

◊ \* ◦ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

circle. Just an hour later, at 10:28 p.m., the moon will be in the position indicated by II, and the total eclipse will begin. At 11:11 p.m., EST, the eclipse will be at its middle, as shown at M. III shows the end of the total eclipse, as the eastern edge of the moon starts to emerge from the umbra, at 11:54 p.m. Just as it took an hour to enter the umbra, it takes an hour to leave. At 12:54 a.m., EST, on April 13, the moon is in position IV, and the eclipse is over. At 1:51 a.m. the moon will be completely out of the penumbra, shining with undiminished light.

Between I and II, and between III and IV, the curved shadow of the earth will be seen creeping across the lunar disk. Even at M, when the eclipse is at its height, the moon will not be completely dark, but will shine with a coppery-red light. The reason for this is that the layer of air around the earth acts as a prism and refracts some of the sunlight into the shadow. As this light passes through the atmosphere, some of its blue rays are scattered, and these give the sky over those regions its blue color. With so much blue light removed, the rays which penetrate are predominantly red. It is a similar effect that gives the setting sun its red color, but the effect is even more pronounced with the eclipse, for then the rays have passed through twice as long a path in the atmos-

phere as those which reach us at sunset. Thus, it is a red light which falls on the moon during a total eclipse.

#### Time Table for April

April	EST	
3	5:00 p.m.	Planet Neptune directly opposite sun and nearest earth; distance 2,721,000,000 miles. (Not visible to naked eye.)
6	8:01 a.m.	Moon in first quarter
9	8:26 a.m.	Moon passes Saturn
12	4:00 a.m.	Moon nearest; distance 222,500 miles
	11:08 p.m.	Moon full and in total eclipse
19	10:15 p.m.	Moon passes Jupiter
	10:27 p.m.	Moon in last quarter
21	early a.m.	Meteors from direction of constellation of Lyra
24	5:00 p.m.	Moon farthest; distance 252,200 miles
28	3:02 a.m.	New moon, partial eclipse of sun visible in Europe and Arctic regions

Subtract one hour for CT, two hours for MT, and three for PT.

Science News Letter, March 26, 1949

#### INVENTION

### New Device Measures Ripeness in Fruit

➤ TESTING the ripeness of fruits and vegetables has long been done by rule-of-thumb—or rather, by rule-of-thumb-nail. The tester simply pressed a thumbnail against the specimen, and guessed how hard or how soft it was.

Now Dr. Edward Ross of the State College of Washington has put such testing on a mechanized, exactly measurable basis. In his testing machine a small piston, powered by a compressed gas from an ordinary commercial cylinder, pushes a rounded brass tip five thirty-seconds of an inch in diameter to a depth of one thirty-second of an inch into the skin of the fruit. The force needed is read off directly on the dial of a gauge.

Description and diagram of Dr. Ross' device is published in the journal, SCIENCE (Feb. 25).

Science News Letter, March 26, 1949

#### CHEMISTRY-ASTRONOMY

### New Photographic Emulsion Will Help in Study of Sun

➤ A PHOTOGRAPHIC emulsion sensitive to light far into the ultraviolet may prove useful for studying the sun from rockets sent high into our atmosphere. The emulsion was developed for identifying atoms or chemicals by analyzing their radiant energies.

Called a "vacuum ultraviolet" emulsion, the material was described to the Optical Society of America meeting in New York by Arthur L. Schoen and Edwin S. Hodge of Kodak Research Laboratories. The new emulsion has extremely close-packed silver grains with very little gelatin.

Ultraviolet rays of the sun are intense at high altitudes where the new emulsion may be used, for at this altitude these rays have not been filtered out by the earth's atmosphere. To test the emulsion here on earth, air was pumped out of a vacuum spectrograph and the emulsion, placed in the vacuum, was exposed to a high intensity spark, rich in ultraviolet radiation.

Science News Letter, March 26, 1949

### Words in Science—HYDROPONICS

➤ ORIGINALLY meaning gardening in water instead of earth, hydroponics is now applied to any sort of soilless gardening whether the plants are grown in tanks of water, or in sand, gravel, vermiculite, sawdust or any other sterile material. You pronounce the word high-dro-pon-icks.

In hydroponics, fertilizer chemicals in suitable proportions are provided to the plants. From these the plants manufacture their own foods. Through hydroponics, it has been possible to grow flourishing gardens on barren volcanic islands where even the water has to be distilled from the sea, and not a grain of real soil was available.

Science News Letter, March 26, 1949

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