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For the Week Ending January 2, 1892.

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DEMAND FOR SAILING VESSELS INCREASING.

The demand for sailing vessels has, of late, shown a marked increase both here and abroad; in Great Britain, according to *Lloyd's Registry*, there being now 141 such craft with a total tonnage of 185,807 under construction against 76 with a tonnage of 80,000 this time last year. Here about the same tendency is manifest. The rate of steamer construction in Great Britain has seen a marked falling off during the year, and though in these waters the rate has largely increased, it may easily be traced to favorable legislation rather than to a further abandonment of the sailing type. Shipping people, it would seem, are beginning to discover that for certain classes of trade, in which time is not a very material element, the sail is more economical than the steam engine; the price of fuel, too, is telling against the latter. Then, again, the difference in cost of construction between steamer and sailing vessel, when compared with the amount of saving in time in average voyaging of the ordinary steam tramper over the sailer, inclines to favor the latter.

The steam tramp, it will be found, will not average much above ten knots, under favorable conditions; to push her at higher speed would largely increase her sailing expenses, while against heavy head seas she will not do so well by two or three knots. The smart sailer, on the other hand, though falling far short of this figure with winds heading her off, is good for much more than ten knots under favorable conditions of wind and sea. With the old-time clipper ships sixteen knots an hour, and even more that, was not unusual with favorable gales over their counters. The clipper ship Great Republic, built by Donald McKay, when employed as a transport for French troops in the Crimean war, to the surprise of all led off in ordinary weather the steam vessels of the fleet that were to have taken her in tow.

In 1851 the Flying Cloud (clipper) made the passage from New York to San Francisco, her track computed at 17,000 miles, in 89 days 21 hours. Her greatest distance from noon to noon of any day was 374 knots (433¼ statute miles), which, allowing for difference in longitude, was made in 24 hours 19 minutes 4 seconds, or at the rate of 17·77 miles per hour. In 1853 the Comet reached New York from San Francisco in 83 days, and the Sovereign of the Seas from the Sandwich Islands in 82 days. The greatest distance made by the latter from noon to noon on any day (in this case 23 hours 2 minutes 4 seconds) was 362 knots (419 miles), or at the rate of 17·88 miles per hour.

As to the number of men required to work a full-rigged ship (steam winches being employed), it is not so great, when tonnage is compared, as is necessary to a steamer—deck hands, stokers, and engine-room crew; and when we consider the type known as the "tern," or three-masted schooner, the saving in wages is very marked, for, with the use of the steam winch for heavy hauling, a crew of six or seven men can work a craft of 1,200 tons.

ELI WHITNEY AND ELI WHITNEY BLAKE.

The citizens of Augusta, Georgia, are about to erect a monument in that city to the memory of Eli Whitney the inventor of the cotton gin, as a grateful testimonial from the people of the Southern States to the man to whom they owe the principal part of their prosperity. The purpose is a noble one, and the honor will be worthily conferred. Mr. Whitney's invention was of conspicuous benefit to this country and to all mankind, not only as the creator of wealth, through its development of great agricultural and manufacturing industries connected with cotton, but by its cheapening and consequent greater diffusion of all fabrics of that material, whereby the comfort and the progress of the human race have been greatly promoted. It was also specially meritorious as the embodiment of an original idea or principle of operation in a form practically perfect, for the cotton gin remains to-day substantially the same as it came from the hands of its inventor.

It is somewhat remarkable that Mr. Whitney's name should have become connected in later times with another mechanical invention of even a greater economic value than the cotton gin from its wider range of use, and of equal merit as an original and complete invention. We refer to the stone and ore crusher of Eli Whitney Blake, a nephew of Mr. Whitney, which was first introduced to public attention by an illustrated article in the SCIENTIFIC AMERICAN, September 4, 1858. Since that date, "the Blake crusher" has become as famous and as indispensable in engineering and mining work as the cotton gin is to the cotton grower. The function which it performs, that of breaking stone into fragments without pulverization, is like that of the cotton gin, one which was before performed only by hand and on the smallest scale; but unlike the cotton gin its utility is not limited to special regions and a single branch of industry. In every part of the world, from Alaska to Patagonia and from Norway to New Zealand, thousands of the machines are in use crushing ores in every description of mine, thousands more in constructing streets and highways and ballasting railroads, and other thousands in breaking stone for concrete foundations of buildings, bridges, aqueducts and other public works. Like the cotton gin also, but to a greater and more diversified extent, it has developed and advanced the various forms of industry to which it is applicable by furnishing a better product than that of hand labor, and so suggesting better methods and securing better final results than hand labor, however abundant and cheap, could ever have made attainable.

While the beneficial results and economic value direct and indirect of the Blake crusher, like those of the cotton gin, are incalculable, a similar experience attended its history as a patented invention. Persistent infringements on the largest scale pursued the course of both and robbed their authors of all but an insignificant reward for their services to mankind. Both inventors were born in the little town of Westboro, Massachusetts, also both were residents in later life of New Haven, Connecticut, in whose cemetery both lie buried.

POSITION OF THE PLANETS IN JANUARY.

VENUS

is evening star. She is coming into fine position for observation in the early evening, and may be found shining serenely in the southwest for nearly two hours after sunset, on the first of the month, and for nearly two hours and a half when the month closes. She is the most interesting feature of the starlit sphere as long as she is above the horizon, for her radiance and size are increasing as she approaches the earth, and give a charming foretaste of what may be expected in time to come.

When Venus was in superior conjunction with the sun on September 18, her whole illumined disk was turned toward the earth, like a small full moon. As she advances in her course eastward from the sun, she takes on the gibbous phase, and, when January closes, only 0.843 of her disk is illumined. When in superior conjunction, the brilliancy of her disk was represented by 47.4. When the present month closes, it will be represented by 66.6. In like manner, her diameter has increased from 10″.0 to 12″.8. Every one should study the present movements of this peerless star, for the interest it arouses and the enjoyment of the celestial picture.

The moon makes two conjunctions with Venus in January. The two-days-old crescent is in conjunction with Venus on the 1st at 9 h. 32 m. P. M., being 3° 17′ south. Crescent and star will be below the horizon at the time of the conjunction, but will be fair to see on the twilight sky as they approach each other. The two-days-and-a-half-old crescent will be in conjunction with Venus on the 31st at 6 h. 34 m. P. M., being 3° 42′ south. Moon and star are visible at the time of the conjunction, and, if the weather be propitious, the celestial picture will find many admirers.

The right ascension of Venus on the 1st is 20 h. 38 m., her declination is 20° 14′ south, her diameter is 11″.6, and she is in the constellation Capricornus.

Venus sets on the 1st at 6 h. 36 m. P. M. On the 31st she sets at 7 h. 50 m. P. M.

JUPITER

is evening star. We are soon to lose his brilliant presence from the sky, and he can now be observed only in the early hours of the evening. The feature of the month will be the approach of the bright stars Venus and Jupiter. As the former is moving eastward from the sun, and the latter is moving westward toward the sun, the space between them must lessen. The planets are about 36° apart on the 1st and only 5½° apart on the 31st.

The moon is in conjunction with Jupiter on the 4th, at 11 h. 8 m. A. M. being, 4° 2′ south.

The right ascension of Jupiter on the 1st is 23 h. 1 m., his declination is 7° 33′ south, his diameter is 35″.4, and he is in the constellation Aquarius.

Jupiter sets on the 1st at 9 h. 47 m. P. M. On the 31st he sets at 8 h. 19 m. P. M.

NEPTUNE

is evening star. He is in fine position for telescopic observation on account of his high meridian altitude, and is easy to find on account of his vicinity to Aldebaran.

The moon is in conjunction with Neptune on the 10th, at 11 h. 41 m. A. M., being 2° 43′ north.

The right ascension of Neptune on the 1st is 4 h. 21 m., his declination is 19° 51′ north, his diameter is 2″.6, and he is in the constellation Taurus.

Neptune sets on the 1st at 4 h. 46 m. A. M. On the 31st he sets at 2 h. 45 m. A. M.

MERCURY

is morning star. He reaches his greatest elongation on the 19th, at 2 h. 58 m. P. M., when he is 24° 16′ west of the sun. He is then visible to the naked eye in the east, before sunrise, but is so low down in the south that it will be difficult to find him, although he rises nearly an hour and a half before the sun.

The right ascension of Mercury on the 1st is 18 h. 5 m., his declination is 20° 15′ south, his diameter is 9″.6, and he is in the constellation Sagittarius.

Mercury rises on the 1st at 6 h. 28 m. A. M. On the 31st he rises at 6 h. 4 m. A. M.

URANUS

is morning star. He is in quadrature on the 26th, at 6 h. A. M., being 90° west of the sun.