POSITION OF THE PLANETS IN DECEMBER.

MERCURY

is evening star until the 28th, and then morning star. He is the most active member of the solar family during the month, playing a part on no less than ten occasions. We call attention to the most important. He is in conjunction with Venus on the 5th, at 10 h. 3 m. A. M., being 1° 15′ south. The planets are invisible at the time of conjunction, the event occurring in the daylight, but they will be visible, on the evening of the 5th, to bright-eyed observers. They set on that evening a little more than an hour after the sun, and are about 2° south of the sunset point. The great southern declination of both planets is, however, unfavorable for northern observers. Mercury reaches his greatest eastern elongation on the 11th, at 10 h. 12 m. A. M., when he is 20° 36′ east of the sun. He is then, and for a week before and after, visible to the naked eye, if the weather conditions are favorable, setting at elongation, about an hour and a quarter after the sun. Mercury is in inferior conjunction with the sun on the 28th, at 4 h. 53 m. P. M., when, passing between the earth and the sun, he closes his course as evening star.

The new moon of the 1st is in close conjunction with Mercury on the 2d, at 8 h. 39 m. P. M., being 30′ south. The waning moon, a few hours before her change, is in conjunction with Mercury for the second time in the month, on the 30th, at 1 h. 29 m. P. M., being 6° 6′ south.

The right ascension of Mercury on the 1st is 17 h. 49 m., his declination is 25° 49′ south, his diameter is 5″.6, and he is in the constellation Sagittarius.

Mercury sets on the 1st at 5 h. 26 m. P. M. On the 31st he rises at 6 h. 37 m. A. M.

VENUS

is evening star. It is still the day of small things on her calendar, but before the month closes she will be far enough east of the sun to be recognized by every observer who turns his gaze to the southwestern sky soon after sunset. This radiant evening star sets an hour and a half later than the sun on the middle of the month and two hours later at its close.

The new moon of the 1st is in conjunction with Venus on the 2d, at 9 h. 13 m. P. M., being 1° 54′ south.

The right ascension of Venus on the 1st is 17 h. 51 m., her declination is 24° 24′ south, her diameter is 10″.8, and she is in the constellation Sagittarius.

Venus sets on the 1st at 5 h. 34 m. P. M. On the 31st she sets at 6 h. 33 m. P. M.

JUPITER

is evening star. An interesting event occurs in his December course. He is in quadrature, or 90° east of the sun, on the 1st, at 5 h. 2 m. P. M. He is then on the meridian near sunset and sets about midnight. He is resplendent in the western sky, and in fine position for telescopic observation. A new red spot has been discovered on Jupiter's disk, having been first seen by Mr. Stanley Williams in 1889. It is not as large as the famous red spot that appeared in 1878. It is in the same latitude as the dark belt south of the great red spot. A fresh subject for investigation and speculation is now presented to the men of science, who are as far from comprehending the meaning of the mighty changes going on in the Jovian domain as they were thirteen years ago, when the great red spot first appeared.

The moon is in conjunction with Jupiter on the 7th, the day before her first quarter, at 10 h. 50 m. P. M., being 4° 12′ south.

The right ascension of Jupiter on the 1st is 22 h. 46 m., his declination is 9° 12′ south, his diameter is 38″.8, and he is in the constellation Aquarius.

Jupiter sets on the 1st at 11 h. 28 m. P. M. On the 31st he sets at 9 h. 51 m. A. M.

SATURN

is morning star. He is in quadrature, or 90° west of the sun, on the 21st at 6 h. P. M., when he rises about midnight. Observers, who have telescopes, will find it most interesting to watch the reappearance of the rings, as they gradually change from threads of silver to the larger proportions that make Saturn the marvel of the heavens.

The moon is in conjunction with Saturn the day before her last quarter, on the 22d, at 8 h. 10 m. P. M., being 2° 21′ north.

The right ascension of Saturn on the 1st is 11 h. 59 m., his declination is 2° 24′ north, his diameter is 16″, and he is in the constellation Virgo.

Saturn rises on the 1st at 1 h. 3 m. A. M. On the 31st he rises at 11 h. 11 m. P. M.

MARS

is morning star. He makes a close conjunction with Uranus on the 15th at 4 h. 58 m. A. M., being 29′ north. The planets rise on the 15th about a quarter after 3 o'clock, and a good opera glass or a small telescope will bring them to view as they hang side by side in the morning sky, the distance between them being a little less than the diameter of the moon.

The moon makes a close conjunction with Mars, four days before her change, on the 26th, at 9 h. 56 m. A. M., being 25′ north. The waning moon and the ruddy planet will be near together as they approach conjunction on the morning of the 26th.

The right ascension of Mars on the 1st is 13 h. 36 m., his declination is 9° 0′ south, his diameter is 4″.6, and he is in the constellation Virgo.

Mars rises on the 1st at 3 h. 23 m. A. M. On the 31st he rises at 3 h. 2 m. A. M.

NEPTUNE

is evening star. He is in excellent position for observation with opera glass or telescope, being visible nearly the whole night. He must be looked for in the early evening, in the east, a little northwest of Aldebaran.

The right ascension of Neptune on the 1st is 4 h. 24 m., his declination is 19° 58′ north, his diameter is 2″.6, and he is in the constellation Taurus.

Neptune sets on the 1st at 6 h. 52 m. A. M. On the 31st he sets at 4 h. 51 m. A. M.

URANUS

is morning star. His right ascension on the 1st is 14 h. 7 m., his declination is 12° 22′ south, his diameter is 3″.4, and he is in the constellation Virgo.

Uranus rises on the 1st at 4 h. 2 m. A. M. On the 31st he rises at 2 h. 13 m. A. M.

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

How to Make a Good Floor.

Nothing attracts the attention of a person wishing to rent or purchase a dwelling, store, or office so quickly as a handsome, well-laid floor, and a few suggestions on the subject, though not new, may not be out of place. The best floor for the least money can be made of yellow pine, if the material is carefully selected and properly laid.

First, select edge grain yellow pine, not too "fat," clear of pitch, knots, sap, and splits. See that it is thoroughly seasoned, and that the tongues and grooves exactly match, so that, when laid, the upper surfaces of each board are on a level. This is an important feature often overlooked, and planing mill operatives frequently get careless in adjusting the tonguing and grooving bits. If the edge of a flooring board, especially the grooved edge, is higher than the edge of the next board, no amount of mechanical ingenuity can make a neat floor of them. The upper part of the groove will continue to curl upward as long as the floor lasts.

Supposing, of course, the sleepers, or joists are properly placed the right distance apart, and their upper edges precisely on a level, and securely braced, the most important part of the job is to "lay" the flooring correctly. This part of the work is never, or very rarely ever, done nowadays. The system in vogue with carpenters of this day, of laying one board at a time, and "blind nailing," is the most glaring fraud practiced in any trade. They drive the tongue of the board into the groove of the preceding one, by pounding on the grooved edge with a naked hammer, making indentations that let in the cold air or noxious gases, if it is a bottom floor, and then nail it in place by driving a six-penny nail at an angle of about 50° in the groove. An awkward blow or two chips off the upper part of the groove, and the last blow, designed to sink the nail head out of the way of the next tongue, splits the lower part of the groove to splinters, leaving an unsightly opening. Such nailing does not fasten the flooring to the sleepers, and the slanting nails very often wedge the board up so that it does not bear on the sleeper. We would rather have our flooring in the tree standing in the woods than put down that way.

The proper plan is to begin on one side of the room, lay one course of boards with the tongue next to, and neatly fitted to, the wall (or studding, if a frame house), and be sure the boards are laid perfectly straight from end to end of the room and square with the wall. Then nail this course firmly to the sleepers, through and through, one nail near each edge of the board on every sleeper, and you are ready to begin to lay a floor. Next, fit the ends and lay down four or six courses of boards (owing to their width). If the boards differ widely in color, as is often the case in pine, do not lay two of a widely different color side by side, but arrange them so that the deep colors will tone off into the lighter ones gradually. Push the tongues into the grooves as close as possible, without pounding with a hammer, or, if pounding is necessary, take a narrow, short piece of flooring, put the tongue in the groove of the outer board, and pound gently on the piece, never on the flooring board. Next, adjust your clamps on every third sleeper and at every end joint, and drive the floor firmly together by means of wedges. Drive the wedges gently at the start, and each one equally till the joints all fill up snugly, and then stop, for, if driven too tight, the floor will spring up. Never wedge directly against the edge of the flooring board, but have a short strip with a tongue on it between the wedge and the board, so as to leave no bruises. Then fasten the floor to the sleepers by driving a flat-headed steel wire nail of suitable size, one inch from either edge of every board, straight down into each sleeper. At the end joints smaller nails may be used, two nails in board near the edges, and as far from the ends as the thickness of the sleeper will permit. Proceed in this manner until the floor is completed, and you will have a floor that will remain tight and look well until worn out.

Such minute directions, for so common and simple a job, sound silly, but are justifiable from the fact that there are so many alleged carpenters who either do not know how or are too lazy to lay a floor properly—*The Builders' Gazette.*

Durability of Redwood.

The Santa Barbara authorities recently investigated the lasting qualities of redwood, in order to decide whether to use redwood or stone for a bulkhead for the proposed esplanade.

The following are the questions and answers received in regard to Santa Cruz redwood:

From E. L. Van Kleck: How long will this redwood last under ground or in salt water? Answer—Without any decay at all, it will last 25 years. Some will last much longer; 6 × 6 posts have been removed perfectly sound, after being in the ground over 30 years.

How long would it remain sufficiently sound to hold spikes, or until one-third of a 6 × 8 timber would decay, while constantly wet with salt water? Answer—In some cases, 30 years. I am told by some that the kind of lumber described will last forever.

How long would 6 × 8 piles last, where they are constantly wet with salt water to four or five feet above ground? Answer—Salt water being a good preservative, I should think they would last 35 years.

How long would it remain sound in the ground where there is salt water, or where it would be alternately wet and dry? Answer—Thirty years.

How long would 2-inch plank last in a retaining wall, with earth more or less damp or wet on one side, and the other side dry, or exposed to the weather? Answer—Dampness does not seem to have any decaying effect on redwood. I should say such plank would last 20 years. All of this without any preservation. Coal tar as a preservative, applied hot, is as good as any I know.

From Charles Pierce: I have known some heavy black heart Santa Cruz redwood to lie under ground as long as 30 years without decay. This was in the case of a piece of 6 × 6 redwood used by myself for a gate post on my own premises.

Russell Heath: I have fence posts of redwood on my farm, the same having been in the ground 32 years, and they are sound, free from decay.

John P. Stearns: I know of a timber of Santa Cruz redwood that was 41 years under and in moist ground, and remained sound, free from decay.

G. P. Tebbetts: I know of common redwood posts that have been set in Santa Barbara over 25 years, and are sound to-day.

Insufficiency of the Marine Subsidy.

The International Navigation Company has decided not to compete for the American mail contract under the Postal Subsidy act, in accordance with which bids have been opened by the Postmaster-General. The president of the company, Mr. Griscom, says: "It was deemed inadvisable to enter into competition, because, under the rates given by the act, a transatlantic line of steamers, built in America and sailing under the American flag, would not pay. The establishment of a line of ships built in the United States and flying the American flag would cost too much. We doubt whether ships can be built in America as cheaply as abroad. The act allows but $4 per mile for a first class 20 knot liner for carrying the mails on the outward voyage only. No provision is made for the home voyage, because the government believes that American built vessels on the lines established by the act could secure the return mails at a remunerative figure. This supposition betrays want of familiarity with the subject. In the first place, foreign nations are very likely to discriminate in favor of vessels flying their own flag, and would not send the mails on board American ships unless the letters were especially directed to be sent that way, and not always then. That has been repeatedly demonstrated. In the second place, under the provisions of the act requiring that the vessels shall be of peculiar construction, with a view to their conversion into auxiliary cruisers, which must be approved by the Secretary of the Navy, the cost of building, with the requirement that they shall be run during the winter season, when there is no passenger traffic, would be too burdensome."

Steam Fire Pumps.

According to a circular recently issued by the Associated Factory Mutual Insurance Companies of New England, very few pumps are found upon inspection to meet the requirements of an efficient fire service. Of two or three thousand tested by the companies' inspectors each year, a great number prove to be defective; some cannot be started promptly, and some are incapable of delivering anywhere near their alleged or rated capacity without violent hammering. These tests have made it plainly evident that an improvement in the construction and installation of fire pumps was greatly needed.