

THE HEAVENS IN MAY.

BY HENRY NORRIS RUSSELL, PH.D.

The early evening constellations are shown on our star map. The Great Bear is almost overhead, extending north from the zenith. The map shows how the line of its two brightest stars point out the Pole star below them, and also that the star Zeta, at the bend of the dipper handle, is double—a fact which can easily be seen on a fair night by any clear-sighted observer. The Little Bear is now above and to the right of the Pole, and the Dragon (Draco) makes a wide sweep around it. Its two brightest stars, β and γ, are in the northeast, above the much more brilliant Vega, in the constellation of the Lyre.

Cepheus and the Camelopard, which lie below the Pole, are inconspicuous at best, and Cassiopeia, which is brighter, is now too low to be prominent. Perseus is setting in the northwest, and Auriga, the Charioteer, will soon follow him. The twin stars of Gemini, Castor and Pollux, are a little north of west, and Procyon, the one bright object in the constellation of the Little Dog, is south of them. Above this is the inconspicuous Cancer, marked only by the star cluster known as Praesepe, the Bee-hive. Still higher is the Lion, which has one star of nearly the first magnitude, which bears the letter α and the name of Regulus. The stars β, γ, and δ are all of the second magnitude. The second of them is a fine double, seen with a small telescope.

Below Cancer is the head of Hydra, the sea serpent, which justifies its name by its enormous extent—fully half the breadth of the sky. It contains but one conspicuous star, Alphard, of the second magnitude, which stands very much alone to the south of Leo. Being the brightest star in the constellation, it is given the Greek letter α, the first of that alphabet.

This system of naming stars requires perhaps some explanation. In the early days of astronomy stars were named according to their places in the figure of the constellation in which they lay. Alphard, for example, was known as Cor Hydræ, since it lay where the heart of the sea serpent ought to be. Some of the brightest stars, such as Sirius, Procyon, and Arcturus, and also groups like the Pleiades and Praesepe, received names of their own from the Greeks and Romans. The Arabs added many more such names. Aldebaran, Algol, and Fomalhaut are examples.

When in more recent times the stars came to be studied in greater numbers, these methods of naming them were found to be insufficient. The present system was invented about 1610 by the German astronomer Bayer, who conceived the idea of arranging the stars of each constellation in the order of their brightness, and of designating them by the letters of the Greek alphabet in order. The brightest star in each constellation is therefore called Alpha (α), the next Beta (β), then Gamma (γ), Delta (δ), and so on. In a few constellations the order followed is not strictly that of brightness. For example, in Ursa Major the first seven letters, α, β, γ, δ, ε, ζ, η, are given to the stars of the Dipper in order, regardless of the fact that δ is much fainter than any of its neighbors.

In the larger constellations many stars visible to the naked eye remain after the Greek letters are exhausted. Some of these have the Roman letters a, b, c, etc., but most of them bear numbers, given by the English astronomer Flamsteed toward the beginning of the eighteenth century. Thus we speak of 61 Cygni, and so on. The telescopic stars are generally known by their numbers in some star catalogue. Thus a certain star of the seventh magnitude in Ursa Major, which according to the most recent observation is probably the nearest in the northern hemisphere, is known as Lalande 21185, since it bears this number in Lalande's catalogue of star places, which was made about a cen-

tury ago. Sometimes a star may get two or three names in this way, and it takes some little care to recognize it under its various aliases. But this is a matter which troubles only the professional astronomer, and we may turn back from it to the study of the face of the heavens.

On the back of Hydra, due south, are the faint constellation Crater, the cup, and the pretty bright one Corvus, the Crow. Above these is the large and prominent group of Virgo, which has one star of the first magnitude, and several of the third. The star γ in this constellation is also a fine, double one, consisting of two equal components, which revolve about one another in a period of some two hundred years.

Below Virgo in the southeast is the small group of Libra, the Balance (or scales, as it is marked on the map), and still lower is the Scorpion just rising. Due east, and still low, are mingled constellations Serpens and Ophiuchus—the serpent and the serpent bearer—which are so mixed up that they can be better disentangled with the map's aid than by any verbal description.

Above them is Boötes, the Herdsman, with the superb red star Arcturus (α) and several others of the second and third magnitudes. Northeast of it is Corona, the Northern Crown, a beautiful semi-circle which can-

degrees of him. All the planets are in Taurus, a few degrees north of Aldebaran, which will afford a fixed point with whose aid we may determine their motions. They set about an hour and a half after the sun, so that it will easily be possible to observe these conjunctions, which are the most interesting celestial phenomena of the month. Saturn is morning star in Aquarius, rising at about 2 A. M. in the middle of the month. Uranus is in Sagittarius, and comes to the meridian at 3 A. M. on the 15th. Neptune is in the western part of Gemini, and sets at about 10:30 P. M.

THE MOON.

First quarter occurs at 2 P. M. on the 1st, full moon at 9 A. M. on the 8th, last quarter at 3 P. M. on the 15th, new moon at 3 A. M. on the 23d, and first quarter once more at 1 A. M. on the 31st.

The moon is nearest us on the 8th, and farthest away on the 22d. She is in conjunction with Uranus on the 11th, Saturn on the 16th, Mercury on the 21st, Jupiter and Mars on the 24th, Venus on the 25th, and Neptune on the 26th.

On the night of May 2 the moon occults the bright star Regulus. As seen from Washington, the star disappears behind the moon's dark limb at 11:42 P. M., and comes out on the opposite limb at 12:33 A. M.

The times for observers in other parts of the country will be somewhat different.

THE RELATION BETWEEN PAIN AND INFLAMMATION.

Inflammation and pain are so closely connected that a person who feels pain in the throat often complains of having a sore throat or an inflamed throat without examining the throat to see if it is really inflamed. Hitherto inflammation has been taken as a cause and pain as its inevitable effect, but according to a remarkable investigation by Prof. Spiess, reported in the Münchner Medizinische Wochenschrift (Munich Medical Weekly) for 1906, No. 8, the pain is the cause and the inflammation is the effect.

If the pain is calmed by anæsthetics, the inflammation also subsides. For example, inflammation of the mucous membrane of the nose and throat can be cured by anæsthetics, and if an anæsthetic is injected into an incipient boil, there is little subsequent inflammation. In the treatment of inflammatory diseases, therefore, painlessness is an object well worth striving for. Spiess regards the cessation of the nasal secretion of influenza during sleep as a proof that the inflammation of the mucous membrane is arrested by the insensibility of sleep, and he explains in a similar manner the often observed healing of wounds, without

inflammation, in insane persons.

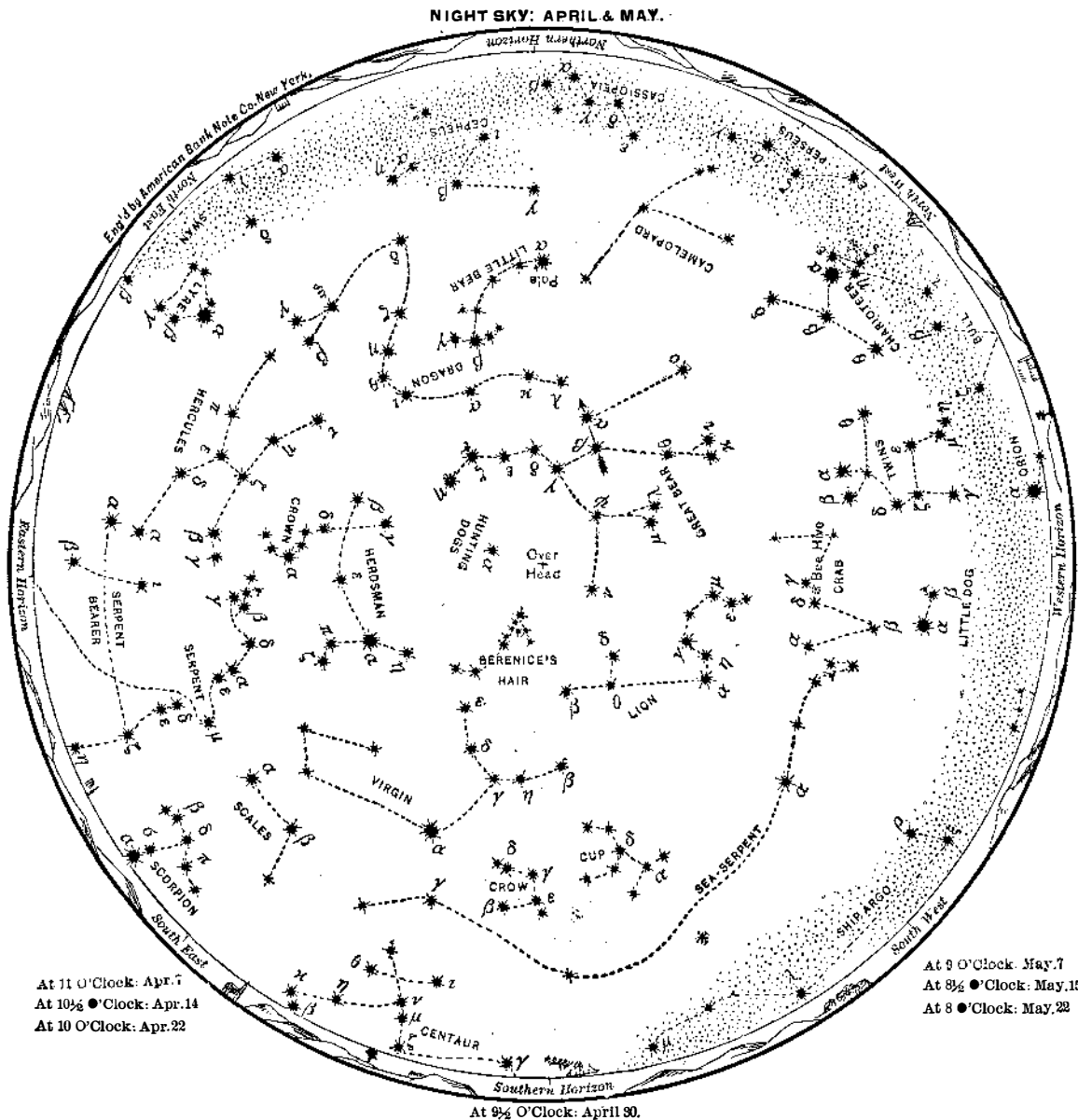
As an anæsthetic Spiess first employed orthoform, afterward novocain, a substitute for cocaine, the poisonous character of which makes it unsuitable for use.

The inflammation following operations on the tonsils, which is ordinarily very severe, was almost wholly prevented by applications of orthoform before and after the operation. The inflammation as well as the pain of wasp stings, mosquito bites and slight wounds was prevented by rubbing them with an aqueous solution of the anæsthetic.

It is too soon to attempt an explanation of these remarkable results. The inflammation appears to be the result of a reflex action transmitted by the sensory nerves. The anæsthetics used should therefore be such as affect those nerves alone, and have no influence on the vasomotor nerves, which regulate the supply of blood.

The New Army Rifle.

A new magazine rifle will be issued to all of the infantry and cavalry troops in the United States before the end of May. The new bayonets have been manufactured, and the Ordnance Department now has on hand a large quantity of the new small arm, which will be immediately issued.



In the map, stars of the first magnitude are eight-pointed; second magnitude, six-pointed; third magnitude, five-pointed; fourth magnitude (a few), four-pointed; fifth magnitude (very few), three-pointed; counting the points only as shown in the solid outline, without the intermediate lines signifying star rays.

not well be mistaken for anything else. Between this and Lyra is Hercules, whose most prominent configuration, shaped like the keystone of an arch, is formed by the four stars η, ε, ε, and π.

THE PLANETS.

Mercury is morning star in Pisces and Aries, and is best seen early in the month, near the date of his greatest elongation, which occurs on the 2d. At this time he rises more than an hour before the sun, and should be easy to see. Toward the end of the month he gets too near the sun to be seen with the naked eye.

Venus, Mars, and Jupiter are all evening stars, and are very close together. They are all moving eastward. Venus goes fastest, and overtakes Mars on the 6th and Jupiter on the 11th, while Mars, which is moving more slowly, overtakes Jupiter on the 18th.

All these conjunctions are close. The one between Mars and Venus is especially remarkable, for the two planets come so near together that they could hardly be separated by the naked eye. This happens at 9 A. M. by our time, so that we cannot observe it, but on the preceding and following evenings their apparent distance will be less than half the moon's diameter.

The conjunctions in which Jupiter takes part are not so close, but both Venus and Mars come within 1¼