

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.

One copy, one year postage included. \$3 20
One copy, six months, postage included 1 60

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.

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. 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 plates 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, 10 cents. Manufacturers and others who desire to secure foreign trade may have large and handsomely displayed announcements published 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, MARCH 5, 1881.

Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as Agricultural inventions, Lunar volcanoes, Amateur mechanics, etc., with corresponding page numbers.

TABLE OF CONTENTS OF THE SCIENTIFIC AMERICAN SUPPLEMENT No. 270.

For the Week ending March 5, 1881.

Price 10 cents. For sale by all newsdealers.

Table listing sections I. ENGINEERING AND MECHANICS, II. TECHNOLOGY AND CHEMISTRY, III. ELECTRICITY, LIGHT, ETC., IV. HYGIENE AND MEDICINE, V. METEOROLOGY, VI. ART, ARCHITECTURE, ETC., VII. MISCELLANEOUS.

TELEGRAPH WIRES IN CITIES.

The ice storm which so seriously interfered with electric communication in and around this city recently, exposed many defects in the usual method of supporting telegraph and telephone wires.

How to secure immunity from such interruptions in the future, without laying too great a burden upon the owners of wires, and without restricting the easy extension of electric communication, is a problem of no small importance.

The first demand, particularly from those who had no property interest in telegraph or telephone lines, was that the practice of setting up wires on poles and houses should be stopped, and that all electric wires should be put underground.

In response to this demand a bill was introduced in the New York State Legislature to secure such a placing of wires within city limits before July 1, 1882. The bill provided that after the date given it should not be lawful to use any wire above ground for telegraphic, telephone, or electric lighting purposes, except indoors.

Granting the feasibility of putting underground a large part of the wires—which is far from evident—the requirement that all wires shall be so placed would be little less than prohibitory in the case of private wires, since the cost of the work would outweigh any possible benefit.

The exigencies of modern business and social life require not only the widest extension and the cheapest maintenance of electric service attainable, but also its readiest extensibility. This, not by great corporations solely, but by individuals. It is a common thing nowadays for business houses to supplement the facilities offered by the telegraph companies and telephonic exchanges by maintaining from one to a dozen or more private lines.

The relatively low cost of aerial lines, and the ease with which they can be set up and repaired, make them in many instances of this nature the only available means of electric communication. As for lines which might go underground the question would arise, Which is the greater nuisance, the poles for the support of aerial lines, cabled or separate, or the frequent tearing up of the pavements for extension, alterations, and repairs, if the lines are buried?

It may be that legislation will be required to remedy these evils, but that should be had without difficulty, and without necessitating any sweeping change in the systems, or endangering in any way the freedom and economy of electric service.

There is ample room on the roofs of houses for such an orderly distribution of aerial wires as would meet the public requirements and avoid at the same time the unsightly tangle of wires now prevailing.

Another important reissue decision by the Supreme Court. The tendency of recent decisions of the Supreme Court of the United States, with regard to reissued patents, lately commented upon in this paper, received another illustration in the decision delivered by Mr. Justice Swain in the case of Denmore et al. vs. Scofield et al. (December 20, 1880).

ANOTHER IMPORTANT REISSUE DECISION BY THE SUPREME COURT.

The tendency of recent decisions of the Supreme Court of the United States, with regard to reissued patents, lately commented upon in this paper, received another illustration in the decision delivered by Mr. Justice Swain in the case of Denmore et al. vs. Scofield et al. (December 20, 1880), appealed from the United States Circuit Court for the Northern District of Ohio.

It would appear that the complainants had patented a method of attaching to ordinary flat cars over the trucks two large wooden tanks for holding petroleum while in transit on railways, so as to carry the oil in bulk instead of in barrels or other commercial vessels.

the method of attaching them to the car, but "their equivalent when constructed and operated in combination with an ordinary railway car"—that is to say, any form of tank car.

Suit being brought for infringement, the answer set up, among other defenses, that the reissued patent was too broad and was therefore void.

The court saw fit to disregard this plea, deeming it proper to dispose of the case upon a more radical and comprehensive objection. After citing the unimpeached and uncontradicted testimony of witnesses called by the appellees, to the effect that the complainants' wooden tanks had been discarded for reasons given, and that the use of return casks placed and fastened as described in the patent had been practiced for twenty years or more, the court said:

"This testimony leaves nothing of the substance of the plaintiffs' alleged invention. . . . But, irrespective of this testimony and of any testimony, upon looking this reissue in the face and examining its several claims by their own light, we find nothing that brings any of them within the sphere of what is patentable. There is no novelty and no utility." On this ground the Supreme Court pronounced the entirety and all the particulars of the claims "frivolous and nothing more."

"Patents rightfully issued," the court observed further on, "are property, and are surrounded by the same rights and sanctions which attend all other property. Patentees as a class are public benefactors, and their rights should be protected; but the public has rights also. The rights of both should be upheld and enforced by an equally firm hand, whenever they come under judicial consideration."

A few more decisions of this tenor should put an end to the practice which has wrought so much injustice to the public and brought so much discredit to the patent system, we mean the extension of obscure and often trivial patents so as to make them cover, on reissue, valuable processes or products not within the scope of the original.

PHYSICAL TRAINING AS A MEANS OF MENTAL HEALTH.

One of the serious problems which modern science encounters is how to deal with—more particularly, how to prevent—the excessive nervous development, and through that the frequent mental failure or derangement characteristic of modern life. The mad poet's sarcastic remark, that brains had brought him to the asylum—a fate his interrogator ran no risk of—was bitterly true; but it is not volume of brain so much as an unbalanced development of brain that leads to insanity or a liability to that distressing malady.

What are we to do? We cannot radically change our style of living to that of our slow-going ancestors; on the contrary, the indications are that our children's children will, by contrast with their more active life, look back upon our age as measurably serene. It is remotely possible that a new order of invention may reverse the tendency of the race and relieve the future of much of the mental and nervous strain which we have to endure; but it does not look that way now.

A generation ago the popular theory was that mental discipline, with the brain development which early and long-continued schooling gives, would furnish the capacity for mental work and mental endurance which would best fit the coming man for the work he would have to do.

The result has been to increase the work to be done, and the speed of doing it, without materially increasing man's capacity for toil. In many instances the course of education pursued seems rather to have lessened the endurance of our people, and to have hastened the mental collapse of many of our brain workers.

And the school children of to-day have more to do than their fathers and mothers had, and have to bear no inconsiderable portion of the evils of modern life besides; that is, if constant excitement, haste, and worry are to be accounted obstacles to healthy mental and nervous development. That they cannot fairly be considered beneficial is sufficiently evident.

Speaking of the nervous excitements and their results, due to our modern education and the rate and manner of our living, an eminent English physician (Dr. Browne, editor of the British Medical Journal) says: "The cerebral tissue becomes more and more highly organized, convolutions obtain secondary gyri, and with each differentiation in structure, new possibilities of disturbances are introduced; while the very differentiation in question produces in turn new mechanical devices, which again introduce a more complicated mode of life with which the nervous system must keep pace."

If there were no possible corrective to this tendency to increase the nervous strain of life more rapidly than the nervous organism can acquire power to endure it, the inevitable destiny of civilized men would be the madhouse or something near it. But there is promise of such a correc-