POSITION OF THE PLANETS IN MAY.

VENUS

is morning star until the 2d, then evening star. She is in superior conjunction with the sun on the 2d, at 4 h. 15 m. A. M., passing from his western to his eastern side, and becoming evening star. She will be invisible for about six weeks on account of being so close to the sun, and will then emerge from her seclusion and gradually increase in size and brilliancy, until she stands highest on the celestial roll call, the sun and moon alone excepted. Observers will welcome her presence during the summer evenings, and rejoice in the light of her radiant luster as the months roll on. Her reign continues during autumn and winter, for she only reaches her greatest eastern elongation from the sun on December 6, her period of greatest brilliancy on January 12, 1894, and her inferior conjunction on February 16, 1894. The queen of the stars until that time will be most conveniently situated for observation.

Venus is in conjunction with Neptune on the 25th at 1 h. 35 m. P. M., being 1° 36′ north. It will be noted that the inferior planets at superior conjunction seem to pass from the sun's western side to his eastern, while the superior planets at conjunction pass from the sun's eastern side to his western. The result is that the number of planetary conjunctions is increased, as in this case, where Neptune moving westward toward the sun meets Venus moving eastward from the sun, and their conjunction necessarily occurs.

The moon, when one day old, is in conjunction with Venus on the 16th, at 1 h. 6 m. A. M., being 3° 4′ north.

The right ascension of Venus on the 1st is 2 h. 37 m., her declination is 14° 28′ north, her diameter is 9″.8 and she is in the constellation Aries.

Venus rises on the 1st at 5 h. 2 m. A. M. On the 31st, she sets at 7 h. 54 m. P. M.

SATURN

is evening star. He continues to hold his place as the only large visible planet and is finely situated for observation, with the brilliant Spica on the southeast, and with Gamma Virginis on the east, the beautiful double star that has been his companion for months. The planet is still retrograding or moving westward, and observers will note that the distance between him and the double star increases during the month. Saturn makes his transit on the 1st at 9 h. 50 m. P. M., and is plainly visible in the southeast, as soon as it is dark enough for the stars to come out. He cannot fail to be recognized, from the description given, and this excellent opportunity for the telescopic study of the ring-girdled planet and the noted double star should be improved.

The moon, three days after the first quarter, is in conjunction with Saturn on the 25th, at 3 h. 48 m. A. M., being 43′ south. The conjunction is invisible, occurring when moon and planet are below the horizon. The moon occults Saturn and Gamma Virginis for observers in the southern hemisphere who are rightly located.

The right ascension of Saturn on the 1st is 12 h. 31 m., his declination is 0° 23′ south, his diameter is 17″.9, and he is in the constellation Virgo.

Saturn sets on the 1st at 3 h. 48 m. A. M. On the 31st, he sets at 1 h. 47 m. A. M.

JUPITER

is morning star. He makes rapid progress westward from the immediate vicinity of the sun, rising on the 31st 1 h. 8 m. before the sun, when he becomes visible as morning star to sharp-sighted observers. Jupiter's diameter when farthest from the earth is 31″.4, while the diameter of Venus under the same conditions is 9″.8. The former became morning star four days before the latter became evening star, and makes his appearance in the morning several weeks before his rival graces the west with her visible presence.

Jupiter is in conjunction with Mercury on the 20th at 2 h. 6 m. P. M., being 56′ north. The former a superior planet, and the latter an inferior planet, traveling in opposite directions, must meet on the celestial road when within certain limits. If one had eyes to pierce within the solar rays, an assemblage of planets would be found in near proximity to the great day star.. Jupiter and Mercury near together on his western, and Neptune and Venus on his eastern side.

The moon, the day before her change, is in conjunction with Jupiter on the 14th, at 9 h. 52 m. P. M., being 2° 20′ south.

The right ascension of Jupiter on the 1st is 2 h. 26 m., his declination is 13° 28′ north, his diameter is 31″.4, and he is in the constellation Aries.

Jupiter rises on the 1st at 4 h. 56 m. A. M. On the 31st, he rises at 3 h. 17 m. A. M.

MARS

is evening star. There is one thing to be said in his favor, and this is his high northern declination, always desirable in a planet's course. This would be more highly appreciated if he were in a different portion of his orbit. As he is practically invisible, his long stay above the horizon is of little avail, but, as in many terrestrial events, his time will come, when the most powerful telescopes will be turned upon his disk, with the possibility of learning something of this strange world, where clouds are few and sunshine reigns.

The moon, when three days old, is in conjunction with Mars on the 18th, at 5 h. 15 m. A. M., bing 3° 32′ north.

The right ascension of Mars on the 1st is 5 h. 25 m., his declination is 24° 20′ north, his diameter is 4″.5, and he is in the constellation Taurus.

Mars sets on the 1st at 10 h. 14 m. P.M. On the 31st, he sets at 9 h. 39 m. P. M.

MERCURY

is morning star. There is nothing of note in his course, as he makes his way from western elongation to superior conjunction, excepting his conjunction with Jupiter, already alluded to.

The moon, on the day before her change, is in conjunction with Mercury on the 14th, at 6 h. 56 m. A. M., being 3° 12′ north.

The right ascension of Mercury on the 1st is 0 h. 59 m., his declination is 3° 7′ north, his diameter is 7″.6, and he is in the constellation Pisces.

Mercury rises on the 1st at 4 h. 5 m. A. M. He rises on the 31st at 4 h. 12 m. A. M.

URANUS

is evening star. He is still in excellent position for observation as he retrogrades or moves westward. Observers who have located the seemingly small planet will find it an enjoyable study to follow his course and keep track of the slow-motioned wanderer until he disappears from view. He is in a region almost destitute of visible stars, Alpha Librae on the east being his nearest neighbor of any size. At the close of the month, he has retrograded into his old quarters in Virgo.

The moon is in conjunction with Uranus three days before the full, on the 27th, at 6 h. 44 m. P. M., being 1° 24′ south.

The right ascension of Uranus on the 1st is 14 h. 26 m., his declination is 13° 56′ south, his diameter is 3″.8, and he is in the constellation Libra.

Uranus sets on the 1st at 4 h. 55 m. A. M. On the 31st, he sets at 2 h. 54 m. A. M.

NEPTUNE

is evening star. He is very near the sun, and almost at his greatest distance from the earth. His conjunction with Venus has been described.

The moon, the day after her change, is in conjunction with Neptune on the 16th, at 6 h. 50 m. P. M., being 5° 5′ north.

The right ascension of Neptune on the 1st is 4 h. 34 m., his declination is 20° 28′ north, his diameter is 2″.6, and he is in the constellation Taurus.

Neptune sets on the 1st at 9 h. 5 m. P. M. On the 31st, he sets at 7 h. 17 m. P. M.

Venus, Mars, Saturn, Uranus and Neptune are evening stars at the close of the month. Jupiter and Mercury are morning stars.

Volcanic Activity at the Sandwich Islands.

Mr. S. D. Macdonald, F.G.S., of Halifax, N. S., who is wintering on those islands, writes as follows:

"The somewhat abrupt termination of what promised to be a violent eruption from the summit crater of Mauna Loa, after its usual period of quiet, places the people of Hawaii in a state of awful suspense, fearing, as they have every reason to from past experience, that an underground lava flow is in progress, and may, at any moment, burst forth beneath them. Several sharp earthquake shocks accompanied the eruption, which is always considered to be a premonition of a flow. There can be little doubt but that an outburst from somewhere along the dome of the mountain is impending."

This summit crater, known as Mokua-weo-weo, has an elevation of 14,000 feet, and from it have come most of the lava flows that have wrought such destruction on that island. Its gently rounded top or dome, viewed at short distance, affords not the faintest indication of the fires which slumber within, and which, when they do awaken, cause such terrible earthquakes and lava flows, the like of which are unknown elsewhere.

The crater of Kilauea or, more properly speaking, the pit or lake of fire on the flank of Mauna Loa, has been unusually active for some months past.

This vast pit or caldron is nine miles in circumference, with vertical walls, and a depth of from 400 to 1,100 feet, according to the rise and fall of its molten tide.

At present intense action is confined to its western portion.

Visitors and tourists who have witnessed it in magnificent action of late are enthusiastic in their description of its fiery fountains tossing their red-hot spray high in air.

Its gory surges sometimes rolling in low, curling waves, and again dashing like wind-driven surf against lava cliffs, which fall, remelt, and form new waves, to be borne onward again in its blood-red tide, while dreadful detonations and earth tremors add sublime terror to the awful scene.

In extent, grandeur and intensity of action, Kilauea is unrivaled among volcanoes.

Correspondence.

A Liquid Road Hardener Wanted.

To the Editor of the Scientific American:

I have an abiding faith in the inventors of America. Our State has just voted the amendment, good roads. Now we want the inventor to help us out, and he can own the earth.

We want a liquid that can be sprinkled on the roadbed from a tank, that will petrify the ground to a depth of four inches or more, that will not cost to exceed $5 per rod. The ingredients would have to vary, as the soil varies. You can see the possibility of such a thing, and it may be possible.

Union City, Mich., April 6, 1893. D. L. MERRILL.

Progress of Mineral Industries in Virginia.

To the Editor of the Scientific American:

For us it is a matter of glad tidings to see the flow of Northern and foreign capital continuing with increased vigor toward the development of Virginia minerals.

About new year I began prospecting on the Irwin farm, Goochland County, for mica and discovered very valuable deposits of "lepidolite" (silicate of aluminum, potassium, and lithium) and "phlogopite" (silicate of aluminum, potassium, and magnesium) in kaolin and quartz, the former closely resembling the ores of Zinnwald, in Saxony, and especially those of Moravia and some sections of the Presidency of Bengal, in Hindostan; while the latter is equal in size and far superior in quality to the famous specimens extracted in such vast profusion from the Laurentian limestones of North Burgess, England, and reach the unusual size of 20″ × 30″.

To demonstrate the wealth of these new discoveries, I used about $3,000 of Northern capital in prospecting, under an optional right to purchase between January 1 and March 25, 1893, and during that time produced from within sixty feet of the surface, in open cut, over $10,000 worth of lepidolite, phlogopite, and biotite. A Northern syndicate have purchased a tract of 1,500 acres near Irwin, at a cost of $120,000, and are now preparing to work it on an extensive scale with $250,000 capital, which is all fully subscribed, and to which I am consulting engineer.

Further up the James River, near West View, on the R. & A. R.R., on the Jayne & Case farm, I am bringing "to bank," from a depth of less than fifty feet, peculiarly fine specimens of "fuchsite" (silicate of aluminum, potassium, and about 6 per cent of chromic oxide), a bright green mica, such as is famous to Schwarzenstein in the Tyrol, and peculiarly adapted for grinding up for the manufacture of wall papers and other glittering decorations, such as Christmas cards, shop signs, theatrical purposes, and enormously demanded as a lubricant for rapidly revolving machinery.

Here also land has jumped in price from the wearisome old agricultural value of not more than $10 per acre up to $100, and in one case I know of $250 per acre.

Still further up the James and backward from it the use of hundreds of thousands of imported dollars is located, and the employment of vast sums of money, such as even the days of land booms in this country never paralleled, is going on with daily increasing strength, the money earning fabulous profits and dividends.

Mica, however, is not by any means the sole attraction and impetus to draw capital into mining here; for gold, cobalt, lead, graphite, and the generous family of hydrated silicates of magnesia are each and all taking a prominent part in our State's mineral progress.

JOHN N. ADAMS,
Civil and Mining Engineer.
Irwin and Richmond, Va.

Transportation of Frozen Fish.

Mr. John Wallace, a prominent fish shipper at Kalama, Wash., gives, in *Ice and Refrigeration*, some interesting facts in relation to the rail shipment of frozen fish, which may be of general value. As our readers well know, a large quantity of frozen salmon finds its way from the freezing plants at the fisheries to the East. In shipping the trade recognizes the fact that fish frozen solid will in part refrigerate themselves. They therefore pack them tightly in boxes and load into refrigerator cars. These cars are first reduced to as low a temperature as practicable, and then the floor is covered with several inches of *chilled* sawdust. The boxes of fish are then loaded in, leaving a space of several inches between the sides, ends, and top of the car, which also is filled with *cold* sawdust. Then the car is closed and sealed. No ice is placed in the tanks of the car, but it has been found by quite extensive experience that fish so packed for shipment reach their destination in perfect condition in reasonably warm weather without ice, and that, too, after a passage of fifteen to eighteen days. The saving effected is the first cost of the ice; then cost of freight on the ice, and also a gain of 1,500 pounds of fish in lieu of that much weight of ice, which by the practice of the N. P. road is allowed free.