

**THE HEAVENS IN APRIL.**

BY HENRY NORRIS RUSSELL, PH.D.

The most interesting astronomical announcement of the past month comes from Greenwich, and relates to a faint planet discovered there by Mr. Melotte.

The mere discovery of another asteroid calls for no remark, for such are now found every month. But this object is very close to Jupiter (about  $\frac{3}{4}$  of a degree south of him) and seems to be moving with him among the stars, the relative motion of the two being less than one-tenth of the distance that the two appear to have traveled. It therefore seems very likely (as is suggested in the telegram announcing the discovery) that this is another satellite of Jupiter—faint and distant like the two recently discovered.

This seems all the more probable when it is seen that, during the month for which it has been observed (on eight nights between January 27 and February 28) it was moving relative to Jupiter in about the same direction as the previously known sixth satellite (which at the time of writing must be apparently pretty close to it in the sky), but at only about one-third the rate. It looks therefore as if the new body was really a satellite, perhaps more distant from its primary than the sixth and seventh (whose periods are about 250 days) and of correspondingly longer period. It will, however, be some time before the intricate calculations which will inform us of the nature of the orbit can be completed.

**THE HEAVENS.**

This is the time of all the year when we can see the greatest number of bright stars in the evening. Beginning in the west, we see Orion with two stars of the first magnitude, the white Rigel below his belt and the red Betelgeux above. North of him is Taurus, with the ruddy Aldebaran, beyond which is the cluster of the Pleiades.

Venus and Mars are both close to the Pleiades, and to one another at the beginning of the month. The latter is not as bright as Aldebaran, but the former is exceedingly brilliant, and far surpasses anything else in sight. South of Orion is Canis Major, whose principal luminary, the great dog star Sirius, surpasses all the other stars in splendor, though by no means as bright as Jupiter and still more inferior to Venus. Above these constellations, and on the opposite side of the Milky Way, we see Canis Minor, with the other dog star, Procyon, Gemini with its twins Castor and Pollux, and Auriga, whose brightest star Capella very much resembles our sun in color and spectrum, though probably exceeding it a hundred-fold in actual brightness. Not far from Castor and Pollux is the planet Jupiter, second only to Venus in brightness.

The eastern skies are not so abundantly adorned, but we may none the less pick out Regulus in Leo, high up and due south of the zenith; Spica in Virgo, well down in the southeast; and the much brighter red star Arcturus, due east.

Within a few minutes after the hour for which our map is drawn, one more bright star, Vega, will rise in the northeast, and we will then have twelve stars of the first magnitude in sight at once, as well as the two brightest planets—an unusual display.

The remaining constellations can easily be made out from our map, the principal ones being Hydra in the south, with the inconspicuous Crater and the brighter Corvus upon its back, and the circumpolar group in the north; Ursa Major is almost overhead, Draco and Ursa Minor on the right of the pole, and Cepheus below it, with Cassiopeia on the left and Perseus farther on in the northwest.

**THE PLANETS.**

Mercury is morning star all through April, but is not very favorably placed, having passed elongation on March 27, and being moreover far south of the sun. He may, however, be pretty well seen during the first week of the month, when he rises at about 5 A. M.,

but toward its end he is lost in the dawn and becomes invisible.

Venus is evening star, very bright, very far north, and as conspicuous as she possibly can be. She moves through Taurus to Gemini during the month, and increases in brightness about fifty per cent as she approaches us. Owing to her high northern declination, she remains in sight for a long time, and does not set till nearly 10 o'clock.

It is perfectly easy to see her in broad daylight even at noon, when the sky is sufficiently free from haze. The only trouble is to know where to look for her. A very good opportunity will be on the afternoon of the 3d, when she will be about 7 deg. above the moon.

On this evening she is in conjunction with Mars, and the two planets, with the moon, will be well worth looking at.

Mars is likewise evening star, moving eastward through Taurus and pretty close to Venus all the month, so far as appearances go, though as a matter of fact he is fully 200 million miles from us, while Venus is only 80 million.

Jupiter is in Cancer, visible until the small hours of the morning. On the 24th he is in quadrature with the sun, and comes to the meridian at 6 P. M. Saturn, which has just passed conjunction with the sun, is

**"GLUTEN" BREAD AND CRACKER FRAUDS.**

BY CHARLES CHRISTADORO.

When starch must be eliminated from a sick man's diet, white bread is the first thing tabooed, and then follow potatoes and other overcharged starchy cereals. It is a serious matter for the patient to be denied bread, and so the pathway is smoothed out and the doctor prescribes "gluten" bread, because gluten is not a carbohydrate, and "gluten" bread is supposed to be free from starch.

What is gluten? Well, spend ten minutes and find out—not all about it, but something about it. Obtain a heaping tablespoonful of white flour. Add a little water to it, in a saucer, and dough it into a compact ball. Turn on the tap in the sink, and let the water drip upon your hands as you roll the ball between your palms. The ball will grow less and less, and the water will be white with starch cells held in suspension. In ten minutes, more or less, the water will run clean and clear, and you appear to have a nodule of yellow, firm, vegetable gum, which you are tempted to call "pure" gluten. Become a gum chewer for once, and keep a-chewing for a couple of hours. At the end of this time the quantity of gluten is less than when you took it from the hydrant. What has happened? You have simply mechanically crushed and

broken the gummy mass, exposing the infinitesimally fine starch cells to the moisture of the mouth, and the washing out of the raw insoluble starch has continued, just an extension of the sink-washing process, with greater mechanical elaboration to expose the entangled starch cell. Now take the piece of gluten to an analytic chemist. When his report comes in, you read starch 15, or 18, or maybe 20 per cent, gluten 85, 82, or 80 per cent, and begin to appreciate for the first time what real gluten is.

Where a case is a desperate one, and starch or no starch will turn the balance of life, it is very easy to procure and analyze a sample of the flour or cracker of "gluten" the patient is to use. Such a course would save a physician many a perplexing hour, and maybe an esteemed patient now and then.

Gluten is a word to conjure with. There is for sale in London and Paris a gluten bread that is much like baked horn or glue, but it is a step toward gluten, although it may contain 20 to 25 per cent of starch.

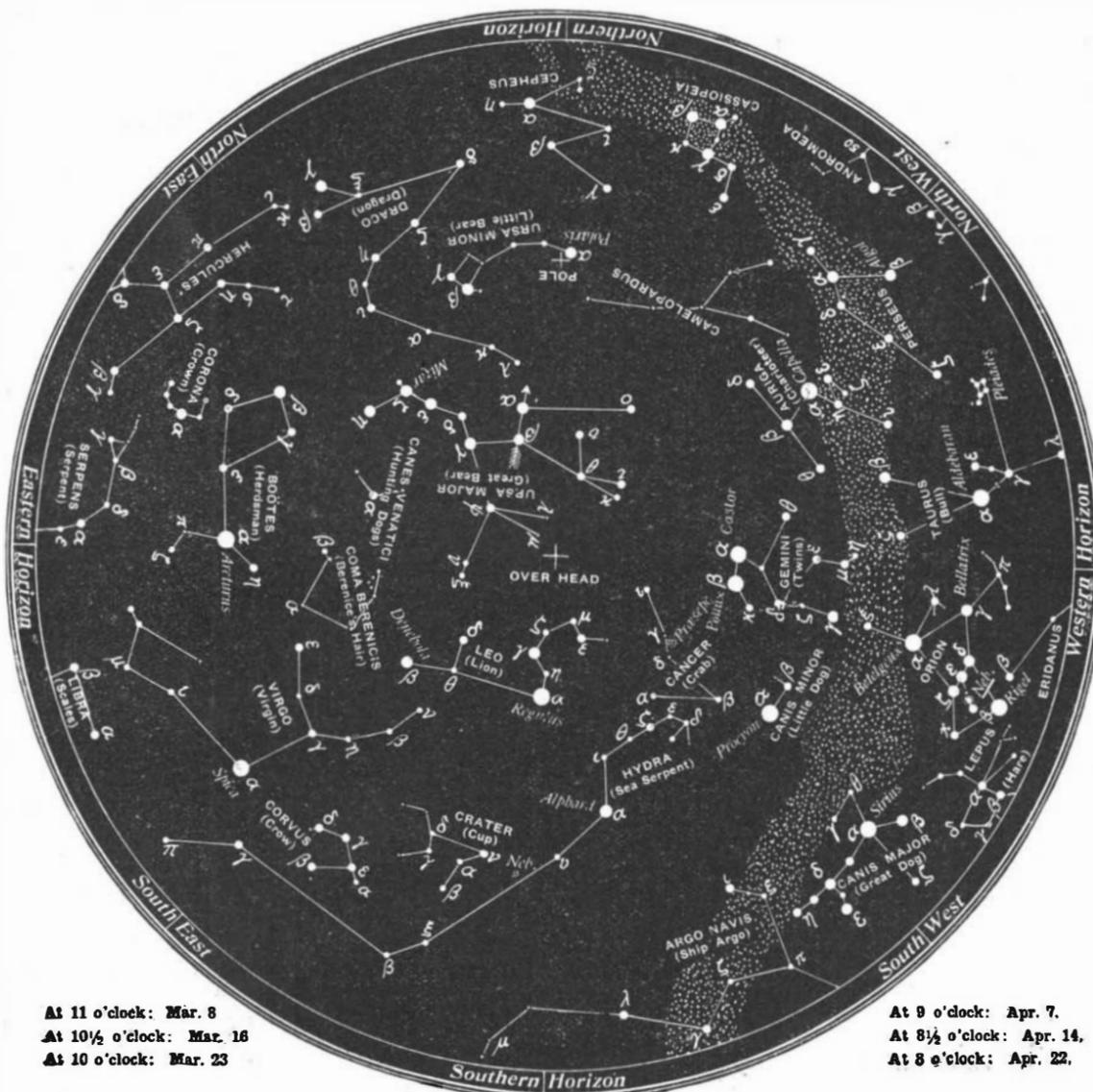
The fact is, nothing short of an intricate installation will produce pure gluten, and that at a price which is quite prohibitive. Some of the gluten breads on the market may have a portion of

their starch eliminated, while others have little claim to any use of the name.

**RUBBER STATISTICS OF 1907.**

The total production of rubber in 1907 amounted to about 69,000 tons, against 65,000 tons in 1906. England imported 22,964 tons, and America, 16,020 tons. The shipments of Para rubber amounted to 30,360 tons, and of Peruvian, 7,160 tons; of this quantity, Europe received 20,940 tons. The supply of plantation rubber from the East has increased to over 1,000 tons (in 1906 it was 510 tons): the area planted is about 350,000 acres, or 50 per cent more than in 1906. Brazil exported about 41,500 tons in 1907, against 38,000 tons in 1906. The total production of West African rubber amounted to 17,000 tons, about the same as in 1906. East African rubber showed an increased supply.

According to the American Machinist, the greatest single consumption of brass is for condenser tubes; a battleship alone having from 30,000 pounds to 40,000 pounds of condenser tubing in it; and owing to the corrosive effect of sea water this tubing must be continually replaced. The material used is usually either Muntz metal—60 per cent copper, 40 per cent zinc—or else a mixture of copper, 70; zinc, 29; and tin, 1.



**NIGHT SKY: MARCH AND APRIL**

only visible at the end of the month, and then with difficulty, as a morning star. Uranus is in quadrature on the 6th, and is due south at 6 A. M. Neptune, which is almost exactly opposite him, is also in quadrature, on the 1st, and south at 6 P. M.

**THE MOON.**

New moon occurs a few minutes before noon on the 1st, first quarter at 11 A. M. on the 8th, full moon at noon on the 16th, last quarter at 2 P. M. on the 23d, and new moon again at 10 A. M. on the 30th. The moon is nearest us on the 25th, and farthest away on the 10th. She is in conjunction with Venus and Mars on the morning of the 4th, Neptune on the 7th, Jupiter on the 9th, Uranus on the 22d, Saturn on the 27th, and Mercury on the 29th. The conjunction with Jupiter, which takes place about 6 P. M. on the 9th, is rather close.

Princeton University Observatory.

Iron and steel pipe may be readily distinguished by a flattening test, according to statements made at the meeting of the American Society of Heating and Ventilating Engineers. Soft steel pipe, cut in very short lengths or rings, flattens smoothly and evenly without breaking, while wrought iron pipe usually fractures at two or more places when flattened.