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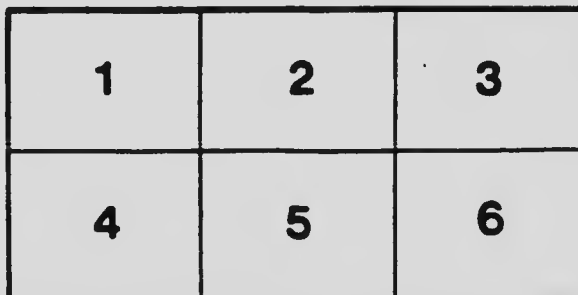
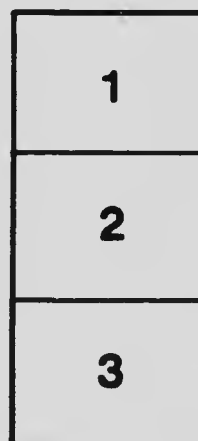
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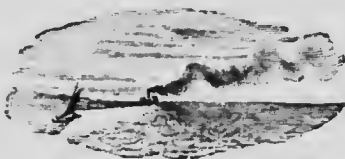
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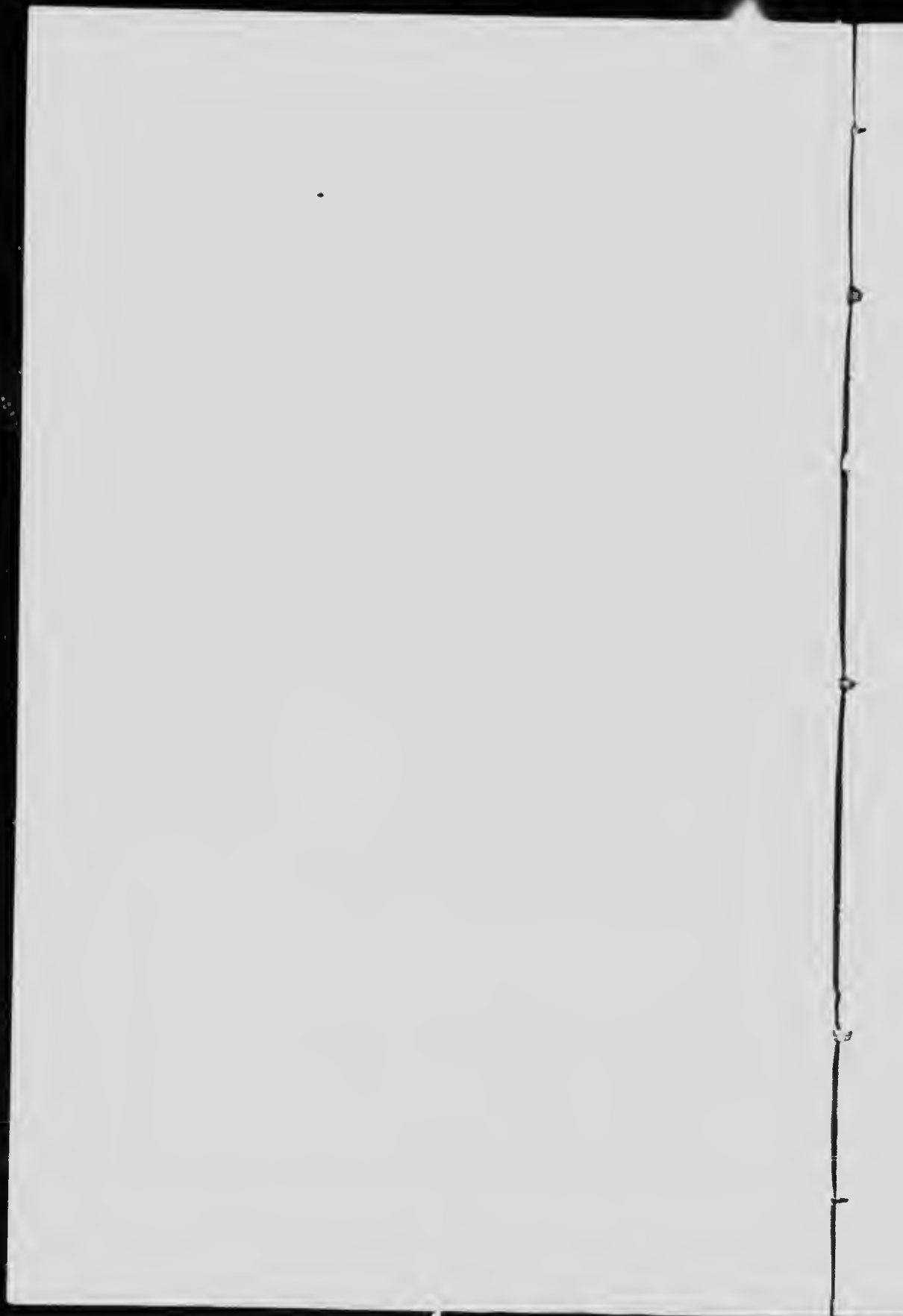
IN RE

LEVELS OF THE LAKE OF THE WOODS



BRIEF
FOR PROVINCE OF ONTARIO AND
DOMINION OF CANADA

FRANK H. KEEFER, K.C.
Of Counsel for Ontario and Canada



LETTER OF REFERENCE

DEPARTMENT OF STATE,

Washington, June 27, 1912

INTERNATIONAL JOINT COMMISSION

OF THE UNITED STATES AND CANADA,

Washington, D. C.

SIRS: I have the honor to inform you that at the joint request of the Government of the United States and of the Government of the Dominion of Canada, under the provisions of Article IX of the treaty of January 11, 1909, between the United States and Great Britain, the questions of matters of difference set forth below, which have arisen between them, involving the rights, obligations, or interests, of each in relation to the other, or to the inhabitants of the other, along their common frontier between the United States and the Dominion of Canada, are hereby referred to the International Joint Commission for examination, and report upon the facts and circumstances of the particular questions and matters referred, together with such conclusions and recommendations as may be appropriate.

The questions so referred are as follows:

1. In order to secure the most advantageous use of the waters of the Lake of the Woods and of the waters flowing into and from that lake on each side of the boundary for domestic and sanitary purposes, for navigation and transportation purposes, and for fishing purposes, and for power and irrigation purposes, and also in order to secure the most advantageous use of the shores and harbors of the lake and of the waters flowing into and from the lake, is it practicable and desirable to maintain the surface of the lake during the different seasons of the year at a certain stated level; and if so, at what level?

2. If a certain stated level is recommended in answer to question 1, and if such level is higher than the normal or natural level of the lake, to what extent, if at all, would the lake, when maintained at such level, overflow the lowlands upon its southern border, or elsewhere on its border, and what is the value of the lands which would be submerged?

3. In what way or manner, including the construction and operation of dams or other works at the outlets and inlets of

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the lake, or in the waters which are directly or indirectly tributary to the lake or otherwise, is it possible and advisable to regulate the volume, use, and outflow of the waters of the lake so as to maintain the level recommended in answer to question 1, and by what means or arrangement can the proper construction and operation of regulating works or a system or method of regulation be best secured and maintained in order to insure the adequate protection and development of all the interests involved on both sides of the boundary, with the least possible damage to all rights and interests, both public and private, which may be affected by maintaining the proposed level?

I have the honor to add that the Government of the United States will be glad to assist the commission in obtaining any information which it may desire in the course of its investigation of the matters herein referred for its examination and report.

I am, sir, your obedient servant,

P. C. KNOX

To the Members of the International Joint Commission

The reference herein submits three questions to

Question One

The first question in effect asks what is practicable and desirable to maintain the surface of the lake during the different seasons of the year at a certain stated level in order to secure the most advantageous use of the waters, and if so, at what level?

If a literal translation be given, all the evidence would concur that the answer to the question must be in the negative, as physical limitations prohibit the maintenance of one stated level.

Undoubtedly the question intends a broader interpretation, or otherwise the Commission's investigation would be useless.

The use of the words "during the different seasons of the year" undoubtedly indicates or contemplates different levels for different parts of the year, therefore not a stated level for all the year.

Furthermore, the letter to the Secretary of State of the 22nd July 1906 referring these questions to the Commission asks for examination and report "upon the effects and circumstances of the particular questions, together with the proposed and recommended as may be practicable."

In addition, Article 11 of the treaty (under which the questions have been referred), by the second paragraph thereof authorizes the Commission in each case so referred to examine to and report upon the effects and circumstances.

When the different interests of a river mentioned in Question 1 are considered, they are (a) Domestic and Sanitary, (b) Navigation and Commerce, (c) Fishing, (d) Power, (e) The most advantageous use of the shores and harbours, (f) The most advantageous use of waters flowing into and out of the lake.

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tion must be interpreted as meaning: "What are the levels by which all of the above interests can best be served?" or, in other words, what is the best range of levels?"

Range prior to Control

The evidence gathered by the Commission shows that the lake, prior to any obstruction at its outlet, varied in level approximately 10 ft. This range is also definitely referred to in Mr. Lawson's report on the geology of the Lake of the Woods, page 18cc, published under date of 1884, wherein he says: "The level of Shoal Lake is much more constant than that of Lake of the Woods, which has a rise and fall through a range of 10 ft."

High Water Mark

The upper limit of this range is indicated by well defined high water marks, the elevation of which is from 1062.4 to 1062.9 (see text page 172 and Mr. White's evidence, page 12, 1915 hearings).

These marks were defined in 1895 by J. C. Kennedy (see text page 170).

Range Under Control

Under a systematic regulation and control, for the benefit of all interests mentioned in Question 1, set out above, this range of 10 ft. can be reduced. Since the dams have been erected, viz.: the Rollerway dam in 1887 and the Norman dam in 1895 (put in operation in 1898), such control has reduced this range.

Return to Question 1

Let us consider what level or levels would best serve the different users of the water.

Different uses

The first use mentioned in the question is domestic and sanitary purposes.

Domestic and Sanitary

(A) DOMESTIC AND SANITARY

After a perusal of the reports of the sanitary experts on the Warroad situation (see page 297 of the 1910 hearing), this branch can be left without further comment, and will afford little difficulty.

(B) TRANSPORTATION AND NAVIGATION

All the evidence on this branch naturally points to

RELEVANT EVIDENCE ON THE WOODS

Navigation
Transportation

Charles C. ... Mr. G. A. ...
Engineer of the ... Minnesota ...
the 1912 hearing.

Evidence

Q. Mr. ... what are the particular advantages of a high level of navigation?

A. The only advantage would be the navigation could be carried on at less expense.

Q. It would be a great aid to navigation?

A. Yes.

(See also Mr. Graham's evidence of the 1912 hearings, in which he says it is very important that the level of the Lake of the Woods should be kept up to what is known as the 100 bench mark, meaning by that a level of about 1001.

See also Mr. D. L. Mather's evidence, page 131-135. Then see testimony at the Kenora hearing in 1915 in detail. In this connection see the evidence of Captain Hooper, page 35, to 400. Also Captain McRitchie, page 401; also Captain Matthew Hickey, page 408; also Captain James Henderson, page 417, and Captain Kendall, page 493.

Canadian Government's Expenditure on Navigation

Mr. Harcourt, Engineer for the Department of Public Works, Canada, on page 153 of the 1915 hearing, shows that for navigation purposes in that district \$281,200.04 had up to date been expended.

Memorial of 8 Transcontinental Transportation Lines for high water

Attention should be paid to the representation of the three transcontinental Canadian railways on page 15 of the 1915 hearings. These railways memorialized the Commission, that the "free navigation of these waters is essential to the successful exploiting of their advantages as desirable waters etc.," and also pointed out that "a reasonable high water level has an important bearing on the development of summer resorts."

Dominion Hydrographer's Evidence

Mr. Stewart, the Dominion Hydrographer, on page 135, of the 1916 hearing, says 1000.5 to 1001 is an advisable level for navigation.

Before leaving this subject there should again be recalled the request of the United States Government

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under date 1906, to keep the waters up to the high level of not less than 7.2, that is 1000.8 (see letter containing this request, page 435, 1916 hearings).

(C) FISHING

Fishing

The next use of the waters to be considered is fishing. Arthur Johnson, who is largely interested in fishing, shows that the valuable fish, viz.: trout, white fish, etc., seek deep water in summer. He wants a minimum of variation in any year, but realizes that there must be variation (see page 414 of 1915). On page 416 he says "that the state of the water as it now is would suit the fishing industry, whether a foot higher or a foot lower" (the level at that time was 1000.5).

Professor Prince's evidence, page 267, et seq of the 1915 hearings, also shows that high water is not detrimental, as valuable fish spawn in deep water, etc.

(D) POWER

Power

The next use mentioned in the question for consideration is power. The subject discloses two power phases.

At the Outlet

1. That for the power at the outlets as high a level as possible is desirable (see Hastings' evidence and that of the other industry people taken at Kenora in 1915). Mr Ferguson, New York expert, at the Winnipeg hearings, corroborates this.

Down the River

2. That for power on the Winnipeg River the level is not so important, but as wide a range as possible is necessary. (See Mr. Lea's evidence and that of all the Winnipeg interests on power at the 1916 hearing.) Mr. Challies, as Superintendent of the Water Power Branch, deals briefly with the question, and asks conservatively for a range of not less than 6 ft.

RE LEVELS OF LAKE OF THE WOODS

He takes this limited range in order to harmonize with all the other users.

Mr. Acres, on behalf of the Province of Ontario, an ~~important~~ ^{owner} owner, gave important testimony, which should be read (see page 414, Winnipeg hearing).

Then Mr. Stewart (see page 439), considering these powers, asks for a range of 6 ft.

(E) SHORES AND HARBOURS

The
advantages-
ous use of
Shores and
Harbours

On this branch it must be conceded that high water is detrimental to low-lying lands on the shores, but it must also be remembered that high water gives access for mining and logging purposes to many difficult places, for landing supplies, etc.

Shores

Captain Hooper says:

Q. In reviving the mining business it would have to depend on navigation?

A. Yes. (See Captain Hooper's evidence, page 400 of the 1915 hearings). The same by Captain Henderson, see page 418, that "the mining industry is almost dependent on navigation to get in and out." Captain Kendall gives the same evidence, page 265.

Harbours

As to harbours, of course deep water is beneficial and needs no elaboration.

Shores

Then under the head of the advantageous use of the shores, we have the existing power plants which have developed power as riparian owners at the outlet of Lake of the Woods, at Keewatin and Kenora. Mr. Hastings' evidence on this point shows that he wants the level one foot higher than 1000.5, if possible (see page 143 of 1912 hearing). All the existing saw-mills and lumbering interests around the shore concur in this view, as likewise the Kenora Power plant, so that with the exception of low-lying land, that is liable to be

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submerged, the advantageous use of the shore would require the level to be not less than 1001.

(F) WATERS FLOWING IN AND OUT

Advantage-
ous use of
Waters
Flowing
In and Out

One of the other advantageous uses mentioned in Question 1 is the advantageous use of the waters flowing into the lake.

Flowing
In
Rainy River
and its
Navigation

Under this heading comes the subject of navigation on Rainy River, which necessarily involves access to the river at its mouth. To show the importance of this I quote the testimony of Mr. Ralph, who was the State Drainage Engineer for the State of Minnesota, and one of the most important witnesses examined at the Warroad sittings in 1912. (See page 92 of the 1912 hearings.)

Questioned by Mr. Keefer:

Q. You are familiar with the Rainy River?

A. Yes, Sir.

Q. Do you consider the maintenance of the navigability of the Rainy River an important thing for this part of the country?

A. I believe it is very important. I believe the Lake of the Woods in time to come will be one of the beauty spots on the continent. I believe it will be found to be the most beautiful lake on the American continent, and that it will attract tourists from all over the world, and that it will be highly important to keep open navigation on the Rainy River as far as Fort Frances.

Then there is the evidence of Mr. Graham and the officials of the Navigation Company running boats from Kenora to Fort Francis.

As one familiar with this district for twenty-five years, and having seen the growth in other districts around the lakes, I earnestly ask the Commission in dealing with the question of levels to consider the importance of this branch of the subject, and look to the future and make provision for this navigation, as

RE LEVELS OF LAKE OF THE WOODS

Mr. Ralph says, from Kenora to Fort Frances, thus utilizing both lakes and Rainy River.

Upon this point, as to what level is most advisable, I again cite Mr. Stewart, page 438, where he suggests 1061, as the best level for Rainy River.

**Flowing
Out**

**Winnipeg
River
Campers**

A summer resort has in the past six years been opened up in the expanses of the Winnipeg River near Manaki. During this period the outflow from the Lake of the Woods has been below normal, with a consequent low river stage. This, together with a disregard of well-defined high water marks on the river's rocky shores, has led to the construction of docks and wharves subject to submergence under normal conditions.

(See Mr. Richardson's testimony, page 279 of 1916 hearing.)

Gauge readings and deductions as given in the tables and diagrams of the consulting engineers show that the river at Manaki has fluctuated between elevations 1033 and 1041.3. This range under proper control would be somewhat diminished, and the extreme upper level only reached under abnormal conditions.

**The
Island
Campers**

The Campers, in addition to those mentioned in detail above, would be satisfied with this level. See Mr. Taylor's statement, page 456, viz.: "It is impossible to give you a level of 1060.5 all the time, but 90% of the time you will have it there." Mr. Taylor "I think that will be fairly satisfactory."

See also testimony of J. R. Deacon at Winnipeg, wherein he was willing to concede a foot higher.

Summary

Summing up and harmonizing all of the requirements of the above users of water mentioned in Question 1, I cannot do better than again refer to Mr. Stewart's evidence, wherein he suggests and recommends that an ordinary maximum level of about 1061 be adopted, particularly for the summer months of navigation. He shows that the flood flows would be

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controlled well within the former high water mark or level of 1062.5, and suggests that a range of 6 ft. from 1056 to 1062.5 (which would give a usable range of 5 feet), be fixed so as to allow for the necessary constant flow of water for the important powers below the outlet. Mr. Stewart shows, and is corroborated by Mr. Meyer, that for 90 per cent. of the time during the summer season the water will remain within half a foot of 1061, and for one per cent. or less of the time it might go a foot higher; that that one per cent. of the time would represent three or four weeks out of 21 years, and that the extreme maximum of 1062.5 might never be reached. (See Mr. Meyer's evidence, page 453, as corroborated by Mr. Stewart in his testimony).

It is therefore respectfully suggested that the evidence presented shows:

That the ordinary maximum level 1061.0 is the one that will cause the least disturbance to conditions that have existed and been permitted since the dams were constructed, and during which period almost all the settlers were located around the Lake.

That it is the level to which the navigation, industrial and power interests have become accustomed, and to which they have adapted themselves.

That under judicious and scientific control of the outflow and careful study of meteorological conditions, with more and properly selected stations, the excess storage can be handled to prevent recurrences of the floods that have heretofore occurred.

That the higher the upper limit, and the greater the range, the more easily can the floods be controlled.

Therefore to afford the most advantageous use of the waters for all interests combined no lower level than 1061 for ordinary high water with a range between 1056.0 and 1062.5 seems advisable.

The Commission are asked to answer the second question. In effect this question is: If a certain level be recommended, and if such be higher than the

RE LEVELS OF LAKE OF THE WOODS

normal or natural level of the lake, what is the extent of the flowage on the southern border - elsewhere, and what is the value of the lands that would be submerged?

Normal and
Natural

If the "certain stated level" is to be 1061 as above suggested, the question then would be, Is this higher than the normal or natural level of the lake? This at once involves the meaning of the words "normal or natural" level.

If the words "normal level, under natural conditions" had been used, there would have been no ambiguity. As the expression is ambiguous, the intention of the parties using the words "normal or natural" should be, if possible, investigated in order to ascertain their intended meaning.

The facts relating to the matter are briefly as follows:

Reason A

Norman
dam
in use
when
Treaty
made

When the treaty was promulgated the Norman dam had been built, was not only being operated for the benefit of navigation, but was regulating the flow of water, when necessary, for power purposes, at the outlet, where are situated the grist-mills of the Lake of the Woods Milling Company, the Electric Power Plant of the Town of Kenora, and down the Winnipeg River, where had then been constructed the plant of the Winnipeg Street Railway.

History of
Rollerway
dam

The history leading up to the erection of this dam is as follows:

The Rollerway dam, upon a petition for the bettering of navigation, was constructed (by Mr. John Mather) in 1887, under authority of an Order-in-Council of the Dominion of Canada dated 5th April, 1887, whereby an expenditure of \$7,000.00 was authorized by the Dominion Government for the work.

The wording of the Order-in-Council should be kept in view, as it recites the reasons in the following words:

(a) "To maintain the water of Lake of the Woods

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at a constant level, and thus permit the shallow draft steamers which have been built for the navigation of the lake to ply for the whole of the season of navigation, and thus afford uninterrupted communication between the settlements around the lake and the C.P.R."

(b) "To maintain a constant head of water for the mills, both saw and grist, which have been and hereafter will be erected, and which depend for their power and therefore their constant working upon an ample supply of water, which would be given were the proposed dam constructed."

**History of
the
Norman
dam**

Subsequently the Norman dam was built further down in the same channel. It was partially completed in 1895, although not used until 1898, when representations were made by the navigation interests to the Ontario Government that the lake level was falling, and it was requested that the dam be operated in such a manner as to control said level for the purpose of improving the navigation of the lake. The Ontario Government entered into an agreement with the Keewatin Power Co., Ltd., the owners, to so manipulate the sluices as to keep the levels of Lake of the Woods under control, and paid \$4,000 for the installation of stop-logs.

**Request
seven
years after
operation of
dam for
level by
U. S. A.**

In May, 1905, the Secretary of State for the United States wrote the British Embassy at Washington (see page 463 of 1916 hearings), asking that the Canadian authorities prevent the water falling below 7.2 of the Warroad gauge (1060.8 C. & G. S. datum), and thus maintain, as they contended, the *normal* level of the lake. Without such a dam and stop-logs it would have been impossible to maintain such a high level as requested by the United States Government.

Reason B

In making this request the United States Government recognized and practically acquiesced in this dam.

This letter was written after the United States had investigated the feasibility of creating a harbour at

RE LEVELS OF LAKE OF THE WOODS

Warroad on the south shore of the lake, and after various surveys and reports had been made.

The report of C. W. Raynor, 5th February, 1900, shows that work was commenced in 1899, though no official request was made for the maintenance of levels until 1905.

On the 27th September, 1906, the United States Government repeated the request.

Subsequently complaints of high water were made to the United States Government, but no action was taken. In 1911, owing to the then existing *low* water stage, further complaints were lodged, and officers of the United States Corps of Engineers investigated, and reported that the low water was due to an improper manipulation of the stop-logs, and faulty construction of the dam, and recommended referring the matter to your Commission.

Consequently this matter has been referred to your Commission, as arising out of the *low* water complained of in the season of 1911.

Further
Complaints
against
low water

Reason C.

Article 8
of Treaty

Article 8 of the treaty, after defining the order of precedence for uses of boundary waters, stipulates "the foregoing provision shall not apply to or disturb any *existing uses of the boundary water* on either side of the boundary."

Article 3 also uses the word "permitted," which might be construed to have a bearing upon this case.

I therefore respectfully suggest that in dealing with the three questions, and fixing a level or range of levels, the existing structures and conditions will have recognition both as "an existing use of the boundary waters" (article 8), and as "permitted" (article 3), and recognized by the United States, and therefore that "normal or natural" will be construed as applicable to the period since the Norman Dam has been in operation, or, in other words, the *normal* level during that period, and that this is evidently what the parties submitting the questions intended, knowing that

INTERNATIONAL JOINT COMMISSION

the dam at the outlet had been in use for 22 years previously.

Definition
of term
"Normal"

For a definition of the term "normal," and also to further indicate what the parties using the same intended, is it not proper to refer to the reports and correspondence of the War Department and the Department of State of the United States Government leading up to the preparation of these questions?

In the letter of the Secretary of State to the British Charge d'Affaires, dated 6th May, 1905, it is stated that the "Improvement depends very largely upon the level of the Lake of the Woods, all the estimates for dredging the harbour of Warroad and its approaches being based upon the maintenance of this level at or above the datum 7.2 ft. on the Warroad harbour gauge. During the past year it appears that the gauge reached that reading only for the half of one day, and that it fell as low as 6 ft. for several days during the season of navigation. High water mark is reported to be about 1.51 ft. above this reading of 7.2 Warroad.

Govern-
mental
Correspond-
ence using
the word
"Normal"

"Some years ago the Keewatin Power Company built a dam across one of the outlets of Lake of the Woods near Rat Portage, which dam it is understood subsequently passed to the control of the Provincial Government of Ontario, and it is thought that the level of the lake could be easily controlled by inserting or removing stop-planks in this dam. In view of this, it is suggested by the Secretary of War in his letter on this subject of the 26th ult. that an agreement might be reached with the Canadian authorities by which the dam could be so operated as to prevent the level of the lake falling below the datum of 7.2 ft.

"I have the honour, therefore, to ask if you will be so good as to lay the matter before the proper authorities of the Dominion, with a view to reaching the suggested *normal* level of the lake in question."

Major Shunk, in his report dated January 11th, 1911, states as follows in paragraph 5: "The citizens of Warroad apparently think that the present low

RE LEVELS OF LAKE OF THE WOODS

"stage of water is to be permanent. Equal alarm was felt about a high stage in 1907, and complaints forwarded to the Secretary of State * * * It is reasonable to suppose that the 'normal' lake level will be restored."

War Office
Official
usage
of word
"Normal"

On the 18th of March, 1911, Major Shunk states: "It is not a fact that 7.2 level was derived from seasons when there was an exceptionally high stage of water. It was first assumed in the absence of records from the best information available from marks and residents about the lakes. At the end of 1900, observations of five years showed a *mean* level during navigation season of 7.24, almost exactly what had been assumed. Including the subsequent years, the *mean* level during navigation season is 7 ft. As both exceptionally high and exceptionally low levels have occurred since 1899, when records begin, it is not likely that the ultimate *mean* level during navigation season will get beyond the limits of 7.0 on one side and 7.2 on the other."

Mean

In 1910 and 1911 the citizens of Warroad became very uneasy over the low stage of water, and Major Shunk made an investigation and reported on the 9th of June, when the water was as low as 3.25 on the gauge: "This is the lowest level of which we have record, though old settlers mention a time some sixteen years ago when there was an even lower stage of water."

On the 30th June, 1911, he reports upon the investigation he made of the Norman dam, and amongst other remarks states paragraph 2: "It is this Norman dam which has been indicated as the probable cause of low water on Lake of the Woods, and my inspection fully confirms this report." (See page 179 of 1916 hearing.)

In explanation of the statement he draws attention to leakage through the dam, and states: "This is undoubtedly one cause, and a very considerable one, of

INTERNATIONAL JOINT COMMISSION

the slow recovery of *normal* level of that lake." (See page 178 of 1910 hearing.)

Normal

In connection with such leakage, the dam was left open the previous season, until the lake had been lowered 3 ft., and the following statement is made: "It would not have been serious had not last season been unusually dry, and I think that the lake would undoubtedly have recovered its *normal* level had the dam been water tight, as it ought to be." (see page 179 of 1910 hearing.)

Dealing with the loose rock fill in the same report he states: "It is my opinion that the Rubble mound referred to ought to be made water tight, and as the United States has a considerable interest in the regulation of lake levels, I recommend that the general question of regulation be referred to the International Joint Commission." (See page 179 of 1910 hearing.)

The very wording in the above asks that the general question of *regulation* be referred to the International Joint Commission, not the dam itself, and that a higher level than that as regulated was again desired, as was the case in the letter of the Secretary of State five years previously (see page 135, Winnipeg hearings.)

Normal

Dealing with the bars at the mouth of Warroad River, he states: "During the past season, the water having been below its *normal* level, bars have been formed further out than is usual." (See page 180 of 1910 hearing.)

In connection with any further improvement at Warroad harbour, he states: "I do not think, however, that anything should be determined at once on account of exceptional conditions which have recently prevailed."

In a report of Major Derby, under date of April, 1906, the reasons are given for the adoption and maintenance of a 7.2 level, and also what damages, if any,

RE. LEVELS OF LAKE OF THE WOODS

may be expected to result from so maintaining the level.

His reasons for selecting a level of 7.2 are as follows.

(1) Where a dam exists at the outlet of a navigable lake undergoing improvement by dredging for the benefit of navigation, it would seem to be expedient to utilize the dam to help the improvement by preventing the level of the lake from falling as low as the natural low water stage.

(2) The standard low stage so maintained for navigation should be the highest stage which does not invade the rights of interests other than navigation.

(3) The other interests affected are power interests at the outlets, and interests of riparian owners. The Power Companies would desire the highest possible minimum level with sufficient storage. As the high water mark is at gauge reading 8.9, the minimum level of 7.2 would leave sufficient range for storage. The riparian owners would like the lake drained dry, in order that the land would revert to them. However, the minimum level would be such as could be maintained without invasion of the rights of riparian owners.

No compensation if maintained at 7.2 as normal level

(4) The adoption of 7.2 standard minimum is apparently arbitrary in the first place, but the mean of four years' gauge records closely approach this level, and more nearly so if only the normal period is considered.

(5) That no damage might be expected from maintaining the level of the lake at 7.2, and the reasons for such conclusion are given very fully and are set out and supported by reference to leading United States authorities.

The above is merely an abstract from Major Derby's report of April, 1906, which should be read

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"in extenso." (See pages 472 and 473 of 1916 hearing, giving in full Major Derby's reasons.)

Closer examination of the above correspondence and of the reports show that the officers of the engineer corps of the War Department of the United States, specially trained gentlemen, considered a "normal level" to be a level with the dams subsiding, and that they undoubtedly considered 7.2 as the normal level, pointing out that there should be no compensation to riparian owners if this level were adopted.

Major Derby's words from his report printed on page 473 are as follows:

"My assistant, Mr. Horace Dunaway, surveyor, who made the last survey of Warroad Harbour in December, 1905, reports that at the time of the survey the gauge read 8.1, and that the line between the aquatic vegetation of the lake (Chirushes) and the terrestrial vegetation of the banks was still several inches above the water level. It would therefore appear that the level 7.2 is well below ordinary high water mark as it exists today."

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The perusal of Mr. Fairbairn's report as Engineer of the Department of Public Works for Ontario (see page 435 of 1916 hearing) would indicate that the United States authorities, in asking for this level of 7.2 as an absolute minimum level for navigation purposes, and not as a mean level, were perhaps asking for high conditions. The records, however, show that the Ontario Government authorities, during the past sixteen years, have endeavored to maintain as closely as possible this mean level of 7.2, though they did not go so far as to make this level a minimum as the United States authorities then requested. To support the above statement of fact I would refer the Commissioners to an examination of the records of lake levels, as shown on pages 249 to 254 of the Commission's book of tables, which show that the mean summer level for a period of twenty-two years, 1892-1914, is 1069.22, and that the mean monthly level was about 1061.0 during eleven summer months of this period. Land which is

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submerged as often as this cannot be of much value for farming. It would therefore seem that the navigation interests have been accustomed to a level of at least 1061 during most of the time.

Conclusion

If Major Derby's report under date of April, 1906, be correct as to facts, which seems to be the case, and if the reasons and decisions noted by him therein be sound, which I think they are, and if the dam has been operated during the past sixteen years so as to keep the level below what is claimed to be a *normal* level, and if 1061 as an ordinary maximum be adopted as in answer to question one, it would then follow that the answer to the second question could well be that the ordinary maximum of 1061, as recommended for question one, is not higher than the normal or natural level of the lake; (especially when the Norman dam is not to be disturbed "as an existing use of boundary waters"), that, therefore, there are no flooded lands or land values to be reported under question two.

Should, however, for any reason it be considered advisable that lands up to 1062.5 be absolutely acquired and be under Government control, the amount necessary to be paid for such purpose should be considered a joint or international obligation arising out of what navigation requires, and as such be equally borne by both Governments.

This might also apply to the necessary expenditures in Canadian waters to deepen the western outlet and improve the Norman dam so as to pass 40,000 cu. ft. per second, and so avoid reaching the extreme maximum of 1062.5, and also the expenditure necessary to prevent leakage through the dam in endeavoring to maintain this 1061 ordinary maximum for navigation.

Quest on
Three

The answer to the Third Question should be upon broad lines, looking well to the future.

Theoretically, and provided sufficient storage could be obtained, it should be possible to so control the outflow as to supply discharge which is the mean of the

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net supply of water received into the drainage area. This mean for the last 22 years has been found to be about 16,000 c.f.s. out of Lake of the Woods and 5,835 ft. per second from Rainy Lake.

It is, however, a physical impossibility to carry out this ideal condition, and after a careful study of the conditions that have existed during the last 22 years it has been found that a uniform discharge of 9,670 ft. with 4 ft. storage can be counted upon for Lake of the Woods and 5,835 ft. per second for Rainy Lake.

Another study of a variation of this method would give a variable discharge of sometimes as much as 16,000 c.f.s. out of Lake of the Woods and 10,000 c.f.s. out of Rainy Lake, diminishing to 7,700 ft. from Lake of the Woods and 3500 ft. from Rainy Lake.

As the works for the controlling and handling of these discharges are not yet in place, and the demand for all the water is not yet very urgent, it is respectfully suggested that the exact method of control be not now made a subject for recommendation, but that the officers to be charged with the handling of the waters continue the study until the works are completed.

To carry out the proper regulation of the waters it would appear necessary:

1st. To enlarge the western outlet to give a capacity of 40,000 c.f.s. at a lake elevation of 1061.

2nd. To improve and put in first-class condition the Norman dam, that is to say, stop up the leaks and make more efficient the sluices.

3rd. To enlarge the controlling sections of the Throat rapids and the Dalles.

4th. To construct in the near future a lock and dam, with provision for power plant, at Long Sault rapids.

At International Falls is a large dam sufficient for the control of the waters of Rainy Lake to give 7 ft. storage, and at the outlet of Namakan Lake (Kettle Falls) is another dam sufficient for 11 ft. storage

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above. These works should be enough to provide one hundred million cubic ft. of storage and permit of a minimum discharge of 5835 c.f.s.

It would be advisable for both Governments to acquire and hold all patented lands up to a contour of 1003 around the shores of the lake that might be affected by any of the levels suggested, such acquisition to be by complete purchase from the owners. As to any lands not patented, but still vested in the respective governments, both governments should be requested to withdraw same from sale or location, and to reserve even up to a higher contour, such to be held in future as park land surrounding the lake. It might also be advisable to properly monument in the low-lying lands certain defined contours for the information of the surrounding settlers.

The answers to the above three questions have always been considered by the International Joint Commission rightly as an engineering problem, and in the above I have endeavored to deal with same almost wholly from an engineering viewpoint.

I wish here to join in the testimony that was given at Winnipeg by the different engineers to the value of the work accomplished by the consulting engineers of the Commission, viz.: Mr. Meyer and Mr. White and their staff.

By the thoroughness and painstaking research, by the application of their technical ability, by the accuracy that naturally flows from such application, there is now on record, in the Commission's text and book of plates and maps and other material, facts and information that will be most valuable as relating to one of the large watershed districts of the North American continent.

Before closing, I wish to again refer, as was done at the Kenora sittings in 1912, to the Commission. After three years' experience with the members of the Commission (though not always with the same personnel), I am unable to thoroughly express my admiration for their impartiality, for their judicial manner,

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and for their intention, which they have always revealed, to reach the truth and rightness of the International problem.

The two countries of the North American continent, through this Commission constituted entirely by and of its own citizens, are demonstrating to the world how disputes can be amicably settled by themselves without any recourse other than to the fairness and common sense of the two peoples as represented by their Commission.

In closing, permit me to thank the members of the Commission, both present and past, for the many kindnesses and courtesies received from them at the different sessions.

FRANK H. KEEFER,
Of Counsel for the Dominion of Canada
and the Province of Ontario.

Thorold, March 31st, 1916.

