Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors. PUBLISHED WEEKLY AT

No. 261 BROADWAY, NEW YORK.

A. E. BEACH.

O. D. MUNN.

TERMS FOR THE SCIENTIFIC AMERICAN.

Clubs.-One extra copy of THE SCIENTIFIC AMERICAN will be supplied gratis for every club of five subscribers at \$3.20 each; additional copies at same proportionate rate. Postage prepaid. Remit by postal order. Address

MUNN & CO., 261 Broadway, corner of Warren street, New York.

The Scientific American Supplement

is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of Subscription for SUPPLEMENT, \$5.00 a year, postage paid, to subscribers Single copies, 10 cents. Sold by all news dealers throughout the country.

Combined Rates. - The SCIENTIFIC AMERICAN and SUPPLEMENT will be sent for one year postage free, on receipt of seven dollars. Both papers to one address or different addresses as desired.

The safest way to remit is by draft, postal order, or registered letter. AddressMUNN & CO., 261 Broadway, corner of Warren street, New York.

Scientific American Export Edition.

The SCIENTIFIC AMERICAN Export Edition is a large and splendid periodical. issued once a month. Each number contains about one hundred large quarto pages, profusely illustrated, embracing : (1.) Most of the plates and pages of the four preceding weekly issues of the $SC_{1KNTIFIC}$ AMERICAN, with its splendid engravings and valuable information; (2.) Commercial, trade, and manufacturing announcements of leading houses. Terms for Export Edition, \$5.00 a year, sent prepaid to any part of the world. Single copies 50 cents. (37 Manufacturers and others who desire to secure foreign trade may have large, and handsomely displayed an-nouncements published in this edition at a very moderate cost.

The SCIENTIFIC AMERICAN Export Edition has a large guaranteed circu-

NEW YORK, SATURDAY, MARCH 22, 1884.

Contents.

(Illustrated articles are marked with an asterisk.)

, feid, sulphuric	Inventions, agricultur
J. r. dusty illum, bodies in 184	Inventions, engineerin
Apprentices, why scarce 180	Inventions, index of
Battery, Leclanche. imp. in* 179	Inventions, mechanica
Bills, patent. hostile 177	Inventions, miscellane
Bird, twelve thread plume* 183	Inventors should work
Blindness of Congressmen 181	Iron, cast. to harden
Boat series, Paddlefast 181	Lighthouse, Hell Gate
Boilers, water in	Motors, sound
Business and personal	Notes and queries
Cable as it is, the 180	Paints, Trusb
Carbonic dioxide, liquid, prepar., 184	Patents, plot against
Center-cycle. the 179	Phylloxera in Portuga
Channel, Missis. shifting of 184	Railways, cable, for N.
Cigar making in Sevilie 179	Rule, triangular
Comet, Pons-Brooks 181	Schools, trade, of New
Coupling, car, improved* 179	Secret, a, discovering.
Defense, water line	Snails, curious facts al
Disease, Bright's 181	Stealing a ride in Engl
Disease, onion	Steamship, ignoble fat
Du Moncel, Th 1??	Steel, structural
Exhaust, how choked 181	Storms, remarkable
Exhibition, dairy, Munich 179	Sugar, loaf. pure, to te
Exhibition, New England 178	Sunsets. red, and prec
Fevers, malarial 176	Surplus, Patent Office
Fishes, mertality among 184	
Fishing. salmon. outfit for 183	Tie. railroad, metallic*
Freezing, curious case of* 182	Trunk, hand, improved
Gas leokages	Vatican, the
Guin arable supply cut off 181	Waters troubled oil o
Gun, what will burst 182	Wire invisible
Heaters, car, acetate of soda 181	Wood, metallization of
reations, car, accounts of sources 101.	moon, metanization of

186 186 186 186 181 177 eous. k like polit. 180 186 184 176 184 al... N. Y. city... 176 182 v York..... 182 179 about 183 gland..... 180 tte of a.... 178 ipitation.. 184 180 179 e imp.*..... c*. d*. on..

PAGE

TABLE OF CONTENTS OF

THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 429.

For the Week ending March 22, 1884.

Price 10 cents. For sale by all newsdealers

I. CHEMISTRY, METALLURGY, ETC.-Experiments on the Colors 6854 6854 of Gems. On the Condensation of Gases. Lead.—Action of water on lead.—Compounds of lead with oxy. gen.—Tests for solutions of lead.—Lead in the arts and in the ma-teria medica. 6854

II. ENGINEERING. MECHANICS, ETC.—A Scientific City Built by the Pullman Co.—Laying out a city.—Mr. Pullman's account of the enterprise.—A church offered for rent.—No corporate government. —Opinions of the enterprise Sagnes' Machine for Making Moulds for Objects in Copper and Bronze.—Several figures. Meinesz's ('ompressed Air Dredging Apparatus.—3 figures... Drainage of Large Marshes.—Paper read by C. E. HOLLSTER be-fore the Mich. Ass. of surreyons and Engineers, with discussion... The Cost of Steam Power.—with tables giving estimates of cost of engines and boilers and cost of operating the same. The Hull and Barnsley R.R. Swing Bridge.—Several figures... Forged Steel Wheels, —Severality ures. 6840 6842 6843 . 684 6844 6846

THE PLOT AGAINST PATENTS.

and also to the extraordinary attitude exhibited in the House of Representatives in respect to patents, by the passage of people. two of these bills by immense majorities. Such of the newspapers as share in the Congressional feeling of hostility to the holders of patents are found to be owned or controlled by railway officials.

The general, all-pervading impression among the people is that nothing has so greatly contributed to the prosperity of the nation as our excellent system of patent laws. How it is that Congress, at this late day, has been brought around them not to sacrifice their interests and property in this into its present hostile attitude appears to most persons unaccountable. It has been accomplished, in all probability, by a very cunning and adroit system of operations pursued by the combined railroad companies. The aggregate amount which they are annually obliged to pay could nullify the patent laws, their profits would be in-: municipal limits. These lines are torun up-town, down-town, ber of years they have made efforts in this direction, but appear to have legislated on the supposition that New York so far without much success. For a long time they have had city is in great present need of more rapid transit lines, and their combined patent bureau in operation, under which they will by its rapid growth soon require extensions. These make a common defense against paying patent royalty for wants, present and future, are amply provided for by the any patent, when there is a chance to escape. They now commissioners so far as routes and tracks are concerned; have a head center at Washington, through which, this year, but we fear their judgment is ill-considered in requiring, they are making a desperate effort to carry laws in their as they have done, that the main lines of these new roads shall favor, and pull up all patents by the roots. They have be worked on the cable system. What the people restuffed the grangers, making them to think that inventors, quire is rapid transit; but the cable plan is in reality only a who are really their best friends, are their enemies; that slow form of slow transit. All the cars must run at the the charge of ten dollars for using a patent drive well, which same speed; if one train or one car is detained, the speed saves them two hundred dollars, or the cost of an open well, cannot be increased so as to make up for lost time; if the lation in all commercial places throughout the world. Address MUNN & is a hardship; that payment for patents is nothing but rob-CO., 261 Broadway, corner of Warren street, New York. bery, and in this free country can no longer be tolerated.

With falsities like this the railroad agents have induced They have drafted various forms of adverse patent bills, and cable pipe. caused them to be sent from different parts of the country, to different members of Congress, purporting that these bills represent the feelings of large numbers of their constituents, and asking that the same be introduced and passed. This system of deception has been so extensively worked up and had its effect in the House of Representatives; and in that PLEMENT of this week, page 6847. body there is to-day actually a large majority of members who are willing to encourage the false idea that new invenwishes of their railway masters by passing laws that will give relief from paying further tributes to inventors.

parts of the country. Every establishment in the land that horses. manufactures under a patent, all workmen employed in such concerns, two hundred thousand patentees and their families, all must now have their property struck down or damaged to gratify the railway kings.

false bills and deceptive representations, and that august istence of the pond cause the fevers? body is unable to hold its own against them.

duced from seventeen years to five years:

"seventeen" and inserting in lieu thereof the word "five;" and that all acts or parts of acts inconsistent herewith are

northeast part of the State not till 1883. It has maintained nassed nere is one calculated to make the railway monopolist a steadily epidemic condition ever since, having swept the ppier. It was introduced by Hon. Mr. Voorhees, Sena- State so fully that not a town is now exempt from its sway, m Indiana, and is now before the Senate, its passage except, possibly, a few in Windham and New London ed every day. We give the full text: Counties. Running up the Housatonic Valley, it reached S. 1,558. Be it enacted, etc., That it shall be a valid de the northern line of the State in 1877, and in 1878 it crept fense to any action for an infringement of any patent, or any over into Massachusetts at Lenox (the place referred to by suit or proceeding to enjoin any person from the use of a pa- Dr. Griswold) and Lee. It has already invaded the sacred $\frac{0}{2}$ tented article, that the defendant therein, or his assignor, precincts of Boston, and is in high march for Nova Scotia purchased the patented article for use or consumption, and and Newfoundland, for all that we can tell. This progress is astonishing, for no change has taken not for sale or exchange, in good faith and in the usual course of trade, without notice that the same was covered by a paplace in the surface or condition of the country to which it tent, or without notice that the seller had no right to sell can be traced. Ponds and swamps have always existed of such article; and in all such cases notice received after such natural formation, and artificial ponds have been formed, purchase shall not have the effect to impair in any way the dating back to the first settlements, but they have been harmless. Nor can we say that they have anything to do at right of such purchaser as absolute owner. If Mr. Anderson's patent bill passes, all new patents be- the present time with the evil. For, disregarding its name come free for use by railways and the public at the end of of marsh fever, the epidemic has just as freely selected its victims on the hills as in the swampy valleys. Litchfield, five years. " a city set on a hill," which had always boasted its health-If Mr. Voorhees' bill passes, the free use of all existing patents is at once taken from the patentee and given fulness, acknowledged the tread of the invader in 1880, and he had come to stay, to their great disgust. And disregard-

It seems to us that the passage of these bills, or of any For several weeks past we have been calling the attention of the other bills which impair the rights of inventors to of our readers to the remarkable series of bills introduced in hold their patents, or prevent them from recovering dam-Congress for the purpose of breaking down the patent laws, | ages against infringers, would be disastrous to the country and destructive to the interests of a large portion of the

> There is at present writing a strong probability of their passage. But if effort is promptly made, they can be defeated. Let every patentee, every inventor, every manufacturer, every workman, every farmer, every individual, who believes in the maintenance of home industries and the encouragement of the useful arts, write letters personally, at once, to the Senators and Members of Congress, urging wanton and unjustifiable manner.

Read the letter of Mr. D. L. Carver, in another column.

CABLE RAILWAYS FOR NEW YORK CITY.

The Rapid Transit Commission of New York City, under to the inventors and patentees of new inventions authority of a general law of the State, has lately mapped rises to hundreds of thousands of dollars every year; out and granted to one company in the city the routes for and naturally they reason that, if by hook or crook they no less than sixty-six miles of new railway tracks within the creased and great annoyances overcome. For a num- cross-town, in fact in all directions. The commissioners which the cables run are rendered dangerous to horse fiesh by farmers to ask Congressmen to vote down the patent laws. liability to tearing off shoes by wedging in the slot of the

The system has a variety of other objections. With a view to the presentation of these, our reporter lately interviewed Mr. F. C. Crowley, a street railway engineer, constructor, and operator of long experience, who has made a very careful examination of the Chicago cable roads. The manipulated by the railroad head center, that at last it has report, which is quite interesting, will be found in our SUP-

After all that can be said by way of objection to the cable system, it must be admitted that in some localities, especialtions and new industries are a bane to the people instead of a by for hilly towns, it has proved very advantageous; in fact, blessing; and these members are now ready to execute the it will work very well anywhere and in any city where rapid transit is not wanted. But for the streets of New York, it would seem as if a better and less objectionable The worst is that these hostile laws, while they undoubt- system would be the employment of some form of independedly increase the dividends of the railway people for the ent motor, powerful, but fast or slow as needed, and sustime being, will also deal a terrible blow to industries in all ceptible of use in the streets with the same facility as

MALARIAL FEVERS.

The case on trial described by Dr. Griswold in the New England Medical Monthly of August 15, referred to a pond They wave their wands, and their newspapers cry in Berkshire County, Mass., near which many cases of ague out against patents; they manipulate Congress through and fever had occurred. The point was this: Did the ex-

The disease has been in time past by most writers reck-We will not repeat again the details of all the hostile bills oned a marsh fever, and it was commonly believed to be now before Congress, but will only select two, either of limited to regions and to seasons where vegetable matters which, as soon as passed, will accomplish all that the rail- were undergoing decomposition from moisture and heatroad schemers want. Here is the full text of the little bill in- ; that is, to swampy lands and (except in the tropics) to the troduced by Mr. J. A. Anderson of Kansas, and now before autumnal months. New England was formerly free from the House, by which the life of all new patents will be re-it. It is possible that a single case may have occurred occasionally in the extreme southwestern part of Connecticut. Be it enacted by the Senate and House of Representatives of but practically ague was unknown there until 1860. In the United States of America in Congress assembled, That that year a most wonderful onward movement to the east section forty-eight hundred and eighty-four of the Re- and the north commenced, and it has continued unchecked vised Statutes is hereby amended by striking out the word | till the present time, and in its progress it has overturned theories at a rate as remarkable as its own advance.

Commencing on Long Island Sound, at Southport, in 1860, it spread as already stated, with an irregular front, hereby so modified as to be made consistent. This bill will be a happy thing for the railroads, as soon reaching New Haven in 1864, Hartford in 1872, and the

	American and English Freight Cars		
	Jections to their use in crowded cities	6847	stillhap
II	TECHNOLOGYCeramic PhotographyMethods of producing	6947	tor from
	vitrifiable photographs Relief Printing Blocks from Photographs	6848	expecte

IV, ELECTRICITY, LIGHT, ETC.—Inside of a Light House.—Ful	
page engraving	6840
The Baume Hydrometer Scale.—By JOHN TAGLIABUE	6850
Radiquet's Electric Light Apparatus -2 engravings	685(
Radiguet's Electric Light Apparatus.—2 engravings The Magnetic Balance.—With tables giving magnetic capacity of	,
different metals	COR
umerent metans	. 000

v.	A RCHITECTURE-Residence for the Hon. A. C. B. Bannatyne.	
	-An engraving	6848

VI. NATURAL HISTORY, GEOGRAPHY, ETC The Eruption of	
Krakatoa By M. C. VAN DOORN. officer in command of H.M.S.	
Hydrograaf – With several engravings and map	5852 ·
Notes on New Caledonia.—Nature of the land.—Population.—De- pendencies.—Mines.—Geological formation.—Government	2059
Rare Fishes	6858
Trout and Trout CultureBy R. A. Koss	853

VII. MEDICINE, HYGIENE, ETCMemoryBy Dr. R. WOOD BROWNMemory from a physical standpointComposition and functions of the brainTheories which account for memory phy-
sicallyConscious and organized memoryColorof the brain dur- ing s.eep
facts established by Hayem, Bizzozera, and others

VIII. MISCELLANEOUS.—Handwriting... Division of the Weight Unit.... 6841 6841 to the railways.