

Scientific American.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT  
NO. 37 PARK ROW (PARK BUILDING) NEW YORK.

O. D. MUNN.

A. E. BEACH.

The American News Co., Agents, 121 Nassau street, New York.  
The New York News Co., 8 Spruce street, New York.  
A. Asher & Co., 20 Unter den Linden, Berlin, Prussia, are Agents for the German States.  
Messrs. Sampson Low, Son & Marston, Crown Building, 185 Fleet street, Trubner & Co., 81 Paternoster Row, and Gordon & Gotch, 121 Holborn Hill, London, are the Agents to receive European subscriptions. Orders sent to them will be promptly attended to.

VOL. XXVI., NO. 12. [NEW SERIES.] Twenty-seventh Year.

NEW YORK, SATURDAY, MARCH 16, 1872.

Contents:

(Illustrated articles are marked with an asterisk.)

|                                     |     |                                     |     |
|-------------------------------------|-----|-------------------------------------|-----|
| American Art Industry.....          | 183 | *Observed Changes in a Solar        | 179 |
| A Munchausen Comet.....             | 183 | Prominence.....                     | 179 |
| Answers to Correspondents.....      | 183 | Official List of Patents, Exten-    | 187 |
| Are Experimental Tests of Tur-      | 183 | sions, Designs, etc.....            | 187 |
| bine Wheels Trustworthy?.....       | 183 | Printing the Patent Drawings.....   | 177 |
| Business and Personal.....          | 183 | Professor Treadwell.....            | 182 |
| *Chapman's Improved Saw Filing      | 182 | Railway Power Brakes.....           | 175 |
| Machine.....                        | 182 | Recent American and Foreign         | 186 |
| Collection of Meteorites.....       | 182 | Patents.....                        | 186 |
| *Colt's Army Testing Machine.....   | 175 | Scientific and Practical Informa-   | 184 |
| Counterfeit Bills.....              | 175 | tion.....                           | 184 |
| Declined.....                       | 176 | Shaving with Pumice Stone.....      | 180 |
| Fig Culture in California.....      | 186 | Silver Mining in Nevada.....        | 181 |
| Franking Circulars.....             | 182 | Simple Disinfectants.....           | 177 |
| *Improved Projectile for Fire       | 178 | Sulphite of Soda not a Cure for     | 180 |
| Arms.....                           | 178 | Small Pox.....                      | 180 |
| Interesting Lecture by Professor    | 176 | The Abolition of Models.....        | 179 |
| Tyndall.....                        | 176 | The "Argento" Picture.....          | 181 |
| *Inventor of a Greenhouse.....      | 178 | The Color of the Gulf Stream, etc., | 180 |
| Inventions Patented in England      | 187 | The Hartford Steam Boiler Inspec-   | 178 |
| by Americans.....                   | 187 | tion and Insurance Company.....     | 178 |
| Labor and Personal Cleanliness..... | 176 | The New York Fire Alarm Tele-       | 177 |
| Laughing Gas.....                   | 176 | graph.....                          | 177 |
| *Magnesium in Marsh's Test for      | 173 | The Progress of Stellar Chemis-     | 181 |
| Mercury.....                        | 173 | try.....                            | 181 |
| Measuring the Heat of Combustion    | 184 | The Yale Exploring Expedition       | 177 |
| .....                               | 184 | of 1871.....                        | 177 |
| *Millener's Extension Ladder.....   | 179 | Tunnelling under City Streets.....  | 182 |
| Native Coke.....                    | 176 | Value of Salt.....                  | 178 |
| New Method of Copying.....          | 178 | *Walsh's Water Wheel Governor       | 182 |
| Notes and Queries.....              | 185 | Waterproof Glue.....                | 181 |

AMERICAN ART INDUSTRY.

Prior to 1870, the manufacturers of woven and printed fabrics in this country were accustomed to depend wholly upon foreign artists for the origination of ornamental designs. No sooner was a novel pattern produced in England or France than our manufacturers copied it here without giving to the artist, by whose study and labor it was designed, either credit or recompense.

This illiberal and unjust policy was productive of a variety of evil results. First, it deprived the original artist of all chance of reward for his labors. Second, it encouraged our manufacturers in stealing the fruits of such labors. Third, it utterly prevented the development of home talent in the production of artistic works of this kind. Why should our rich and prosperous manufacturers hire home artists to prepare designs for patterns when they could steal them, ready made and free of cost, from foreign artists?

To remedy this evil, and gradually to compel our manufacturers to employ native artistic talent, Congress revised the patent law, in 1870, so as to permit foreigners to patent their designs here. This was an act of simple justice to foreign artists; at the same time, it gave protection and stimulation to home industry. The manufacturer could no longer copy his designs with impunity from foreign sources, and was compelled, as a matter of course, to call in home talent to his assistance!

This has been the practical effect of the new law thus far. Hundreds of artists have found remunerative pay for their labors, and hundreds of art students are diligently at work preparing themselves for this new field of industry. In a very few years, if this law is allowed to stand, the United States will occupy a leading position as the originator of beautiful art works, and a noble branch of home industry will be created.

These remarks are called forth by the attempt on the part of certain manufacturers to change the existing law so as to restore the old status. A bill for this purpose, preventing foreigners from registering their designs, has just passed the Senate. It bears the innocent title of "A bill to amend the statutes relating to patents and copyrights." But its title, if correctly given, would be "An act to discourage American art industry, and to assist wealthy manufacturers in stealing artistic designs." We trust that the House will reject the Senate bill.

ARE EXPERIMENTAL TESTS OF TURBINE WHEELS TRUSTWORTHY?

We answer to this query that they can be made so. The conditions necessary are simple and easily established, but so far as we are aware they have never been carried out in any series of tests yet made in this country.

It is conceded by competent hydraulic engineers that no turbine wheel will utilize the same percentage of water power under all heads. Some wheels do their best at high heads, others show greater proportional efficiency with low heads. To make a turbine that shall perform the best with a given fall of water, it should be constructed with special reference to the conditions under which it is to be used; but to do this in every instance would make the cost of this class of wheels too great; therefore manufacturers attempt to construct them so as to give the best average results under varying heads.

It is obvious, then, that to know what a turbine will do, with a given number of inches of water and a given fall, it must be tested under those particular conditions. It is not perhaps practicable to test wheels for all heads and with

widely varying quantities of water; but for all heads, excluding fractions of feet, and with quantities of water varying from large to small within the limits found in ordinary practice, this might be done; and until it is done, being closely observed, the public will know little in regard to the merits of different wheels in the market.

There is no question that a friction brake properly constructed can be made to indicate accurately the power of a given wheel under any particular set of circumstances; but, if the conditions are changed, the results obtained in the first instance cannot be a sure guide to what may be expected in the second. When the wheel overcomes the friction of the brake, it is performing work just as much as though it were sawing lumber or grinding wheat. There is, therefore, in our opinion, no force in the statement made by some that the only true test of a wheel is what it does in the performance of useful work. Work is work, whether it is useful or not, and the scientific measure of work is the foot pound, not a bushel of wheat or a thousand feet of lumber. So far from discouraging such tests, we are disposed to encourage them; but we insist upon it that turbines should be tested under different heads, and that the wheels should be finished in the style of those actually put in the market.

TUNNELLING UNDER CITY STREETS--THE ATMOSPHERIC RAILWAY.

During the past year, an eight foot tunnel has been constructed under the streets of Cincinnati, O., for drainage purposes, by means of the novel boring machine, illustrated on page 154, Vol. XXII of our paper. A vertical opening or shaft was first made on Sycamore street, near Hunt street, and carried down to the intended bottom grade of the tunnel. Two of the boring machines were then lowered into the shaft and set at work boring in opposite directions, the tunnel being laid up in brick as fast as the machines advanced, the earth being removed at the shaft. The tunnel extends from Abigail street along Sycamore street to Court street, where it makes a sharp turn into Court street, along which it passes to Broadway. The crown of the tunnel is some twenty feet below the street surface, and on its route passes under two canals, the Miami Canal and a branch or raceway. This method of boring has peculiar advantages for city uses, as it permits the construction of tunnels beneath the streets of cities without disturbing the surface or the usual travel of vehicles, while the only earth to be handled is a body equal to the exact size of the tunnel.

The Cincinnati boring machines were constructed and operated substantially on the same plan as the larger machine used in building the Broadway Underground Railway tunnel now existing in this city.

This tunnel, it will be remembered, extends from the Broadway Bank, at Murray street, passing under Broadway northerly to Warren street, where, on a curve of 50 feet radius, it turns into the Company's passenger station. This railway is worked on the atmospheric plan and has been in practical operation for some two years. Thousands of passengers have enjoyed the atmospheric ride under Broadway, finding it an agreeable and novel method of travelling. In fact, the Broadway Underground Railway is one of the attractive curiosities of the city. By means of a large blowing engine, a current of air is made to traverse back and forth through the tunnel, and this current, impinging against the ends of the cars, carries them along like a boat before the wind. The car in use is of about the same size as the ordinary street car, having seats for twenty-two passengers.

The Company are applicants before the Legislature for the privilege of enlarging and extending their works, so as to carry passengers from the Battery, under Broadway, to Harlem river, a distance of nine miles. The present working section of railway was built for the purpose of demonstrating the practicability of placing a railway under Broadway without injury to adjoining property; and in this respect the work is a complete success. It was alleged and generally believed that the foundations of buildings, as well as the water pipes, gas pipes, sewers, etc., would all be damaged by such a railway. In answer to this, the Company set to work with one of the boring machines above alluded to--the design of Mr. A. E. Beach, of the SCIENTIFIC AMERICAN--and built a railway tunnel under Broadway, passing below water pipes, gas pipes, sewers and the foundations of some of the heaviest buildings. The thing was done in a few days, with the entire travel of omnibus and other vehicles passing over the heads of the workmen, and on its successful completion all reasonable objections to the construction of a railway under this thoroughfare were removed. In fact, so strongly in favor of its building have the leading property owners become that they now present themselves as rivals before the Legislature, and ask that the right of construction may be given to them and not to the Transit Company, which has begun the work and at a heavy outlay of money demonstrated its desire and ability to execute it with success. The Legislature is not likely to do such an act of injustice, and there is reason to believe that the necessary authority to proceed with the work will be shortly granted to the Beach Transit Company.

A MUNCHAUSEN COMET.

A European journal recently published a discovery (?) by a Professor Plantamour, whom it mentions as a well known Genevan astronomer, that a comet is now approaching the earth, that a collision between the bodies may be expected on the twelfth of next August, and that, if the prediction be verified, the destruction of the world is certain to occur on that day. Of Professor Plantamour we do not find any necessity to speak, never having before heard of that scien-

tist; and our readers' patience need not be tried by a lengthy and serious consideration of his theory. But we must express some astonishment at the number of journals who have given space to discussion of the subject; and we respectfully suggest that some public provision be at once made for the education, in the physical sciences, of newspaper editors and writers.

The eccentricity of the orbits and the varying periods of the recurrence of comets have long given to these bodies a prominent place in the sidereal phenomena; but the idea of danger from their approach or of destruction by contact with them is not compatible with the enlightenment of the nineteenth century. In the year 1699, the Elector of Darmstadt informed the world that a dangerous eclipse was about to take place, but the calamity did no mischief. We are no longer to be scared by an eclipse; but the ignorance and folly of the celebrated autocrat have still their representatives in the Genevan Professor; and the public who thankfully received the Elector's warnings were little less instructed than those who read the predictions of the comet destruction, and who find nothing in them contrary to their knowledge or repulsive to their intelligence. There may be some readers of the SCIENTIFIC AMERICAN to whom a recapitulation of a few facts concerning comets will be useful, and to such we present the following:

Comets are bodies of such extreme tenuity that the planets, the Earth among others, have frequently passed through them without producing any other effect than an auroral glare, changing the color of the sun's light on the planet, while the period of transit lasted. Many secondary bodies, such as Jupiter's satellites, have been engaged in Lexell's comet without having their positions or periods affected in the least. We have already pointed out, in an article on this subject on page 279 of Vol. XXV., that the Earth passed through the comet of 1861; and this well known fact might, if duly considered, have hindered this Plantamour from gaining notoriety by talking nonsense, and quieted the fears of the writers engaged on many daily journals. While, however, no comet of whatsoever magnitude has been observed to consist of a sufficient mass of matter to influence the smallest planetary or stellar body in the slightest, nearly every one which visits our field of observation is changed in its course by the attraction of stars infinitely less in proportion than itself. This is further evidence, perhaps not needed by our readers, that a comet is composed of matter so impalpable that some of the largest, such for instance as the one of 1843 which was 200,000,000 miles in length, have not sufficient aggregate gravity to render their influence of any importance in an astronomical calculation. We therefore think that the comet "scare" is not worthy of a moment's serious attention; and we regret that so many of our cotemporaries can fill their columns with matter so insulting to the understandings of their readers.

THE COMMON LAW OF TRADEMARKS.

An interesting decision has recently been delivered by the Supreme Court of Louisiana, touching the right of a manufacturing firm to the exclusive use of a peculiar name by which its goods are known to the public.

A firm in Holland sells a peculiar preparation of gin, known by the original makers' name, with a sonorous and fanciful title. The defendants had manufactured an imitation of this gin during the last ten years and sold it in bottles resembling those in which the original is sold, and labelled so like them as to be "colorable imitations." The Court expressed itself convinced that the original article was pure and exactly what it professed to be, while the imitation was adulterated. It was shown that the foreign manufacturer had devised the bottles and labels in 1851, and that he had used them ever since. A lower court had thrown out a claim for damages and merely issued an injunction restraining the defendant from the use of the personal name, but allowing the use of the peculiar name given to the gin. The Supreme Court reversed this judgment, ordered an injunction against any imitation of labels or bottles, and allowed fifteen hundred dollars as damages, with costs in both courts against the defendants.

Among the peculiar features of this case was a claim by the defendants that they had used the imitation label for ten years without interruption, and that they had gained a customary and prescriptive right to it. The Court said that the damages could not be assessed for more than one year back, but the claim that use for ten years gave the defendants a right to the trade mark could not be allowed. Another claim of the defendants, that the words on the label were not new, was also rejected, the Court saying: "His combination of those words is proved to have been new, and it is proved to indicate the origin and ownership of the liquor, and the defendants have no right to filch this combination, or any important part of it, in such a way as to mislead the purchaser as to the real origin and ownership."

Floating Fire Engines.

Among the many means now available for promptly extinguishing fires, there are none more useful in our business towns than the floating engines now in use in New York, Baltimore and elsewhere. In the first named city especially, the proximity of nearly all parts of the city to one or the other of the rivers, and the enormous accumulation of valuable merchandise all along the water's edge, point out the floating engine as the most ready and accessible implement for the purpose. The facility with which it can be brought to the scene, the instant supply of water, and the great power obtainable from the engines, which need not be limited in size or capacity, are additional recommendations.