



NO COMPETITION

The bright stars of winter shine this month without having their splendor dimmed by the light of the planets.

at a distance of 94,424,000 miles. At first glance, one might think that we should have warm weather when the sun is closest, but there are other factors that much more than compensate for this change. Because the earth's axis is inclined, at about 23 degrees, to the plane in which it revolves around the sun, the northern half of the earth leans away from it in winter and towards it in summer. This in turn affects the sun's height, as we all know it comes near to the zenith at noon in June, but now its noon-day height is less than a third of a right angle. Thus, its rays of heat are spread over a much larger area than when they fall directly downwards, and the heating effect is much less. In the southern hemisphere conditions are reversed, of course, for when the sun is low for us it is high for them. Consequently the people in Australia and South Africa are now enjoying mid-summer.

No Planets

The glorious stars of the winter sky shine in their full splendor this month, without competition from the planets, none of which can be seen during most of the evening hours. As soon as darkness falls, Mars and Saturn can be seen low in the southwest, but both are faint, and they set soon after the sun. On January 16, Mercury is at its greatest distance to the east of the sun, when it sets latest, then it may be glimpsed in the western twilight. Venus and Jupiter are close together in the constellation of the Scorpion, which rises about 4:30 a. m.

At ten o'clock on the first, nine on the fifteenth and eight on the thirty-first, the times for which the accompanying maps show the skies, Orion is the most conspicuous constellation, high in the

south. It is easy to recognize because of the three stars in a row that form the belt of this heavenly warrior. The two stars north of the belt, Betelgeuse and Bellatrix, form his shoulders, while to the south are two others, Rigel, the brighter, the Saiph, the fainter, which mark his legs. A curved row of stars to the west of Bellatrix represents one of the giant's arms over which is thrown a lion skin, and the stars just above Betelgeuse are supposed to outline the other arm, in which he is brandishing a club. And well might he need this defense, for next to him, to the right, is Taurus, the bull, charging towards him.

Horns and All

The red star, Aldebaran, is the bull's eye, and the Hyades, the V-shaped group of which it is part, outline his face, while the two stars just above Orion are the tips of his horns, as shown on the old star maps. In the shoulders of the bull are the Pleiades, the "seven sisters" of mythology, though most people can only see six stars there with the naked eye.

The part of the sky in and near Orion contains more bright stars than in any other similar area, which is the reason that the evening skies of winter seem so much more brilliant than those of summer. Below and to the left of the warrior is the brightest star in the sky (except, of course, for the sun) Sirius, the dog star, part of Canis Major, the greater dog. This star is bright, not because of great intrinsic brilliance, but because it is very close. In fact, from northern countries no closer star can be seen, except with the aid of a telescope. But so far are even the nearest stars that the light of Sirius, travelling at the speed of eleven million miles a

minute, takes more than eight years to reach the earth. Higher in the sky is the lesser dog, Canis Minor, with the star Procyon. Still higher, and almost due east, are the twins, Gemini, with Castor and Pollux. Capella, in Auriga, the charioteer, is in the zenith.

Standing on one corner in the west are the four stars called the "great square of Pegasus," though the uppermost, Alpheratz, is in the neighboring constellation of Andromeda. This, in turn, is next to Cassiopeia, seen in the north, and shaped like a letter W on one side. In the northeast is the great dipper, the handle hanging downwards. The uppermost pair of stars are the pointers, and a line from them to the left indicates the direction of Polaris, the pole star, close to the north pole of the sky, and always, therefore, appearing in about the same place. Polaris is at the end of the handle of the little dipper. If you follow the direction of the pointers in the other direction, you will come to Regulus, in Leo, the lion, seen at this time of evening rising in the northeast. Low in the northwest Deneb can be seen, all that now remains visible of Cygnus, the swan.

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ENGINEERING

New Radio Device Detects Leaks in Water Mains

OTHMAR W. Pies, valveman in the Water Department in Cincinnati, has perfected a device to detect leaks in water mains and pipes. As patented, his apparatus consists of a set-up of radio tubes with a very sensitive microphone pick-up which detects and locates the leaks. He connects his device with a fire hydrant, valve or ordinary house stop-cock having a direct connection with the main or house line.

A leak is disclosed by a sizzling sound which grows into a roar as the equipment nears the leak. By taking a reading on each side of the leak by use of a graph, he is able to find the exact location. He has seldom missed finding the leaking valve or pipe.

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ZOOLOGY

Immersed Beavers Can Stop Hearts and Hold Breath

BEAVERS held under water can apparently stop their heartbeats as well as hold their breath for considerable periods of time, experiments by Dr. Laurence Irving and M. D. Orr of the Uni-