



☆ * ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

pole star. Throughout the United States and Canada, the eclipse will occur in the evening, earlier the farther west you are. To get the moon oriented, as it will appear in the sky, hold the diagram with the arrow labeled "north" pointing upwards and to the left. Thus, it will be the left hand edge of the moon, as you see it in the sky, where the shadow will first appear.

During the hour and 14 minutes that the moon takes in entering the umbra, the curved edge of the terrestrial shadow will be seen on its face. This, incidentally, is an unassailable argument for the earth's roundness, for it is always curved the same way, and only a sphere invariably casts a round shadow.

While the moon is in total eclipse, it will not be likely to vanish completely, unless conditions are most unusual. Instead it will shine with a ruddy light, bent into the shadow by the prismatic action of the earth's atmosphere. While the sunlight thus passes through the air, its blue rays are scattered to give the characteristic daytime blue sky and the light that remains is predominantly red.

During the eclipse there is a rapid cooling of the lunar surface. Before it starts astronomical instruments would show it to be around 275 degrees Fahrenheit, but during the eclipse this drops to about 175 degrees below zero Fahrenheit, some 65 degrees colder than dry ice. This quick cooling is due to the fact that, unlike the

earth, the moon has no atmosphere to ameliorate conditions, and also that it is covered with some sort of material, perhaps like pumice, which cannot hold much heat.

At the end of the total eclipse, shown at III on the diagram, the curved edge of the umbra again appears on the moon's face, and from III to IV it creeps across the disk, which gradually becomes fully illuminated. With its passage out of the penumbra, full sunlight once more is shining on the moon, and again it looks like an ordinary full moon to which nothing has happened.

Time Table for October

Oct.	EST	
3	3:00 p. m.	Mercury between sun and earth
6	9:52 p. m.	Full moon and total eclipse of moon
7	noon	Moon farthest, distance 252,500 miles
14	11:06 p. m.	Moon in last quarter
17	7:44 a. m.	Moon passes Mars
18	7:02 p. m.	Moon passes Saturn
19	4:00 a. m.	Mercury farthest east of sun
20	10:48 a. m.	Moon passes Mercury
21	10:00 a. m.	Moon nearest, distance 222,000 miles
	4:23 p. m.	New moon
24	10:58 p. m.	Moon passes Venus
27	3:32 p. m.	Moon passes Jupiter
28	12:04 p. m.	Moon in first quarter

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

Science News Letter, September 24, 1949

kilowatt hour, he added, is lower than in any other region of North America, or probably in the world. In addition to the 6,000,000 horsepower of hydro-electric energy so far developed in the province, 11,000,000 horsepower remains to be harnessed.

Western Canada is within sight of being able to produce enough oil to meet one-third of Canada's petroleum needs, the engineers were told by M. L. Haider of Imperial Limited. Alberta's crude oil reserves are estimated to be in the neighborhood of 1,000,000,000 barrels, and the fields will be able to produce some 100,000 barrels a day by the end of this year.

Alberta has also great quantities of oil-bearing bituminous sands. In one of the richest areas studied by the Canadian National Research Council, according to W. S. Peterson and Dr. P. E. Gishler of that organization, a bitumen content of 200,000,000 barrels per square mile has been estimated. Processes under study to produce oil from the Alberta sands were described by them. Direct distillation is under a pilot plant test.

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ENGINEERING

Canada's Power-Use High

► CANADA, with less than one-tenth the population of the United States, has developed so far 11,000,000 of her 52,000,000 horsepower hydro-electric potential, as compared to the development of 23,000,000 horsepower of a potential 80,000,000 in her neighbor to the south, the American Institute of Chemical Engineers was told in Montreal, Canada, by Dr. Huet Massue of that city, engineer of the Shawinigan Water and Power Company.

Canada's present capacity places the nation second only to the United States in hydro-electric production, he said, adding that the investment required per horsepower in Canada is only about one-half the amount required in the United States.

Within the province of Quebec alone, the hydro installation is about one and two-thirds horsepower per person, he continued. This is almost double that in any entire country. And the average selling-price per

