ASTRONOMY

Summer Promise

Skies in May assume a distinctly springlike aspect. Venus and Jupiter brighten the western evening heavens. Astronomy's birth honored.

By JAMES STOKLEY

➤ BY THE TIME May arrives, the weather has usually become really springlike, and the evening skies, likewise, have assumed their distinctly vernal aspect. Only a few stragglers of the constellations of the winter evening remain on view in the northwest. A different group appears in the south, and a suggestion of summertime appears in the southeast as the scorpion, Scorpius, makes its first appearance. During the summer this figure is conspicuous in the south.

Though the wintertime constellations are rapidly vanishing from view, the presence in one of them still of two bright planets makes them more than usually conspicuous for this time of year. Look on the accompanying maps, which show the heavens as they appear at 11:00 p.m., wartime, on May 1 and at 10:00 p.m. on May 15. In the northwest is shown the constellation of Gemini, the twins. Considerably exceeding Castor and Pollux, the two brightest stars, are Venus and Jupiter. Venus is by far the brighter, of magnitude minus 3.6 in the astronomer's scale. This is about seven times more brilliant than Jupiter, which is minus 1.5.

Start With Dipper

To find the stars of the May evening, the big dipper, part of Ursa Major, the great bear, high in the north, is a good place to start. The dipper can easily be recognized, and in it are the pointers, which show the direction of Polaris, the pole star. But the handle of the dipper is also a guide. If you follow its curve around toward the south, the first bright star you come to is Arcturus, in Bootes, the bear driver. Following it still farther, you reach Spica, in Virgo, the virgin, which is in the center of the southern sky as shown.

Above and to the right of Virgo is Leo, the lion. In it, representing the animal's head, is the sickle. Bright Regulus stands at the end of the sickle's handle. On the other side of Virgo is the faint constellation of Libra, the scales, and next to Libra is Scorpius. Antares, the bright star of this group, is just coming above the horizon on the map.

Another first magnitude star is almost directly west—Procyon, in Canis Minor, the lesser dog. Farther to the right is Venus, and then Auriga, the charioteer, with Capella. In the northeast in Lyra, the lyre, is Vega, the brightest star now visible. And below Lyra is Cygnus, the swan, with Deneb, whose brilliance is somewhat dimmed because it is so low in the sky.

The only other planet which can be seen during the whole month is Mars. Standing in the constellation of Aquarius, the water carrier, it is low in the southeast at dawn. In the first day or two of May Mercury is visible low in the west as it is getting dark. Saturn is not visible at all—it is too close to the sun.

Astronomy's Birthday

Perhaps the most important astronomical event of May, 1943, is not in the sky. It is the commemoration of the beginning of modern astronomy, which took place exactly four centuries ago. On the 24th of May, 1543, a book which had just been published at Nuremberg was brought to its author, who lay dying at Frauenburg, in Poland, where he was canon of the cathedral. He had been born at Thorn, in Prussian Poland, on February 19, 1473, and had been christened as Mikolaj Kopernik, though we now know him by the Latinized name of Nicolaus Copernicus.

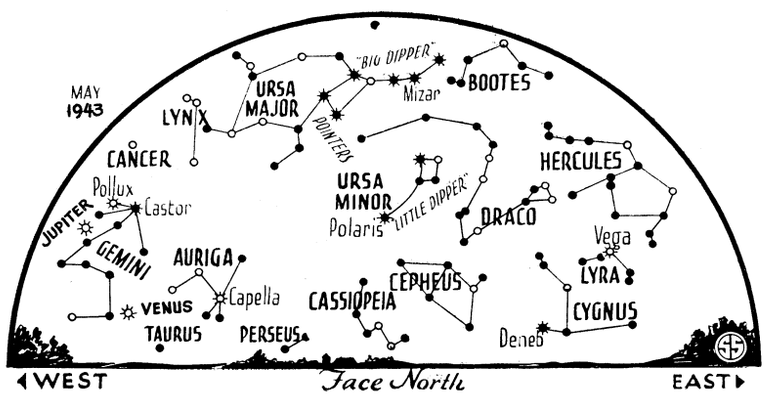
The idea of a spherical earth goes back to the ancient Greeks. Pythagoras and his followers accepted it about 500 B.C. About 420 B.C. another member of his school, Philolaus, taught that the daily revolution of this ball makes the skies seem to turn, producing the apparent rising and setting of the sun. And about 265 B.C. another Greek, Aristarchus of Samos, suggested that people were mistaken in thinking that the sun and planets revolved around the earth. Instead, he proposed, the sun marks the center of the system, and the earth revolves around it with the other planets.

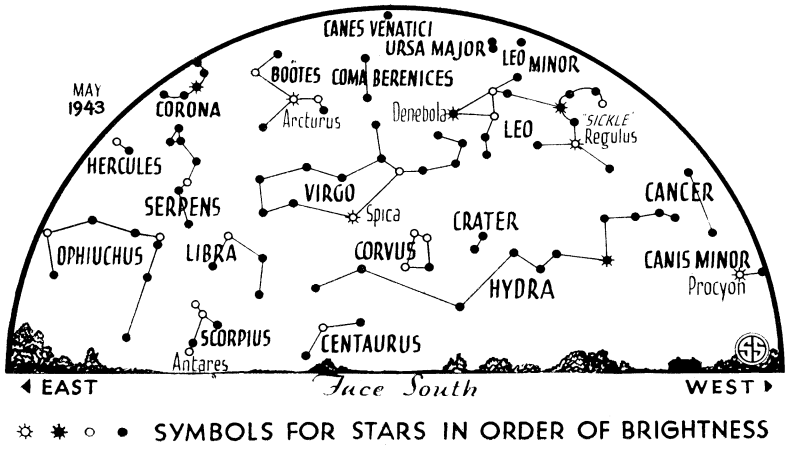
Ideas Not Accepted

But these ideas were not then accepted. Hipparchus, who lived about 126 B.C., preferred an earlier suggestion that the earth was the center, and his ideas were preserved in a great work, generally called the "Almagest," by Claudius Ptolemy, who lived a little later. Thus the Ptolemaic theory, as it came to be called, reigned undisputed until the early 16th century.

Copernicus studied in Italy, but about 1506 he returned to Poland. Interested in astronomy, he began to examine the older writings, and came across references to the ideas of Aristarchus. Despite the general prejudice against a moving earth, Copernicus kept an open mind, and soon saw that this gave a much simpler explanation of the motions of the sky than the complicated Ptolemaic system.

Around 1530 he began to write down his ideas in his great work, "De Revolutionibus Orbium Coelestium" — "On





the Revolutions of the Celestial Orbs." About the same time he wrote a summary, which was circulated in manuscript, the "Commentariolus," and from which Pope Clement VII in Rome seems to have heard about it in 1533.

In the summer of 1539 there came to visit Copernicus a 25-year-old professor of mathematics from the University of Wittenberg. This was Georg Joachim of Rhaetia, better known as Rheticus. In October he wrote an account of the Copernican ideas to his friend Johann Schoner at Nuremberg, and this letter was published at Danzig in 1540 as the "Narratio Prima" ("First Narration"). It was the first published account of the epoch-making ideas of the Polish astronomer.

Full Work Published

Its reception was favorable enough that Rheticus was able to persuade his master to allow publication of the full account. So Rheticus was entrusted with the manuscript, and he took it to Nuremberg with the idea of seeing it through the press. Unfortunately, however, Rheticus left in 1542, to accept a professorship at Leipzig, and Andreas Osiander, a Lutheran clergyman, was left in charge. Apparently, he was uneasy about the radical character of the ideas expressed, so he wrote an anonymous preface stating that this was not necessarily a true picture of the way things were, but merely another hypothesis for the convenience of astronomers.

In the spring of 1543 the book appeared, and a copy was dispatched to Frauenburg. It arrived on May 24, the day that Copernicus passed away. There is no more dramatic scene in the history of science than that of the dying astronomer, handed the first copy of the work over which he had labored so many years and which, as he realized, boldly moved the earth from its place of honor, to become one of a whole family of planets revolving around the sun.

True, this was not the system we today know to be the true one. He still kept the planets moving in circles, and retained many of the smaller circles, or epicycles, which encumbered the Ptolemaic theory in order to explain the changing distances of the planets. But at least it paved the way by taking the main step. Despite opposition to his ideas by the Protestant as well as the Catholic Church, it gradually was accepted. Later astronomers added to it. Kepler showed that the planets moved not in circles, but ellipses. Galileo made observations with his first tiny telescopes which supported it. Newton formulated the laws under which the planets moved.

On this foundation our modern structure of astronomy has been erected. And that is why this month, in a warring world, men are pausing to pay tribute to the man who began it. And in so doing they also honor his native Poland, now crushed to earth under a tyrant's heel. But the culture that brought forth Copernicus cannot be crushed. In the words of the Polish national anthem:

"Poland shall again be free, victory is nearing!"

Celestial Time Table for May

May	EWT	
4	early a.m.	Meteors of eta Aquarid shower seen in southeast.
	5:43 a.m.	New moon.
7	2:24 p.m.	Moon passes Venus.
9	4:32 p.m.	Moon passes Jupiter.
10	1:00 p.m.	Moon farthest; distance, 251,300 miles.
12	5:52 a.m.	Moon in first quarter.
19	5:13 p.m.	Full moon.
22	10:00 a.m.	Moon nearest; distance, 226,600 miles.
26	9:33 a.m.	Moon in last quarter.
28	6:26 a.m.	Moon passes Mars.

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

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MEDICINE

Jaundice May Occur Months After Transfusions

➤ PHYSICIANS should be on the lookout for jaundice developing one to three months after blood or plasma transfusions, Dr. Paul B. Beeson, of Grady Hospital and Emory University School of Medicine, urges (*Journal, American Medical Association,* April 24).

Dr. Beeson reports seven such cases in which he believes the jaundice was probably caused by some substance in the blood or plasma used for transfusions. The condition is similar to cases of jaundice that have been reported following yellow fever vaccinations and use of convalescent serum in measles and mumps.

More such cases may be occurring without being recognized, Dr. Beeson suggests, because the long period between the transfusion and development of jaundice may mask the significance of the transfusion in causing the condition.

The only way to find whether jaundice is frequently occurring as a result of blood and plasma transfusions, Dr. Beeson states, is for physicians to make a concerted effort to recognize such cases. He suggests the following two practical measures for investigating the problem:

"First, a careful record should be kept of the source of blood or plasma administered to each patient. Second, a small portion of blood or plasma should be set aside at the time a transfusion is given, so that, in the event of subsequent cases of hepatitis, some of the causative material will be available for study."

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