THE

Scientific American.

MUNN & COMPANY, Editors & Proprietors.

PUBLISHED WEEKLY AT

NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

O. D. MUNN, S. H. WALES, A. E. BEACH.

☞ Messrs Sampson Low, Son & Co., Booksellers, 47 Ludgate Hill London, England, are the Agents to receive European subscriptions for advertisements for the SCIENTIFIC AMERICAN. Orders sent to them will be promptly attended to.

☞ "The American News Company," Agents, 121 Nassau street New York.

VOL. XIII., NO. 26....[NEW SERIES.]..*Twentieth Year.*

NEW YORK, SATURDAY, DECEMBER 23, 1865.

Contents:

(Illustrations are indicated by an asterisk.)

END OF THE VOLUME.

THE present number closes the thirteenth volume of the new series. At this time there will also expire a large number of subscriptions, and, in accordance with a long-standing rule, the paper will be discontinued unless the subscription is renewed. We trust that all our old patrons will not only promptly renew their own subscriptions, but induce some of their neighbors to join with them in a club. Remember, we furnish the paper to clubs of ten names or upward at $2 50 each per annum. Send in your clubs and subscriptions.

TO OUR READERS.

It is over twenty years since the SCIENTIFIC AMERICAN first made its appearance. In the beginning, and in other hands, the experiment was somewhat crude; indeed, it was a considerable time before the public could be brought to believe that a journal, devoted especially to the development of the great industrial interests of the country, could succeed. Political, religious, and literary journals, in great numbers, found plenty of readers. Almost any man of good sense, and with some means, could enter these departments of journalism, and hope, at least, for success, but many deemed it presumptuous to attempt to work a successful journal exclusively in the interest of the Mechanic, Inventor, and Manufacturer, unless its columns were opened to sensation stories, and to political and literary gossip. As for ourselves, we had an abiding faith in success, and we determined so to conduct the SCIENTIFIC AMERICAN that it would take its place among the permanently useful journals of the world. When this fact came to be fully recognized several imitators or rivals began to make their appearance, hoping to pluck our laurels, or, at least, to divide them. But now, after the lapse of one-fifth of a century, this journal stands as the only successful one of its kind in this country; and we venture to assert that it has now a larger circulation than that of all similar journals of the kind, in this country and England, combined. We have subscribers in every civilized country on the globe. Our paper goes to the chief departments of the Government, and is regularly filed therein; it is found on the tables of all the principal reading rooms of the country, and is preserved in all the chief libraries of the world. We have just completed a set from the beginning for one of the first libraries in Constantinople. It is safe, therefore, to say that not less than one hundred thousand persons are weekly readers of this journal.

Upon the inventive genius of the country the SCIENTIFIC AMERICAN has exercised a wonderful influence. Such has been the uniform testimony of every experienced officer connected with the Patent Office; it has been felt and acknowledged not only by the principal manufacturing establishments of the country, but by the many thousand inventors who have sought our professional assistance in obtaining patents for their valuable inventions and discoveries.

We begin the new year with an accumulated experience of twenty years, and with a determination to keep the SCIENTIFIC AMERICAN far in advance of all similar publications, relying upon the support of our generous patrons, who have never yet failed to appreciate our efforts and exertions.

THE RIGHTS OF JOINT PATENTEES.

On page 44, Vol. X., SCIENTIFIC AMERICAN, we published at length the opinion of Judge Chapman, of the Supreme Court of Massachusetts, in reference to the rights of joint owners of patents.

The judgment of the Court was substantially that joint owners of patents must be regarded as having interests which are distinct and separate in their nature, though they are derived from the same contract; and having such interests, with the right to use them separately, they cannot for any legal use of them incur any obligation to each other.

We publish, on another page, a judgment delivered by the Lord Chancellor of England, that involves the same question of joint ownership, from which it will be seen that substantially the same opinion is held.

Inventors should take notice of this judgment, as it involves a matter of great importance to their interests. A wealthy manufacturer, possessing a small fractional interest in a patent, can go on and manufacture and sell the patented article or machine without liability to the other owners.

Inventors should not give up their rights without a special contract setting forth the amount to be paid to them by the other joint owners, in the event of their engaging in the manufacture and sale of the patented invention. This contract or agreement ought to be incorporated into the assignment of the right.

BOILER INCRUSTATIONS.

We have received from Charles F. Chandler, Ph. D., Professor of Analytical and Applied Chemistry, in the School of Mines, Columbia College, New York, a copy of a report made by him on boiler incrustations to the President and Directors of the New York Central Railroad. It gives the results of seventeen analyses of the waters used in locomotives on the line of that great road, and of several analyses of incrustations found in the boilers, with an exceedingly able and lucid discussion of the subject, including an examination of the principal remedies. It is by far the best treatise on boiler incrustations that has ever come under our observation, and we shall lay the principal part of it before our readers in our next number.

CRYSTALLIZED gypsum is about to be used for building houses in Nevada, where large quantities are found. It is as translucent as glass, and, of course, people who live in such dwellings will be careful not to throw stones.

PRESERVING TIMBER.

We have on our table two inquiries from widely separated correspondents, in regard to the best mode of preserving timber which is exposed to the action of the weather. Among the numerous substances which have been proposed for preserving wood, the following have been found effectual:—corrosive sublimate, sulphate of copper, sulphate of lime, chloride of zinc, coal tar, and petroleum. None of these answer the purpose if applied as an external coating; the wood must be saturated with them, and this can be done effectually only while the wood is green.

The use of corrosive sublimate—the chloride of mercury—was patented in England in 1832, by Mr. Kyan, and the process is known as kyanizing. The wood is immersed in a solution of chloride of mercury until it is saturated. In the case of large timbers, the wood is placed in air-tight tanks; the air is exhausted, and the solution is forced into the tank under pressure. The results of this method were very satisfactory, but its high cost has caused it to be generally abandoned.

The oily mixtures obtained by a rough distillation of gas-works tar was suggested by Mr. J. Bethel, of England, and it is now extensively used in that country, especially for the preservation of railway sleepers and ties. The air is exhausted and the liquor is forced into the pores under a pressure of 150 lbs. to the inch.

In France, the method suggested by Dr. Boucherie is extensively employed. The substance used is sulphate of copper, and it is forced into the pores by the pressure of its own gravity. The timber is set on end and covered with a water-tight cap, into which a flexible tube leads the liquor from a tank placed at an elevation of thirty or forty feet. The sap is forced out at the lower end by the pressure, and its place is occupied by the preserving liquor. The strength of the solution employed is 100 parts of water to 1 of the blue vitriol.

The method which has met with most favor in this country is that called burnettizing; it was patented in England in 1838 by Sir William Burnett, and consists essentially in saturating the wood with a solution of 1½ parts of chloride of zinc in 100 parts of water. In 1850 the Locks and Canals Company, of Lowell, erected an apparatus by which 7000 feet of lumber could be burnettized at one operation, at an expense of $5 or $6 per 1,000 feet. A cast-iron cylinder, 60 feet long and 5 feet in diameter, with one head movable, was connected with a steam pump, by which the air could be exhausted, and the liquid forced in under a pressure of 125 lbs. to the inch. The wood was piled on a truck and run on a rail track into the cylinder. The operation of exhausting the air and forcing the liquid into the pores occupies seven hours and twenty minutes.

Petroleum, from its great facility for entering capillary tubes, will work its way even into seasoned lumber; more readily, indeed, than into green, as it is not disposed to mix with water. If petroleum is employed, it would doubtless be best to use the heavy lubricating oils from the Ohio wells, as they are less volatile than the lighter oils of Pennsylvania, and would, consequently, remain longer in the timber. Though petroleum has long been used in India for preserving timber, we have no knowledge of any trials with it so thorough and conclusive as those which have been made with chloride of mercury and chloride of zinc.

Two immense steamboats are about to be built and put upon the Sound. The hulls are to be 358 feet long, with proportionate breadth of beam. The engines are of the beam pattern, with cylinders 109 inches in diameter by 12 feet stroke. They are from designs by Erastus W. Smith, Esq., and are building at the Etna Iron Works, this city. The terminus of the line is at Bristol, R. I.

SUPPLEMENT.

Our columns have been so much crowded of late that we have determined to issue, with this number, a supplemental sheet of four extra pages, which will afford ample room for our copious index, and also give our advertising patrons the benefit of our extended circulation.