ASTRONOMY

Christmas Stars

Bright Heralds in the Evening Skies Are Four Planets Venus, Mars, Jupiter and Saturn Seen Soon After Sunset

By JAMES STOKLEY

AS if it were a sign in the sky to herald the Christmas season, a brilliant display of planets can now be seen in the west soon after the sun sets. Three of them are indicated on the accompanying maps, where we see the heavens shown as they appear in the United States at about 10:00 o'clock on the evening of December 1, 9:00 o'clock on December 15 and 8:00 o'clock on the 31st. The other, Venus, sets before these hours, but it can easily be found in the west as soon as it is dark, for its brilliance exceeds that of any other star or planet.

Next to Venus, Jupiter is brightest, and stands in the figure of Pisces, the fishes, to the southwest. Considerably fainter, though brighter than most of the stars, and about the same brilliance, are Saturn and Mars. Mars is in Aquarius, the water carrier, to the west, while Saturn is also in Pisces, and to the south. Mercury, the remaining naked eye planet, is not visible in the evening, but for a few days about the 16th of December, it will appear low in the east about an hour before sunrise.

Southeast Has Display

The most brilliant stars now to be seen are in the southeast, surrounding the figure of Orion. This group, representing the warrior, can easily be identified by three stars in a row which form the man's belt. Above, and to the east are two stars, Betelgeuse the brighter and Bellatrix the fainter, which are his shoulders. Rigel, the bright star to the south of the belt, is in one of his feet.

Above Orion is Taurus, the bull, supposed to be charging on Orion. The red star Aldebaran, in a V-shaped group, is his eye. Still higher, in the shoulders of the animal, are the Pleiades, a group sometimes called the "seven sisters." Below Orion is Canis Major, the great dog, with the dog star, Sirius, the brightest in the night time sky. Low in the east is the lesser dog, Canis Minor, with a star called Procyon.

A little higher, and farther north, are Gemini, the twins, with stars named Castor and Pollux. Above them is Auriga, the charioteer, in which we find the star called Capella.

Two other stars, of the astronomer's first magnitude, are indicated low in the northwest. They are the only ones remaining of the brilliant stars of summer. Deneb, in Cygnus, the swan, is at the top of a figure called the Northern Cross. Still lower, to the right, is Vega, in Lyra, the lyre.

The Great Dipper, part of the great bear, Ursa Major, has been in the poorest evening position during recent months, but it is now starting to climb into the northeast. The upper two stars of the dipper are the pointers, which indicate the direction of Polaris, the north star, in Ursa Minor, the lesser Bear. Above the north star is Cassiopeia, shaped like a letter W on the side.

Christmas Grouping

Returning to the planets, it is interesting to find that in December just before Christmas, they have an arrangement not very different from that which they had in the year 6 B. C., shortly before the birth of Christ. In some of the five American cities now provided with that remarkable invention, the Planetarium, it is possible at each Christmas time to see the skies as they appeared from Palestine at that remote date.

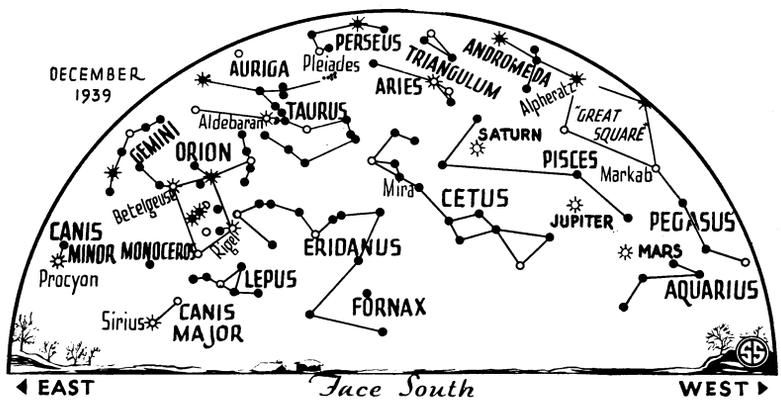
In February, 6 B. C., Jupiter, Saturn and Mars were close together, all in the constellation of Pisces, the fishes. Now Jupiter and Saturn are in Pisces, and Mars in the neighboring constellation of Aquarius, the water-carrier. There is another difference, for at that time, as the shepherds looked at them to the west, they saw Jupiter above, then Mars, and Saturn the lowest. Now Saturn is uppermost, Mars lowest and Jupiter between.

"Star of Bethlehem"

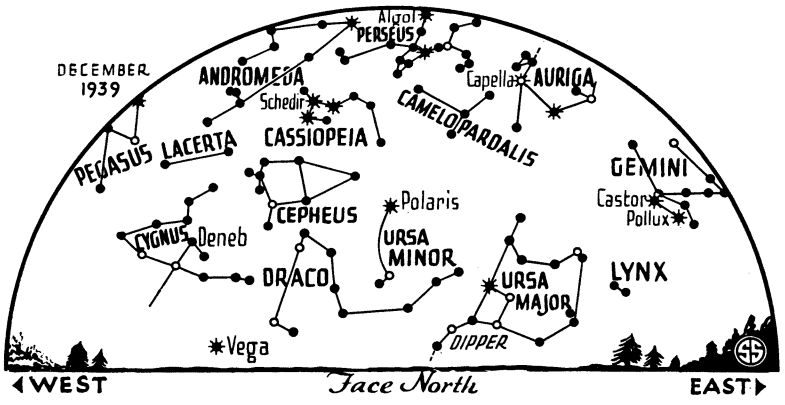
According to some authorities, this grouping of planets was the origin of the "Star of Bethlehem." The wise men of the east were really astrologers, holding the now thoroughly discredited idea that the position of the planets has an influence on our lives. According to them, Saturn was a planet particularly important to the destinies of the Hebrews. Also, they imagined, the constellation of Pisces was significant to the Jews. Then, when Saturn was joined in Pisces by Mars and Jupiter, they might well have imagined that this was a portent of some great event in Hebrew history, perhaps even of the arrival of their long-heralded King. So this might have been the sign they were awaiting, and after it appeared they may have set off on their long journey to Palestine to pay their homage.

One discrepancy seems to be that the Bible mentions that the wise men said they saw the star in the east, while the grouping of planets appeared in the west. Perhaps this is due to a mis-translation. Certainly the wise men were themselves to the east of Palestine, and if they went in the direction of the star they must have seen it in the west.

A clue is afforded by the French and German Bibles, in which words are used for "east" which definitely refer, not to



☼ ✸ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



the eastern part of the sky, but the eastern part of the earth. So perhaps, instead of "We have seen His star in the east," the passage should be "We, in the east, have seen His star."

But the "Star of Bethlehem" may have been something else entirely. A so-called "new star," which is really an old star that suddenly gets much brighter, might have flashed out. An otherwise unrecorded comet may have moved across the sky. It might have been a fire-ball, a very brilliant meteor, similar to those which have been seen in broad daylight. And it might even have been some phenomenon so exceedingly rare that it has never occurred since. We have to admit that we really do not know what it was.

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Celestial Time Table for December

Sunday, Dec. 3, 2:00 a. m., Moon nearest earth, 230,100 miles distant; 3:20 p. m., Moon at last quarter. **Sunday, Dec. 10,** 4:45 p. m., New moon. **Tuesday, Dec. 12,** early a. m., Geminid meteor shower. **Saturday, Dec. 16,** 7:00 p. m., Mercury farthest west of sun, visible about now as morning star. **Sunday, Dec. 17,** 11:00 a. m., Moon farthest, 251,300 miles distant. **Monday, Dec. 18,** 4:35 a. m., Moon passes Mars; 4:04 p. m., Moon at first quarter. **Tuesday, Dec. 19,** 2:58 a. m., Moon passes Jupiter. **Thursday, Dec. 21,** 2:53 a. m., Moon passes Saturn. **Friday, Dec. 22,** 1:06 p. m., Sun farthest south—winter starts. **Tuesday, Dec. 26,** 6:28 a. m., Full moon. **Friday, Dec. 29,** 6:00 a. m., Moon nearest earth, 227,300 miles distant..

Eastern Standard Time throughout.

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ARCHAEOLOGY

Greek Athletes Good, But Not "Incredible"

MODERN athletes have been awed by the record hung up by one Phaullus, winner of ancient Pythian games at Delphi, who once jumped 55 "feet." The modern record for running broad jump set by Jesse Owens in 1935 is a mere 26 feet, 8¼ inches. Some commentators have frankly called the Phaullus jump incredible.

But now comes a report that ancient Greeks had no single standard for the length of a foot. M. Evangelos Kalfarentzos, Inspector-General of Physical Education at Athens, has been investigating sizes of stadia in Greek cities. Olympia's stadium was 600 "feet," actually 192.25 meters, he finds. A foot there measured about 12.7 inches. Delphi's stadium was 1,000 "feet" long, actually 177.55 meters, and a foot at Delphi was not quite seven inches.

Chionis, who won at Olympia in 664 B. C., jumped 23 feet, 1 inch, by this reckoning, not 52 feet as sometimes calculated. The jump by Phaullus at Delphi shrinks to 32 feet.

Even 32 feet is beyond modern free jumping records. But some say that the Greeks used a slightly raised take-off. And some point to evidence in vase paintings that jumpers increased momentum by swinging weights and casting them aside as they leaped.

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RADIO

S. D. Kirkpatrick, editor of Chemical and Metallurgical Engineering and Frank A. Howard, president of Standard Oil Development Corporation, which receives this year's award for chemical and engineering achievement, will be guest scientists on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Monday, December 4, 4:30 p.m., EST, 3:30 CST, 2:30 MST, 1:30 PST. Listen in on your local station. Listen in each Monday.