

October 4th, 1934.

MEMORANDUM on behalf of SALT SALMON PACKERS  
ASSOCIATION OF CANADA.

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This branch of the fishing industry along with many others was commenced and built up through the efforts of the Canadian fishermen of Japanese origin in the Province of British Columbia and through their continued efforts it has continued and expanded down to the present day.

Salmon Dry Salting was first started in British Columbia in the year 1895 by Canadian fishermen of Japanese origin operating on the Fraser River and about 10,000 fish, equivalent to 150 boxes of the present standard size box, was cured and shipped to Japan.

Since then, the market has been expanded until at the present time 20,000 to 30,000 boxes of Canadian Salt Salmon are being consumed in Japan annually. The pecks of these Salted Chums in most of the years has increased in the same ratio with the reduction of Canned Chums because of the fish being salted heavily whenever the canneries check their purchases of fresh fish from the fishermen because of the poor market for the canned products and the salt salmon industry is a salvation to the individual salmon fishermen who otherwise would not be able to dispose of his catch.

The Canadian Salted Chum Salmon is only a small proportion of the supply consumed in Japan. The Nichiro Gyogyo which operates extensively in North Japan and Kamchatka waters alone furnishes a large quantity, and Okidori Gyogyo, which is operating with several floating plants, is making continuous progress. Apart from these two powerful concerns, there are numerous smaller operators in Hokkaido (See Schedule "A").

Moreover, Soviet fish are now going into Japan and the Russian policy with regard to the marketing of these fish permits them to be dumped on the market at any available price, regardless of their production costs and, in the result, makes it extremely difficult for the Canadian salmon to retain its present market, and a very high degree of co-operation is necessary between the Canadian exporter and the importer for the Japanese market.

The various kinds of salted salmon marketed in Japan are bought by the dealers only upon actual inspection, or otherwise a very large allowance has to be made to persuade the purchaser to undertake the risk arising out of the quality and shrinkage. This custom is invariably followed by the Nichiro, Okidori and Hokkaido packers and unless shipment can be made from Canada on consignment the salt salmon market will almost certainly be lost.

Since 1930 when this Association was formed, it has been in the closest contact with importers in Japan to establish the most secure market possible in the circumstances. The members have invested very heavily in the industry, and in the past five years have produced 167,055 boxes out of a total of 183,095 boxes and , at the present time, <sup>the Association is</sup> ~~they are~~ handling shipments for each of the individual members to the Japanese importer on the strict understanding and undertaking that the Association has the right to discontinue any dealings between the members and the consignees which will tend to destroy the fair marketing policy which it is striving to keep up.

The Association is at present engaged in trying to work out a scheme of co-operative sales company in Japan with those who have been regular importers of Canadian salmon and those who are anxious to build up an import business from Canadian resources. These negotiations are still under way and have not yet been completed. It is to be emphasized that

this Association welcomes as members all Canadian salted salmon producers who are willing to join it and co-operate in carrying out its efforts to maintain an orderly and self-supporting market in Japan ~~and China~~, and it feels that the progress which it has made in building up the eastern market entitles it to every consideration and the recognition that it is a vital factor in the salt salmon exporting business which entitles it to adequate representation on any Board which may be created.

RESPECTFULLY SUBMITTED

SALT SALMON PACKERS ASSOCIATION OF CANADA

SCHEDULE "A"

Canadian Salted Chum Salmon

Nihiro and Okidori Salted  
Chum Salmon

<u>Year</u>	<u>Boxes</u>	<u>Koku</u>
1926	36,396	?
1927	20,938	184,000
1928	45,493	395,400
1929	18,694	323,900
1930	26,313	306,280
1931	65,223	257,617
1932	33,785	269,023
1933	18,660	245,289
1934	?	374,550 (Estimation)

Each box contains approximately 67 fish.

Koku - 60 fish  
Size of fish is about 75%  
of Canadian salmon.

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C O P Y

TILLEY, JOHNSTON, THOMSON & PARMENTIER,  
Barristers and Solicitors

80 King St. West

Toronto 2  
CANADA

March 10, 1931

T. G. Norris, Esq.,  
Empress Hotel,  
Victoria, B. C.

Dear Sir:

Re: B. C. CENTRAL SELLING LEGISLATION

I have carefully considered the draft bill entitled "Growers Sales Act" and the other papers submitted by Mr. Lewis Duncan when asking my opinion as to the validity of a Statute passed in the terms of the draft bill.

I have given special attention to the recent judgment of the Supreme Court of Canada in Lawson v. Interior Tree Fruit and Vegetable Committee of Direction holding that the British Columbia Produce Marketing Act (1927) is ineffective to impose a levy on the produce of the appellant Lawson or to authorize the regulation or control in any manner of the marketing and selling by him of his product outside British Columbia. That judgment proceeded on the view that the levy was an indirect tax and that the Act in attempting to regulate the marketing of produce into parts of Canada outside British Columbia, dealt with "trade as trade" that was largely inter-provincial and fell under the head "the regulation of trade and commerce" and therefore within the exclusive authority of

the Dominion Parliament.

It is not necessary for me to give my personal view as to the soundness of the decision with regard to the levy but it occurs to me that had the Supreme Court reached the conclusion that the main features of the legislation relating to marketing fruit, etc., were valid, it might with propriety have dealt differently with the clause regarding levy. But the provisions for raising funds under the draft bill so differ from those contained in the Produce Marketing Act (1927) that it is not necessary to consider the correctness of the decision in the Lawson case. Assuming that the main provisions of the draft Growers Sales Act are within the competence of the Provincial Legislature, I am quite clear that the incidental provision as to deducting from the proceeds, moneys to cover expenses and reserve funds cannot be questioned. Assuming the District Committee can be set up and given the powers of marketing contained in the draft Bill, they can certainly deduct their expenses from the proceeds of the product they sell.

As to the main features of the proposed Bill, it seems clear that their real purpose is to set up within the Province a selling agency called the District Committee with authority to receive property grown in the province and to sell it under such contracts as the Committee sees fit to make. The Committee's powers to regulate and control are exercisable only within the province. It will have rights

to sell outside the province subject to the law of the place where the sale is made. In this respect they will be in the same position as any owner or agent residing in British Columbia.

Mr. Justice Duff in the Lawson case, after reviewing the Parsons' and other decisions, declared that the principle still stands that foreign trade and trading matters of interprovincial concern are among the matters included within the "regulation of trade and commerce" under head 2 of Section 91 of the B. N. C. Act. He reached the conclusion that the Produce Marketing Act, if carried into effect, would result in a regulation or control of trading in the produce concerned in areas beyond the limits of the province. He thought the Act aimed at control of trade in matters of interprovincial concern in such a degree as to exclude it from the category of legislation in respect of matters local in the province. It seems to me to be unfortunate that the Produce Marketing Act did not contain a recital of the conditions that prompted the legislation. I have not the record before me and the reasons for judgment did not disclose the facts that were proven. For the purpose of this opinion I accept the judgment in the Lawson case. I incline to think, however, that if legislation of the kind contained either in the Produce Marketing Act or in the draft Growers Sales Act is of real importance to the province it would be a matter of regret if the Privy Council is not asked to express an opinion on the former

Act. I do not mean by this to suggest that the decision is wrong but it does seem to be one of great importance and one that might well be fully considered by the court of the highest resort.

But in any case I cannot think the objections raised to the Produce Marketing Act would apply to the draft Growers Sales Act. Under the latter a poll is taken before the selling agency is established and when established, it takes control of property within the province and markets it in the interests of the general body of producers within the area. In my opinion, legislation of that character, if passed to preserve or foster an industry that is vital to the province, is provincial in its nature. In its true aspect it deals with property and civil rights within the province and with matters of a local or private nature within the province.

Nor in my opinion can such legislation be deemed to be an attempt to regulate interprovincial trade and commerce. The selling agency is as free to enter into contracts as would be an individual producer. All that is done is to set up within the province an agency that the legislature thinks necessary or appropriate to take control of property in the province and sell it in the interests of the producers.

You raise a question as to the right of the province to enact restrictions imposed by Sections 27 and 35(b) of the draft Bill. While under Section 9 of the Bill all growers are members of the corporation, yet in order to be a trustee or a

T. G. Norris, Esq.

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March 10/1936

committee man, a person must be a British subject as provided by Section 27. To be a voter, he must be a British subject as provided by section 35(b). I really cannot express an opinion of these sections without knowing more about the local situation. I should want to know who will be deprived of the vote and why.

I doubt the wisdom of Section 55 of the draft Bill. I certainly would not insert such a clause unless it was really essential to the scheme. All sorts of complications may arise, if the legislation takes the form of merely preventing an action in the British Columbia courts. On the other hand the provincial legislature could not go the whole distance of declaring existing contracts with persons outside the province void.

I think the Gold Seal case 62 S.C.R. 424 is a complete answer to the point raised by Mr. Justiceannon as to the effect of section 121 of the B. N. A. Act. I am rather sorry that legislation of so serious a character must be put through with such haste. My view is it would be desirable if possible to proceed slowly and consider carefully the precise language in which the legislation is framed. The draft submitted could I think be revised considerably with advantage. I would certainly recommend that the Act contain a recital showing the conditions prevailing in the province that render the legislation desirable from the provincial point of view.

Yours truly,

"W. N. TILLEY"

WNT.A



"COMPANIES ACT"

OF

BRITISH COLUMBIA

(1929)

Chapter 11

MEMORANDUM AND ARTICLES OF ASSOCIATION

OF

SALT SALMON EXPORTERS OF B.C. LIMITED

WILLIAMS, MANSON & RAE  
Barristers Etc.  
Vancouver, B.C.

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"COMPANIES ACT"  
OF  
BRITISH COLUMBIA  
(1929)  
Chapter 11

MEMORANDUM OF ASSOCIATION  
OF  
SALT SALMON EXPORTERS OF B.C.  
LIMITED

1. The name of the Company is "SALT SALMON EXPORTERS OF B. C. LIMITED".
2. The Registered Office of the Company will be in the Province of British Columbia and until changed will be at 716 Hall Building, 789 Pender Street West, in the City of Vancouver, Province of British Columbia.
3. The objects for which the Company is formed are:-
  - (a) To acquire, own, hold, enjoy, operate, be interested in, manage, turn to account and alienate in any and/or all branches and departments, any business, property or asset relating to the following headings or ancillary thereto:- Dealers in fish and other fresh water or sea products, and including fishing or any other means of acquiring same, and the conveying, storing, processing, manufacturing, shipping and marketing of same, and whether as owner or agent; owners and holders of real estate, personal property and rights; the business of merchants, traders, manufacturers, contractors, wharfingers, operators of storage plants, ship owners or charterers, exporters, importers, brokers, agents, carriers, (other than the ownership or operation of railways within the meaning of the Dominion or Provincial Railway Acts), guarantors, (other than guarantee insurance within the meaning of the Insurance Acts of the Province of British Columbia), financiers, investors, and lenders of money on any security.
  - (b) To carry out the objects of the Company within Canada or outside Canada, and to promote and cause to be incorporated companies in Canada or elsewhere to carry out any of the objects of the Company, and to finance same, and to enter into any business relations or arrangements with same.
  - (c) To acquire by purchase, exchange for shares or securities of this company or otherwise, shares, bonds,

debentures or acknowledgments of indebtedness of any nature of any other persons or Governmental body.

4. The liability of the members is limited.
5. The authorized share capital of the Company is twenty thousand dollars (\$20,000.00), divided into two thousand (2,000) ordinary shares with a nominal or par value of ten dollars (\$10.00) each.

WE, the several persons whose names and addresses are subscribed are desirous of being formed into a Company in pursuance of this Memorandum of Association, and we respectively agree to take the number of shares in the capital of the Company set opposite our respective names.

NAME IN FULL	ADDRESS	OCCUPATION	NO. OF SHARES
"William E. Williams"	3738 Cypress St. Vancouver, B.C.	Solicitor	One (1)
"M. Alex Manson"	1850 Western Parkway University Hill, B.C.	Student-at-Law.	One (1)

DATED at Vancouver, British Columbia, this 1st day of February, A. D. 1936.

WITNESS to the above Signatures:-

"Gwendolen S. Lauder"  
Stenographer,  
716 Hall Bldg.,  
Vancouver, B. C.

"COMPANIES ACT"  
OF  
BRITISH COLUMBIA (1929)  
Chapter 11

ARTICLES OF ASSOCIATION  
OF  
SALT SALMON EXPORTERS OF  
B. C. LIMITED

1. The regulations contained in Table "A" in the first schedule of the "Companies Act" (Statutes of British Columbia, 1929, Chapter 11) hereinafter called "Table 'A'", shall apply to the Company, save insofar as they are expressly excluded or varied hereby, and save insofar as they are repugnant to these Articles.
2. The following clauses of Table "A" shall not apply to the Company:- Nos. 6, 30, 51, 52, 55, 58, 62 and 91.

SHARES

3. In case the Company should at any time be converted into a public company, then the share capital offered to the public for subscription may be allotted when a minimum of 5 shares, payable in cash, has been subscribed for, and when 5% of the nominal value of said minimum subscription has been paid in cash upon application therefor.
4. The shares of the Company shall be under the control of the directors, subject, however, to the following limitations:-
  - (a) Shares shall be allotted only to persons (in the wider sense) who have agreed to market their product through the company, or such other persons or class of persons as shall be approved of by a resolution of the members.
  - (b) Members may, by resolution, provide for a limitation of allotments, or of transfers, for the purpose of securing an equality of share holdings in each member, so far as it is practical to effect same.
  - (c) Transfers of shares shall be to members only, or to such other persons as have been approved by a resolution of the members, and who shall have a prior right to purchase same so as to effect equality of holdings amongst such members or persons, and subject thereto, shares offered to the members or such other persons for

purchase, shall be divided, as nearly as practical, equally amongst the members and such other persons, who shall, within ten (10) days of notice of the offering have signified to the Secretary of the Company their willingness to purchase same.

(d) It shall be the duty of the directors to maintain equality of shareholdings amongst the members so far as it is practical so to do.

#### GENERAL POWERS

5. The Company may exercise all powers conferred by any provision of the Companies Act which would be available to the Company if these Articles expressly conferred such power upon the Company, and such powers may be effected by resolution of the directors, unless precluded by said Act, and in other cases by ordinary resolution of the shareholders, unless precluded by the said Act, subject, however, to any other requirements provided for in the Act.

#### PROCEEDINGS AT GENERAL MEETING

6. In lines 5, 6 and 7 of Clause 40 of Table "A", the words:-

"When a meeting is adjourned for ten days or more, notice of the adjourned meeting shall be given as in the case of an original meeting, save as aforesaid".

shall be struck out.

7. With the consent of members holding sixty per cent (60%) of the issued ordinary shares of the Company given before or at the time of holding a general meeting, other than a meeting called for the passing of a special resolution, such meeting may be convened on shorter notice than seven (7) days. (See Section 159).

8. Holders of ordinary shares who shall cease to be entitled to vote in the Company by reason of any agreement filed with the Company, shall not be entitled to receive notice of or to be present at any ordinary or extraordinary general meeting of the Company.

9. The financial year of the Company shall end on the 30th day of April in each year, and the Annual General Meeting of the Company shall be held as soon as convenient thereafter. At the Annual General Meeting of the directors shall furnish to the members a financial statement of the affairs of the Company, including a Profit and Loss Statement and the disposition of any profits.

#### VOTES OF MEMBERS

10. Any writing showing the intention of a member to appoint a proxy

and signed, shall be sufficient, but only members of the Company, or employees of members of the Company or directors of the Company, shall be entitled to act as proxies. Proxies may be deposited at the Registered Office of the Company or with the Chairman of the meeting before or at the time of holding the meeting at which the proxy is to be used.

#### POWERS OF DIRECTORS

11. The directors may, from time to time, raise, borrow or secure the payment of any sum or sums of money for the purposes of the Company.

12. The directors shall have power by resolution to carry out and effect all the objects of the Company, unless otherwise definitely provided for in the Memorandum of Association or the Articles of Association, or unless power so to do cannot be conferred upon the directors under the "Companies Act".

13. The proposed total pack by members of any product to be exported by the Company, during any production year, and the allotments of such total pack amongst the members, shall be tentatively fixed by the members in General Meeting, provided that as the production period advances, the directors may, by resolution, increase or reduce such pack, and the allotments to members shall be increased or reduced accordingly, and the directors shall promptly notify the members of any increase or reduction in their allotments, and same shall be binding upon the members.

#### DISQUALIFICATION OF DIRECTORS

14. The office of director shall be vacated if the director:-

- (a) By notice in writing to the Company resigns his position.
- (b) Is found lunatic or a duly qualified Medical Practitioner shall have given an opinion that the director is of unsound mind.
- (c) In case of death.

15. A director may hold any office in the Company in conjunction with the office of director, and on such terms as to remuneration or otherwise as the directors may authorize. No director shall be entitled to receive remuneration for his services as a director unless authorized by an ordinary resolution of the shareholders.

#### PROCEEDINGS OF DIRECTORS.

16. A written resolution signed by two-thirds of the directors shall be valid and effectual as if passed at a meeting of directors duly called and properly constituted.

17. Any directors not present at any meeting may afterwards ratify the proceedings of such meeting by signing their names on the Minutes of the meeting, whereupon the same shall be as effective as if such signing member had been present at the meeting, and voted accordingly.

18. A director may appoint a member, or an employee of a member, or any other director as his alternate director, to act in his stead in his absence, by filing with the Board of Directors the appointment in writing, and upon the appointment being approved by a resolution of directors, and in the absence of such director, his alternate director shall receive notice of all meetings of the directors and shall have all the powers of a director, and may vote for or sign resolutions for such director.

19. It shall not be necessary for a director to hold any shares in the Company.

20. The directors of the Company shall be limited to seven (7) until changed by resolution of the members.

#### SEAL

21. The Seal of the Company shall be attached to all documents proper to be executed under the corporate seal of the Company, if the execution of the documents on behalf of the Company has been authorized by resolution of the directors and any director who signs the documents on behalf of the Company may attach the corporate seal.

#### DIVIDENDS AND RESERVES

22. No dividend shall be paid otherwise than out of profits or out of returns from depleting assets.

23. All dividends unclaimed for one year after having been declared may be invested or otherwise made use of by the directors for the benefit of the Company, until claimed, and all dividends unclaimed for six years after having been declared may be forfeited by the directors for the benefit of the Company.

#### NOTICES

24. Notices may be given by the Company to any member either

personally or by sending it by post to him at his address on the Company's Register of shareholders, or to any other address supplied by him to the Company for the giving of notices to him, and in the absence of any such address the posting up of the Notice in the Registered Office of the Company shall be sufficient notice, but the non-receipt of the notice or the omission to give any such notice to any member or members shall not invalidate the proceedings at any general meeting.

25. In addition to or in lieu of any other method of giving notice to members, notices may be given by advertising in three successive issues of a daily newspaper circulating in the locality where the registered office of the Company is situated, setting out the time and place of holding the meeting and of all special business to be submitted to the meeting, and such Notice shall be effectively given on the day following the third publication of such Notice.

26. (a) The Company is a Private Company and no shares shall be transferred without the approval of a resolution of the Directors.

(b) The number of members in the Company shall not exceed fifty (50) exclusive of persons who are in the employment of the Company and persons who are members while in the employment of the Company and continue to be members after the termination of such employment.

(c) No invitation shall be given to the public to subscribe for any shares or debentures of the Company.

NAME	ADDRESS	OCCUPATION
"William E. Williams"	5738 Cypress St. Vancouver, B. C.	Solicitor
"M. Alex Manson"	1850 Western Parkway, University Hill, B.C.	Student at law

DATED at Vancouver, British Columbia, this 1st day of February, 1936.

WITNESS as to the above Signatures:-

"Gwendolen S. Lauder,"  
Stenographer,  
716 Hall Bldg.,  
Vancouver, B. C.





鯊獲、並に潮と月の関係。

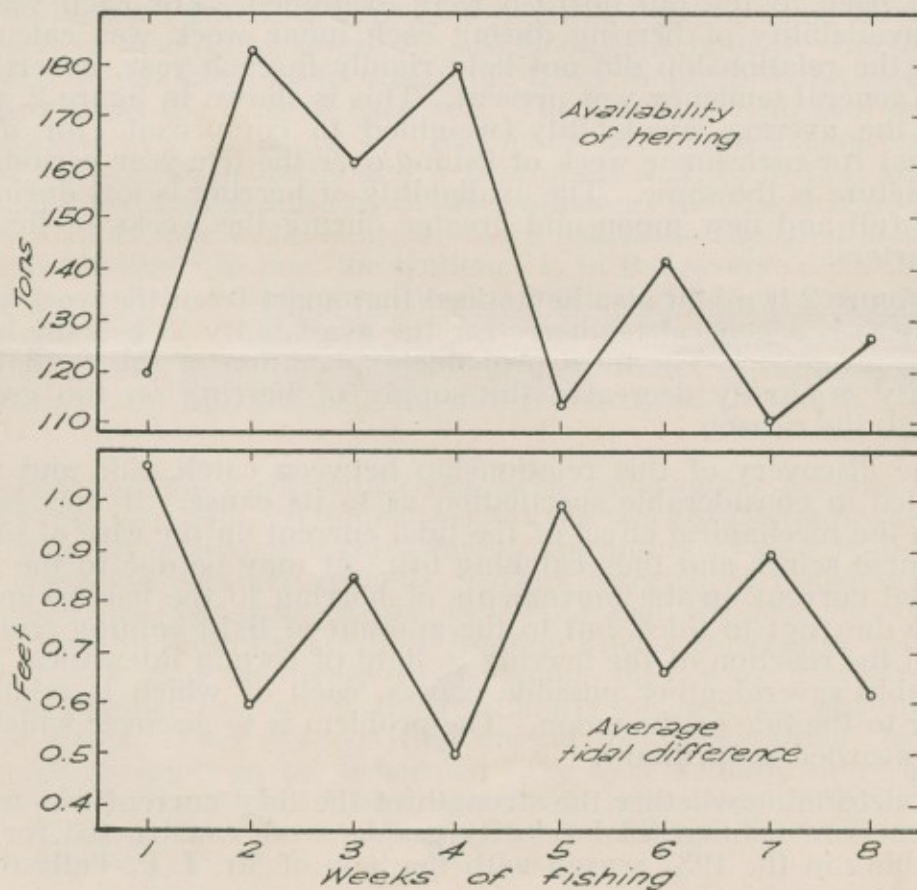
### HERRING, THE TIDE, AND THE MOON

By Albert L. Tester,  
Pacific Biological Station, Nanaimo, B.C.

It is a common experience of purse seine fishermen that herring appear to be more abundant and are more readily caught in some weeks than in others. Some fishermen may offer explanations of this, pointing an accusing finger at the tide or the moon. Do these affect our herring fishery? There is good evidence that both the tide and the moon are at least related to weekly fluctuations in the availability of herring in the Swanson channel fishery on the south-east coast of Vancouver island. This evidence has arisen from a study of daily catch records collected by the Fisheries Research Board of Canada with the help of the Dominion Department of Fisheries and the fishermen.

In figure 1 is shown the availability of herring (that is, the average catch per seine per day) during each of the eight weeks of fishing at Swanson channel during the fall of 1937 (Oct. 18 to Dec. 11 incl.). It is at once evident that the average catches fluctuate considerably. However, there seems to be some order to these fluctuations. The catches are relatively small in the first, third, fifth and seventh weeks and relatively large in the second, fourth, sixth and eighth weeks of fishing.

In figure 1 is also shown the average difference between the height of high and low water for each week of fishing. This is calculated for the hours of the day between 6 P.M. and 8 A.M., the interval during which



75% of the herring were caught. Although the tide data do not adequately cover the daily fishing periods and although they are for Sand Heads, not Swanson channel, nevertheless they seem to vary in a regular manner with the availability of fish. When the average tidal difference is large the catch is small, and when the average tidal difference is small the catch is large. It may be shown mathematically that this correlation is not merely the result of chance.

It might be pointed out that during the weeks of high availability and low average tidal difference, the tidal series was passing from neap (low) to spring (high) tides, whereas during the weeks of low availability and high average tidal difference, the tidal series was passing from spring to neap tides. This factor in itself may be of importance in explaining the results.

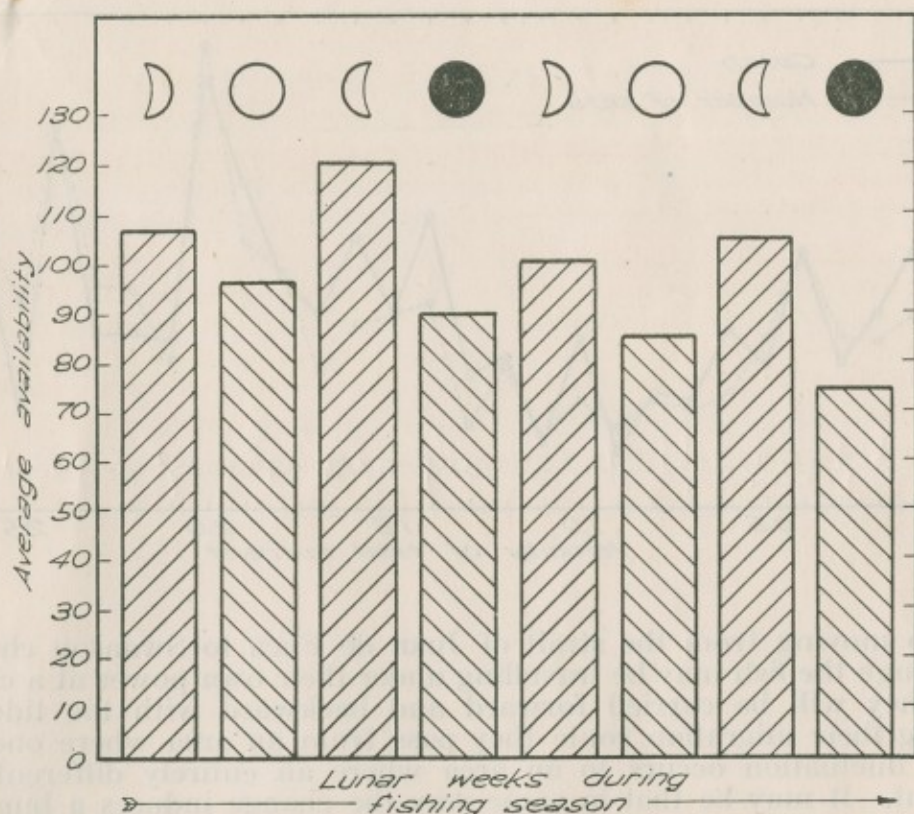
As tides are caused by the force of attraction exerted by the sun and the moon, particularly the latter, on the water mass of the earth, it is not surprising to find that fluctuations which are related to the tides are also related to the phases of the moon. In a lunar month there are four lunar weeks corresponding to the moon's four phases. Considering each lunar week to include three days before and after the time of each phase, it was found that in 1937 the lunar weeks corresponded fairly closely with the calendar weeks. The availability of herring was lowest during the weeks in which the moon was in the new and full phases and highest during the weeks when it was in the first quarter and third quarter phases.

Was this relationship between herring catches, the tide and the moon peculiar to the fall of 1937 or has it occurred in other years? To answer this question, daily catch records of the Swanson channel fishery extending back to the fall of 1933 were examined. For each year the average availability of herring during each lunar week was calculated. Although the relationship did not hold rigidly in each year, nevertheless the same general tendency was present. This is shown in figure 2, which portrays the average availability (weighted to compensate for annual differences) for each lunar week of fishing over the five-year period. The general picture is the same. The availability of herring is less during the weeks of full and new moon and greater during the weeks of first and third quarters.

In figure 2 it might also be noticed that apart from the weekly fluctuation there is a general tendency for the availability to become less as the season progresses. The most probable explanation of this is that fishing activity gradually decreases the supply of herring on the grounds throughout the season.

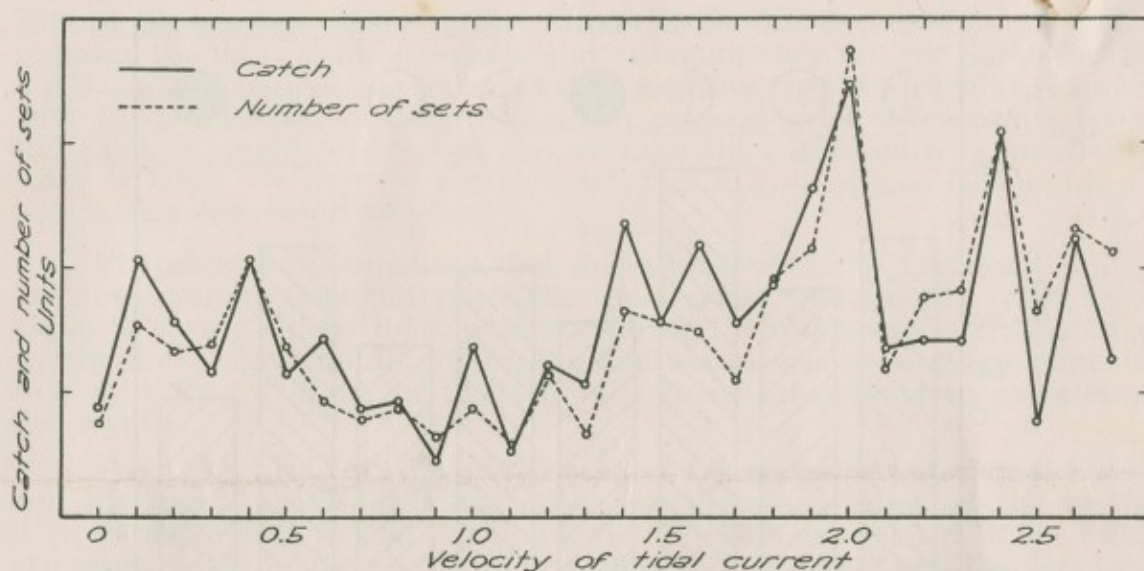
The discovery of this relationship between catch, tide and moon has resulted in considerable speculation as to its cause. It may be due merely to the mechanical effect of the tidal current on the ease of manipulating purse seines and thus catching fish. It may be due to the effect of the tidal current on the movements of herring to the fishing ground. It may be due, not to tides, but to the amount of light coming from the moon and the reaction of the herring to light of certain intensities. There are probably several other possible causes, each of which is related in some way to the tide or the moon. The problem is to discover which one may be regarded as primary.

To determine whether the strength of the tidal current was related to the success of fishing, tidal velocity graphs were constructed for each day of fishing in the 1937 season with the help of Mr. J. P. Tully of this



Station. Tide data for Active pass, the reference point closest to the Swanson channel grounds, were used. As the fishermen had been careful to include in their Pilot House Record Books the hour at which each set was made it was possible to determine from the graphs the speed of the tidal current at the time of each set. The results for all sets during the whole season (weighted to the frequency of occurrence of each tidal velocity during the actual hours of fishing—2 A.M. to 8 A.M. and 1 P.M. to 10 P.M.) are shown in figure 3. It is apparent that there is no tendency for either more sets to be made or more fish to be captured at the lower speeds of the tide. In fact, the tendency is in the reverse direction—more sets and more fish at the higher speeds—but it is not known as yet whether this is significant. It may be concluded that weekly fluctuations in the availability of herring are not due merely to the effect of the speed of the tidal current on the ease of manipulating a purse seine and capturing fish.

The tagging work which has been in progress for the last two years (Prog. Rep. No. 35) indicates that the weekly fluctuations in availability may be related to a third factor, the influx of new bodies of fish to the Swanson channel grounds. Tags inserted at Sooke have been recovered from Swanson channel, showing that the fish supplying this ground move in from the strait of Juan de Fuca. During the fall of 1937 it was found that relatively more Sooke tags were recovered from Swanson channel fish when the availability of herring was high than at other times. This suggests that during the weeks when the herring were more available to the fishermen they were actually more abundant because of the addition of new and large quantities of fish from the strait. If this is true, these influxes may be related in some way to the tidal cycle.



In moving from the strait of Juan de Fuca to Swanson channel, even though the fish may be travelling under their own power at a certain speed, they will be carried forward and backward with the tide. In following their migration route they pass from an area where one type of tidal fluctuation occurs to an area where an entirely different type is present. It may be that in some way the change induces a bunching of the fish so that more arrive at Swanson channel during one tidal cycle than during another. Or perhaps, for some reason, the fish move toward Swanson channel only during particular tidal series. These suggestions are advanced in an attempt to cover the relationship between catch, tide, moon, and tag returns.

On the other hand, in searching for the primary cause of the observed facts, we may be altogether "off the track". Perhaps the fact that the availability of fish is greater during the first and third quarters of the moon is related in some way to the particular intensity of light which is present during these phases. This possibility has been considered, but as a suitable explanation it seems to be fraught with difficulties. For example, the intensity of the light from the moon will vary considerably with the state of the sky—whether clear or overcast; a particular intensity of moonlight will occur at different hours on successive nights, whereas most of the herring are caught at two fairly definite times—just before twilight in the morning and just after twilight in the evening (Prog. Rep. No. 37); often successful sets are made in broad daylight. Space will not be devoted to an elaboration of these and other difficulties surrounding the theory of the "light" factor; they are probably obvious to the fishermen.

At present, therefore, it would seem that the most plausible explanation of why herring are more available in the Swanson channel fishery during the first and third quarters of the moon and less available during new and full moon lies in the effect of the tides on the movements of herring. When more data have been accumulated it may be possible to pursue this interesting problem further. In the meantime, the writer invites any discussion of the relationships which have been pointed out, particularly with the fishermen.