Over a larger area it was seen as partial. The one that occurs on Saturday, Nov. 23, will not be seen as total any place on the earth.

The shadow of the moon in space has two parts. The core, which tapers from

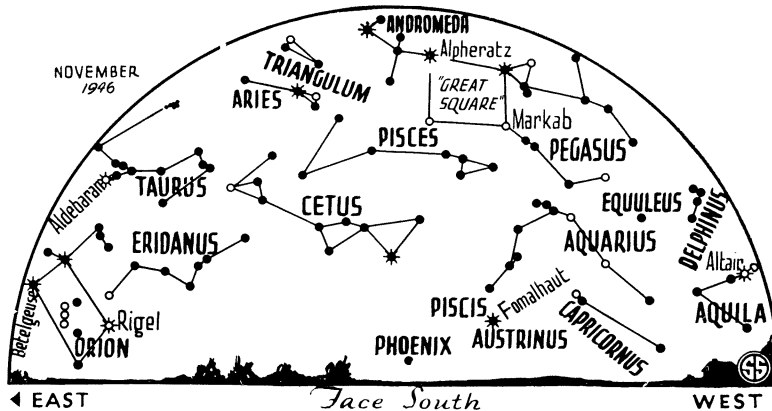
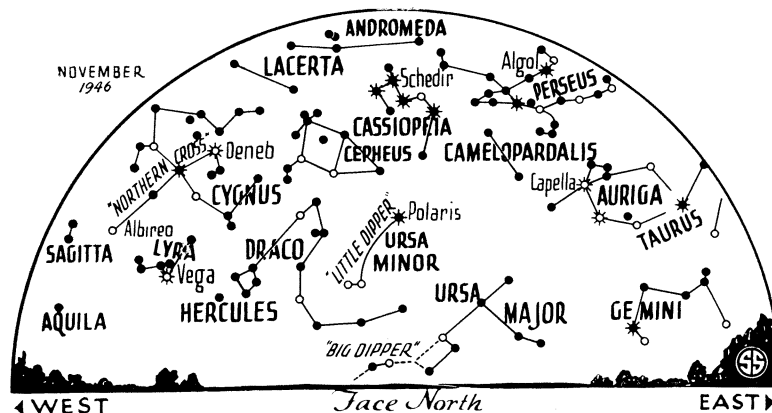
the moon to a point at a distance about equal to that of the earth, is called the "umbra" and from within it the moon completely hides the sun. But there is a larger, outer part of the shadow, the "penumbra," in which one sees the dark lunar disk only partially covering the solar face. When the umbra touches earth, as it did in July, 1945, it traces out a path where a total eclipse occurs and at the same time the larger area covered by the penumbra includes that where the eclipse is partial. In this penumbral area the eclipse is more nearly total the nearer one is to the umbra. Thus, whenever there is a total eclipse, there is a partial eclipse over a far greater area.

However, the converse to this proposition is not true. It may happen that the umbra fails to touch the earth at all,

but the penumbra does. Then we have an eclipse which is only partial, and that is what happens on Nov. 23. The umbra then passes well above the Arctic regions, but the penumbra covers all of Canada, except the extreme northwest, and all of the United States with the exception of the southwest. The greatest eclipse will occur in the region of Labrador, where more than three-fourths of the sun's diameter will be hidden. As we get away from this area, the magnitude of the eclipse will be less and less, as indicated by the following table for a few typical cities. This also shows the times at which the eclipse will be greatest in these places.

	Percent	
Boston	60	12:30 pm EST
Washington, D. C.	51	12:22 pm EST
Atlanta	36	12:13 pm EST
Chicago	44	10:59 am CST
New Orleans	22	11:06 am CST
Denver	18	9:33 am MST
Portland, Ore.	08	8:14 am PST

In observing the eclipse, be careful not



☼ * ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



to look directly at the sun. A dense photographic negative is a good protection to hold in front of the eye when watching it, or else one may look through a pin-hole in a card. Then, a while before the times mentioned above, the dark edge of the moon will begin to encroach on the upper part of the sun, and gradually get larger and larger until the maximum eclipse. After that the moon will go off from the sun's lower limb.

If you want to try a photographic record of this eclipse, you may do so by setting up your camera on a tripod or some steady support and pointing it to the southeast, the part of the sky through which the sun will move. Since the sun is so bright, you should use the smallest stop and an exposure of perhaps a fiftieth of a second. Make one exposure as it starts, then one every five minutes during its progress; without, of course, moving

the camera. The result will be a series of images of the sun, in various stages of occultation.

Celestial Time Table for November

Nov.	EST	
1	11:40 p.m.	Moon in first quarter
4	2:19 a.m.	Algol (variable star in Perseus) at minimum
6	11:07 p.m.	Algol at minimum
9	2:10 a.m.	Full moon
	7:56 p.m.	Algol at minimum
10	8:00 a.m.	Moon nearest, 223,300 miles
14	3:08 p.m.	Moon passes Saturn
15	early a.m.	Meteors of Leonid shower visible
	5:35 p.m.	Moon in last quarter
17	2:00 p.m.	Venus passes sun
23	12:24 p.m.	New moon, partial eclipse of sun
25	5:00 p.m.	Moon farthest, 252,500 miles
27	12:50 a.m.	Algol at minimum
29	9:39 p.m.	Algol at minimum

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, October 26, 1946

MEDICINE

Vaccine May Stop Mumps

Inoculation may make adults immune to mumps, although length of immunity is not yet known. Vaccine is successful on monkeys.

► The first mumps vaccine in history is in the final stages of development in the laboratory of Dr. Karl Habel, research scientist at the National Institute of Health. It has already proved successful in immunizing monkeys to mumps.

Dr. Habel's work began in 1940, when Army, Navy and public health authorities met to map the strategy against epidemic diseases in the expected war. Major emphasis was placed on combating mumps, which in World War I ranked among the top infectious illnesses in disabling men.

In addition to being a nuisance disease and a time loser, mumps in men can have serious consequences since it may cause sterility in the adult males it afflicts. According to Dr. Habel, about 50% of the population have had a childhood attack of mumps which gives immunity, and some persons may have acquired immunity without having an attack.

Dr. Habel was able to test his vaccine on a huge scale last summer when he inoculated over a thousand West Indians in Florida. They came to this country under the auspices of the War Food Administration to work in the sugar fields. Since mumps is a rare ail-

ment in their islands, the men were particularly susceptible. Last year mumps struck 600 out of 3,000 Jamaicans in the same area.

Although the results are not yet in, the vaccine now looks promising.

Dr. Habel, who manufactures his own vaccine, incubates the virus in monkeys and chick embryos. After the virus has been developed to desired potency, it is whirled through a centrifuge to concentrate the virus particles. It is then made sterile by ether, formaldehyde or ultraviolet rays. The resulting vaccine stimulates the body to develop antibodies.

"It is encouraging to note," Dr. Habel

says, "that the number of antibodies so developed is the same as those resulting from a regular attack."

It is not yet known, however, whether the immunity produced by the vaccine will be life-long like that after a natural siege of the disease.

Dr. Habel points out that it is probably not a good idea to use the vaccine on children. Since the vaccine may not give life-time immunity, a boy may grow up without having had mumps and so expose himself to serious possibilities when a man. Mumps in children generally is a mild illness.

But the mumps vaccine should be useful for adult travelers from countries where mumps is relatively unknown to places like the United States where it is prevalent. It will be valuable for parents who have not had mumps to protect themselves from their youngsters. Persons having to live together intimately, as in the barracks-like dormitories of today's colleges, will also be benefited.

Science News Letter, October 26, 1946

CHEMISTRY

Sulfur-treated Petroleum Makes Soap Substitute

► NEW HOPE for soap-seeking housewives was voiced by a chemist who said that an efficient soap substitute has been made from petroleum treated with sulfur.

Dr. Chester M. Suter, associate director of the Sterling-Winthrop Research Institute, Rensselaer, N. Y., described a new method of sulfonating petroleum which was used in Germany during the war to produce a substitute for soap and other types of cleansing agents. He added that American research on this process now produces useful products.

Mersol, one of the German soap substitutes, had excellent wetting quality, very good foam formation and great stability in hard water plus high washing power, Dr. Suter reported.

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