

THE BRIDGE BLUNDER

Continued from first page.

now made by two independent authorities shows that the very high unit stresses permitted by the specifications are far exceeded.

Messrs. Bolter & Hodge treat this matter in their report very briefly. They say merely:

"We made a stress sheet for the loads called for in the specifications. BUT IT WAS EVIDENT THE STRUCTURE COULD NOT SAFELY CARRY THESE LOADS, so we had to find the maximum safe carrying capacity of the structure.

The capitalization is ours and is fully justified, we submit, by the importance of the statement. Here is a stupendous bridge—one of the greatest in the world—designed to carry safely a certain loading and contracted for on that basis. On completion it is found to be absolutely unsafe to carry this load. Surely the public is entitled to ask who has blundered and why it is not to receive what it has paid for.

Turning now to Professor Burr's report, we find it much more explicit on the condition of overstrain in the bridge. He states that the specified loading on the structure would stress some of the bottom chord members of the island span about 25 per cent more than the specifications permit. Reduced to figures this means that some of these compression members (concerning whose strength the profession is in grave doubt anyway) would carry, if the concealed loading were applied, about thirty thousand pounds a square inch (less the usual deduction of a quantity dependent upon the column length and size).

And this is not an isolated case of overstress. The nickel-steel eye-bars in the chords of this same span would also be overstressed about 25 per cent, or would carry a unit load of almost 40,000 pounds a square inch. It may be noted here that the specified elastic limit of these nickel-steel eye-bars was only 45,000 pounds a square inch.

Even this is not quite the worst that Professor Burr finds. We quote as follows from his report:

"The overstresses in a number of the carbon steel eye-bars would range from 10 to 15 per cent in some members in all parts of the structure except in the Queens anchor arm, where 30 per cent is reached in one case. There would be also some similar overstresses in riveted tension members in the same parts of the bridge, rising above 33 per cent in a single instance. Few main posts in all the bridge would be overstressed as much as 25 per cent. In the Queens anchor arm there is one post which would be overstressed 33 per cent. The Manhattan rocker arm would be overstressed nearly 20 per cent in tension and 30 per cent in compression, while the Queens rocker arm would be subjected to an excess of 10 per cent in tension and 12 per cent in compression.

"Few main posts in all the bridge would be overstressed as much as 25 per cent" is, we take it, a bit of veiled sarcasm on the part of Professor Burr, for every engineer knows that it would take precious few such overloaded members to condemn the structure.

It must be remembered in reading the reports of Messrs. Bolter & Hodge and Professor Burr that they are rendered to the Department of Bridges, which is responsible for the design and erection of the Blackwell's Island Bridge. Commensurate courtesy, therefore, forbade anything of a condemnatory tone in the reports, and confined the writers to a bare statement of facts.

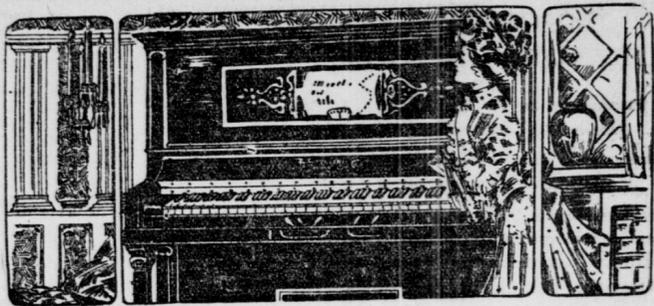
Curiously enough, this absence of any condemnatory tone in the wording, coupled with the technical character of most of the report, has led many of the New York newspapers to regard these reports as quite of a reassuring character, and they publish extracts from the reports under such headings as "Queensboro Bridge Safe." It is needless for us to say to our readers that the bare facts given in these reports are more condemnatory to those who understand their full significance than any mere words could possibly be.

And it should be noted here that all the information desired concerning the bridge has not yet come to light. A stress sheet has been given out and is printed in this issue, showing what loads the various members would carry under the loading recommended by Messrs. Bolter & Hodge. We still lack the stress sheet showing what stresses would be imposed on these members if the loads fixed in the specifications were applied. It ought to be most illuminating. It may shed some light, for example, on the puzzling question why a bridge with a dead weight of over 35,000 lbs. per lin. ft. can carry a live load of only 4,000 lbs. per lin. ft.

We said above that the report contains material that will astonish the engineering profession. Surely the facts just quoted justify this statement. Here is a huge bridge structure built by a great and wealthy city. There was no need and no thought of attempting to economize in the design, as was done from force of necessity at Quebec. The city bridge department has had on its staff some engineers of high professional reputation, and the structure has been built by a firm of long experience and high standing. Were these engineers ignorant of the stress conditions in the structure? Did they knowingly transgress the limitations for safe stress fixed by the specifications? Would they have deliberately taken the responsibility of opening the bridge to public use in this condition regardless of the terrible object lesson at Quebec a year ago?

A multitude of questions of this sort come to mind. It is a thousand pities that the history of this bridge cannot be investigated by another Holgate Commission as was the history of the Quebec Bridge. The engineering profession might then gain some further knowledge as to how to design—and how not to design—great cantilever bridges.

Adopting this (20,000 per square inch) as the safe working stress for the metal, Messrs. Bolter & Hodge find that the main trusses, as they now stand, can safely carry a live load of about 2,000 lbs. per lineal foot each, and by taking off about 1,000 lbs. per lineal foot of the dead load the capacity can be raised to 3,000 lbs. live load per lin. ft. By assuming a loading of only 50 lbs. per sq. ft. on the roadways and sidewalks, and specifying that trolley cars shall be spaced at least a car-length apart, Messrs. Bolter & Hodge conclude that the bridge may be safely opened to pedestrian highway and trolley car traffic on four tracks, but that the elevated railway tracks cannot be used. Professor Burr takes off more of the dead load, spaces the cars farther apart and then concludes that one pair of elevated tracks might safely be opened for



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traffic, provided that the heads of the trains are spaced at least a thousand feet apart.

Is it safe to permit this great bridge to be used under such conditions? Is there sufficient assurance that regulations as to the spacing of trains will be actually observed without interference? Professor Burr cites practice on the old Brooklyn Bridge in the spacing apart of cars as justification for the adoption of similar precautionary measures on the Blackwell's Island structure. On the Brooklyn Bridge, however, the car spacing was adopted in view of limitations in the floor system. If through neglect cars should be hunched too closely together, the worst to be expected would be injury of some of the floor members or possibly of some of the stiffening truss members. It is almost certain that any distress in these members from such overloading would become evident before serious accident occurred. But on the Blackwell's Island Bridge, when official neglect—always a possibility, if not a probability—permits cars and trains to crowd closer than the limits fixed above, the result will be that the main truss members will be overstressed.

Let us not forget just what this means. It means that unit stresses of 20,000 lbs. a square inch, with no allowance for snow loads, for wind, for reverse stresses, for impact or for secondary stresses, such as the bending of members due to their own weight, may be exceeded if trolley cars are allowed to run closer than a car length apart. Let us not forget, either, that experience at Quebec shows that important members of a truss may be loaded almost to the point of final failure and yet show very little external evidence of their condition.

We believe this matter should receive more thorough consideration, at least before the bridge is opened to the public. There is another question, however, that seems to us of even greater importance. That question is the strength of the compression members in the Blackwell's Island Bridge. Will these safely carry the unit stresses which the experts have assumed? What margin of strength will still remain when such a load is applied to them?

Both the expert reports give special attention to the design of these members, and we have studied carefully their discussions of the strength. We fail to find in this discussion any adequate assurance that these posts and chord members can carry safely the load it is proposed to place upon them. Both reports conclude that these compression members are at least as strong against bending horizontally as vertically, but the reasoning on which this conclusion is based is fatally defective in that it leaves wholly out of account the strength—or lack of strength—in the column latticing. It is needless to say that the strength of these huge columns depends as absolutely on the strength of this latticing as did the unfortunate structure at Quebec. The interests at stake are too great and too important to rest on the mere judgment of any man or set of men as to whether this column latticing is strong enough or not.

Theories of stresses are valuable and necessary, but they must be reinforced by actual test or they will fall into more such disasters as that which befell the profession on August 29, 1907.

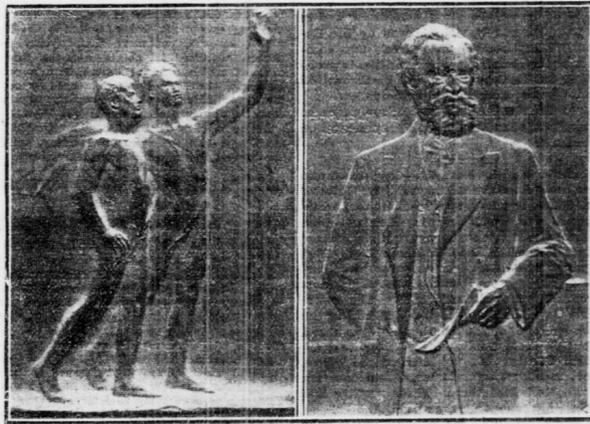
We call the special attention of our readers to Professor Burr's report on this matter. We quote:

Adverse comment has been made on the heavy compression lower chords of this bridge, and that design therefore has been scrutinized with great care. It will be found by examination of the stress sheet that there are other compression members of the trusses which sustain higher unit stresses with a greater ratio of length over radius of gyration. There can be no apprehension, therefore, that these lower chord compression members are in any way unsafe (Italics ours)—B4. "Engineering News" or of less unit carrying capacity than other main compression members of the trusses.

And so the lower chord members are safe because the posts are weaker than the chords are? We doubt whether assurances of safety, based on such reasoning will convince anybody. Evidently it failed to convince Professor Burr himself, for elsewhere in the report we find him recommending that the bridge be destroyed and replaced by a steel truss bridge with six pairs of structural steel compression members similar in cross-section to typical compression members of the Blackwell's Island Bridge and as large as can be tested in the largest testing machine in this country! Why go to this trouble and expense if these compression members are so safe?

Professor Burr's recommendation for tests is good as far as it goes, but it does not go far enough. Let us frankly face the fact that neither the public nor the engineering profession can have confidence in the safety of the Blackwell's Island Bridge until some of its full size members

MEMORIAL PLAQUE OF CARL SCHURZ.



Memorial plaques of Carl Schurz in silver and bronze have been distributed recently as souvenirs among his friends and admirers in this city. They were executed by Victor D. Brenner, at the request of Paul M. Warburg, of Kuhn, Loeb & Co., an intimate friend of Mr. Schurz. The obverse bears a three-quarter length portrait, full face, of Mr. Schurz in the attitude of addressing an audience. His right hand is at his back, and his left, holding a manuscript, rests on

a pedestal on which is inscribed Mr. Schurz's motto, "Ubi Libertas, Ibi Patria" ("Where Liberty is, there is my Fatherland"). Above appears the inscription "Carl Schurz, 1829-1906," the dates of his birth and death. The reverse bears a group symbolizing Youth led by an ideal from the valley of darkness toward the light of the rising sun. The plaques are oblong, 3 by 2 1/2 inches in size. The original models were 8 by 11 inches.

are tested, so that it can be known what their margin of strength really is.

Three months ago, in our issue of July 30, 1908, Mr. Gustav Lindenthal brought forward a simple method by which tests on these great columns could be carried out at small expense. The point we wish to emphasize is that such tests CAN be made; and that they must be made before the Blackwell's Island Bridge can be regarded as safe for public use.

The issues at stake are too vast to permit any trifling or temporizing with this matter. Hundreds and thousands of human beings will pour across the bridge when it is opened, and we must know within reasonable limits what margin of safety there is in its members. Finally, it is proper to point out that "Engineering News" has been throughout conservative in its treatment of this matter. We have fully appreciated for more than a year that the safety of the Blackwell's Island Bridge was a matter of grave doubt; but we forbore exciting popular apprehensions. In the hope that those responsible for the public safety would take the necessary steps to remove the doubt. The publication of the reports of Messrs. Bolter & Hodge and Burr, however, reveals conditions of overstress and consequent weakness in the bridge never before suspected, in addition to the anxieties regarding the compression members. What we have said above has been merely to present the facts revealed by these expert technical reports in their true light. We are as far from desiring to pose as alarmists regarding the structure as we are from aiding those who are endeavoring to apply to it a coat of whitewash. That coloring won't strengthen the bridge a particle, any more than the confident assurances of those who say nothing wrong with those bending chords at Quebec could avail to save them from ultimate failure.

MISSING CASHIER IN THE TOOLS.

Said to Have Spent \$5,000 on the Races in Less than Two Months.

Baltimore, Nov. 11.—A man whom the police say is Edmund Cecil Loudon, until a short while ago bookkeeper and cashier of the Provident Savings Bank and Trust Company of Cincinnati, was arrested at a hotel here to-day on the charge of having embezzled between \$5,000 and \$6,000 from the institution. He is said to have admitted that he was the person sought.

On September 22 last Loudon is said to have entered the cage of a fellow employe at a bank, gathered up about \$5,000 in bills and a lot of checks, and disappeared. It is said he has since visited racetracks all over the country. He is quoted as saying that he had had a good time and that he had not a penny left. He is twenty-six years old.

WRECK SURVIVORS HERE.

Passengers of Velasquez Come to Port on Steamer Titan.

Seventy-six persons who survived the wrecking of the steamer Velasquez, of the Lamport & Holt Line, off the coast of San Sebastian on October 16, were brought to port yesterday on the steamer Titan, of the same line, to which the survivors were transferred from the Milton, which rescued them. No lives were lost, but the passengers suffered somewhat from lack of food for several days and the inconvenience of sleeping on the beach. Captain Kelley and several officers of the Velasquez did not return to New York, but went on another steamer from Brazil to report to the home office of the line, in England.

According to the passengers who arrived here yesterday, the weather was fair, but the night exceedingly dark, when the Velasquez grounded on San Sebastian. No explanation could be given for the grounding of the big steamer. When the water poured into the fire room, and the engines stopped and the lights went out, the passengers became alarmed. The work of getting the passengers and crew into the small boats had to be done practically in the dark.

36 YEARS FOR BURGLAR CHIEF.

Pittsburg, Nov. 11.—Convicted on eleven charges of burglary, John Loar, alleged leader of a band of negro highwaymen, has been sentenced to serve thirty-six years in the Western Penitentiary. Sentence has been deferred in the case of Loar's companion, "Frisco" Sullivan, convicted on four burglary charges, pending valuable information expected from him.

Sullivan left Pittsburg to-day in charge of three officers for Leechburg, Penn., where he says \$10,000 worth of silverware and jewelry, the loot of various burglaries here, is buried. It is expected that information will be obtained from Sullivan's confession which will clear the mystery surrounding the death of Harry Firth Smith, who was murdered in a duel with a burglar at his home two years ago.

SHERIFF KILLS NEWSPAPER WRITER.

[By Telegraph to the Tribune.] Austin, Tex., Nov. 11.—James H. Merrin, a newspaper writer, formerly employed in St. Louis and New York, was shot and killed at his former home at Caldwell, Tex., last night by Sheriff L. W. Henslee, of that county. Henslee surrendered, but has made no statement as to the cause of the shooting. Merrin was at the railroad station ready to leave town when Henslee walked up and shot him. Merrin was thirty years old.

NEW YORK YOUTHS HIGHWAY ROBBERS.

Boston, Nov. 11.—State prison sentences were imposed on two New York youths, William F. Dunagan and Joseph Moran, in the Superior Criminal Court to-day, the young men having pleaded guilty to charges of highway robbery. It was alleged that the defendants held up and robbed Ernest F. Jenkins, a hotel clerk, on the street in Dorchester last month.

The Wanamaker Galleries
Furnishing & Decoration
New Building. Store Closes at 6 P. M.

REAL LEATHER LUXURIOUS LOUNGING CHAIRS For Tired Busy Men In This Moderated Price Sale



PROMINENT newspaper man expressed keen delight yesterday in a deep-toned comfy velvet-surfaced, cool and luxurious leather chair that he purchased here, in the hope of feeling waves of comfort when he comes home, brain-weary and tired, with "frazzled" nerves. As the usual price of this chair would be about THIRTY-THREE AND ONE-THIRD PER CENT GREATER than this gentleman paid, we were pleased to hear his comment on its value as an investment.

No greater value can be had in any sort of house furnishing than in REAL LEATHER pieces, at customary prices. At these November sale prices they are almost like government bonds. A year's preparation is shown in this great collection which includes modest-cost rockers as low as \$6, (ordinarily \$9) up to the most sumptuous and stately London English Morocco Club pieces and suites. Fifth Gallery, New Building.

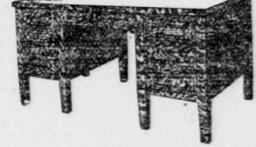
The Very Pictures for College Rooms

A fine and interesting collection of ORIGINAL DRAWINGS, in pen and ink, by artists you all know—Hy Mayer, Stanlaws, Jay Hambidge, King, C. H. Johnson and others. Exactly what college men will like to hang on the walls of their rooms—but you don't have to be in college to find a place for them.

All in black frames, with or without mats. At \$5, originally \$10 to \$25 At \$3.50, originally \$5 to \$10 Eighth Gallery, New Building.

A Desk of Service

The picture shows one of the most popular patterns of Office Desks on our floor. But it is only one from more than a hundred different patterns—for a very remarkable assortment is here.



The details of construction and finish show the same care that you would expect in a desk of three times its price. In Quartered Oak, \$25 In Mahogany, \$37.50 Roll-top and Typewriter Desks to match it in a variety of sizes. Seventh Gallery, New Building.

Time-Thrift UTENSILS in Nickel and Copper

An interesting demonstration of Coffee Machines and other nickel and burnished copper things in the Housewares section. Some purse-sparing prices:

- COFFEE MACHINE; capacity four breakfast cups; nickel-plated, double tint-lined; asbestos regulating lamp; guaranteed. \$8, worth \$6.25.
- CHAFING DISH; capacity three pints; hot-water pan; dome cover; full nickel-plated; asbestos lamp. \$4.50, worth \$6.
- PUDDING DISH; nickel-plated, enameled baking pan; dome cover; three-pint size; ebonzoid wood side-handles. \$2.25, worth \$3.25.
- COASTER SETS; unusual offering: one 10-inch flowered tile tray with six nickel-rimmed flowered tile tumbler stands; assorted designs. Set complete for \$1—worth exactly \$2.40; only fifty sets. Basement, New Building.

Healthy BULBS for Fall Planting

You must get them into the ground soon, so that they will get started before it freezes. These are fine, hardy sorts, that you can trust for beautiful flowers in the spring.

- Tulips, single, 2c each, 15c doz; double, mixed, 3c each, 25c doz.
- Hyacinths, all colors, 7c each.
- Chinese Water Lilies, 10c each, three for 25c.
- Pebbles, for water plants, 5c quart.

And a special shipment of the remarkable flowering bulb ARUM CORNUTUM, or Monarch of the East, 15c each. Basement, New Building.

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COTTON MEN DETERMINED

Say Price Must Advance—Night Riding Deprecated.

Memphis, Nov. 11.—J. A. Taylor, president of the National Cotton Producers' Association, spoke before the cotton conference here to-day on "Night Riding in the South." He declared that it began with the fight against the so-called Tobacco Trust in Kentucky. The few depredations in the cotton belt, at least \$100,000,000 by the passage of state laws. To offset this we have succeeded in bringing the Cotton Exchange to give us what we want and what we insisted on three years ago—a fair contract. Now that they have done this, I think that we should at once amend our laws so as to allow trading in futures on a legitimate exchange. Do this and you will remove the cause, and there will be no Night Riders in the South.

A resolution was adopted providing for a central bureau to gather cotton statistics. This bureau is to be supported by small contributions from the growers themselves.

New Orleans, Nov. 11.—"Cotton. Its price can go up. Its price should go up. Its price must go up. Its price will go up." This is the slogan of between twelve and fifteen hundred delegates to the national convention of the Farmers' Educational and Co-operative Union, which was formally opened here to-day in the New Orleans Coliseum. The delegates represent two million cotton planters of the South. President C. S. Barrett, who opened the convention, said: "When we succeed in restoring the price of cotton to the figures that ruled last year, we will be richer by \$100,000,000." He said that many of some newspapers and business had sought to connect the Farmers' Union with the Night Riders, but that the union did not need and would not make lawless methods to gain its end.

IRISH BRIGADE IN THE BOER WAR

By COL. I. Y. F. BLAKE

Theories of Theodora, Balloon Records, Etc., Etc.

Next Sunday's Tribune