

The Oystercatcher

THE SALT SPRING TRAIL AND NATURE CLUB - GANGES B.C. VOS-1EO

EDITORIAL

Andrew Gibson

Sept. 1988

When the matter of reviving THE OYSTERCATCHER was discussed many months ago it was anticipated that the first issue would be out with reasonable speed. After all, T&N members probably have above-average writing skills. Alas, the expected deluge of material didn't arrive, and the editor himself was the slowest of all the contributors.

I have taken the liberty of including, to get the ball rolling, a rather lengthy article by myself, but I would like to reassure readers that my function hereafter will be as editor only, and the contents of future issues will be contributed by readers. A reprint may occasionally be used, but normally I do not anticipate having to depend on other than our own well-informed membership.

I don't request lengthy erudite articles, although these would be welcome, nor need they be typed and double-spaced. Short comments or letters to the editor about anything related to the outdoors would suffice in sufficient numbers. A photograph of the contributor would be welcome.

A quarterly will be aimed at, but initially at least the timing will depend on what arrives. Correspondence, announcements and contributions can be left in the box at the Village Cobbler, or can be mailed to me at RR3, Ganges. My telephone number is 537-4347.

CANADA CASHES OUT ITS FORESTS

Anthony Netboy

When I moved to Salt Spring Island from Oregon in 1981 and became acquainted with the Gulf Islands and Vancouver Island, plus a trip across the interior of British Columbia to the Columbia River, I was amazed to discover that Canada's most important natural resource, the forests, was being hacked away - mined - at a furious pace. The daily papers fully documented this abominable practice. I read the latest books on the subject, such as HERITAGE LOST: THE CRISIS IN CANADA'S FORESTS by Donald Mackay, and other materials. Having written one book and many magazine articles on the forests in the United States, and studied the history of its forest use and misuse there, I realized that Canada is still in the age of exploitation, not conservation. What has happened and is happening in British Columbia is the pattern of forest use throughout Canada. Some writers call it "cashing out", others use the word "vandalism".



As you travel around Vancouver Island, for example, you see huge clearcut areas where once stood noble Douglas fir and cedar, some hundreds of years old. Usually there is little new growth coming in. The loggers were often kind enough to keep a "fence" of big trees along the road to hide the scars. You stood and watched the logging trucks go by, ten or fifteen every hour, and knew that each was bringing back to the mills gigantic trees to be cut up for boards shipped to the United States where the big market is, and the slash will be mainly ground into pulp for paper. What kind of paper? Newsprint, toilet paper, grocery bags, etc.

A study of the literature makes dismal reading. There seems to be no real management of the forest resource in Canada which is mostly owned by the people - in the United States we call it the "public domain". The trees are handed over to the forest products industry for so-called tree licenses, without any rules about logging or reforestation. Often you see headlines in the paper such as "Macmillan Bloedel log wastage denounced." MB is one of the giants of the industry. It has somehow got control of a large hunk of Saltspring Island and sold it to Mr. Cyprus and his partners who are ferociously logging it to make way for a housing development. With the logging goes, of course, the loss of natural beauty. Cutover areas are graveyards.

MB is now applying the same treatment to a large part of beautiful Galiano Island. It is only interested in dollars. The provincial government lets them get away with anything, their profits swell year by year, the land gets poorer. How long will it be before our islands, denuded of big trees and accompanying vegetation, will cease being attractive to would-be residents, while many of those who now live there will leave, sick of the sight of denuded land?

The forest products industry in Canada has its way whenever it gets a foothold. The provincial government seems to have a mandate to do what it pleases with the public domain. The ineffectually beautiful Stein Valley, for example, is on the block, a priceless wilderness sacrificed to Mammon. The company logging it has a sad record; its work has resulted in extensive erosion, increased the rate of runoff, caused creeks to be choked with logging debris, ruined rivers for salmon. This is not what the government, and its stooge foresters, tell the public. "All's well," they say, "we're watching the logging to save the environment, etc. We're planting new trees." An editorial in the Times-Colonist of April 14, 1986, calls this brainwashing. It says that the government doesn't know what it is doing now when it comes to reforestation.

What Canada needs is to get into the 20th century, pass laws like the United States' Environmental Protection and Wilderness Act locking up large areas of inviolate wilderness with no access to miners, gold diggers or drillers. It needs a national forest system providing government management of public forests, a national parks system that is inviolable, a scenic rivers system, and above all a dedicated fighting citizenry to save the land and its resources, like the 440,000 members of the Sierra Club in the United States.

STEWARDS OF THE LAND - written for the Trail & Nature Club by NICK GILBERT

Spring arrived with promise and excitement on the islands. It was a time of growth, of greening, and of the urgent and energetic voices of birds returning to their summer nesting grounds, or passing through on the coastal flyway.

Apart from this marvellous natural pattern of events, human kind is involved in a different kind of growth, less predictable and far less respectful of the habitat and evolution of other species. We are caught up in a period of political uncertainty (will the Islands Trust survive, and will it be given the tools to fulfill its "preserve and protect" mandate?).

We are fearful of the effects of unprecedented and rather uncontrolled development (how will the water supply, and plant and animal communities be affected?).

More than a year has passed since the Island Trusts Act was amended to allow the Trust to accept gifts of land and money, thus potentially assisting us to fulfill our mandate. We have given a great deal of thought to the establishment of the Trust Fund, and recognize its great promise. At present the Trust has little support from the Province. We are underfunded and understaffed, and no financial aid has been offered to get the Fund started. However, there are some interesting initiatives for land stewardship that may be attainable despite the political and development chaos that sometimes seems to overwhelm us.

Many private land owners must wonder how they can contribute to the preservation of the natural environment. There is often some aspect or feature on their property that they would like to see protected. The feature may have landscape or recreation value, or it may contribute to the welfare of the plant and animal community. And yes, protection is possible, with little cost or commitment on the part of the owner or the Islands Trust.

To own a piece of land is to have control of, or rights to, a number of assets. One can give

up, or share with others, those rights that may best be transferred or held in the public interest. Covenants and easements are the legal devices used to make these adjustments. They allow the owner to retain title to his or her land, and to sell it or pass it on to family members. However, he may voluntarily bind himself, and future owners, to certain limitations.

In the States, conservation easements have been widely used to protect sensitive wildlife habitat and migratory corridors. These easements may stipulate whatever the owner wishes, but generally speaking they are designed to limit the development potential of all or a portion of his or her land, where the integrity of that land is desirable for reasons of environmental or ecosystem protection.

Sometimes the easement or covenant is put in place to protect a swamp, a grove of trees, or a patch of wild flowers. Sometimes it is to provide public access to a viewpoint or other feature, or to provide a vital link in a trail system. Several families on our neighbouring islands to the south, the San Juans, are working with the San Juan Preservation Trust to commit to conservation easements that limit their development potential (number of buildings) in order to preserve the scenic beauty of their properties, and to preserve farm and forest land.

I believe that development pressures here are greater than they are on the San Juans, yet we do not have a functioning trust organization. Salt Spring, and other Trust islands, should become active in promoting land trust initiatives. Members of the Trail & Nature Club can make a significant contribution in three ways:

1. Have a close look at your own property and ask yourself if it has value that should be protected.
2. Assist in compiling an inventory of significant natural features on the island.
3. Combine your interest and energies with others, locally, to promote land trust on Salt Spring. The Islands Trust needs your input and support.

Finally, the Trust has had one offer of a significant land donation on Salt Spring in recent months. There may be others. Please work with us to identify and encourage the preservation of significant features. Contact me if you would like more information on land trusts.

(Note: Nick Gilbert is a UBC graduate who moved to Salt Spring in 1975. He served on the APC from 1978 to 1982, and as Vice-Chairman and Chairman of Islands Trust from 1982 to the present. The Gilberts have three teen-age daughters, and are farmers, specializing in fruit and nut trees.)

LETTERS

Dear Fellow Hikers:

Members of our club, being adventurous and curious travellers, are no doubt planning excursions. One which is quite close and inexpensive is the trip to Nootka Sound ports aboard MV Uchuk 3.

A comfortable little boat, inside and out seating, coffee shop aboard, it leaves Gold River for Friendly Cove in Nootka Sound, and makes the round trip in 5 1/2 hours with several stops along the way at logging camps and an hour's stopover at Nootka. There is, of course, a superfluity of Beautiful British Columbia, and bird life of many kinds.

Information regarding this cruise (and two other longer runs on the same vessel) may be obtained from: Nootka Sound Service Ltd., P.O. Box 57, Gold River, B.C. V0P 1G0. Phone 283-2515.

If you have already made this trip, plan to make it, or even omit it, I would like to recommend for your interest and pleasure a new book now in our library, entitled "The Adventures and Sufferings of John R. Jewitt, Captive of Maquinna".

Mr. Jewitt was one of the two survivors of the crew of the ship "Boston", the others having been massacred by the natives of Yuquot (Nootka to us). He and his companion were captured and held there for two years by Chief Maquinna and this book is his narrative of the life he led with the natives of the locality between 1802 and 1804, when he was rescued.

He was intelligent, perceptive, understanding of and at times sympathetic to his captors and became a favourite of Maquinna.

The book has excellent illustrations and commentaries on the narrative and has been well-edited by a British Columbia historian. It certainly gives an inside picture from an outsider's point of view of the customs and manners of some of our native people in bygone days.

I hope these suggestions add to your pleasure.

Your fellow hiker,
Norah Ray

A venturesome Gulf Island lass
 Went kayaking in Active Pass
 She decided the tide
 Gave her too rough a ride
 So she kayaked henceforth on wet grass
Anon.

Foreword: For many years I had labored under the delusion that I understood tides. I now know that I was mistaken. Furthermore, I found the subject very difficult to condense into a form suitable for the eclectic interests of T & N members. I would be glad to know if what follows is understandable, or a tidal bore.

We Gulf Islanders see the effects of the tides not only in Active Pass but in all of our waters - in the emptying and filling of the Fulford Estuary, in the currents speeding past Fernwood, and in the claim boundaries which the jealous sea has marked with logs or chiselled rocks.

Those of us who are fishermen or boaters or beachcombers know the predictability of tides, and may absorb by observation all of the practical information needed, just as our ancestors did in their coracles or long boats. But whereas they explained the tides as the regular breathing of the ocean god, or the dipping of a celestial finger in the waters, we know that they are a completely natural phenomenon. They have something to do with the moon, haven't they?

Whatever the reason, anything that happens regularly will be subjected to prediction tables, as were prepared by the Arabs as early as 1325 and by the Europeans a couple of hundred years later. No theory was involved - that was left to the astonishing brain of Isaac Newton, who first made the intellectual leap over Aristotle's roadblocks. He explained not only the motions of the solar system, but, in his "Equilibrium of the Tides", the rise and fall of the waters.

First, however, a short astronomical brush-up on the sun-earth-moon system.

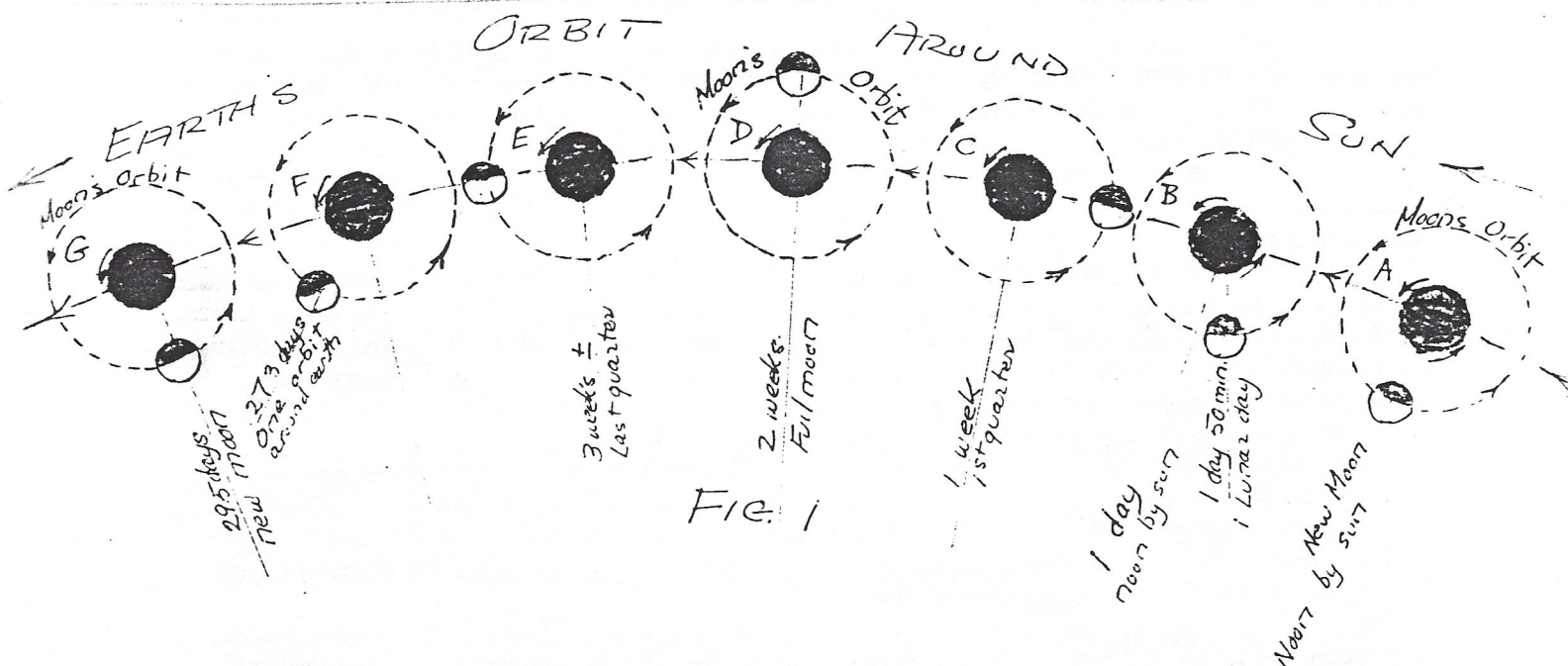


Figure 1 shows a one-month segment of the earth's orbit around the sun, beginning with A, when the new moon is between the earth and the sun. At B it is again noon, 24 hours later, but the moon having moved about 13 degrees in its orbit, in the same direction as the earth's rotation on its axis, it takes the meridian of the observer on earth about 50 minutes to catch up. At C the moon has completed a quarter of its orbit, and is a crescent moon, at D it is opposite the sun, and is full, and so on until at F it has completed one orbit, relative to space, around the earth. But during this 27.3 days the earth has moved far enough along in its orbit around the sun that it will take the moon another two days to again be between the earth and the sun.

Let us now build Newton's theory, beginning with an even simpler case - a spherical earth (fig. 2) all alone in space, and uniformly covered with water. Under the pull of the earth's gravity this will be a smooth envelope. Now the moon is added, which makes a gravitational imbalance. It is easy to understand that the water adjacent to the moon will be pulled toward it, and a high tide will be created there. But there will also be a high tide on the other side of the earth. Adjacent to the moon the water, being closer than the solid earth, is pulled away from the earth's gravity. On the other side the earth is pulled toward the moon more than is the water, with the same result. At points midway between these high tides it is low tide.

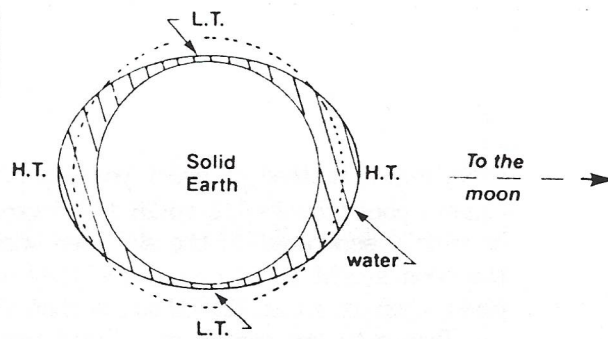


Fig.2

Now start the earth rotating on its axis, once every 24 hours, and also start the moon orbiting the earth every 27.3 days. The tides will maintain their relationship to the moon, and in effect the earth will rotate beneath this standing wave, with a period, as shown in figure 1, of 24 hours and 50 minutes. If a pole a mile or so long were set in the ocean, an observant whale would note that the highs and lows would follow each other at 6 hrs. 12 1/2 min. intervals. I should note that this is not quite the explanation which would be given by a physicist, who would correctly point out that the earth and moon revolve around each other, with a centre of gravity far down in the earth. The tide-creating force would be described as the difference between the moon's gravitational pull and the centripetal force directed towards the moon. The explanation I have given translates this into layman's language.

Now, to further complicate the matter, we create the sun, many millions of times the mass of the moon, but 390 times as far. Since the tide-creating force varies directly as the mass, but inversely as the cube of the distance, that of the sun is less than half of that of the moon, so the tides are largely a lunar phenomenon. But, as shown in fig. 3, the sun adds to the moon's effect when the earth and moon are on line with it, and subtracts from that effect when the moon is perpendicular to the earth-sun line. These are the spring and neap tides respectively, from Saxon words meaning active and inactive, with no seasonal connotation. The New York tidal graph, shown in figure 4, illustrates this.

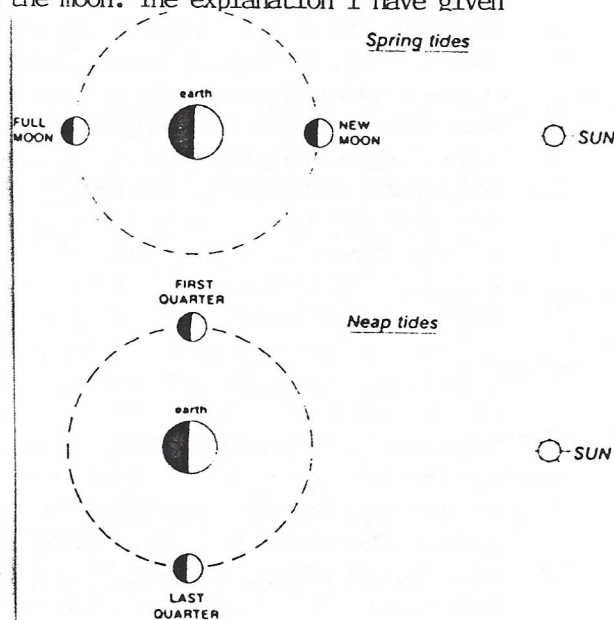


Fig. 3

This is the world that may help us to understand tides, with an earth covered by water, and the moon's orbit around the earth, the earth's around the sun, and the earth's equator all in the same plane and perfectly circular. But the real earth of tides is much more complex. More than a third is highly irregular land mass.

The ocean varies from many-mile depths to vast shoals, and so, instead of the vast sweep of the tides over a universal ocean, they are impeded, deflected, re-

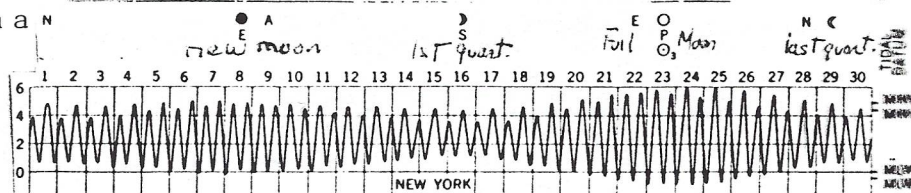


Fig. 4

reflected, channelled and enormously complicated. There are harmonics to consider - the earth's salt water basins, large or small, and including our own Straits of Georgia, have resonance periods which may or may not coincide with tidal periods, just as the period of the liquid in a cup relative to the coffee-drinkers walk dictates whether or not it spills. The tides, like the winds, are affected by the rotation of the earth, by atmospheric pressure, and notably by storms - some hurricane tides can be catastrophic.

Nor is the solar system used to explain simple tides the actual one. The earth's axis of rotation is 23 1/2 degrees away from its orbital axis, so we have seasons while the sun moves from its June north to its December south and back again. The moon does the same thing

every month instead of every year, and, to make it worse, its distance north or south of our equator goes from $18\frac{1}{2}$ to $28\frac{1}{2}$ degrees in a 19-year cycle. So the sun and the moon may be widely separated in the sky even when they are on the same line. Neither the earth's nor the moon's orbits are circular - they are elliptical. The moon has considerably more tidal power when it is at 221000 miles than when at 253000 miles, because of the cube of distance law.

Thanks to the genius of a Britisher, William Thomson, Lord Kelvin, the world has had published tide tables for every major port in the world since the middle 1800's. He realized that the primary cause of the tides was the totally predictable relationships of the earth, moon and sun. These, together with local components, derived from records, could be incorporated in gear settings on a machine, and could make forecasts years in advance. Now, of course, such predictions are child's play for computers, but the older mechanical models have been so successful that they have only recently been replaced.

For our purposes it is necessary to understand only the major components. We have seen that the 24 hour fifty minute passage of the moon past any one meridian produces twice-daily or semi-diurnal tides, the range of which is affected by the moon's changing distance. This semi-diurnal tide is increased or diminished by the changing position of the sun relative to the moon (fig. 3), and also by the sun's changing distance from the earth. But there are also daily, or diurnal influences, involving both the moon and the sun.

Fig. 5 shows the diurnal effect related to the moon. When the moon is north of our equator (north declination), the high tides are not equal on opposite sides of the earth, as they would be when the moon is on the equator. The tide is higher adjacent to the moon in the northern hemisphere, and opposite the moon in the southern. When the moon is south there is a reverse effect. Thus a daily inequality of successive high tides is created with, in the case of the moon, a 4-week cycle.

The sun has a similar but somewhat smaller effect, but with a one-year cycle. At the time of the summer solstice the sun would have its maximum effect in a theoretical ocean at noon (in the real ocean there is a delay of hours or even days between cause and effect). If this happens when the moon is also having its maximum diurnal effect, there will be a greater tide range - in Fulford Harbour the records are a 14.4 high and a -1.1 low.

Figure 6 shows possible configurations producing maximum tides. At other times the sun's diurnal effect may work against that of the moon. Figure 7 shows examples of mixed diurnal-semidiurnal tides.

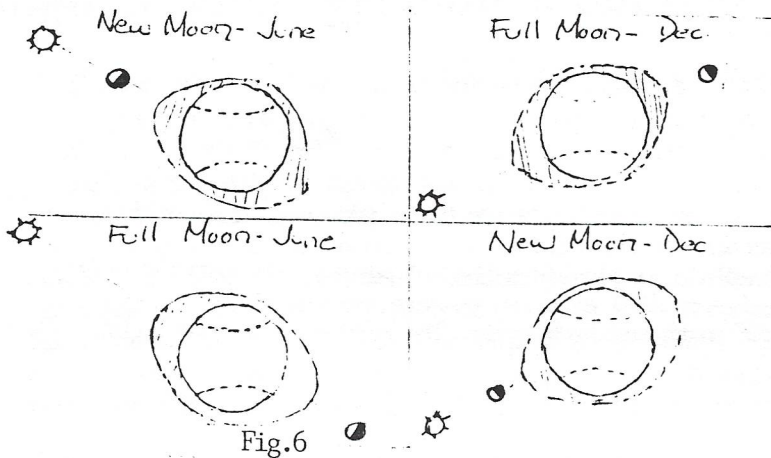


Fig. 6

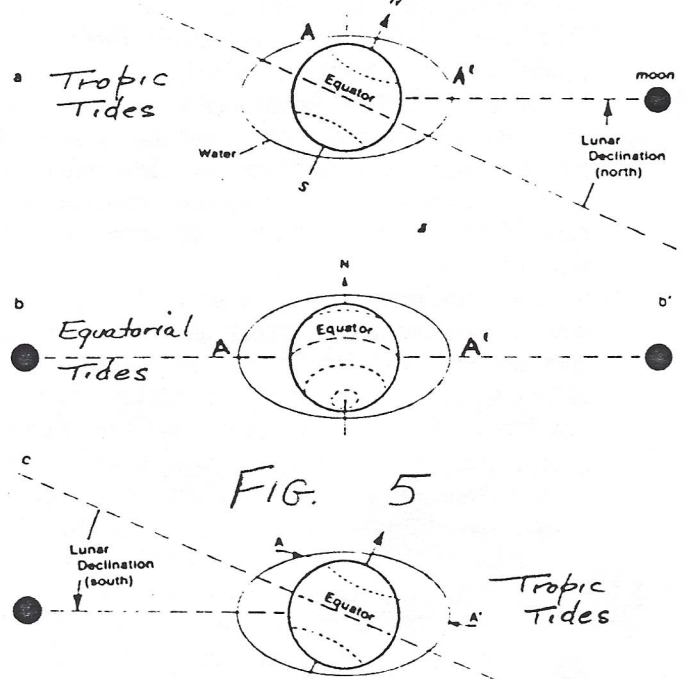


FIG. 5

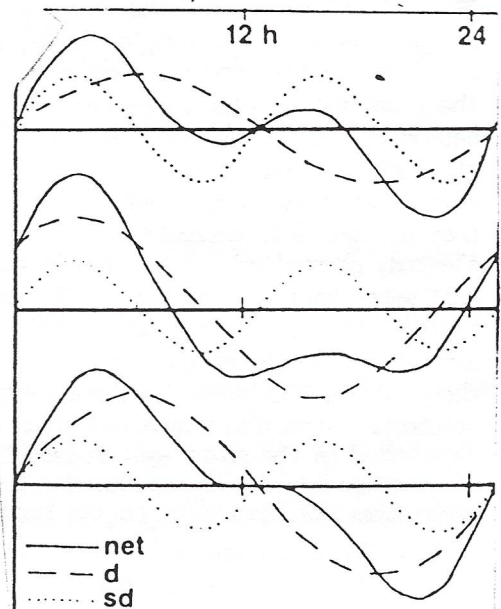
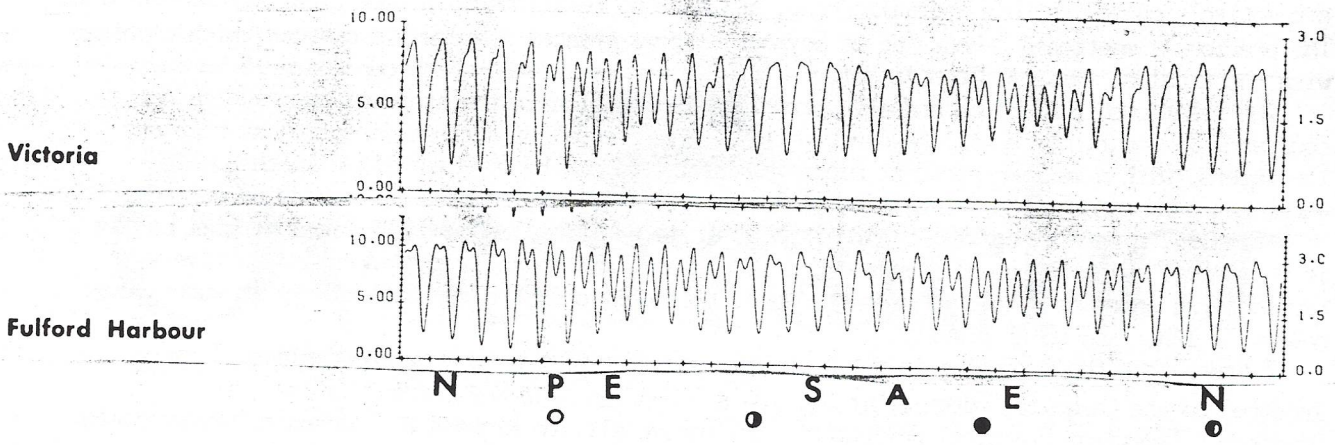


Fig. 7



LEGEND ● - new moon ○ - first quarter ○ - full moon ○ - last quarter	A - moon in apogee (distant) P - moon in perigee (close) E - moon on equator N - moon farthest north of equator S - moon farthest south of equator	LÉGENDE ● - nouvelle lune ○ - premier quartier ○ - pleine lune ○ - dernier quartier	A - apogée P - périgée E - lune à l'équateur N - position la plus au nord S - position la plus au sud
---	--	--	---

Fig. 8

In protected waters where the tides are delayed, channelled or otherwise interfered with they are much more complex. Figure 8 shows the tides during a month at Victoria and Fulford Harbour. Both of these have tides classified as 'Mixed', that is, caused by both semi-diurnal and diurnal components, but Victoria is MD, or mixed, mainly diurnal, while Fulford Harbour is MSD, or mixed, mainly semi-diurnal. It will be noticed that, particularly at Victoria, the diurnal effect is sometimes so great that there is in effect only one high and one low a day.

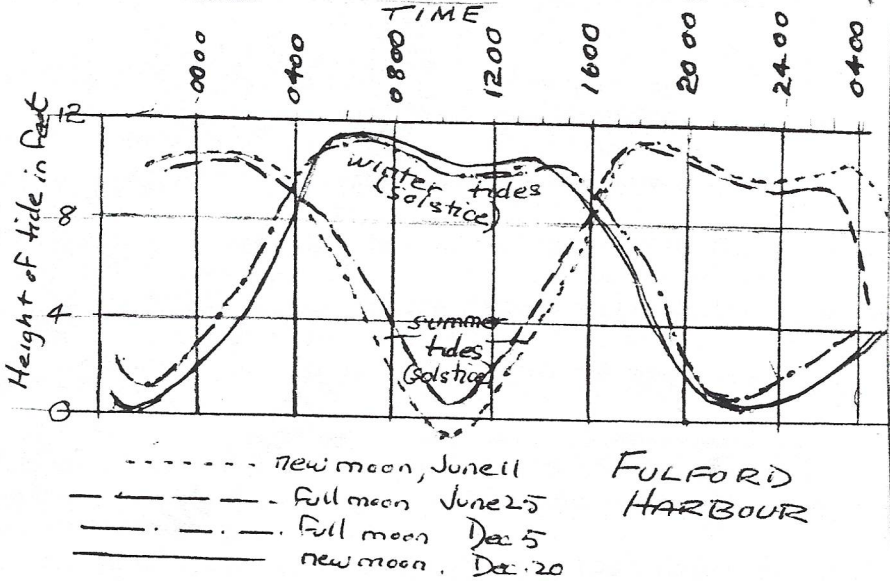


Fig. 9

Figure 9 shows the new moon and full moon tides at Fulford Harbour for the winter and summer solstices of 1987, and it will be seen that although they have an almost identical shape, the times of the corresponding highs and lows of June and December differ by half a day. This illustrates one of our most obvious tide phenomena - the difference between our winter and summer tides. This is especially noticeable in estuaries, which to the casual observer seem often half empty in the summer, but always full in the winter. This perception is partly because the condition of the tide can only be seen for a few hours in the winter, but the diurnal effect of the sun's declination is enough that, in fact, the low tides of May, June and July average within three hours of noon, whereas in November, December and January they are within three hours of midnight.

TIDE PROPAGATION IN THE STRAITS OF GEORGIA: At the south the open Pacific tide must force itself past Cape Flattery, through the straits of Juan de Fuca, Haro and through the island channels to the north and to the south. In the north it swings past the end of Vancouver Island and filters through the innumerable islands to interact with the tide from the south. The tide times vary greatly - High water at Sooke is nearly three hours earlier than at Point Atkinson, and more than 5 hours earlier than at Sechelt Inlet. There is a 2 hour lag in the tide at Campbell River relative to that at Seymour Narrows, 15 miles away.

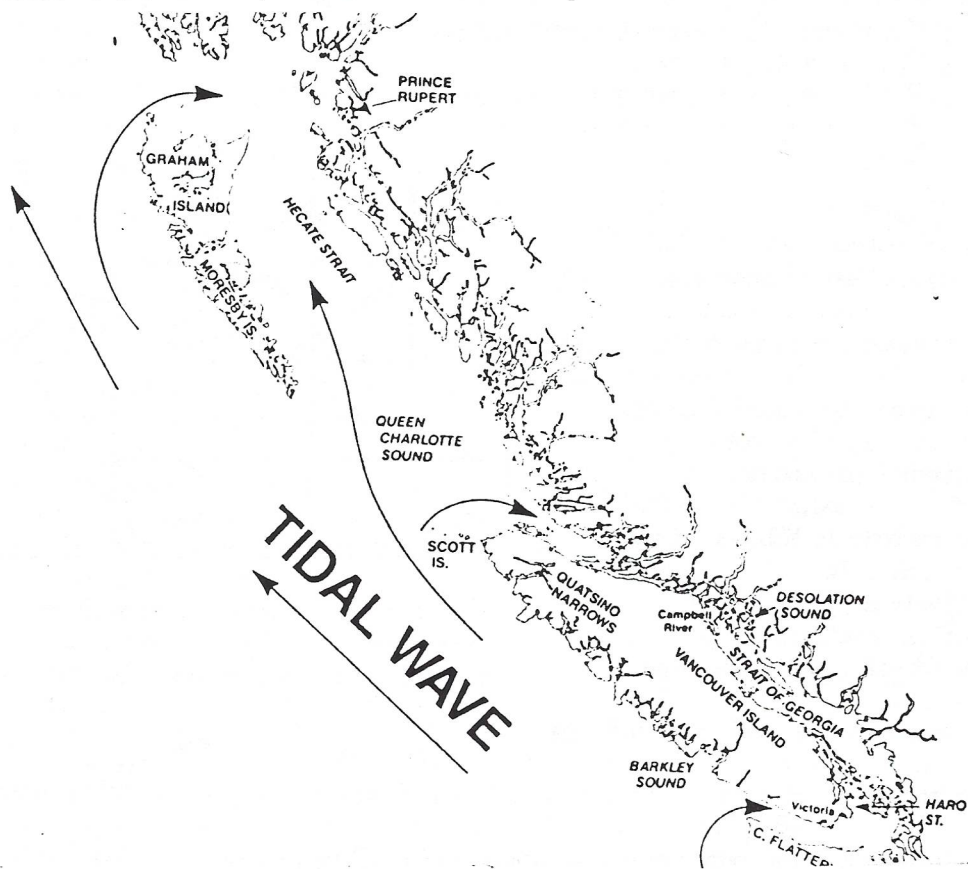
TIDAL CURRENTS: Even more complex than the factors influencing the vertical rise and fall of our waters are those for its horizontal motion. Certainly they are beyond the scope of this article. It is sufficient to recognize that the slight currents associated with the open ocean tides are speeded up in constricted waters, deflected by land, and sometimes, as in Seymour Narrows, become turbulent reversible rivers, with dangerous rips and whirlpools. Since the heights of tide may differ between ends, there may be a simple downhill flow. The currents in Active Pass

are entirely caused by this hydraulic head, and have no relationship to the tidal streams outside. The previously mentioned 2-hour lag at Seymour Narrows creates a hydraulic current which combines with the tidal stream. At Sechelt Narrows this causes a current which can reach 16 knots.

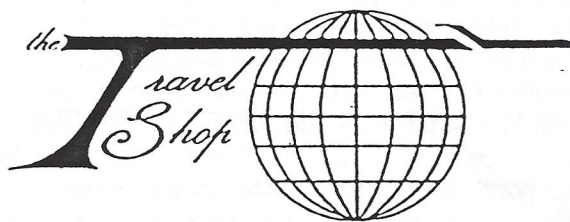
The relationship of flood and ebb currents at a location to the state of the tide is not constant. In theory there will be slack water and a reversal of current direction at high and low waters, with a maximum speed at midpoint, but there can be much variation in this. Slack water can even occur at half tide. The published tide tables also have comprehensive current tables.

Finally, a word about what a tide is NOT. It is not the flood and ebb tidal stream, nor is it a tsunami, which was usually misnamed a tidal wave, and which is the often destructive wave caused by an underwater volcano or earthquake. A tide is only the vertical change in water level caused by lunar and solar gravity.

I trust that the foregoing is not more than you ever wanted to know about tides. I am indebted to the Canadian Hydrographic Service's 'Canadian Tide and Current Tables', to Bowditch's 'American Practical Navigator', and, above all, to Richard E. Thomson's 'Oceanography of the British Columbia Coast', a Canadian Government publication.



WHETHER YOU ARE WALKING ON YOUR OWN ITINERARY, OR TREKKING WITH A GROUP; WE CAN HELP YOU WITH YOUR TRAVEL ARRANGEMENTS. TREK HOLIDAYS AND MOUNTAIN TRAVEL ARE SOME OF THE MANY SUPPLIERS THAT WE CARRY.....CALL US AT



537-9911
Open Monday-Friday
9 am-4:30 pm