

Scientific American.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT NO. 37 PARK ROW, NEW YORK.

O. D. MUNN.

A. E. BEACH.

TERMS.

One copy, one year \$3 00
One copy, six months 1 50
Ten copies, one year, each \$2 50 25 00
Over ten copies, same rate, each 2 50

VOLUME XXX, No. 14. [NEW SERIES.] Twenty-ninth Year.

NEW YORK, SATURDAY, APRIL 4, 1874.

Contents:

(Illustrated articles are marked with an asterisk.)

Answers to correspondents... 218
Astronomical notes... 216
Bird of Paradise, a new... 215
Bottle patent... 215
Bushes and persons... 218
Cable and Faraday, launch of the... 212
Catching the sea by means of oil... 212
Carriageway plants... 207
City of Peking, launch of the... 214
Coffee and milk as an aliment... 214
Detroit river tunnel, the... 218
Education of children, early... 218
Electro-sympathetic clocks... 214
Fire, a street... 216
Fire extinguishing apparatus for buildings... 217
Floats for ships' boats... 213
Fuel manufacture, artificial... 213
Galvanic electricity... 210
Geyser basin, the new... 210
Good work in Canada... 213
Inventions patented in England by Americans... 216
Iron columns... 210
Iron making, new process of... 218
Locomotive engineers, the Brotherhood of... 208
Magnetoelectrical instrument, a new... 211
Mechanics, the marvels of... 208
Metals as exhibited by the Franco-American Exposition... 209
Metreological science... 208
Mine in the world, the greatest... 212
New subscribers, to... 209
Norwegian antiquities... 213
Oils, essential... 215
Pacificocean deep sea soundings... 215
Patent decisions, recent... 216
Patents, official list of... 219
Patents, official list of Canadian... 220
Patents, recent American and foreign... 217
Photography, dry plate... 215
Pine way transportation... 213
Planetary system, harmony of the... 213
Propagating house, the... 211
Railways, English and American... 213
Scaffold, improved adjustable... 211
SCIENTIFIC AMERICAN as a preventive of boiler explosions... 208
Sclerosis, tooth-edged cutting... 210
Shark, the basking... 216
Shifting engine, improved... 212
Stove for smoke houses, improved... 214
Sulphur, a hill of... 209
Threshold, improved adjustable... 210
Tunnels... 212
Turbine wheel, improved... 214

THE SCIENTIFIC AMERICAN AS A PREVENTIVE OF BOILER EXPLOSIONS.—VALUE OF ITS CORRESPONDENCE.

Our readers, in their kind letters of commendation of the SCIENTIFIC AMERICAN, very frequently tell us that the information they derive from its columns is of the greatest value to them in their several callings, and every day we are told that a single hint put in practice is often the means of making or saving considerable sums of money.

Mr. S. E. Worrell, of Worrell, Hannibal county, Mo., writes that he has read the SCIENTIFIC AMERICAN for fourteen years, and that he has learned more from its pages than during the period he attended school. In perusing a recent number, he goes on to state, his attention was attracted by the report of boiler inspections by the Hartford Boiler Insurance Company.

We congratulate our correspondent on his narrow escape from a probable casualty. We commend him for his careful attention to what he reads. If every mechanic, on receiving a number of the SCIENTIFIC AMERICAN, would thoroughly consider its suggestions, and seek to apply them to his individual case, there is no doubt but many of the disasters occurring in the use of machinery would be avoided.

We would suggest that this feature of the paper may be made still more useful and interesting, if every subscriber will take the trouble to communicate some new fact or discovery he has made, whether by accident or experiment.

A few lines of such information from the workshop are frequently of more practical value than a volume of essays on some abstract science by the most learned author.

THE BROTHERHOOD OF LOCOMOTIVE ENGINEERS.

Those of our readers who are familiar with the course of events during the strike of railroad engineers, which occurred, principally on western lines, some two months since, will remember that the demonstration elicited a strong letter of disapproval from Mr. Charles Wilson, Grand Chief Engineer of the Brotherhood of Locomotive Engineers.

The locomotive engineers of this country are as a rule an able and thoroughly reliable body of men. To their hands are entrusted immense responsibilities, and from them are required the exercise of an amount of skill, cool judgment, and, at times, absolute heroism which raise them far above the average mechanic.

Mr. Wilson, we understand, proposes to appeal to the Brotherhood as a whole, against the action of their delegates, and invites such members as do not acquiesce in the course of the latter, to join him in forming a new society on the old basis, as expressed in the letter referred to in the beginning.

THE MARVELS OF MECHANICS.

During the last siege of Paris, the inhabitants from time to time effected communication with their friends beyond the German investing lines by means of carrier pigeons. In fact, a regular pigeon post was organized, having one of its receiving stations in London.

Small as this photo writing seems, it has been surpassed by mechanism. In a recent number of the Lens, Dr. J. J. Woodward, U. S. A., gives an enlarged photograph of microscopic writing done by machinery on glass, by means of a diamond, executed by Mr. William Webb, of London.

copy a space of about two inches long by one and a half inches broad. All the words are brought legibly out on the photograph, the total number of letters being 227; and such is the exceeding fineness of the original writing that 29,431,458 letters written in the same way would only cover one square inch of glass surface.

The Webb machine, however, does not equal, in the fineness of its writing or perfection, the prior instrument of Mr. N. Peters, a wealthy banker of London, who, as long ago as 1855, was able to write nearly three times finer than Webb.

METROLOGICAL SCIENCE.

The American Metrological Society, the first session of which was held during December last in this city, forwards us a copy of its constitution and by-laws, in which the objects of the association are fully set forth.

President Barnard, of Columbia College, has been elected President, and the names of several well-known scientific gentlemen, including Professors Hilgard, Newton, Cooke, Elliot, and Thurston are among the officers and council.

The second memorial refers to the legal weights of our gold coinage, and asks that the pure gold contained in the dollars shall be exactly one gramme and a half.

The gramme of pure gold would thus become the world's unit of money, and the problem of an international coinage thus quickly and easily settled.

THE DETROIT RIVER TUNNEL.

An interesting history of the attempted construction of the tunnel under the Detroit river, between Detroit and Windsor, on the Canada shore, is given in a paper read by Mr. E. S. Chesborough, C. E., at the last annual convention, and published in the Transactions, of the American Society of Civil Engineers.

On the Detroit side, other difficulties were being encountered. At 1,180 feet from the shaft, the ventilating apparatus proved inadequate and two of the workmen were killed.