

LOWER THAN OLD RAILWAY BRIDGE

Difference of 5½ Feet at the Western End of Monsarrat's 75 Ft. Fairway.

Further Information of Injury to Navigation by C. P. R. New Bridge at the Falls—What G. H. Duggan Said.

To the Editor of The Times:
Sir,—In an effort to establish the clearance and fairway afforded by the highway bridge over the falls and thus to prove that the new C. P. R. bridge would give equal clearance and fairway, Mr. Fairburn quoted a few words from an article by Mr. George Herrick Duggan which was read before the Institute of Civil Engineers in London. This article was also referred to by Colonel Monsarrat in his report to the department of public works. A selection of a few words is not always equitable. I, therefore, trust that you will print the whole article bearing on the navigation of the river, which I here-

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with attach; also the statement of the facts as found by our engineer.

Excerpt of Paper Number 4267.

"The Superstructure of St. John Arch. By George Herrick Duggan, M. Inst. C. E. Section 2, Page 225, Vol. CCVI. Minutes of Proceedings of the Institution of Civil Engineers, J. H. T. Duggan, D. Sc., M. Inst. C. E., Secretary, London, England.

"The St. John arch ranks high among the long span bridges of Canada being only second in span to the Quebec bridge, but its interest lies chiefly in its surroundings, in the low rise of about one-ninth of the span and, consequently, in the comparatively heavy stresses met in the cantilever erection of each half of the arch.

"The arch spans the St. John river, which flows into the Bay of Fundy at the city of St. John after a course of approximately 450 miles and forms, with its tributaries, towards its mouth, a wide lake-like expanse, from which the only outlet to the sea is through a very restricted gorge, with precipitous rocky banks (Figs. 1 and 2). The width of the river here is narrowed down to about 350 feet for a length of about 370 feet in a direction normal to the bridges. (Normal here means at right angles to the bridges and not on a slanting course from west to east as shown on the blue-print furnished by the resident engineer of St. John.) Besides narrowing to such an extent, the river makes a very sharp bend at the southern end of the gorge, caused by the extreme point of a long and high rock tongue, which is the western end of the city. A similar point of rock juts out at the northwest end of the gorge and becomes the deflecting influence for the current as it leaves the wider reach above to enter the canon. These two points are composed of hard limestone, the upper surface of which is somewhat weathered, but of which the general bedrock is exceedingly good, and is very suitable for foundations.

"The spring tides in the harbor of St. John have a range of about twenty-seven feet. The normal surface of the river basin above the gorge is about seventeen feet above ordinary low tide, and the basis thus becomes tidal as well as a long stretch of river. The area of the gorge is so restricted, compared to

the area of the extensive basin above, that the change in level causes very strong currents and an actual fall upstream of about ten feet during H. W. O. S. T., whilst at low tides there is an outward flow of about seventeen feet. It is from this fact that the name Reversing Falls, which has long been associated with the locality, has arisen. "The river between the gorge and its mouth forms the present harbor of St. John, and is occupied on the east side by slips, wharves and the commercial activities of a restricted water front, while on the west side the Canadian Pacific has established deep-water terminals for all-the-year-round service. "The gorge is the only practical location for bridging the river for a long distance from its mouth. The deep water and strong currents in the gorge, as well as the navigation interests, demanded that the crossing should be in one span. The first crossing was effected in 1829, when a suspension bridge was erected. Some years later a bridge of the cantilever type was built to connect the railways on either side of the gorge, which has since been acquired by the Canadian Pacific Railway.

"As the city and suburbs of St. John extended, the traffic outgrew the capacity of the suspension bridge, both in volume and in the character of the loads, and the government of the Province of New Brunswick determined to replace the suspension bridge with one of ample capacity for the growing traffic. Mr. A. R. Wetmore, provincial engineer, prepared general plans and specifications, in collaboration with the late Mr. C. C. Schneider, who made the design for the steel construction. Tenders were asked for the work in February, 1918, and the Dominion Bridge Company secured the contract for the steel superstructure, including the floor construction and the ornamental iron work.

"Conditions at the site required ample clearance over the river for all naviga-



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tion purposes, an elevation of roadway corresponding with the elevation of the existing roads on either side and that the structure would be capable of erection without any support from below. The shallow spandrel-braced arch chosen by Mr. Schneider not only meets the requirements in all the particulars mentioned, but also has a very pleasing appearance.

"The general lay-out of the bridge is shown in Fig. 2 and Fig. 3, plate 6. The clearance of the railway bridge was about eighty, and the suspension bridge at elevation seventy-nine. The Canadian Pacific Railway base of rail is about 37.5 at the level crossing over Douglas avenue on the St. John side. To retain equal or sufficient fairway for

navigation, it was necessary to raise the grade of the new bridge, so that the elevation of the crown of the roadway at the centre of the span comes to 103.7. This arrangement provides 240 feet width of fairway at a clearance elevation of eighty. Page 208.

"The author wishes to make acknowledgment to Mr. A. R. Wetmore, provincial engineer, for information concerning the site and substructure, and to express his appreciation of the work of Mr. E. P. Shearwood, assistant chief engineer of the Dominion Bridge Company, and of his staff in carrying out the detail work of the office and erection.

The above is the article from which Mr. Fairburn, chief engineer of the C. P. R., quoted, and referred to by Colonel Monsarrat, government consulting engineer, in his report to the department of public works, to establish heights and fairway.

The new bridge will only give about forty-five feet fairway on the western side of the centre line of the highway bridge, with equal clearance to that of the existing cantilever bridge; with fifty-five feet fairway it will be one foot lower. At seventy-five feet, the fairway mentioned by Colonel Monsarrat, it will be five and one-half feet lower, and at the 120-foot fairway mentioned by Mr. Duggan it will be nineteen and one-half feet lower than the existing

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cantilever bridge, according to the report of R. H. Cushing, C. E.
It was on the strength of our statement that at the western end of Colonel Monsarrat's seventy-five foot fairway from centre line of the highway bridge the new bridge will be five and one-half feet below the existing railway bridge that the stop order of March 14th was issued by the department of public works. Said order has since been rescinded without refuting the statement that the new bridge at that point will be five and one-half feet lower than the existing railway bridge.

Yours respectfully,
GEO. S. CUSHING.

METHODIST CHURCH FOR LONG SKIRTS
London, Ont., June 7.—That the Methodist church frowns upon short skirts, gambling, dancing in colleges, schools and summer resorts and the stigma attached to illegitimate children was evidenced by discussions which took place at the general session of the London Methodist conference today.
Rev. Sanderson of Seaford introduced the subject of "ladies attire" but was greeted by a chorus of "oh's" from fellow delegates. "I would recommend some young ladies to go to bed," he declared. "It is a disgraceful thing. Our women ought to be decently attired at least."
"What is the trouble?" asked a member of the conference. "The clothes are

a little too far from the ground and quite near enough to Heaven," he replied.
Americans eat but sixteen pounds fish per capita, while Canada consumes thirty, Norway forty-four, Sweden two and Great Britain about six pounds.



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