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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.

"WHAT'S IN A NAME?"

We note in the columns of the daily press that the Cunard Company are proposing to bestow upon the two 25-knot turbine steamers, the time of whose launching is not far removed, the names "Lusitania" and "Mauritania." As we stand in meditative contemplation of these most interesting products of the art of nomenclature, we are askng, like one of old, "What's in a name?" Saving and except that they end in the characteristic last two syllables favored by the company, they fail to call up any familiar associations either of people or country. "Umbria" we know and "Etruria" we know; but who are these?

A reference to the encyclopedia discloses the fact that "Mauritania" and "Lusitania" were the ancient names, respectively, of Morocco and Spain—two of the countries which are playing a leading part in the present diplomatic amenities at Algeciras; from which it is evident that the Cunard Company, forecasting a peaceful outcome, have decided to perpetuate the conference by an appropriate christening.

One member of our staff has suggested that because the two new ships are the longest in the world, search was made among the names of countries living and dead for names that bear a similar distinction; while a contemporary has discovered that the ships will never need to take in water ballast, their names being heavy enough to keep them on an even keel in any weather.

But in all seriousness we do think it would be a thousand pities if these two noble ships, representing the highest effort of the shipbuilder's art, should be dispatched to this country carrying names which have no appropriate significance whatever. Surely the Cunard Company possess, among the names of the earlier ships, some that might fittingly be perpetuated in these, their latest vessels. The SCIENTIFIC AMERICAN, therefore, offers the friendly suggestion that the company revive the names "Britannia," and "Hibernia"; the one being the name of the first ship to carry the Cunard flag across the Atlantic, and the other the name of one of the "Britannia's" three sisters. There would be a peculiar fitness in the choice, inasmuch as the "Britannia" and "Hibernia" of 1907, like their namesakes of sixty years before, will mark the opening of a new era in the wonderful story of the navigation of the Atlantic.

NEW WATER SUPPLY LEGISLATION.

The legislature of the State of New York has seldom been called upon to discuss a bill of greater importance and urgency than the one now being pressed upon its attention for increasing immediately the water supply of the city of New York. It is gratifying to know that this whole question is in the hands of a Board of Water Supply, whose members are strictly non-partisan, and all men of sterling worth. Its engineers have formulated a plan, the broad outlines of which are discussed elsewhere in this issue, which embodies the results of investigations extending over many years, and carried on by the very best engineering talent of the day. If favorable legislation is secured, and active construction at once begun, it will be possible to complete in a few years' time a sufficient section of the new system to ward off the threatened risk of a water famine. That such a famine is possible if immediate steps are not taken to prevent it, will be evident from the following considerations:

The water supply of New York is at present confined almost exclusively to the Croton watershed, with which it is connected by two aqueducts, the "old," and the "new." The new Croton aqueduct, completed fifteen years ago, in its present condition, when running at its full capacity, can deliver 295 million gallons of water per day to the distribution reservoirs in Manhattan. The old Croton aqueduct, as now being repaired, can be relied on to convey about 80 million gallons per day. New York city, therefore, has aqueduct connections with the Croton watershed which are sufficient to bring in a maximum of 375 million gallons per day. In years of extreme drought, however, the Croton watershed, even if every reservoir within it should be drawn down until it was empty, can be prudently relied upon to yield, in years of extreme drought, not more than 300 million gallons per day. Nevertheless the consumption of Croton water has already averaged for an entire month as high as 318 million gallons per day, and for a whole year 292 million gallons per day. Now for ten years past the consumption of water in New York city has increased at the average rate of 14 million gallons per day, a rate of increase which renders it certain that unless a new supply is soon provided New York city must face the untold inconvenience and danger of a water famine.

STEEL MANUFACTURERS AND THE CHAIN BRIDGE.

The Merchants' Association of this city is determined to leave no stone unturned in its efforts to expose the daily increasing scandal of the delay in building the Manhattan Bridge; and they have recently addressed a strong letter to the Hon. Herman A. Metz, comptroller of the City of New York, which has received a favorable answer.

In the campaign carried on in the daily press by the engineers who were anxious to discredit the accepted design for a chain bridge, it was repeatedly stated that the chain bridge would cost more to build than a wire bridge, and that the steel manufacturers would be unable to manufacture eye-bars of the great size required, that would come up to the requirements of the specifications. These statements were merely part of a cloud of pseudo-technical dust with which an effort has been made to confuse the issue.

Now the Merchants' Association has effectually disposed of this contention by writing to several of the leading steel manufacturers, firms who would be possible bidders for the construction of the chain cable bridge, and asking them whether such a bridge could be built, and whether it would cost more in time and money than a wire bridge. In every case the association was assured by these firms that they were prepared to submit bids and undertake the construction of the bridge according to the plans. They further stated in their replies that the Manhattan Bridge, if built on the eye-bar plan, will require less time for its construction than it would if built on the wire cable plan.

We do not make any comments upon the breach of professional etiquette involved in the starting and keeping alive of a daily-press agitation of this character by engineers of more or less standing—that is a question for the Society of Civil Engineers or for the papers devoted exclusively to civil engineering interests to pass upon—but we do consider it to be a strange anomaly that, although the engineers who are opponents of the chain bridge have been feverishly anxious to discuss, or prompt the discussion of, this bridge question in the daily press, or before non-technical bodies, they absolutely refuse to allow it to be brought up for discussion and decision before a qualified board of engineering experts. It is not the fault of the public if it is driven to believe that the refusal to submit the plans for the two bridges to a tribunal of expert engineers, is due to the fact that the advocates of the wire bridge are well aware that the decision would be in favor of the more modern, more scientific, cheaper, and more quickly constructed chain-cable design.

A TIMELY WARNING.

In our issue of December 9 of last year, commenting on the need for providing some form of horizontal guide or fender rails on the supporting columns of the Subway on all curves, we said "the SCIENTIFIC AMERICAN is of the opinion that on such curves as those at the Grand Central Station and Times Square; and at all turnouts such as that at Spring Street which are liable to be taken by express trains at high speed, it would be advisable to attach some form of guard rail to the lines of posts on the outer side of the curve." That the warning was timely was shown on the morning of March 15 last, when the third car of a heavily-crowded express train jumped the track at the Spring Street turnout, and was only saved from collision with the columns by the strength of its couplings, which fortunately proved sufficient to hold it in the general line of the train and fairly close to the rails, until the emergency brakes had brought the train to a stop.

We regard the situation at Spring Street as being particularly dangerous for two reasons: First, that whereas at the Grand Central Station and Times Square the curves are both sharp and long, and therefore, must always be conspicuous in the minds of the motorman, the curve at Spring Street being only what might be called a jog in the line, to enable the tracks to swing out sufficiently to admit of an additional track at that point, does not appear to be as formidable a curve as the two above mentioned. When a motorman is running at full speed, and particularly should he be behind time in the rush hours, there is a strong temptation for him to take the turnout at a higher speed than he would if the turnout were merely the commencement of a long and formidable-looking curve. And yet it is a fact that such short curves as are found at turnouts or where the tracks spread to pass on either side of an island platform, are very much sharper than the longer and more important curves. Furthermore, in the Subway, the important curves are "spiraled," or "eased," that is to say they are parabolic in curve, and the centrifugal thrust of the train against the outer rail is so gradually developed as not to be perceptible to the ordinary passenger. On turnouts and jogs the change of direction of the track is so abrupt that if, as happens every day on the Subway, the motormen on the express trains fail to make the proper reduction of speed, there is a jolt and lurch to the train which tells very plainly what a terrific strain is being thrown upon the guard rail and upon the flanges of the car wheels.

A personal inspection of the track at Spring Street after the accident showed very clearly the point at which the centrifugal thrust of the flange of the wheel against the guard rail became great enough to enable the flange to get a sufficient "bite" on the metal to enable it to lift itself and its load over the rail and so cause the derailment. The general manager of the company has issued an official statement, which assigns the derailment to the fact that the wheel had slipped on the axle and that this widened the gage between the wheel flanges and caused the trucks to jump the track. This may be perfectly true; but it simply proves what a terrific lateral thrust is being exercised on the Subway cars if the guard rail reaction is sufficient to shift a wheel on its axle; for these wheels are thrust onto their axles by a hydraulic pressure, which amounts, we believe, to as high as 15 or 20 tons.

Another fact that makes the situation at Spring Street one that calls for great care in running the trains is, that the turnout necessitates a break in the continuity of the line of columns, and that as a train swings over to the right and crosses this line diagonally, it is in a position in which, if the leading car of a train that was running too fast were derailed, it would run end-on into the first of the columns, beyond the turnout, with one or two results: Either a number of the columns would be carried away and the street above crash into the Subway, or, should they be able to resist the impact of the 300-ton train, the columns would shear their way through the first car, splitting it in two.

We do not wish to be alarmists. The Subway and its equipment are absolutely first class; and there is not the slightest risk at Spring Street, or elsewhere *provided the trains are slowed down to the proper speed for which the curves at this point were laid out by the engineers who built the road*. The rules of the company as to reduction of speed on curves should be of the most stringent character, and accompanied with the severest penalties in case the lawful speed is exceeded. There can be no doubt that at present motormen are running over portions of the line, where they are expected to slow down, at a higher speed than is consistent with a prudent and safe operation of the road; and the most flagrant instance of this, especially during the past six months, has been the particular spot at which the recent derailment occurred.

THE DURATION OF LIGHTNING FLASHES.

Faraday made observations which to him proved that lightning flashes lasted as long as one second, whereas Dove, by his observations on tops, illuminated by a flash of lightning, was led to infer that the duration of lightning must be exceedingly short.

L. Dufour has suggested using rapidly-rotating devices, such as employed by Wheatstone in measuring the duration of electric sparks, for determining the duration of lightning flashes. He thus distinguished "instantaneous" and "rapidly succeeding" flashes of lightning and those of a "certain duration."

The oscillating character of lightning flashes has been proved by B. Walter from photographic records, which showed a wave-shaped fluctuation in luminosity.

In a recent issue of the Elektrotechnische Zeitschrift Mr. K. E. F. Schmidt records some experiments made on a rapidly-rotating disk, 10 centimeters in diameter, on which a white cross on a black background had been drawn, the members of the cross being 2 millimeters in breadth. This disk being driven by clockwork, performed 50 to 60 revolutions per second, and the following observations were made by its means on heavy evening thunderstorms:

1. In connection with many flashes, the cross would appear once brilliantly and sharply.

2. The cross would more frequently appear two, three, or even more times as a well-defined image, either in so rapid a succession as to give the impres-