

SCIENTIFIC AMERICAN

ESTABLISHED 1845

MUNN & CO., - - Editors and Proprietors

Published Weekly at
No. 361 Broadway, New York

TERMS TO SUBSCRIBERS

One copy, one year for the United States, Canada, or Mexico \$3.00
One copy, one year, to any foreign country, postage prepaid. £0 16s. 5d. 4.00

THE SCIENTIFIC AMERICAN PUBLICATIONS.

Scientific American (Established 1845) \$3.00 a year
Scientific American Supplement (Established 1876) 5.00
Scientific American Building Monthly (Established 1885) 2.50
Scientific American Export Edition (Established 1878) 3.00The combined subscription rates and rates to foreign countries will be furnished upon application.
Remit by postal or express money order, or by bank draft or check.
MUNN & CO., 361 Broadway, New York.

NEW YORK, SATURDAY, MARCH 29, 1902.

The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are sharp, the articles short, and the facts authentic, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

SPEED ON THE ELEVATED RAILROAD CURVES.

We believe it may be said, without fear of contradiction, that the sharpest curves on any broad-gauge steam railroad system in this or any other country are to be found on the Elevated Railroads in this city. The sharpest on the road are to be found on the Sixth Avenue line, one at the intersection of Church and Murray Streets, and the other at the intersection of West Third Street and Sixth Avenue. Until the past few months, the speed of trains in passing around these curves has been reduced to a limit which gives a reasonable margin of safety against accident; but of late there has been an evident acceleration, and some of the trains take the curves with such velocity that, in spite of the considerable super-elevation of the outer rail, the cars are thrown heavily onto the bearing plates of the trucks, and actually at times have a distinct inclination to the outside instead of to the inside, as they should have, of the curve. The curve at West Third Street and Sixth Avenue is the one on which this is most noticeable, especially in the case of the uptown evening trains; the lurching of the cars is so noticeable as to have become the object of remark among old-time travelers on the road. At the speed with which the curves are being taken, the strains on the wheel flanges are simply enormous and, of course, the tendency of the flange to climb the rail is proportionally increased. Should a flange give way or a wheel mount the rail, the present wooden guard rails would, on curves of such short radius, be of little avail in holding the engine upon the structure.

We draw attention to this matter particularly because of the fact that with the completion of the electric equipment, a faster running speed is contemplated, and the temptation will be rather to increase the speed than to reduce it. If the curves are to be taken at high speed, the element of risk will be eliminated by giving a higher super-elevation to the outer rail. On such sharp curves as these, excessive super-elevation is a less serious evil than too little super-elevation, and we believe that it would be an excellent policy, before the fast electrical train schedule is put in force, if orders were given for the super-elevation of every curve on the line to be increased from thirty to fifty per cent.

MOVING SIDEWALK FOR THE BROOKLYN BRIDGE.

The moving sidewalk, a device which came into public notice at the World's Fair, Chicago, is proposed by Bridge Commissioner Lindenthal as the best remedy for the congested condition of travel across the Brooklyn Bridge. He proposes that four lines of moving platforms be arranged, running at speeds of 2½, 5, 7½ and 10 miles an hour, respectively. Of the four platforms, only the one moving at ten miles an hour would cross the bridge; the other three would extend merely around the loops at the two terminals, and would be installed simply to assist passengers in boarding the ten-mile platform, which, by the way, would be provided with seats similar to those of the moving platform at Chicago.

While nobody can deny that for passenger traffic the moving platform has a vastly greater capacity than any other known system, there is always the serious objection that a breakdown in any portion of the platform would mean the stoppage of the whole system until repairs could be made. For this reason we think that until the moving platform has been thoroughly tested under heavy conditions of traffic, it would be inexpedient to place one on such an important thoroughfare as the Brooklyn Bridge. At the same time, we do not doubt that by careful design and workmanship it could be made so mechanically perfect that the chances of a breakdown would be extremely remote. Under Lindenthal's scheme, a covered glass shelter would extend over the ten-mile platform, affording protection to passengers throughout the whole trip.

FAULTY PIPE THREADS.

Our esteemed contemporary The Locomotive draws attention in a characteristic article to the necessity for exercising great care in the cutting of threads on steam, water and gas pipes. Although piping as turned out from the mills of the manufacturer is threaded, or supposed to be threaded, according to a national standard, when it comes to be cut into commercial lengths in the installation of new systems of piping, or in repairing old systems, the standard proportions of thread are too seldom followed. The shop-cut threads are often so faulty that it is impossible to make a good joint with the standard fittings which they have to enter; hence the number of failures that occur at threaded joints. Thus, the standard calls, in a 4-inch pipe, for eight perfect threads, the total length cut by the die being 1.80 inches. Yet it is common experience to find that the total length of thread on 4-inch piping is only 1.25 inches, and, indeed, this is often all the thread there is on a 6-inch pipe, although the standard calls for 2.01 inches. As a consequence, it is a common matter to find pipe connections to boilers, for instance, which have only two, three or four threads properly made up. It is claimed, and justly so, that practice such as this shows an indifference to the safety of life and the security of property that is little short of criminal.

A NOVEL TURBINE DESTROYER.

A new turbine destroyer, the "Velox," has recently been launched by the British government from a Tyne shipbuilding yard. She is similar in dimensions to the ill-fated "Viper" and "Cobra;" but special attention has been given to the question of structural strength, with a view to preventing any such disaster as happened to those two craft. The novel feature of this vessel is that, in addition to the compound turbine engines which comprise the main source of power, a small set of ordinary reciprocating, triple-expansion engines is introduced. The object of this arrangement is to get around the difficulty of using the turbine engines when traveling at cruising speed, for which they are extremely uneconomical. The turbine shows its best economy when it is working up to full power, and in the new destroyer the small reciprocating engines, which are on the same shaft as the turbines, will be utilized for cruising at low speeds, the exhaust steam of these engines passing through the turbines, and finally into the condensers. When the higher speeds are required, steam will be admitted direct from the boilers to both the reciprocating engines and the turbines. When the propellers have reached a velocity that would be dangerous to the reciprocating engines, the latter will be thrown out of gear, and the turbines independently operated.

ARMOR PLATE FOR THE RUSSIAN GOVERNMENT.

The construction of the battleship "Retvizan" and the cruiser "Variag" for the Russian government by an American shipbuilding yard, the armor for which ships was made by the Bethlehem Steel Company, has led to the placing of other Russian orders for plate in this country. A striking evidence of this was seen last week in a train of eighteen cars which left Homestead on express orders for New York, carrying thirty-six plates for the first-class battleships "Borodino" and "Ariel," which are now building at the Imperial yards at St. Petersburg. The consignment represented six months' work at the armor-plate department at Homestead. In view of the fact that the armor plate required for the new warships for the United States navy is more than sufficient to keep the Bethlehem Steel Works and the Carnegie Works continuously occupied, it is evident that there is a call for other armor-plate factories in addition to the two above named. We understand from the last report of the Naval Bureau that a third firm will shortly be in a position to turn out Krupp armor; but if we are to furnish the armor for our own navy and also supply foreign governments on the scale of this recent shipment, it is evident that there will soon be a demand for a fourth armor-plate-making establishment. The industry is an extremely profitable one, even at the reduced price at which plate is now being furnished. Indeed, we do not know of any industrial enterprise in which capital could be invested on a large scale with a surer certainty of profitable returns. There is not the slightest indication of any slowing up in the rate of growth of the navies of the world, our own included; and if the United States navy is to increase in adequate proportion to the extension of our foreign trade (as it certainly should do), the demands of our navy alone will before long require double the amount of armor plate that is now being furnished annually by existing works.

FIRE INSPECTION OF HOTELS.

It is gratifying to learn that one result of the recent Park Avenue fire has been the awakening of proprietors of hotels in this city to the necessity of thorough fire inspection, the improvement of existing fire-fight-

ing apparatus, and the installation of new protective devices designed to facilitate the escape of guests on the breaking out of a fire. The fact that the fire originated at the bottom of an elevator shaft, probably among some oil-soaked waste and refuse, and that, as it swept up through the shaft, it was intensified by the combustible material built into the shaft itself, has led to the conviction that elevator shafts, and all other vertical openings through the building should be most thoroughly fireproofed, and that the landings at the various floors should be provided with fireproof doors. A protective device, which the Superintendent of the Department of Buildings is strongly advocating as a preventive against disasters, is the provision, at stated intervals in the corridors, of swinging doors, whose object would be to confine the dense smoke which always accompanies fire, within limited areas of a hotel. In the recent fire, as, indeed, in the case of most fires, it is the dense and suffocating smoke that is the primary cause of much of the loss of life. People rush from their rooms into an atmosphere that either drives them back to the outer windows, or suffocates them as they grope for the stairways or other exits. This is a common-sense suggestion, which should be adopted at once in every hotel, at least of the older type, in the city. In view of the great protection they would afford, it is certain that hotel patrons would be perfectly willing to endure the slight inconvenience of passing one or two sets of such doors on their way through the corridors.

Yet another suggestion, which is both common sense and practicable, is that of constructing bridges across the interior courts, by which guests on each floor could make a short cut to the rear or front of the hotel, as the case might be, without having to pass through a great length of corridor. A time like the present, when the public has just received such a terrible object-lesson, is opportune for a revision of those laws which affect the fireproof construction of hotels and public buildings, and the provision and maintenance of proper fire-fighting apparatus.

OBJECTIONS TO THE PENNSYLVANIA TUNNEL BILL.

Although a considerable amount of opposition is being shown to the bill authorizing the Pennsylvania Railroad to construct a tunnel beneath Manhattan Island, this opposition is not to be construed as being directed against the tunnel scheme as such. Indeed, it is pretty safe to say that every interest that will be affected by the tunnel is disposed to view the scheme with unqualified approval. The most serious opposition to the bill comes from the Rapid Transit Commission, on the ground that it takes away from the Commission the power to supervise and regulate the construction and operation of tunnels in the way that was contemplated by the Rapid Transit Act. Moreover, it is claimed that while it grants a favorable franchise in perpetuity, the bill does not guarantee to the city an adequate compensation, and in its present form overrides the city charter which limits the granting of franchises to a period of twenty-five years. Furthermore, the bill fails to settle the amount of compensation to be paid to the city, making it purely discretionary. If these points are well taken, they should certainly be sufficient to prevent the passage of the bill in its present form. The lavish gift of franchises by the authorities, in the earlier years of its history, has robbed the city treasury of profitable sources of revenue. The bill should be so amended as to protect the city without hampering the railroad company, and at the same time leave the Rapid Transit Commission supreme in the control of Rapid Transit in this city.

SAILING VESSELS IN THE SUEZ CANAL.

No sailing vessels have crossed the canal since 1874 or 1875, except during the time of the Turko-Russian war of 1877-78. At that time sailing vessels arrived from Calcutta with Indian troops; but for the last ten years no sea-going sailing vessel has crossed the canal. Sometimes trains of coal and materials, treated by the Suez Canal Company as sailing vessels, with the object of collecting the towing duties, have crossed the canal, but no sailing vessel engaged in high-sea navigation has crossed it within the period named. The absence of sailing vessels in the canal is explained by the difficulties of navigation in the Red Sea. The extraordinary number of sailing vessels lost in the Red Sea (which is full of dangerous reefs and shoals) during the years 1872-73 seems to have effectually discouraged further attempts. The officials of the Suez Canal Company believe that the construction of the canal, which was opened to navigation in 1869, has been an impetus to steam navigation throughout the world.

Telluride, Col., was the scene of a snowslide recently which overwhelmed the men at the shaft of the Liberty Bell Mine. Thirty men were lost in the slide and forty in a rescuing party who were swept down by a second slide.