

ASTRONOMY

Bright Stars in January

Though There is a Dearth of Visible Planets, Nine Stars Of First Magnitude Invite Attention to the Evening Sky

By JAMES STOKLEY

JANUARY always brings a glorious display of stars in the evening sky. Even though the year is starting out with a singular dearth of visible planets, except later in the evening and in the early morning, the nine first magnitude stars that can now be seen after dinner well warrant more than a passing glance skywards.

As you look to the south, at perhaps nine o'clock, you will probably first notice Orion, most magnificent of the constellations. Orion is easily identified. The three stars that form the heavenly warrior's belt, though not of the first magnitude, are his unmistakable trademark. Above and to the east of the belt is Betelgeuse, a reddish star of the first magnitude, while below, directly opposite Betelgeuse, is Rigel, also of the first magnitude.

Slightly higher than Orion and more to the west is a very red star, Aldebaran, which marks the group of Taurus, the bull, with which Orion is supposed to be fighting, according to the old pictures. Below Orion is another brilliant star; in fact, it is the brightest in the sky. This is Sirius which marks the constellation of Canis Major, the greater of the two dogs that accompany the warrior. The other dog, Canis Minor, is farther to the east. Its lucida, or brightest star, is Procyon which is only slightly inferior to Sirius.

High overhead and a little to the north of the zenith is the second brightest star now visible, Capella, in Auriga, the charioteer. Capella is the third most brilliant star ever seen from this latitude and the fifth in the entire sky. Besides Sirius, it is exceeded by Canopus and alpha Centauri, two stars that can only be seen from southern countries, and Vega, which will come into the evening sky in April.

Now look below Auriga to the east. There you will see two bright stars, one of which is of the first magnitude. The brighter star is Pollux, one of the twins, Gemini. The fainter star is his brother,

Castor. Still lower in the east is a star group almost as familiar as the Great Dipper. This is the Sickle, part of the constellation of Leo, the lion. The Sickle is now placed with its handle downwards and to the right, and the blade curving upwards and to the right. Brilliant Regulus is the end of the handle.

The stars mentioned are eight of the nine first magnitude stars now visible in the evening sky, and they will remain with us for several months to come. The ninth, which is now about to leave us until the summer, is Deneb in Cygnus, the swan. Low in the northwest it may be seen, even after the rest of the constellation has vanished beyond the horizon. In the early part of the evening you can see most of the "Northern Cross," of which it marks the head, standing upright in the west.

Planets Rise Late

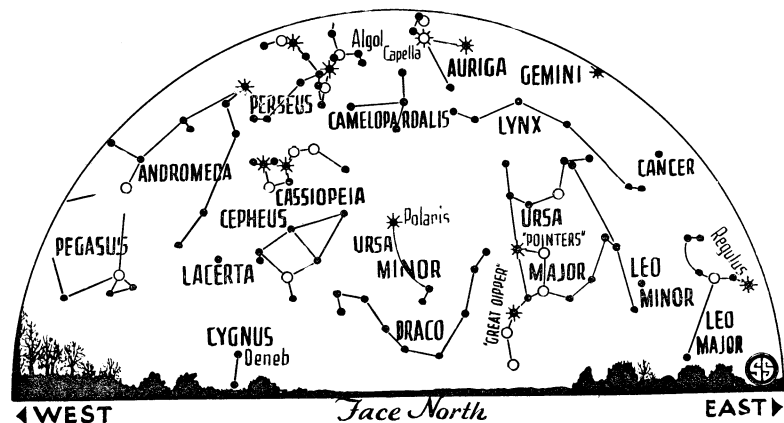
No planets are to be seen during the earlier part of the evening this month, and none are shown on the maps, which represent the appearance of the sky about 10 p. m. on the first, about 9 p. m. on the fifteenth and about 8 p. m. on the thirty-first. However, if Mars were but a little farther west, it would manage to get on the map. It is now in the constellation of Virgo, next to Leo, in which it rises above the eastern horizon about ten o'clock in the middle of the month. By midnight it is well

up in the eastern sky and its steady red glow makes it easy to distinguish. It remains visible during the rest of the night.

Venus appears in the eastern morning sky about two hours before sunrise. Mercury, which was visible during December, is still to the west of the sun so close to it that it rises when the glare of morning twilight is overpoweringly bright. Saturn, which was conspicuous in the south during the summer and autumn, is similarly placed to the east of the sun, where it sets before the evening twilight fades sufficiently to allow it to be seen.

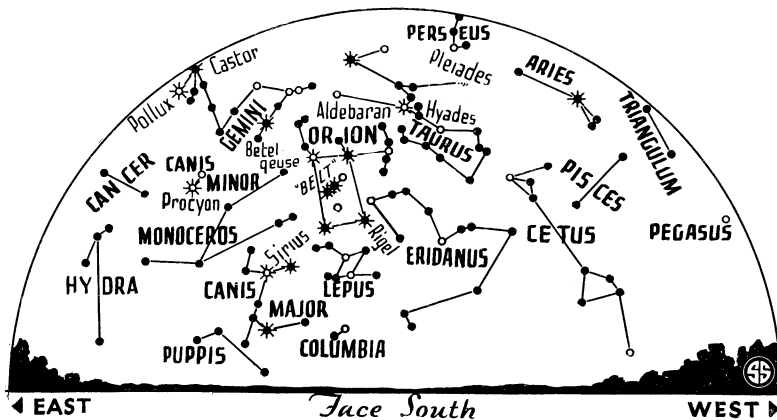
During January the moon goes through its phases as follows. On the third it was at first quarter and directly south at sunset. On the eleventh it is full, rising at sunset and remaining visible all night. On the nineteenth it is at last quarter. Then it rises at midnight. On the twenty-fifth it is new, almost directly in line with the sun and therefore invisible. But a day or two later the young crescent can be glimpsed in the west in the evening sky. Because of the dates of these phases, the evenings from the first of the month to about the sixteenth will be moonlit.

At this time of year the astronomer, like other people, is inclined to look ahead, and see what the year has in store for him. Unlike last year, there is no promise of a total eclipse of the sun in an easily accessible part of the earth. During every year there must be at least two eclipses, and this year we have the



The star Deneb, low in the northwest, will soon vanish behind the horizon.

* * ° • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



MOST MAGNIFICENT CONSTELLATION

In the southern sky brilliant Orion will catch your attention first.

minimum. Though these have little scientific interest, they should attract considerable attention in the regions over which they pass. It is not the fact that they occur in remote parts of the earth that deters astronomers from observing them, for eclipse experts have frequently travelled half way around the world. Both eclipses of 1933 are annular. That is, the moon is then a little farther from the earth than on the average, and its apparent diameter is a little less than usual. Even though it comes directly between the sun and earth, the moon will not completely cover the sun. A ring, or "annulus," of sunlight will remain visible. The glare from this annulus is so bright that none of the phenomena of a total eclipse can be observed.

The year's first eclipse comes on February 24. The path over which the moon can be viewed completely surrounded by sunlight crosses Chile, Argentina, the South Atlantic Ocean, Central Africa, including Belgian Congo, the Sudan and Ethiopia, and Arabia. Over the entire southern half of South America, most of Africa and southwestern Asia, the inhabitants will see a partial eclipse, more of the sun being covered the nearer they are to the path of the annulus.

The second eclipse is on August 21, and has a path that brings to mind the stories of the Arabian Nights. It starts in Egypt, passes over Palestine, Iraq, Persia, India, Siam, Borneo and northern Australia. Such interesting cities as Alexandria, Jerusalem, Bagdad, Calcutta and Rangoon are in it. The partial eclipse will be witnessed over most of Europe, except the British Isles, Spain and the southwestern half of France; but it will

occur early in the morning. In central Europe, the sun will rise partially eclipsed. The partial phases will also be observed in northwestern Africa, and in most of Asia, Polynesia and Australia.

To Prepare for Eclipse

Though 1933 brings no worthwhile eclipses, so far as the astronomer is concerned, he will give much thought to eclipse preparations before the year is over. The next total eclipse occurs in 1934 on St. Valentine's day and is visible over a path crossing Borneo, Celebes, and several small islands in the South Pacific. Several expeditions will doubtless be located along the path, but the places where the eclipse can best be

seen are off the usual steamer routes, so specially chartered ships will be required, and a large quantity of material for erecting the scientific instruments will have to be taken along. Astronomers observing this eclipse will probably spend Christmas many miles from home.

Several comets are sure to arrive during 1933. One never knows when a new comet, rivalling in brilliance the famous ones of the past, may flash unheralded into the night or even the day sky. But there are numerous periodic comets that come back regularly. Among those expected this year are the Pons-Winnecke comet, which comes every six years and was last seen in 1927. It was discovered in 1819 and has been observed on ten returns since then, several having been missed for one reason or another. The Giacobini-Zinner comet, which returns every six and two-thirds years and was last observed in 1926, is also scheduled for a 1933 visit. Its known history dates back to 1900. Finlay's comet, which was first observed in 1886 and was last seen in 1926, and Wolf's comet, which came last in 1925 having been discovered in 1884, are also expected to put in an appearance this year.

In addition, November may bring a good return of the Leonid meteors. Unlike the conditions prevailing last year at the time when a nearly full moon contributed its glare to render invisible the fainter meteors, or shooting stars, the moon will be out of the way this year and scientists will watch the skies with interest.

Science News Letter, January 7, 1933

PUBLIC HEALTH

Towns Change Water Supply To Prevent Tooth Defects

THE FIRST two instances in the history of dentistry of communities changing their water supplies in order to prevent a defect of the teeth of their inhabitants were reported by Dr. Frederick S. McKay, New York City dentist, to the American Association for the Advancement of Science.

The change has been made by two communities in this country in order to prevent the condition known as mottled enamel. The condition was observed about 25 years ago in certain Western communities. Recent research showed that it was due to the presence of fluor-

ine in the drinking water. Wherever there is more than two parts per million of fluorine in the water, mottled enamel occurs, and when there is less than that amount, mottled enamel is absent.

Margaret Cammack Smith at the University of Arizona reproduced the mottled enamel condition in laboratory rats by feeding them concentrated water containing fluorine from one of the afflicted districts. Dr. McKay pointed out that while it would not be ethical to perform such an experiment on man, the experiment has already been unwittingly performed in the commu- (Turn Page)