

Eclipse Chief Feature of Coming Astronomical Year

By JAMES STOKLEY

With 1927 comes a period of interesting events for the astronomer, a total eclipse of the sun visible in Great Britain, and the first one to be seen there in two centuries, being the feature act on the celestial program. Two years ago, the thickly settled regions of the northeastern part of the United States had their chance to see one of these rare phenomena. But though the American eclipse was unfavorable, because it occurred in winter, when the sun was low in the sky, early in the morning, and was quite short, the British eclipse, which comes on June 29, is even more unfavorable. The eclipse track, in which the sun is completely obscured by the moon, passes northeastward across Wales and England, through Liverpool, where it occurs at 5.23 a. m. It leaves Britain at Hartlepool, on the east coast, then crosses the North Sea to Norway, where it is a little later in the morning, the sun is higher in the sky and the weather conditions are more favorable. But even there, it only lasts about 40 seconds which is a rather short time to do much observing. After leaving the north coast of Norway, it crosses the Arctic Ocean, north of Novaya Zembla, comes ashore again, crossing the northeastern corner of Siberia, and ending just south of the Aleutian Islands.

Though it is not a good eclipse, as far as eclipses go, many people will travel to points along the eclipse track to watch it as one of the most magnificent spectacles in nature, while scientific observations will also be made. Dr. S. A. Mitchell, of the Leander McCormick Observatory of the University of Virginia, has announced that he will head an expedition to Norway to photograph the flash spectrum. This is caused by the last edge of the sun, seen just before the moon covers it, or the first edge that appears after totality is over. Even with the longest eclipse, it is only a flash, as the name implies, so that for his purposes, the Norway eclipse is as good as any. Many observations will be made in England also, and a party consisting of members of the British Astronomical Association will travel to Aal, in central Norway, where the weather conditions seem to be most favorable.

The solar eclipse is caused by the motion of the moon in its orbit, when it comes between the earth and the sun. When the earth comes between the sun and the moon, there is also

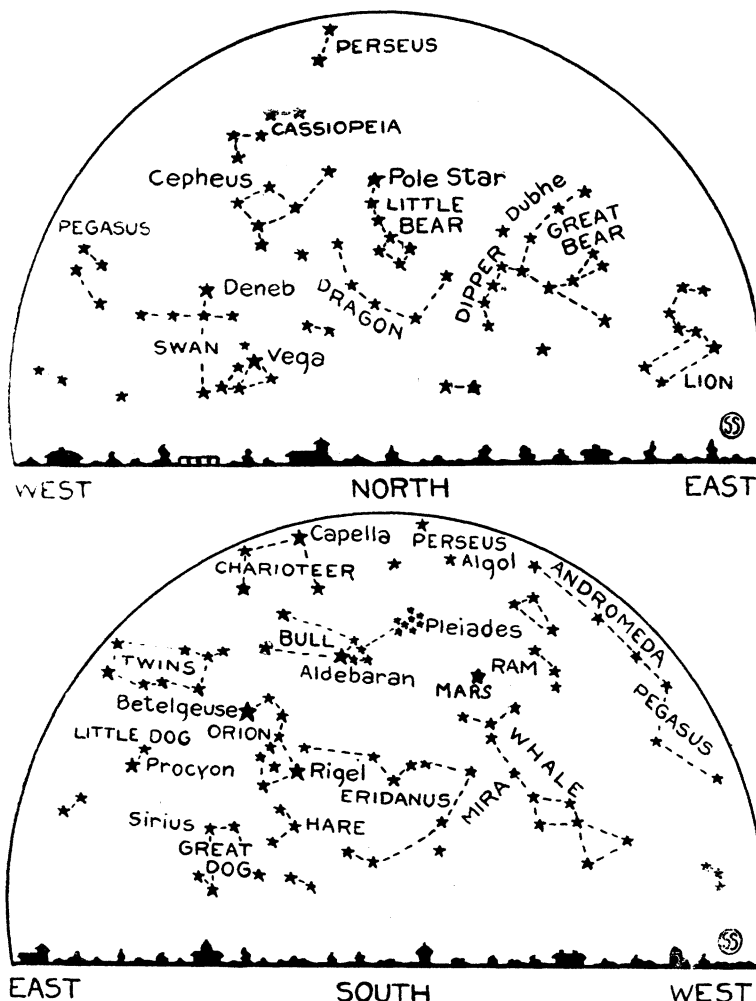
an eclipse, but it is of the moon, and not of the sun. That is because the moon is illuminated solely by sunlight, and when it passes into the earth's shadow it appears dark. Such a phenomenon happens right before the solar eclipse, on June 15, and, unlike the one of the sun, it will be visible in the United States. It will not be seen in Europe, however.

There is another eclipse of the moon, on December 8, which is, however, invisible in the United States; and there are two other eclipses of the sun, neither of which, however, will be of the least scientific value. The first of these is on January 3, and is an annular eclipse. This means that the moon is farther from the earth than ordinarily when it occurs, and so the sun is not completely obscured, but appears as a ring of light around the dark lunar disc. The other solar eclipse is partial and occurs on December 24, but here also the sun will not be completely covered.

Several comets will return to the neighborhood of the earth during 1927, according to the expectations of astronomers. None of them are apt to become very bright, but one never knows when a new comet is to appear. Some of the brightest comets in history have not been periodic visitors, which return to the earth regularly, but have suddenly appeared out of nowhere, became exceedingly brilliant, and then faded away into the limbo out of which they came. Perhaps (and the perhaps is a very big one) such a comet may arrive this year.

As for the stars visible this month, the winter sky is now visible in all its glory. To the northeast is seen the Big Dipper, which has been below the pole-star for the last few months, and not easily visible. The "Pointers," the familiar pair at the end of the dipper's bowl, which point to the pole star, are almost horizontal. But the southern sky is probably the most interesting. Orion, perhaps the most magnificent of all the constellations, is

(Just turn the page)



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in a prominent place. This group, which the ancient star maps represented as a warrior with upraised club, defending himself from the bull, nearby Taurus, has many interesting features. Betelgeuse, which has nearly as many different ways of being pronounced as there are astronomers to pronounce it, is the bright north star of the three that form the belt of the warrior, and has the distinction of being the first star to have its diameter measured by means of the interferometer. It is approximately 250,000,000 miles. The great size of this star can be realized if it is recalled that the diameter of the sun is only about 864,000 miles, and the distance of the sun from the earth is only about 93,000,000 miles. The interferometer was invented by Dr. A. A. Michelson, now at the University of Chicago, but was applied to stellar uses by Francis G. Pease, of the Mt. Wilson Observatory, using the great 100-inch telescope of the observatory, the largest in the world.

Another interesting object in the constellation is found in the sword of Orion, a curved row of stars that hangs down from one end of the belt.

A keen eye can see here a faint, hazy patch of light. Through even a small telescope this proves to be a cloud of nebulous material, and the spectroscopy, which analyzes light into a rainbow-like spectrum, shows what it is. A star such as the sun, when examined spectroscopically, shows a band of color crossed by dark lines. This is called an absorption spectrum, and indicates a hot glowing body surrounded by a gaseous shell. But if a glowing gas is examined, there appears a different kind of spectrum, consisting of a series of colored bands or lines. The nebula in Orion shows such a spectrum, which indicates that it is a cloud of glowing gas, and a group of stars at the heart of the nebula probably excite it to incandescence. When an electrical discharge is passed through a tube with a small amount of gas in it, such as helium, the gas glows and gives such a spectrum, so it may be that these stars give off some sort of electrical discharge. Some of the gases thus found in the nebula are known on earth, but one, which gives a green spectrum, has never been identified here. It is called nebulium, but what its properties may prove to be when, and if, it is discovered on the earth, cannot be predicted. However,

helium, now so useful for filling dirigible airships, was first discovered in the sun, during an eclipse, and then was later found on the earth.

The planets are not so well placed this month as they have been during the fall and early winter, for Mars is the only conspicuous one in the evening sky. Jupiter is seen low in the east after sunset. Saturn will be visible just before sunrise, in the eastern sky.

Science News-Letter, January 1, 1927

Yale has made a woman a professor of psychiatric nursing, the first post of this sort to be created.

A novel pair of steel pliers is made for use as a punch, wrench, screwdriver, hammer, wire cutter, and pipe crimper.

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