on the left in the background is shown the fine building of the *Staats Zeitung* newspaper, which stands at the angle made by the junction of Chatham and Center streets. Around this building sweeps the elevated railroad, which as usual defaces the fine facade of the contiguous structure and aids in obstructing a street already too narrow for the traffic which passes through it.

The northernmost of the two tall edifices in the middle of Fig. 2, previous page, is the *Daily News* office, the other is the iron structure formerly used by the *Staats Zeitung*. At a point about eighteen inches north of the north wall of the firstmentioned building, and consequently in the small house adjacent thereto, falls the center line of the Great East River Bridge, and at this point is the junction of both this line and a line drawn, with a slope of 3¼ feet per 100, from the top of the New York anchorage. Here, then, is the starting place of the immense inclined plane of masonry which forms the approach to the bridge. On each side of the center line for a distance of 55 feet the buildings will be demolished, and in lieu thereof will appear the entrance to the grand aërial avenue. The change thus effected is represented in Fig. 3, and in Fig. 1 the reader is supposed to be looking up the magnificent perspective which will be visible from City Hall Park. The length of the approach from entrance to summit of the anchorage is 1,562½ feet. The latter, it will be remembered, is an immense pile of masonry, located on Water street, in which are imbedded the iron anchors and chains to which the cables are attached. From anchorage to pier the distance is 940 feet. Then comes the span of 1,595 feet crossing the river, another stretch of 940 feet from pier to anchorage, and lastly the Brooklyn approach, which will be but 836 feet long, or somewhat more than half the length of that on the New York side; so that the whole length of the bridge will be nearly 6,000 feet. The great piers rise to a height of 268 feet above high water, and at the water line measure 134 feet in length by 56 feet in breadth. The cables enter the anchorage walls at an elevation of nearly 80 feet above high water.

From our large illustration it will be seen that the width of the approach is not uniformly maintained. Beginning at 100 feet—the extra 10 feet of ground being taken for convenience in construction—it continues at this width for a distance of 600 feet; then it narrows to 85 feet, and this is the uniform width until the roadway is once more broadened on the Brooklyn approach. The space afforded at the 100 feet section is partitioned off into four carriage ways, three footways, and two railways for rapid transit. A pair of carriage roads are arranged at each side, the other thoroughfares being placed intermediately. The narrowing is effected by omitting two footpaths. The rapid transit roads will be provided with endless ropes connected with powerful engines at the termini. To these cables the cars will be attached by ingenious clutching devices, and in this manner they will be drawn over the bridge. The carriage ways may be used either for street cars or for carriages. Upon them are to be laid iron and steel trams, some fourteen inches in width, to accommodate wheels of any width apart. These are also so made that they will serve as tracks for the street cars.

The roadway of the approach rests upon a series of semicircular arches, supported by piers of granite and brick. In these piers openings or cells are left in the masonry to economize material. On the north side the exterior of the approach will be closely contiguous to the adjacent buildings. On the south side there will be a street of varying width, in some places reaching 100 feet. It is possible that the three small buildings on the south side of the approach may also be removed, as indicated in Fig. 3, in which case there will be a fine broad thoroughfare running parallel with the approach. This subject is, however, still under consideration. The facade of the structure wherever visible is of dressed granite of two colors. The spaces within the arches will be devoted to warehouse purposes. In each will be two floors, the loftiest being from 30 to 37 feet above the ground. These will be rented for any business use not likely to prove injurious to the structure, and will doubtless prove a remunerative source of revenue.

The arch construction of the approach is varied where streets are to be crossed. At Franklin Square there is an iron truss skew bridge of 210 and 170 feet span. At Cliff street, there is a stone and brick structure of 51 feet 8 inches span, and at Vandewater street one of 40 feet. The other bridges are to be simple box girders.

The entire approach will be so ornamented as to present an imposing appearance. A pierced parapet will crown the edges; the girder bridges are of a unique design that is very tasteful; and at intervals along the roadway handsome gas lamps will be placed. In all probability this splendid structure will be completed within the next two years.

PROGRESS OF BRITISH TORPEDOES.—The laboratory torpedo is as far ahead of the Whitehead as the latter was in advance of its rivals. The new torpedo, it is said, can travel at a speed of thirty miles an hour, and can be adjusted with more certainty than its rival. The authorities at Woolwich now decline to show distinguished foreigners all that they are doing.

TESTING THE TAY BRIDGE.—The great Tay bridge was lately tested by running six engines (each weighing 72 tons), at first singly, and subsequently coupled together, over the whole of the spans. That weight is more than double the greatest possible working load, and the extreme deflection was found to be only 1¼ inch.

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.

The Scientific American Supplement

is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly; every number contains 16 octavo pages, with handsome cover, 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.

☞ Subscriptions received and single copies of either paper sold by all the news agents.

The Postal Union.—Under the facilities of the Postal Union, the SCIENTIFIC AMERICAN is now sent by post direct from New York, with regularity, to subscribers in Great Britain, India, Australia, and all other British colonies; to France, Austria, Belgium, Germany, Russia, and all other European States; Japan, Brazil, Mexico, and all States of Central and South America. Terms, when sent to foreign countries, Canada excepted, $4 gold, for SCIENTIFIC AMERICAN 1 year; for both SCIENTIFIC AMERICAN and SUPPLEMENT, $9 gold for 1 year. This includes postage, which we pay. Remit by postal order or draft to order of Munn & Co., 37 Park Row, New York.

VOL. XXXVIII., No. 14. [NEW SERIES.] *Thirty-third Year.*

NEW YORK, SATURDAY, APRIL 6, 1878.

Contents.

(Illustrated articles are marked with an asterisk.)

TABLE OF CONTENTS OF
THE SCIENTIFIC AMERICAN SUPPLEMENT
No. 118,
For the Week ending April 6, 1878.

Price 10 cents. To be had at this office and of all newsdealers.

Remit by postal order. Address

MUNN & CO., 37 Park Row, New York.

CITY PARKS AS GARDEN SCHOOLS.

It is scarcely a reproach to be considered too philanthropic, but after carefully reading Dr. Edward Seguin's proposal for the conversion of our city parks into garden schools, we are inclined to think that his desire to benefit the people is in excess of the advantages possible under his scheme. His idea is to convert the parks into species of museums; to introduce plants so classified and arranged that whoever examines them will involuntarily absorb botanical knowledge; to exhibit the appliances for "artificial hatching, breeding, and fattening poultry, raising the silk worm, etc.; to make the ponds lively with the appliances of hydraulics . . miniatures of great American water falls . . . shells, fishes, and the wonders of fish culture; to render the rocks and caves geological specimens," and so on, the motive being to facilitate education, or, in other words, to enable children to become educated through the medium of play.

There is a wide gulf between Dr. Seguin's plan and the outrageous proposal on the part of the city politicians to grab one of our largest and finest parks for the benefit of the young men who find pleasure in tricking themselves out in gaudy clothes and playing at soldier; but it is only necessary to remember that the parks are meant to be places of recreation for all classes of people, to perceive that a project which adds to the restrictions which must be cast around their use is only in degree less objectionable than one which prevents their enjoyment altogether. The main difficulty in our American mode of life now is that we are constantly tending to obliterate the distinction between work and play, by crowding work into hours which ought to be devoted to perfect relaxation of mind and body. If work must be done unremittingly the practice should be confined to the strongest years of life, and the preparation for such an existence manifestly is not an anticipation of it in childhood. The acquirement of knowledge is work, depending upon the nature of the individual, easy or difficult as the mind is receptive or the reverse. As a rule school hours are intelligently adjusted with a view to taxing the young brain to a safe limit; and to put any more upon it, by compelling children, voluntarily or involuntarily, to absorb more knowledge of the kind which should be, if it is not, taught in school, and this during their play hours, is simply continuing work. Besides play that is of any value as play has in its very essence freedom. The parks even now are sufficiently restricted, and if to "Don't walk on the grass," "Don't pick flowers," "Don't break trees," we are to add, "Don't meddle with the machines," "Don't carry off the specimens," "Don't step on the beds," "Don't paddle in the fish pond," and a score of other "don'ts," we might as well close the ground to the children at once.

Again, this project of Dr. Seguin's (which by the way by no means lacks eminent support, for we find it indorsed by Professors Newberry and Eggleston, the late Dr. Peaslee, and other well known citizens and scientists) does not take into account the fact that the immense majority of those who enjoy our parks are the poorer classes, who, in the breathing spaces which have been niggardly enough dealt out, find a welcome relief from the cramped quarters of the tenement, and as affording such relief it can hardly be contended that converting the parks into schools will enhance their value.

DISRESPECT OF INVENTORS' RIGHTS.

English literary journals are not remarkable for their appreciation of inventors' rights. Indeed, it is only too common with them to side with the aristocratic element of society in regarding inventors as, for the most part, poor devils who put themselves and their betters to no end of trouble by interfering with vested rights and established interests; that is to say, inventors who have not inherited or achieved distinction or title. If Sir John or Sir William invents anything, it redounds immensely to his credit and the credit of the British name. But if the unknown mechanic Jack or Bill does the same, and expects to be paid for his invention, it is quite another affair.

Accordingly a little plain talk from a paper like the London *Examiner*, touching the honesty of respecting the rights of inventors, seems decidedly encouraging. Somebody writes to the *Times* that Mr. Graham Bell certainly deserves the highest honor for his wonderful invention, the telephone, and then proceeds to say that the price of the instrument need not prevent any one from possessing a pair. The materials for making them can be purchased for a few shillings, and it is an easy matter to put them together. He himself had made a pair of excellent quality, at a cost of only fifteen shillings; and he goes on to show how others may do the same, unconscious that he is confessing peculation to the amount of about £24 5*s.*, and that he is instructing the public how to deprive the author of "this latest and most wonderful invention" of the reward of his labors.

Whereupon the *Examiner* remarks that the principles of common honesty are not so well understood as they ought to be; at all events there is a sad indisposition to give inventors and patentees the benefit of them:

"We presume that this gentleman would scorn to take £24 5*s.* from the pocket of a person who had earned his money by gambling, or on the stock exchange—that would be stealing. But Mr. Graham Bell happens to ask to be rewarded for rare ingenuity, patience, and scientific knowledge, and he is therefore fair game. 'Those that have brains should have no money' is this gentleman's new reading of the claimant's celebrated apothegm. A few complimentary phrases should satisfy them."

© 1878 SCIENTIFIC AMERICAN, INC