

Scientific American.

ESTABLISHED 1845

MUNN & CO., EDITORS AND PROPRIETORS. PUBLISHED WEEKLY AT No. 361 BROADWAY, NEW YORK.

TERMS FOR THE SCIENTIFIC AMERICAN. (Established 1845.)

One copy, one year, for the U. S., Canada or Mexico. \$3.00 One copy, six months, for the U. S., Canada or Mexico. 1.50 One copy, one year, to any foreign country, postage prepaid, £0 10s. 5d. 4.00

The Scientific American Supplement (Established 1876)

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, for the U. S., Canada or Mexico. \$6.00 a year, or £1 4s. 8d., to foreign countries belonging to the Postal Union. Single copies 10 cents.

Building Edition of Scientific American. (Established 1885.)

THE BUILDING EDITION OF THE SCIENTIFIC AMERICAN is a large and splendidly illustrated periodical, issued monthly, containing floor plans and perspective views pertaining to modern architecture. Each number is illustrated with beautiful plates, showing desirable dwellings, public buildings and architectural work in great variety.

Export Edition of the Scientific American (Established 1878)

with which is incorporated "LA AMERICA CIENTIFICA E INDUSTRIAL," or Spanish edition of the SCIENTIFIC AMERICAN, published monthly, uniform in size and typography with the SCIENTIFIC AMERICAN. Every number contains about 100 pages, profusely illustrated. It is the finest scientific industrial export paper published.

The safest way to remit is by postal order, express money order, draft or bank check. Make all remittances payable to order of MUNN & CO.

NEW YORK, SATURDAY, NOVEMBER 27, 1897.

Contents.

Table listing various articles such as 'Artillery force, increase', 'North Pole, quest of the', 'Arolic exploration, organized', etc., with corresponding page numbers.

TABLE OF CONTENTS OF Scientific American Supplement No. 1143.

For the Week Ending November 27, 1897.

Price 10 cents. For sale by all newsdealers.

Detailed table of contents for the supplement, listing sections like 'I. ASTRONOMY', 'II. BICYCLES', 'III. BOTANY AND HORTICULTURE', etc., with page numbers.

APPELLATE COMMISSION REPORT FAVORABLY ON THE NEW YORK RAPID TRANSIT SCHEME.

The commissioners appointed by the Appellate Division of the Supreme Court to determine whether the rapid transit tunnel should be constructed have filed a report in favor of the building of the road. Every one who is intelligently informed as to the problem of transportation in this city, and is disposed to look at the question from a broadminded standpoint, will be glad to know that this, the greatest and most needed improvement in the history of the city, is now in a fair way to be accomplished.

The report disposes of the so-called engineering risks and perils, of which the opposition has attempted to make so much, by stating at once that the road as proposed is entirely practicable. The objections raised against the Broadway scheme on the score of encroachments on vault spaces are, in the opinion of the commissioners, entirely avoided in the Elm Street plans, which call for a fifty foot width, as against a seventy foot width in the Broadway plan.

In regard to the second objection that the road, if built, would not pay expenses, it is estimated that as the Third and Sixth Avenue elevated railroads now carry 390,000 passengers per day, the tunnel road would have a daily capacity of 425,000. The passenger traffic of the city is increasing at the rate of 20,000,000 a year, which in the five years that will be consumed in building the new road would amount to 300,000 a day more than are now carried on all roads.

It is estimated that the income from passenger traffic and advertising would reach \$5,575,000, and the operating expenses, estimated at 60 per cent of the passenger traffic receipts, are put down at \$3,285,000. The interest on \$35,000,000, together with depreciation of equipment and sinking fund payment, would bring up the annual expenditure to \$5,557,000, or somewhat less than the receipts.

In reply to the statement that the financial condition of the city renders the undertaking impossible, the report quotes the comptroller's testimony that if the assessed valuation of real estate increases as fast in the next decade as it has in the past ten years, it would allow the city to incur an indebtedness of \$135,295,662 without any reduction of the margin which now exists between its net debt and the limit allowed by law.

We have spoken of the good work being done by the Metropolitan Street Railway Company in equipping its system with the electric underground trolley. Incidentally, a portion of the completed work gives a fair example of what the proposed underground transit will be like. We refer to the portion of the Fourth Avenue line which runs through the tunnel between Forty-second and Thirty-second Streets.

THE QUEST OF THE NORTH POLE.

In all the recorded history of our race there is nothing to compare with the unflinching persistence with which the quest of the North Pole has been carried on. It is not that men have failed to show perseverance in other enterprises of a military, scientific or romantic character, or that they have suffered less or run less risk to life and limb; but the fact that renders the search for the North Pole altogether unique and incomparable is the comparative smallness of the results which are expected to crown a successful attempt.

It is not likely that even the most practical among the many explorers who have set out for the North Pole has expected to contribute to the world's store of scientific knowledge any facts that would add greatly to its sum; and it is likely that the majority of the explorers who have gone north since the time when the impracticability of a northwest passage was proved have consciously or unconsciously been moved by the pure spirit of daring and discovery, and that spirit of emulation which, properly directed, is one of the most powerful agencies of human progress.

However, without attempting to analyze the motives which underlie these crusades of the nineteenth century, it must be admitted that their increasing frequency, their exhibition of courage and unconquerable purpose, and the ingenuity and resourcefulness with which they are in quick succession conceived and carried out, all indicate that man has set his heart resolutely upon reaching the North Pole, and that he is within measurable distance of the day when he will stand there.

The prospects of an early discovery (so called) of the North Pole are rendered more likely by the intelligent methods which are now being proposed for future expeditions. The work that has been done already has been too much of the nature of a forlorn hope. The small party that has cut loose from the main expedition, and made the "dash for the pole," has had about as much reasonable expectation of success as would a single regiment of an invading army, if it should push ahead and attempt to reach the interior of an enemy's country without maintaining its lines of communication with the main body.

We publish on another page a timely letter from Timbirsk, Russia, in which the writer dwells upon the positive necessity for systematic and strongly organized advance, if the pole is ever to be reached. The writer, in commenting upon Mr. Wellman's proposed expedition next year, points out two elements which are liable to bring on failure, one of these being haste and the other national and personal egotism. While the suggestion that such expeditions should partake of an international character, "accepting both universal subscription and universal help," is a good one, which, if adopted, would insure the expedition being carried out on the scale which, in our opinion, is necessary to success, we think that national and personal egotism has been and will continue to be a powerful and perfectly legitimate controlling factor in Arctic exploration.

By far the most promising attempt, judged by the standards above given, is that which will be made by our own distinguished explorer, Lieut. Peary, during the coming year. The plan of attack includes an expedition by ship through Robeson Channel to a point as far north on the Greenland coast as possible; then an advance of the party of Eskimos, with a few selected white leaders, by easy stages to the northern terminus of the North Greenland archipelago, caches of provisions being established at each headland; and from this point the inevitable "dash for the pole"—two Eskimos, picked dogs and the lightest possible equipment being taken for the final three hundred miles.

The fact that both Peary and Wellman intend to carry their lines of communication only as far north as the mainland, or archipelago, as the case may be, extends, seems to indicate that, in their opinion, it would be impossible to establish a chain of caches or depots across the sea of ice which encircles, or is supposed to encircle, the North Pole. If it is possible to place a line of depots across the floating ice beyond the land, it seems like inviting disaster not to do so, and one is driven to the conclusion that it is only the increased cost that prevents such a plan from being carried out. If our surmise is correct, the chances of reaching the pole would be very much greater if the two or three separate expeditions which are planned for next year were to join forces, and make the attempt through an unbroken line of communications and on the general lines suggested by Lieut. Peary.

REPORT OF THE SECRETARY OF THE INTERIOR.

In his first annual report, the Hon. Cornelius N. Bliss, Secretary of the Interior, deals at length and in an interesting manner on the condition, work and needs of this department of the government. We give below some of the topics touched upon in the report. In speaking of the devastation of the public domain by forest fires, the Secretary says:

"There are now existing nineteen forest reservations, embracing lands having an estimated area of 18,993,280 acres, which from time to time have been set aside by presidential proclamations. Thirteen forest reserves created by proclamation of February 22, 1897, were, with the exception of two in the State of California, suspended by the sundry civil act of June 4, 1897, until March 1, 1898. The suspended reservations contain an estimated area of 19,951,360 acres. The preservation of the public forests is a matter of vital interest to the entire nation. The enactment of adequate laws for their protection and the proper enforcement thereof, coupled