# Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

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

O. D. MUNN.

A. E. BEACH.

### 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., 37 Park Row, New York.

To Advertisers.—The regular circulation of the Scientific AMERICAN is now **Fifty Thousand Copies** weekly. For 1880 the publishers anticipate a still larger circulation.

#### 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. 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 Address MUNN & CO., 37 Park Row, N. Y.

## 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 lates and pages of the four preceding weekly issues of the SCIENTIFIC 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. (137 Manufacturers and others who desire to secure foreign trade may have large, and handsomely displayed announcements hublished in this edition at a very moderate cost.

The SCIENTIFIC AMERICAN EXPORT Edition has a large guaranteed circulation in all commercial places throughout the world. Address MUNN & CO., 37 Park Row, New York.

#### NEW YORK, SATURDAY, JULY 10, 1880.

Illustrated articles are marked with an asterisk.)

(Inustrated articles ar	еп	iarked with an asterisk.)	
American industries*15,	20 21	.Matter, indestructibility of	17 25
Anthracite, voyage of the	21	Matter, the structure of	25
Ants, slave-making	17	Medical Society, American,	26
Artic expedition, Howgate	26		21
Brake, electric, for R. R. cars*	18	Mon, young, a lesson to	26
Canal boat, large	22	Millers, the, and the patent laws.	16
Cincinnati industrial exhibition	21	Mucilage (11)	27
Clocks, pneumatic*	19	Natural history notes	23
Coins, to clean (2)	27	Nemertes, or striped polia*	23
Cold, severe, effect of on insects.	23	Oysters, American, transplant'g.	18
Corn sled, novel*	22	Pants, patent	17
Creamery, centrifugal	23	Patent pants	17
Decisions relating to patents	21	Patents, decisions relating to	21
Discoveries at Pompeii	26	Pavements, electrical	17
Earthquake warnings	17	Phenomenon, curious, a	24
Elevator, Brooklyn, new	24	Photographs, winking	21
Elevator, improved*	24	Photo plates, sensitiveness of	22
Engineering inventions	19 1	Pittsburg exposition and fair	21
Engine, exhaust of (6)	27	Pompeil, discoveries at	26
Exhibition, Melbourne, the	21	River waters, are they safe?,	17
Expedition, Arctic, Howgate	26	Rivers, purification of	18
Exposition and fair, Pittsburg	21	Rubber fabrics, vulcanized*15,	20
Exposition, industrial, Cincinnati	21	Scratch brush, liquid for (1)	27
Fabrica, vulcanized rubber 15,	20 3	Seal, a, caught in New York	22
Fish batching, Government	22	Sea otter, or kalan*	23
Fishway, improved*	22	Silk, inflammable, more	26
Fruit, preservation of	18	Silvering by cold rubbing,	18
Glass, to remove scratches (11)	27	Silver, recover from solutions (3)	27
Gorilla, another, in Philadelphia	26	Skin grafting from the dead	17
Grain product, California	22 24	Sled, corn, novel*	22
Hops, preservation of	24	Soldiers, cost of keeping	21
Horse bower of engines (10)	27	Starch for laundrying (8)	27
Horseshoes, improvement in*	18	Structure, the, of matter	25
Howgate Arctic expedition	26	Sun, temperature of the	21
Ice trade in Maine	26	Sutter, John A., Gen'l	21
	20	Temperature of the Sun	21
Insects, effect of severe cold on.	23	Tetanus, successful treatment	25
Inventions, engineering	19	There's room at the top	16
Inventions, miscellaneous	18	Time, fastest, on record	26
Inventions, new	25	Towing feat, great	24
Iron and steel making	26	Vulcanized rubber fabrics*15,	AU.
Lesson, a, to young men	26		17
Lifeboats, steam, improved	22 (	Wind pressure	24
Maine, ice trade in	26 24	Young men, a lesson to	20
Malt dust, explosions of			_

# TABLE OF CONTENTS OF

### THE SCIENTIFIC AMERICAN SUPPLEMENT No. 286,

For the Week ending July 10, 1880.	
Price 10 cents. For sale by all newsdealers.	
	3754 3755 3755 3756 3757 3757 3757
II. ELECTRICITY, LIGHT, ETC.—Experiment of MM. Lontin and De Fouville. By M. JAMIN.  New Enlarging Lens for Magic Lantern. 4 figures.  Wind Pressures. 3 figures  Durability of Gutta-percha used for Telegraphic Purposes  New Experiments in Magnetic Attraction. By M. ADER	3759 3759 3760 3761 3762
III. CHEMISTRY AND TECHNOLOGY.—Nitrogen in Iron and Steel  Development of Acetic Acid in Beer.  The Preservation of Timber. By J. W. PUTNAM. The teredo navalis and the treatment of wood to prevent its assaults. Dead oil and the method of applying it.  IV. HYGIENE AND MEDICINE.—Stimulating Drinks. Khooshafs.—Sherbets.—Tiste.—Ginger tea.—Margol wine.—Drink of the Fort Rupert Indians.—Labrador tea.—Parched meal and water.—Orange wine.—Rice wine.—Spruce beer.—Licorice tea.—Walnut wine.—Brick tea.—Sarsaparilla.—New Zealand native wine.—Ques.—Guaran tea.—Yerbamate.—Ciderand perry.—Honey wine.—Sous.	3761 3761 3762
Brick tea.—Sarsaparilla.—New Zealand native wine.—Quaes.—Guarana tea.—Yerba mate.—Ciderand perry.—Honey wine.—Soua.—Native wines, etc An Advane in Therapeutics.  The Stranger within thy Gates V. GEOGRAPHY, ETC.—Washington Territory. Climate.—Arable and timber lands.—Productions.—Mineral resources.—Manufacturing interests.—Exports —Awvigation and railways.—Population.—Price of land.—General remarks  The South Pacific Islands. Gilbert group.—Marshall Islands A Hawaiian Allmanac.	3764 3764 3764
A Hawaiian Almanac. VI. NATURAL HISTORY.—The Electric   Eel (Gymnotus electricus). 1 figure. Electric eel. Intelligence of Seals. 1 figure. Skiff drawn by a seal. The Food of Birds.—Prof. Forbes' study of thrushes. Alders forthe Lawn. Forest Trees of North America. Prof. CHAS. SARGENT'S catalogue. Continued from SUPPLEMENT, No. 235.	8753 8754 3754 3764 3765

orgue. Continued from SUPPLEMENT, No. 233.

VII. MISCELLA NEOUS.—International Fisherles Exhibition at Berlin. Description of exhibits.—Awards to Americans. I illustration. Neptune's Grotto, Berlin Fish Exhibition.

American Bacon and Pork. Statistics of American Swine and pork packing.—How the hogs are dressed.—Preparation of bacon. Making hams.—Sausages.—The yield of lard...

The Cultivation of Barley.

#### THE MILLERS AND THE PATENT LAWS.

We doubt whether there has ever before been so large and complete an exhibition of the mechanical appliances of any trade, in practical operation, as that which was presented by the Millers' International Exhibition just closed at Cincinnati. The milling business has made great progress within a few years past—so great that a revolution may almost be said to have been effected therein-and old methods of making flour are everywhere being superseded by a radically different system, whereby the quality of the product is greatly improved. Nowhere else has the contrast between the old and the new method and their products been shown in such marked contrast, with such an extensive display of every One copy, six months, postage included ...... 1 60 kind of machinery, as in the Cincinnati Exhibition, and yet there is hardly a machine or an article for collateral use in the trade, which has materially contributed to its recent progress, that is not patented. It is our patent law, the protection it gives to inventors, the encouragement it offers to those who devote their time and means to improving old processes, that has chiefly made this splendid exhibition what it is.

And yet, strange as it may seem, with this practical proof ness, the millers, in convention assembled, proceeded to make become a party in the pending suit, avoiding the unnecesone of the most foolish and unreasonable attacks upon our sary expense of special defense, requiring the taking of testipatent system we ever remember to have seen formulated. mony, and construction and explanation of models already in Cincinnati this committee made a report, which was right to this stay, and to be made a co-defendant in another adopted by the convention, avowedly to aid in "reforming" our patent laws and practice, and to "measurably free users of patented devices or processes from expensive litigation," of objection to our patent laws which habitual infringers are the giving of proper bonds by the defendant the court will in the habit of urging, and are as follows:

I. "More liberal appropriations by Congress to the Patent Department, enabling closer scrutiny of applications for committee say, it is urged that the association should make patents, and consequent avoidance of the too frequent granting of patents on claims in which the essential features of novelty and usefulness are wanting." Is not the committee aware that the total expense of the Patent Office is paid by the inventors themselves, and that the examinations always involve a search through all like claims ever filed in the department? And if a patent be issued for anything that is not "useful," are not the millers aware that it is invalid and good for nothing, and is it any great hardship to ask the millers to let a thing alone if it is not useful?

II. "The abolition of the practice of reissue under new date or title, and sometimes for new things scarcely hinted at in original." If a miller obtains a defective title to real may, by like combinations, even more energetically defend estate, through carelessness or error of his own, the courts their legal rights? will aid him to correct such title when it can be done without prejudice to the rights of others. Why should not a patentee, proceeding in good faith, have the like privilege? Further than this, a reissue is not valid if it covers "new things" involving different principles from what were set forth in the original patent.

III. "The establishment and maintenance of a special patent'court at Washington to determine the validity of patents, before which court all parties directly or remotely interested in any case pending shall have ample time and opportunity to be legally and publicly heard." This is really a strange point to make in behalf of those who are now so vigorously protesting against the expense of patent litigation. It is proposed to have a new court, which cannot supersede, but must be auxiliary to the law machinery we now have, and to impose upon litigants in all parts of the country the necessity of a preliminary trial of their case at Washington, instead of having the trials take place as at present in the several districts where they reside.

IV. "The annual assessment of such atax upon existing patents as can only be paid by owners of useful patents, and which, in default of payment of renewaltax, will free the records of worthless patents." It might just as rightfully be proposed that all flour mills making a low grade of flour should be taxed out of existence. The impositions of a tax on patents on such grounds would be nothing more nor less than direct robbery.

V. "A reasonable limit during which an inventor or patentee must successfully introduce his improvement to practical use and notice, in order to claim against any who may thereafter use the same." The present law therefrom all the profits which are to pay him for the not they pay for its use before that time.

VI. "Some more reasonable measure of damages, with reference to actual benefits, in cases of established infringement," The courts always insist upon an accounting to show what gains or profits an infringer has made by his use, without permission, of the property of another. In this accounting the infringer has a right to show what other means were open to him whereby he might have avoided the use of the patent, and in this way it has often been shown that the patent he infringed upon was of no value at all to him. In many such accountings the damages for infringement have been placed at only six cents, and in all cases they are assessed by the court only after a full hearing of what both sides have to say. If a "reasonable yers, also, a greater familiarity is expected with all depart measure" of damages cannot be arrived at on such investiments of modern science, so that many members of the bar

gation, we fail to see how in this fallible world such object is even to be attained—that it should never be reached would probably be nearer what the committee would recommend.

VII. "Greater restrictions in the granting of injunctions, before the validity of a patent has been tried and established, and also preventing the fixing of excessive bonds in cases where temporary injunctions are granted." The general practice now is not to grant injunctions until the validity of a patent has been established, unless it is evident that the alleged infringer is deliberately endeavoring to avoid the consequences of his infringement and escape the jurisdiction of the court. The amount of the bonds which must be given are in each case regulated by the probable measure of damages, and are so fixed by the courts only after an examination in which the infringer has an equal right with the patentee to be heard.

VIII. "An amendment to the effect that, when new suits are begun under the same patent, in which a decision has already been made in a lower court, and appealed to a higher court, the defendant may demand a stay of proceedbefore them of what the patent law has done for their busi- ings pending decision in the higher court, and that he may The Millers' National Association of the United States have on record." This is according to the general practice of our a standing committee on patents, and at their recent meeting courts at the present time, except that the defendant has no suit, unless in accordance with the judgment of the court. When a stay of proceedings is granted in such case it would be a grave injustice to the patentee to allow his rights to go The "reforms" proposed include nearly every variety by default during the pendency of a long litigation, but by generally grant the stay.

Finally, to "give force to these recommendations," as the itself "financially strong," to prevent the granting of what they are pleased to style "fraudulent patents or reissues," for which they would have paid lawyers constantly "on the alert" in Washington, all the millers in the country contributing to funds for such a purpose. Is not this a direct proposal to attempt to circumvent laws passed in pursuance of an important provision of the Constitution? And are not the beneficent effects of those laws written in every leading feature of the great exhibition now just closing? If the millers, or representatives of any other industry, combine to obstruct the equitable administration of our patent laws, is it not just possible that inventors and patentees

It is matter of astonishment to us that the millers of this country, supposing they are truly represented by the committee, have seen fit to take this view of our patent law. We should rather have thought that a system which has done so much for them would have met with nothing but kindly words, and that inventors would have received that encouragement from them which alone will induce them to put forth vigorous efforts to perfect that system of milling improvements which has already made such progress, but which is yet far from having attained perfection.

# "THERE'S ROOM AT THE TOP."

The young man ambitious to succeed in any line of business should always bear this in mind. There are those in plenty of mediocre ability, superficial acquirements, and inadequate preparation, but the thoroughly trained and competent are scarce. The standard of modern professional requirements has been greatly elevated by the advances which the world has made within a few years past, and still higher demands are constantly being made. The demand for men who have a complete knowledge of every department of their business has always been felt. The extent of that knowledge widens every year, as improved methods and facilities are introduced. The ship captain, for instance, who a few years ago needed only to be acquainted with centuries old theories of navigation, with what more recent geographical explorations had added thereto, now finds himself, in this age of steam, working under totally different conditions. What he formerly knew is equally necessary now, but the successful management of a ship propelled by steam calls for an entirely new set of ideas and experiences, and the captain who makes seventeen years such reasonable limit, during which would at present be a thorough master in his profession should the inventor must not only introduce his improvement, but not only know how to run a steam engine, but be a practical hydraulic engineer, with a good knowledge also time and means he has devoted to its development. This matics and electricity, in order to avail himself of all the is the consideration which spurs him to effort, and the publiadvantages which recent discoveries and inventions have lic, at the end of the seventeen years, becomes possessed of placed at the disposal of navigators, whereby more efficient the free right to use his invention or discovery, whether or | work may be done and a higher degree of safety attained. There are captains in plenty who are sailing masters only, but in proportion as they are also competent in these other departments, whereby they become in fact independent of their subordinates, do they attain the higher positions and greater responsibilities of their profession.

And what is true in this instance may be said of nearly every branch of business, as we find a like necessity for greater amplitude and thoroughness of preparation in all lines of professional activity. The discoveries in chemistry within a few years past have been of far reaching importance, and many of them have been such that a first-class doctor cannot remain ignorant of the advances made and retain his position in the front rank of his profession. With law-