

ASTRONOMY

Lion Now High in Sky

This constellation shines high in the southwest on May evenings, made even more conspicuous than usual by presence in it of the bright planet Jupiter.

By JAMES STOKLEY

► HIGH in the southwest on May evenings shines the constellation of Leo, the lion, made even more conspicuous than usual by the presence in it of the bright planet Jupiter. This exceeds in brilliance the star Regulus, brightest permanent member of the group. Jupiter is now of magnitude minus 1.8, which is some 17 times that of Regulus.

A part of Leo that is characteristic is the so-called "sickle" with Regulus at the end of the handle, the point of the blade curving toward the western point of the horizon. To the left of the sickle is a triangle of stars which is supposed to mark the lion's hindquarters. The easternmost of these is called Denebola, a corruption of an Arabic name meaning the lion's tail. The line of stars that comes down towards Jupiter marks one of the animal's hind feet, so the planet is an extra object in this part of his anatomy.

Next to Leo, to the east, is Virgo, the virgin, in which Spica appears. This group, and its neighbors, are all shown on the accompanying maps, which depict the skies about 11:00 p. m., your local war time, on May 1, and about 10:00 p. m. in the middle of the month.

Atmosphere Absorbs Light

Another first magnitude star in the southern sky is shown in Bootes, the bear-driver, which is above the easternmost end of Virgo. Low in the southeast there is indicated a part of Scorpius, and the star named Antares. This is one of the first magnitude also, but the symbol used for it on the map is that for the third. The reason is that it is so near the horizon that much of its light is absorbed by the earth's atmosphere, dimming it considerably. A few months from now it will be higher in the evening sky, and then it will be seen in full brilliance. Even in May it can be seen as high and as bright—in the early morning hours.

In the northern half of the sky some more first magnitude stars and another planet are shown. Saturn is the planet, low in the northwest, in the figure of Gemini the twins where we also see the star Pollux. To the right of Gemini is Auriga,

the charioteer, with Capella. In the northeast there is Vega, in Lyra, the lyre; and Deneb, in Cygnus, the swan, also dimmer than it should be because of its low altitude. In the evenings of coming months these last two figures will get higher, and their stars brighter, while those in the northwest will then be gone from view for a while.

The big dipper, part of Ursa Major, the great bear, is now in nearly its best evening position of the year, high in the north. The "pointers," part of the dipper, show the direction to Polaris, the pole star, and the little dipper, which extends upward from it. Winding around the little dipper, from a position close to the pointers, is Draco, the dragon, which can also be seen well on May evenings.

Low in the east, just before sunrise, two other planets may be seen. Venus, which was so brilliant in the western evening sky during the past winter, has shifted to be a morning star, and it is easily found in the morning twilight. By the end of the month it will be about 18° above the horizon at sunrise. On May 21 it will be at maximum brightness, minus 4.2, which is nearly ten times as bright as Jupiter. Mars also is seen in the east, about 18° above the horizon at the beginning of the month, and is of magnitude 1.3, the same as that of Regulus. Mars and Venus will draw closer and closer together until, early next month, they will be about 5° apart (which is a distance about 10 times the diameter of the full moon). Then they will separate again. Mercury also will come into the

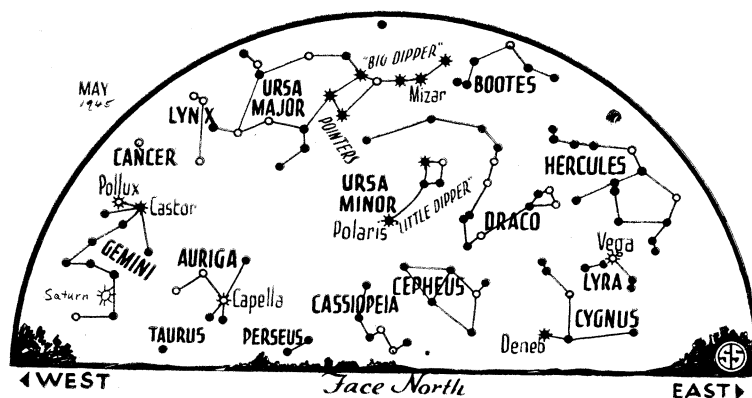
morning sky about May 11, but hardly enough to be seen, for even then it will rise less than an hour before the sun, and will be lost in his glare.

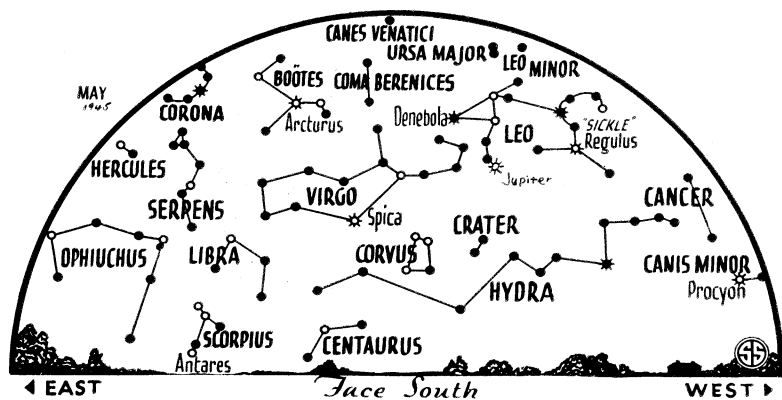
Directly overhead at the times for which our maps are drawn, there stands the constellation of Canes Venatici, the hunting dogs, one of several new figures added in 1690 by the Polish astronomer Johannes Hevelius, of Danzig, to fill some areas where the ancients had not bothered to put constellations. The brightest star in this figure, which stands at the approximate center of the arc of the circle formed by the great dipper, is called Cor Caroli. This was so named in 1725 by Edmund Halley, of comet fame, who was astronomer royal of Great Britain, in honor of Charles II. In doing this he followed a suggestion of the court physician, Sir Charles Scarborough, who said that it had seemed to shine with special brilliancy on the night of May 28, 1660, the eve of the king's return to London upon the restoration of the Stuarts after Cromwell had been overthrown.

Spiral Nebulae

Looking at this constellation with a telescope, a misty spot is seen near the star Alkaid, the one at the end of the handle of the great dipper, and a long-exposure photograph through a great observatory instrument shows it as having the appearance of a Fourth-of-July pinwheel. It is one of the finest of the spiral galaxies (formerly called spiral nebulae, before their nature was understood). Actually it is a vast assemblage of stars similar to that of which our sun and all the stars of the nighttime sky are part, and which make up the Milky Way Galaxy.

This region of the sky—Canes Venatici, and Coma Berenices, next to it—is particularly rich in these objects. The





☉ • ◉ ◊ ◓ SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

Milky Way itself, where all other types of heavenly bodies are most numerous, is devoid of them. This was very puzzling to earlier generations but now we appreciate the reason. Our galaxy is a flattened disk of stars. As we look toward the edge of the disk we see many more stars than we do toward the flat sides, and this concentration of stars produces what we call the Milky Way.

Naturally, all the bodies that are members of our galaxy are most numerous in the Milky Way but they, and the clouds of dark matter that accompany them, obscure what lies beyond and is outside our galaxy. Consequently, external galactic systems, of which the one in Canes Venatici is a good example, are best seen toward the poles of the Milky Way, for in these directions there is less matter in the foreground to interfere. Millions of these other galaxies are known, and when the 200-inch telescope at Mt. Palomar is in use, a year or two after the

end of the war makes possible resumption of work on it, still vaster numbers will be revealed, and nearer ones will be seen better, adding to our knowledge of these "island universes."

Celestial Time Table for May

| | |
|-----------------|--|
| May Ewt | |
| 4 Early Morning | Meteors of eta Aquarid shower visible |
| 5 2:02 a. m. | Moon in last quarter |
| 8 Noon | Moon passes Mars |
| 9 6:53 a. m. | Moon passes Venus |
| 10 2:00 p. m. | Moon nearest, distance 223,200 miles |
| 11 8:00 a. m. | Mercury farthest west of sun |
| 14 4:21 p. m. | New moon |
| 14 10:31 p. m. | Moon passes Saturn (in the southwestern part of the country Saturn will be occulted or "eclipsed") |
| 18 6:12 p. m. | Moon in first quarter |
| 20 6:53 a. m. | Moon passes Jupiter |
| 21 11:00 a. m. | Venus at greatest brilliance |
| 22 9:00 p. m. | Moon farthest, distance 252,000 miles |
| 26 9:49 p. m. | Full moon |

Subtract one hour for CWT, two hours for MWT, and three for PWT.

Science News Letter, April 28, 1945

MILITARY SCIENCE

Underground Factories

Many of them have been discovered by Reds in liberated areas. Using idle mines for war purposes was suggested by a German magazine a decade ago.

➤ A SECRET Nazi underground is offered as a postwar threat, but an extensive German underground factory force has been hard at work since early in the days of Allied air invasions and has produced great quantities of war material in well-equipped industrial plants in former coal, iron and salt mines, and in underground caverns excavated for this single purpose.

How many of these underground factories there may be, and how great their

output, is unknown, but Soviet soldiers have discovered a considerable number in liberated and German areas. Information about some of them is given in a recent official information bulletin issued by the embassy of the Union of Soviet Socialist Republics.

The largest underground enterprises were discovered in German territory in a forested area, the report states. It was a huge plant for the assembling of aircraft, a branch of one of Germany's

largest airplane manufacturers. When taken, everything was in perfect condition, undamaged by the hurriedly retreating workmen and Gestapo watchmen.

In the Budapest area in Hungary, a vast aircraft engine plant was discovered in ancient and little-known catacombs which extend a distance of some three miles. The engines were for a Messerschmitt factory, also located in the Budapest area. In the Poznan (Posen) area in Poland, underground shops were built by the Germans in the forts of an old fortress. Many of these forts had gigantic underground edifices two and three stories deep. Factory equipment evacuated from Bremen was installed in them.

These are but a few of the underground factories and storage places found by the Reds. Many others were discovered in France by the Allies, and more are now being located by Americans and British in Germany itself. The use of the salt mine at Merkers for the storage of German gold and works of art is another example of the German use of bombproof underground storage.

The military use of idle mines for



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