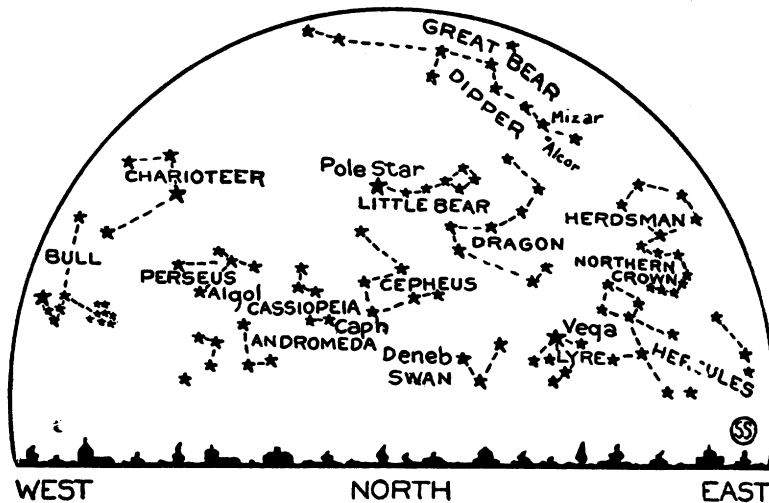


# Leo Succeeds Orion as Southern Constellation



In the northern sky, the large dipper, or the Great Bear, is very conspicuous, as it is nearly overhead in the early evening. In this position, it affords a good opportunity to see the interesting pair of stars, Mizar and Alcor, which are shown on the map. Mizar is the second star from the end of the handle of the dipper—the one at the turn of the handle. Keen eyesight will reveal near it a much fainter star, which is Alcor, so that the pair is sometimes called “the Horse and Rider.” Many early peoples, as well as the American Indians, are said to have used this as a test of keen eyesight. But in large cities the smoke and haze in the atmosphere, as well as the glare of the lights, make it difficult to see, even with keen eyesight. But such slight optical aid as a pair of opera glasses reveals it easily.

From early times it was thus known as visual double star—a star that could be seen as two with the unaided eye. But in the year 1550 the Italian astronomer Riccioli, who is famous for having named the craters of the moon, turned his telescope on it from his observatory in Bologna. Not only did he see the bright Mizar, and the fainter Alcor, but he saw that Mizar itself was double, as it consisted of two stars of nearly equal brilliance, but too close together to be seen separately by even the keenest eyesight. This was the first “double” star to be discovered, but since then many more

*(Just turn the page)*

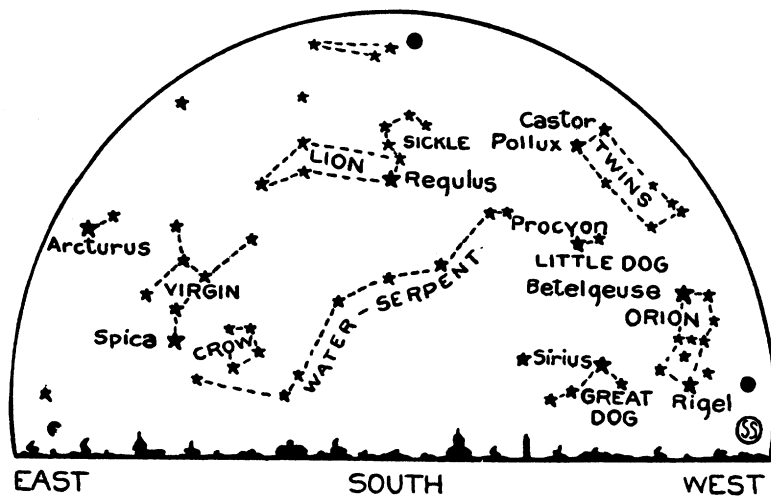
By JAMES STOKLEY  
Leo, the Lion, with its familiar “Sickle” in the southern sky, Orion about to disappear until next fall below the western horizon, and Virgo, the Virgin, with its brilliant star Spica, and Bootes with the shining Arcturus in the southeast—to the student of the heavens, these mean that spring has arrived. The maps show how these stars, and the others, are placed in the April evening sky.

The lion, Leo, or at least the stars of the constellation, seems to bear little resemblance to the figure of the king of beasts, but in ancient times, in India and Egypt, it was represented in the same way as today. The blade of the sickle represents the lion’s head, as he is facing west, and the rest of the constellation the body. Even the medieval Christians who endeavored to remove the pagan star groups from the sky and replace them with Biblical characters, left the lion as one of those with which Daniel was associated.

One explanation of the origin of the sign is that in midsummer, when the sun is among the stars of the constellation, the lions in Egypt came down to the banks of the Nile to escape from the heat, for at that time the river overflows. As Egypt has from the earliest days been dependent on the annual inundation of the Nile, the sign of Leo was also an object of worship among the Egyptians, according to Pliny.

According to the Greek mythology, the lion represents the one slain by Hercules in the first labor, and was placed in the heavens by Jupiter to commemorate the historic conflict.

The second of his labors is associated with the neighboring constellation of Hydra, the water serpent. This group represented to the Greeks the water snake slain by Hercules after he had finished with the lion. According to this legend, the snake had many heads, varying in number from nine to a hundred, depending upon which version of the story we accept. The center head was immortal. As fast as Hercules destroyed one head two new ones appeared, and so the encounter would have doubtless ended in disaster for Hercules, but for the fortunate suggestion of his nephew, Iolaus, that he burn them off. This they did, burying the immortal head under a rock, where the monster was unable to find it. Thus, having completely lost his head, the serpent annoyed Hercules no more!



HOLD THIS PAGE IN FRONT OF YOU, and face north or south. The upper or lower map will then show the way the sky will appear to you on April evenings.

## Leo in Southern Sky

(Continued from page 209)

have been found. In fact we now know that on the average one star out of every 18 in the sky is double. Many of these were discovered and observed by the late Prof. S. W. Burnham, at the Yerkes Observatory of the University of Chicago. After his death, his mantle fell on Prof. Eric Doolittle of the University of Pennsylvania, and when he died it went to Prof. Robert G. Aitken, the associate director of the Lick Observatory of the University of California. Dr. Aitken now spends most of his time observing these double stars with the great 36-inch telescope of the Lick Observatory, and plotting their motion. The members of such pairs do not remain in the same place all the time, but revolve around each other. Their motion is much the same as would result with two heavy balls, tied at the end of a short string, and thrown into the air, spinning around together. They would revolve around the center of gravity of the two, and so do the double stars, showing that they, like the balls on the earth, are under the influence of gravitation.

But Mizar is more than an ordinary double star. It is what is called a spectroscopic double, and, in fact, was the first star of this kind to be discovered, as well as the first double. The brighter of the two stars that Mizar is shown to be by means of the telescope looks single with even the most powerful optical aid, but by analyzing its light with the spectroscope, which turns white light into a rainbow-like band of color, it is shown to be two stars. This band of color, the spectrum, of star light, is crossed with numerous dark lines. The position of a line in the spectrum depends on the speed with which the light which produces it is vibrating, the lines in the red part of the spectrum, for example, being produced by light vibrating more slowly than the lines in the blue part.

Anyone who has heard a fire engine, or a locomotive, go past, ringing its bell, knows that the sound of the bell is shriller as it approaches, and deeper as it goes away. This is because the sound is caused by waves in the air, and the pitch of a bell depends on the speed with which these waves vibrate. As the bell approaches, the waves strike the ear closer together than if the bell were standing still. As a bell of higher pitch would also cause the waves to come closer together, the person who hears it thinks that the bell is of higher pitch than it really is. And then as it goes away, the waves are spread out more than ordinarily, and the sound is interpreted as of lower pitch.

The same thing happens with light. When a star is approaching, the light waves are closer together, and the lines in the spectrum appear nearer the blue end than if it were still, and when it is receding they appear nearer the red end. The result is that by measuring the position of the spectrum lines very accurately, it is possible to tell whether the star is moving towards, or away from, us, and how fast.

But the curious thing about Mizar is that the brighter member of the pair, when its light was analyzed through the spectroscope, showed that the lines were sometimes double and at other times single. This meant that when the lines were double the star was both approaching and receding, at the same time, a contradiction which could be explained if the star itself were double. This is the case, and the two revolve

around each other once in about 20 days and 14 hours.

No planets are well placed for observation all evening during April, but Venus and Mars can be seen in the western sky in the early evening, and late in the evening Saturn appears above the eastern horizon, and is directly south at 2:53 a. m. None of these are shown on the maps, but Venus, which sets about 2 hours and 45 minutes after the sun, may be recognized because of its great brilliance as it shines in the west.

Science News-Letter, April 2, 1927

The United States uses two-fifths of all the wood consumed in the world.

The first grain reaper was made on an anvil in a farm blacksmith shop.

A piece of flat wire made in the city of Nineveh about 800 B. C. is in the British Museum.

Damson plums are believed to have originated in the city of Damascus before 600 B. C.

A thermos bottle in which an aviator can carry a supply of liquid oxygen is expected to be of service to high fliers.

## Eclipses of the Sun

By S. A. Mitchell

Director of the Leander McCormick Observatory

The author will head the only American expedition to observe the eclipse which will be visible in Norway, June 29th. He will then have travelled more than 65,000 miles to witness seven solar eclipses for a total period of sixteen minutes.

Professor Mitchell's book contains the most complete consideration of solar eclipses that has appeared in any language. The gradual accumulation of scientific knowledge concerning the most spectacular phenomenon in nature is traced from the first recorded eclipse in China in 2137 B.C. to the American eclipse of 1925. Chapters explain The Prediction of Eclipses, The Spectroscope, The Flash Spectrum, The Surface of the Sun, The Corona and The Einstein Theory of Relativity.

The book is written so that the layman can understand it. It is illustrated with reproductions of paintings of the corona in natural colors, and of many photographs, together with mathematical diagrams and charts.

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66 plates, \$5.00

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