be the average charge and the charge in special cases would work out about as follows:—

	Charge per k.w.h.
(1) To power users in excess of 1,000 k.w.h. per month and 24-hr. service	0.75c.
(2) To power users, in excess of 1,000 k.w.h. per month, and 10-hr. service	1.5 c.
(3) To small power users and 10-hr. a day service	2.25c.
(4) To power users, irregular service	3.0 c.
(5) To small lighting service	4.0 c.

These rates are from one-quarter to one-tenth the rates now charged in the Maritime Provinces. They would attract population and develop industries, and they could be gradually reduced, as the demand for greater output increased the size of the plant, to about 60% of these rates.

On this basis, then, the annual income should be $2,025,000 initially, and this would probably be apportioned about as follows:—

Depreciation and operating expenses at 60% on cost	$ 660,000
Royalty on patent rights at 50 cents per gross h.p. produced	45,000
Enlarging Memramcook valley by shovelling and dredging, the power being supplied by the plant itself, say	200,000
Incidentals	20,000
Interest on capital expenditure at 10% of cost	1,100,000
Total	$2,025,000

While $45 per h.p.-year would probably have to be the initial average charge, as time goes on and the output increases to the full available horse-power, it would be quite possible to reduce the average charge per horse-power-year to $27, without decreasing the rate of 10% per annum on invested capital. This is figured as before, as follows:—

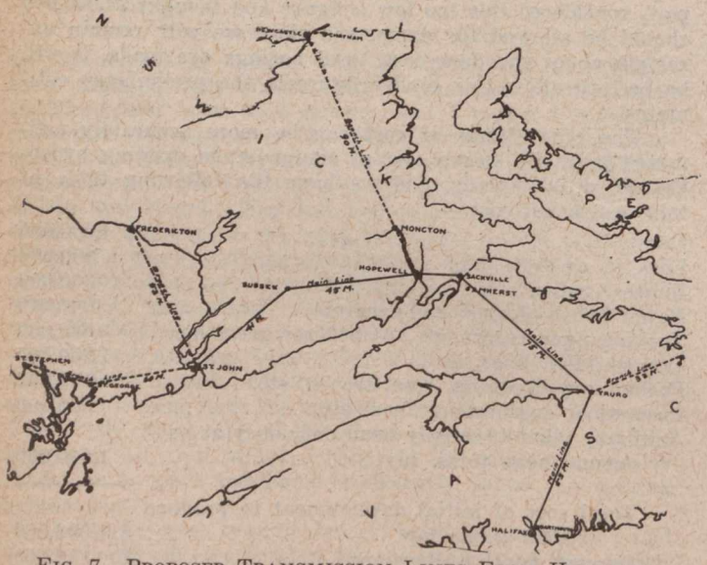

FIG. 7—PROPOSED TRANSMISSION LINES FROM HOPEWELL

For gross output of 200,000 h.p., delivered h.p. 100,000, cost of development	$16,000,000
Annual income from 100,000 h.p. at $27 per h.p.-year	2,700,000
This income is apportioned as follows:—	
Depreciation and operating expenses at 6% on cost	$ 960,000
Royalty on patent rights at 50% per gross h.p. produced	100,000
Enlarging Memramcook valley, nil, since work would by this time be completed	.....
Incidentals	40,000
Interest on capital expenditure at 10% on cost	1,600,000
Total	$2,700,000

The Commission of Conservation's book on the "Water-Powers of Canada" (1911) says, in speaking of New Brunswick, that "the larger rivers, for the most part, are long and their fall is gradual"; and again, that "there are comparatively few lakes in the upper portions of the watersheds of the majority of the rivers and, hence, little facility is afforded for the natural storage of waters for the purpose of equalizing the flow during the low-water periods."

This is true of New Brunswick and it is also true of Nova Scotia. The upper provinces are steadily forging ahead of us, both industrially and in population, and this advance can be ascribed largely to their abundant water-powers, and it behooves us of the lower provinces not to mourn our loss of power, but to make full use of that great power that nature has really placed at our door—viz., the Bay of Fundy tides.

Were we to harness the power that is daily wasted in the two great eastern arms of this bay, we could have the use of 3,500,000 h.p., but this is a dream for the future and is not a practical proposition for to-day. The theory is the same as for the Hopewell plant, but the execution and cost would be impossible at present.

The Hopewell plant is to-day a good commercial proposition. Special engineering problems are attached to it, but they are only those that attach to any special plant. The difficulties are small in comparison to many recent engineering works that have been successful.

NEW ENGLAND WATER WORKS CONVENTION

MEMBERS of the New England Water Works Association met in Albany, N.Y., last week for their 38th annual convention, which occupied the four days, September 30th to October 3rd, inclusive. They were welcomed to Albany by that city's chief executive, Hon. James R. Watt, who is an engineer and contractor.

The presidential address of Samuel E. Killam laid stress upon the opportunities that exist for the association to exert a helpful influence in public affairs. Particular vigilance is needed, he said, in the matter of legislation affecting public health, and in each state a committee should be appointed to examine proposed legislation of this nature.

Over 300 members, associate members and guests were at the convention. The sessions were all well attended, and much interesting discussion followed the papers. The list of papers presented was published in *The Canadian Engineer*, September 25th issue.

The only paper on Canadian work was by Norman J. Howard, who described the construction and operation of Toronto's drifting sand filtration plant. This paper was discussed in a lively manner for more than an hour. James M. Caird, consulting chemist, took a leading part in the discussion. Mr. Caird particularly inquired regarding costs of operation and the ability of the plant to prevent the passage of alum into the filtered water.

Mr. Howard stated that cost figures are not yet available. As to the alum, he reported the presence of aluminum hydrate in the filtered water, but claimed that its presence is not significant, and that so far as he has been able to ascertain, it can be found in the effluent of all mechanical filtration plants, and that it is entirely harmless and inert.

Mr. Caird differed with Mr. Howard in this regard, but several of the consulting engineers and water works superintendents who were present supported Mr. Howard's statements, and considerable difference of opinion was expressed in regard to the point.

Morris Knowles characterized the Toronto plant as a radical departure in water works purification practice, and said that engineers are awaiting with great interest further detailed data on filtration costs.

All of the members and guests assembled on a Hudson River Line steamer on Wednesday, October 1st, and spent the entire day on the steamer, holding sessions during a trip down the river.

A number of the engineers enjoyed an automobile trip Thursday morning to the Gurley factory at Troy, where the Gurley long-distance water recorder was seen in actual operation.