

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 on them will be promptly attended to.

Messrs. Trubner & Co., 60 Paternoster Row, London, are also Agents for the SCIENTIFIC AMERICAN.

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

VOL. XIV., No. 8. [NEW SERIES.] Twenty-first Year.

NEW YORK, SATURDAY, FEBRUARY 17, 1866.

Contents:

(Illustrations are indicated by an asterisk.)

*Robbins's Apparatus for Pre-serving Wood..... 111, 112, 113, 114	Composition of Lucifer Match- es..... 117
Farmers' Club..... 114	*Lowland's Dough Kneader..... 118
*Tracy's Improved Gang Saw Gage..... 114	The American Institute..... 118
Burning of Smoke..... 114	*Soper's Registering Micro- meter Callipers..... 118
Official Report of the Cattle Plague..... 114	Report of the French Exh- ibition..... 119
*Kirk's Connecting Link..... 115	Prof. Mapes's Theory of the Progression of Primaries..... 119
The Photo-miniature—Beech- er's Formula..... 115	Rumetting Wood..... 119
Spider Silk..... 115	The Naval Race..... 119
*Green's Plows..... 115	Special Notices..... 119
Chloride of Lime for Vermin..... 115	Condition of the Patent Office..... 119
The New Cable..... 115	New Inventions..... 120
How to Make Mill Picks..... 116	Patent Office Decisions..... 120
Black Walnut Polish..... 116	Patent Claims..... 120, 121, 122, 123
Query for Molders..... 116	Notes and Queries..... 123
Latest Foreign Intelligence..... 116	*Gardner & Robertson's Auto- matic Stop Governor..... 126
A Watch Factory in Illinois..... 117	*Brooks's Kerosene Lamp rimmer..... 126
The Russian Telegraph..... 117	
Alloys of Manganese..... 117	

THE circulation of the SCIENTIFIC AMERICAN has never been so large as now since the spring of 1861, at which time the war stopped our circulation in the Southern States. Subscriptions continue to come in very rapidly.

REPORT ON THE FRENCH EXHIBITION.

A committee, appointed by the New York Chamber of Commerce to consider the claims of the contemplated French Exhibition upon our countrymen, and to invite the attention of Chambers of Commerce and Boards of Trade, in other cities, to the peculiar national importance of the Exhibition, has prepared and published an elaborate and somewhat verbose report of its views of the whole subject.

The report contains a brief history of the origin of the Chamber of Commerce "in a petty seaport on the southern extremity of Manhattan Island," until now "it finds itself peacefully and broadly seated within a great commercial mart, including the Bay of New York, in a city the third in population of the Christian world." The figure is fine, but the Chamber of Commerce is narrowly seated in a small room on the corner of William and Cedar streets, and sometimes troubles itself with subjects which are entirely foreign to its purposes and organization.

However, the report before us, in spite of its redundancy of language, is, nevertheless, of considerable interest; but, like most other reports, it sweeps over so much space that we cannot find room for it in our journal.

We are glad that the Chamber has waked up to the interests of this proposed Exhibition, and we desire to call its attention to one point wherein it may render an immense service to those who propose to become exhibitors. The space allotted to the United States is 16,824 square feet, a space not quite equal to seven ordinary building lots in this city. No additional space in the exhibition building, as proposed to be constructed, can now be had, as it appears that other nations have applied for additional space which cannot be granted; therefore, in order to meet the wants of our countrymen, Mr. Beckwith, the agent in Paris, suggests that an additional building must be erected, and that Congress should provide \$300,000 as a maximum of the expense. It is understood, however, that the Committee in Congress having the matter in charge, and of which Mr. Banks is Chairman, will report in favor of an appropriation of \$50,000 for salaries, and \$50,000 additional for other expenses, which will scarcely be adequate to

install the space already appropriated by the Imperial Commission.

Now, if we are to profit freely as a nation by what the report designates "the great international solemnity," meaning the Exposition, a great deal more money will be required, and the Chamber of Commerce, so broadly seated in the third Christian city of the world, has the power and influence to make up the sum specified by Mr. Beckwith. Let the same committee, consisting of Messrs. Ruggles, Opdyke, Duer, Stranahan and Cowdin, take this matter in hand and reinforce the appropriation about to be made by Congress. If this is not done we shall make a poor show of our industrial forces in Paris, and the grand eloquent report of the committee will be razed a good deal in its pretensions.

PROF. MAPES'S THEORY OF THE PROGRESSION OF PRIMARIES.

In geological investigations it has been ascertained that the first animals that were created on this earth were of very simple structure—a mere sac, like the clam or oyster, in fact, more simple even than they. Afterward, animals of more complex structure were created—such as sharks and other low orders of fishes; after these the first amphibians made their appearance; next in order came forth reptiles—the lowest form of land animals; after the reptiles mammalians were created; and last of all man—the most complex organism on the globe. Through immeasurable ages the animal creation advanced by progressive improvement "from the monad up to man."

The same progress took place in the vegetable creation. In the oldest fossiliferous rocks no remains of vegetables are found except those of exceedingly simple structure—sea weeds without flowers or other organs; while the upper and newer rocks are filled with plants of more complicated structure, constantly becoming more complex, till, in the present age, we have the modern tree, with its plumule and radicle, its trunk, branches, leaves, calyx, petals, pistils, stamens, anthers and pollen—a structure with numerous organs for its own growth and the propagation of its species.

Water is a compound substance, made up of other substances, oxygen and hydrogen, which can be separated. Iron, on the other hand, is a simple substance, which cannot be decomposed. There are about eighty simple or primary elements at present known, though only about twenty of these exist on the surface of this earth in any considerable quantity. Sixteen of the primary elements are used, by nature, in building up the structure of plants and animals—twelve being employed in minute quantities only, while the principal portion of all organized beings is formed of the four organic elements, oxygen, hydrogen, nitrogen and carbon.

Now, Prof. Mapes's theory was that these elements had, in the long ages of creation, gone through the same progressive improvement as the plants and animals which they combine to form. He contended that before carbon could enter into the structure of an oak or a lily, it must first pass through sea weeds, acrogens, cycads, and the other low and simple forms of vegetable life—being itself modified and improved with the general advance in the vegetable creation. He asserted that a rose could not be nourished with potash direct from the feldspar rock, but that the potash must first go through its series of progressive improvement in mosses and other low forms of vegetables.

This theory has received a great deal of ridicule; the only objection that we make to it is the absence of evidence in its support. Had Prof. Mapes devised and conducted an experiment which should have proved that a rose would not assimilate potash from feldspar, he would have been regarded as the author of a great discovery that would have made his name immortal; but the theory, without evidence, is to be ranked among the thousands of unsupported suggestions that are constantly coming from the teeming brains of mankind.

BURNETIZING WOOD.

A writer in the Boston Recorder, from Omaha City, describes a burnetizing apparatus in use in the construction of the Pacific Railroad, away out in

Nebraska, which forcibly exhibits Western enterprise. Some of the railroad companies in this vicinity have adopted the same plan for rendering their cross-ties and bridge timber durable, but no plan is yet so generally in use as it should be. The invention of [L. S. Robins, for accomplishing the same end, illustrated on another page, we recommend to the attention of railroad companies. The writer says:—

"First, there is a large saw mill on the bank of the river, working two saws, engaged in cutting ties and lumber. Second, a burnetizer; this is worked by a steam engine, and consists of a large iron cylinder 75 feet long, and 5 feet in diameter. The object of this is to harden soft and perishable timber, and render it durable. Cars holding 300 cross-ties are run at one time into the cylinder, the doors are closed, the air exhausted by a pump, and the cells of the wood are thus cleared of sap. Chloride of zinc is then allowed to follow up the vacuum, where it is forced into the pores of the wood by a force pump driven by steam. A large proportion of our timber is cotton-wood, and, if by this process it can be rendered durable, it will be of great advantage not only to the railroad company, but for many other purposes. This machine is capable of preparing 1,200 ties in 24 hours."

THE NAVAL RACE.

This highly exciting and most wonderful event is to come off very soon. Both vessels are ready and eager for the fray, with all their guns, stores, and other impediments on board. If the *Winooski* beats the *Algonquin*, Isherwood's theories are correct. If the *Algonquin* beats the *Winooski*, Dickerson's theories are correct. Engineers will govern themselves accordingly. If the *Winooski* triumphs, all the steam cylinders in the country must be bushed and some more boilers put in; if the *Algonquin* is victorious, the services of the Hanlon Brothers will be required.

The race is to begin from Sand's Point, a distance of 13 miles from this city, and is to be over Long Island Sound, around Faulkner's Island—in all a distance of 800 miles. All other vessels have been warned to give these couriers the right of way, but no stipulations have been made about Plum Gut.

SPECIAL NOTICES.

John M. Earls, of Troy, N. Y., has petitioned for the extension of a patent granted to him on the 21st day of April, 1852, for an improvement in smut machines.

Parties wishing to oppose the above extension must appear and show cause on the 9th day of April next, at 12 o'clock, M., when the petition will be heard.

Thomas J. Woolcocks and William Ostrander, of New York City, have petitioned for the extension of a patent granted to them on the 4th day of May, 1852, for an improvement in speaking tubes.

Parties wishing to oppose the above extension must appear and show cause on the 16th day of April next, at 12 o'clock, M., when the petition will be heard.

Condition of the Patent Office.

The business of the Patent Office increased so rapidly during the year 1865 that the examining force was insufficient to dispose of the cases as was desirable.

We have no doubt that Congress will soon pass a bill authorizing the Commissioner to increase the examining force, which will insure a more rapid disposition of the cases. In the meantime, the examiners are hard at work, and are bringing up the business with commendable dispatch.

THE AMERICAN INSTITUTE.—The election of officers of the American Institute for the ensuing year took place on Thursday evening, February 8, 1866. The following was the result of the ballot:—Horace Greeley elected President by twenty-five majority over Wm. Hall; Vice Presidents, Dudley S. Gregory, Edward Walker and Wm. Hibbard; Recording Secretary, Jirah Bull; Corresponding Secretaries, Samuel D. Tilman; Treasurer, Sylvester R. Comstock.

An extraordinary fact in connection with the traffic of the East India railway is, that 90 per cent of the whole is third class, carried at the rate of three-eighths of a penny per mile.