Environment Canada | Environnement Canada
Fisheries and Marine | Pêches et Sciences de la mer

Appendix 1.

April 12, 1979

Your file / Votre référence

Our file / Notre référence

Mr. Garry Fletcher
Lester B. Pearson College
of the Pacific
Pearson College Drive
Victoria, B.C.

Dear Garry:

I am enclosing a translation of the dive notes made when you and your students took me to Race Rocks on March 31. They are pretty sketchy, but perhaps you may find them useful.

It appeared to me that the first area, near the lightkeeper's dock, is an early successional community, dominated by annual algae above a barren red sea urchin zone. The major influence on this first area is periodic grazing by both red and green sea urchins. The polysiphonous reds, Nereocystis and Desmarestia are all characteristic of recent sea urchin grazing. The intertidal zone near the dock resembled an exposed shore.

By contrast, the second area west of the dock appeared to have more stable and mature communities, dominated by perennial and even long-lived species. The upper algae were all exposed-shore species with over-wintering stipes. The lower zone was almost completely covered with encrusting animal forms. Sea urchins, which allow nothing but litho-thamnion to grow where they graze, the major starfish, and other predators were rare in this zone. The absence of these animals is explained by the current, and results in intense competition for space which the encrusting forms win. The age of some of the mussels and horse barnacles we saw indicates that probably little change occurs here. This same phenomenon is also seen in places that are exposed to extreme wave conditions, such as outer rocks on the open coast.

I saw at least two species of algae that I have not previously found in my diving around the Province, and I saw many animal species that I had also never seen before. Some familiar species were either more abundant than in any other place that I have been (the orange hydroids and horse barnacles), or were shallower (the basket stars), or were in the open (the hydrocoral) rather than being found under rocks as in other places.

... 2

Pacific Biological Station | Station de biologie du pacifique

The area has the highest species diversity of marine organisms I have ever seen in B.C. and was one of the most exciting sites I have ever observed. Its uniqueness is unquestioned. I strongly support your initiative to have the area declared an ecological reserve.

I want to thank you and your students again for taking me out to the rocks. I hope that I can repeat the experience soon.

Yours very truly

J. Nett

for Paul A. Breen
Research Scientist
Abalone/Octopus Program

Enc.

PAB/jn

ORTION OF DIVE NOTES FOR MARCH 31, 1979 AT RACE ROCKS)

We entered the water from the herring skiff, which was tied up at lightkeeper's dock. Near the dock, the intertidal substrate was solid rock, smooth but in roughly rectangular blocks. At datum it changed to bles and gravel with irregular outcrops of bedrock and large boulders, on a allow slope. At roughly 5 feet (these are all corrected to depth below art datum) the substrate changed again to one of small boulders sloping at out 25° into deeper water.

The upper intertidal zone supported the red Porphyra; the mid-zone s Rhodomela and Gigartina, and large thatched barnacles Balanus cariosus casual observations while waiting for the other divers I saw no B. glandula). lower intertidal zone supported dense algae: Alaria, Cymathere triplicata, narestia viridis and D. linqulata var. ligulata, Odonthalia floccosa, taria costata and Cystoseira geminata. These algae extended in various ndances and mixtures to about 2 feet. I noted a number of large abalone e, at or above datum, but the lightkeeper later informed me that he had anted them there.

Just below datum in this area, I noted areas in which green sea chins Strongylocentrotus droebachiensis were very dense, and the rocks were rren of large algae. By their size these might be survivors of the 1969 ceptional year-class. There was also a patch of red sea urchins S. franciscanus ar datum at this place.

At 2-5 feet, the dominant algae were dense bull kelp Nereocystis erkeana (most plants still only a meter high or less), with a very dense derstory of Cymathere beneath. The rock surface beneath these algae was vered with light coloured lithothamnion, usually typical of heavily grazed eas. Nereocystis and Cymathere both ended abruptly at 10 feet, where red a urchins were present at moderately high densities (10/m^2). Around this pth were very thick patches of polysiphonous red algae, again indicative of eas just released from sea urchin grazing pressure. The fauna I noted at is depth in this place were abalone, mostly around 80 mm, 1/m^2 or more; the o coral Balanophyllia elegans, 5/m^2; the sunflower starfish Pycnopodia lianthoides 0.1/m^2 or more; colonies of hydrocoral (Allopora); and white emones (Metridium sessile).

All the observations above were made within several meters of the ghtkeeper's dock. As we swam west from the dock, out of the shelter from the rrent flowing to the east (the tide had just begun to flood), impressive anges occurred. In the zone below 10-15 feet, S. franciscanus became much ss abundant, and in fact was nearly absent from much of the area that we am over. A few purple sea urchins (S. purpuratus) were found singly in ep water at 32 feet -- this was unusual because the purple sea urchin is rmally found near the lower intertidal zone of exposed shores. The rock rface was covered from 50% to nearly 100% cover, mostly with encrusting fauna, ch of which I didn't know. Some of the dominants were: Metridium (even on at rocks; whereas in more quiet places this species occupies vertical and dercut places); bright purple hydrocoral Allopora petrographa forming colonies to 15 cm in diameter with very rugose surfaces; colonial ascidians; what peared to be pink soft coral; an orange hydroid; the horse barnacle Balanus bilus (100% cover on vertical faces); huge sea mussels Mytilus californianus (100 % cover on small patches around 10 feet); and an erect coralline alga profusely decorated with the little anemone Epiactus prolifera. All these species were very numerous, occurring in varying abundance and all dominating at least parts of the bottom.

Starfish were rare in this zone: I noted one individual each of Pycnopodia, Orthasterias kohleri and the leather starfish Dermasterias imbricatu As noted above, echinoids were rare, but there were some highly localized concentrations of green sea urchins near 30 feet, possibly in places with local shelter from the current. Ophiuroids were very numerous in the hydrocoral; and there were two basket stars (Gorgonocephalus eucnemis) near 30 feet. This is a very shallow depth for this species, as has already been noted by other observers at Race Rocks. As for sea cucumbers, Parastichopus seemed absent, and if Cucumaria and Eupentacta were present, I missed them. Hydroids resembling Plumularia in gross morphology were very numerous but not a significant part of the cover.

As for molluses, Calliostoma ligatum was numerous, especially in the erect coralline algae; and I noted several keyhole limpets Diadora aspera, abundant lined chitons Tonicella lineata (especially among sea urchins), but only one gumboot chiton Cryptochiton stelleri. Abalone were rare in this area, usually singly on a small piece of cleared rock (probably kept clear by their grazing), and all near 80 mm. Nudibranchs were not as abundant as one might expect considering the hydroid numbers: I recognized the yellow Archidoris and the white Cadlina.

The anemones were very diverse: I recognized Tealia and Metridium but nothing else (I don't know this group).

The zone just described was the lower part (below 10-15 feet) of the area exposed to strong current. Above this zone was a mixed forest of the upright kelps Pterygophora californica (old plants whose stipes supported many epiphytes, including Membranoptera dimorpha), Laminaria setchellii and Pleurophycus gardneri. The rock beneath these plants was barren except for tiny reds and a low fuzz of diatoms. We didn't explore above about 8 feet.

The dive lasted approximately 30 minutes. These notes no doubt exclude many species, but they should fairly reflect the dominants in each area.

DIVING SERVICE - PEARSON COLLEGE

Appendix 2 Antonio de Oliveira

RACE ROCKS PROJECT

OCT. 1978

I - OBJECTIVE:

The objective of the Race Rocks Project is to provide information enough , through an ecological and topographical survey of two specific spots, enabling us to make a short report which would be sent to the Provincial and Federal authorities in Canada in order to protect the area which is fantastically rich in marine life.

We hope that this final report with many other ones from parallel activities of the same nature , will make a (Marine) Reserve out of Race Rocks.

II - LOCATION

Two spots were chosen due to their richness and variety of species. Those two spots are belived as being good representatives of the environmental condition of Race Rock area . The spots chosen are:

1. Helicopter Pad (main island) and ,
2. Rosedale Rock (between the marker bucy and the light house).

See map for more precise information

III - TECHNIQUES

The general procedure of the survey will be basically the same for both areas , but there will be different techniques that will have to be used in each specific area. Each spot requires some specific techniques due to its particular features (such as tidal conditions reference points , etc.)

III.1. Ecological & Topographical Surveys

Due to the richness of the area in underwater life,an ecological survey is of major need and importance .

A topographical survey can also be done with the proper techniques and apparatus .

A geological survey of the area is a potential project for the future when skills in such area are developed or become available in the college .

Theoretical knowledge on topography and marine science are not required but people who are involved in this project are expected to know the information given in the BSAC diving manual :

- Chapter six : under-water navigation (p. 350)
- Chapter seven : marine biology (p. 417)
  under-water photography (p. 443)
- Chapter eight : charts and tide tables((p. 522)
  position fixing (p. 535)

Drawings , photographs , a full and detailed report on the local sea life (all varieties of species and approximate counting) . This is also concerned to the sea lions and cormorants in Race Rocks and their preservation problem .

III.1.A. Equipment to be used :

-Marker buoys(painted & identified)
-Ropes & transsect lines
-Camera
-Maps
-Clipboards & paper
-Full diving equipment

III.2. Rosedale Rock

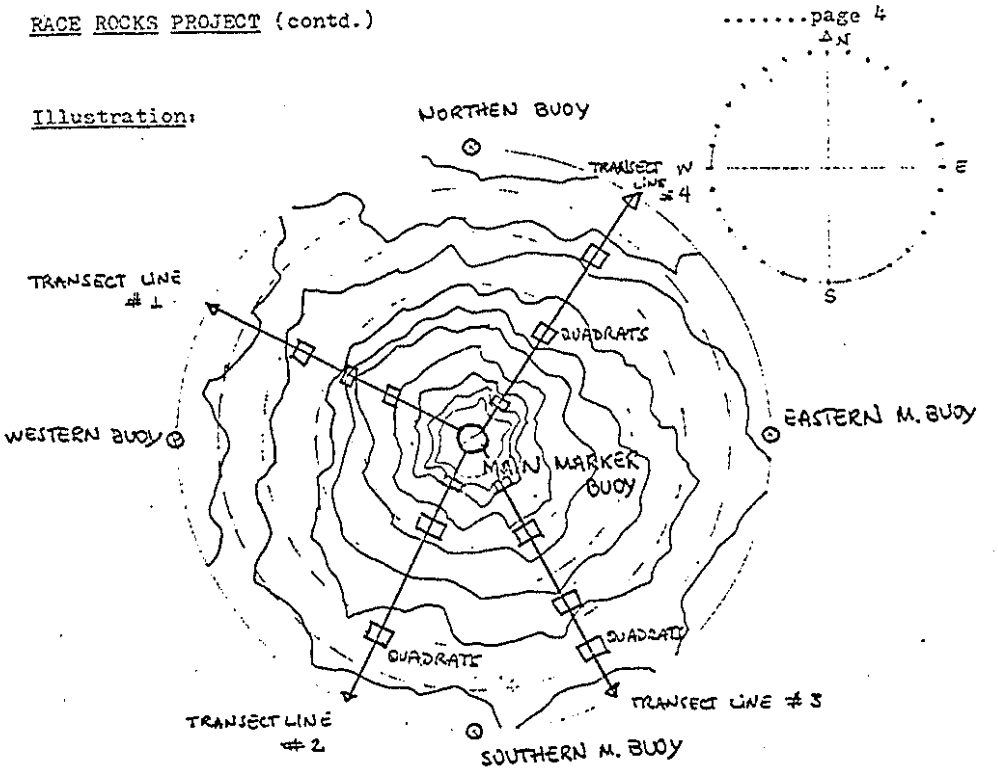
A circular pattern will be used at Rosedale spot since this place presents a relative degree of difficulty to find a reference point. A certain spot will be chosen then , and it will be the center of the circular area to be surveyed . At this point , weights (lead ones and a piece of chain) will be settled down on the bottle and a marker buoy will be fixed with a thicker piece of rope .

From the center a diver will start off with a rope taking bearings

of North , South, East and West, and at a destance of 10-15 metres from the center he will mark the place with identified marker buoys. Once the area is delimited, the actual survey starts.
A diver will remain in the center holding one end of a rope and another one will develop the circular pattern marking a complete circle at a small given distance from the center. He will record the changes in the depth and describe the bottom while he swims around the center. The same procedure is repeated several times at different distances from the center until the largest circle (of 20-30 metres of diameter) is made . This last circle will pass by the marker buoys .
After a greater knowledge of the place and familiarity with the environmental features, several quadrats will be chosen and a precise counting of the species population will be made,pictures will be taken as an aid of description of the point ; and it will be precisely marked down in the chart having as coordinates a Xm distance from the center at a Y° bearing . The center will be marked down in a bigger chart by fixing its position according to three different reference points (the light house, the black marker buoy and a third one) .
By making an accurate drawing of the slope of the bottom we hope to be able to make a detailed chart of the spot and to make graphs of the slope along the different transect lines.
By taking several quadrats along few different transect lines , we hope to make a truthfull inventory of the marine life of the place.

NOTE: The bearing of the transect lines and the number of quadrats will depend on the divers' judgement. These decisions will be made through a team discussion taking into account the richness and variety of the different spots and the time factor which will be determined itself by weather,tidal and current conditions.

Illustration:

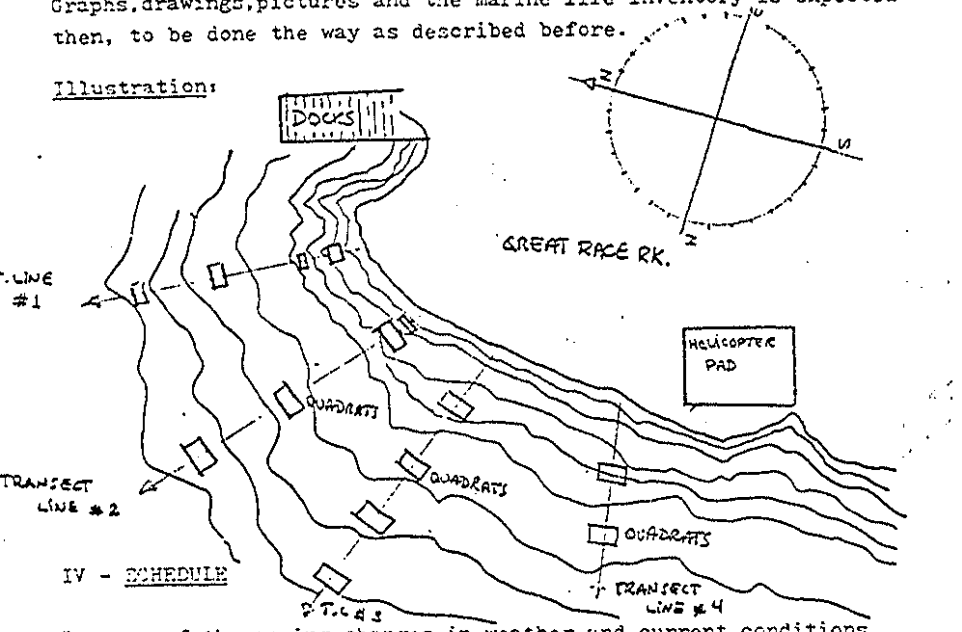


III.3. Helicopter Pad

A very similar procedure will be used at the helicopter pad spot.
The major difference is that the reference point of this team will be the main island(where the helicopter pad is).
The area that is intended to be covered is from the docks to the helicopter pad.
Going from those two different points at a given distance from the main island,the diver will make an accurate drawing of the curves and slope of the bottom.
Such procedure should be repeated several times at different distances from the island until we are able to make an accurate chart of that spot.
The transect lines will leave from the island in a perpendicular line from the shore or to the direction the team decide to be

convenient. A number of quadrats will be settled along the transect lines and the same procedure described before will be followed. Graphs,drawings,pictures and the marine life inventory is expected then, to be done the way as described before.

Illustration:



IV - SCHEDULE

Because of the coming changes in weather and current conditions this project has to be completed by the end of November. Our diving days will depend then, upon the present weather, tidal and current conditions, which means that due to the time factor, we might be not diving in our "diving days " but whenever the factors mentioned above allow us to do so.
Therefore a good deal of flexibility and understanding is required from all those who are involved in this project.

V - EVALUATION

A constant,regular and accurate evaluation will be carried out during the execution of the project.
For such purpose,an evaluation paper was planned and has to be used for the success of the project.

A final evaluation will be made by the end of the project according to every single evaluation record.

VI - POTENTIAL POSSIBILITIES

This project is the first step of what can become an extensive survey on the Race Rocks area, whether it is aiming to preserve the place by trying to make it a Marine Reserve or just to make a detailed description of this spot which is becoming more and more well-known.

ANY SUGGESTIONS & IDEAS ARE WELCOME AND APPRECIATED.

A.W.C.
Oct.14,1978.

APPENDIX B.

EXCERPTS FROM A REPORT ON RACE ROCKS.

by Frank Van Dam, Pearson College Student from the Netherlands, March, 1977.

GEOLOGY;

CENOZOIC	QUATERNARY	2 million years	
	TERTIARY	63 "	"
MESOZOIC	CRETACEOUS	145 "	"
	JURASSIC	210 "	"
	TRIASSIC	255 "	"
PALEOZOIC	many different ages	580 "	"

Figure 1- Geological timetable

In the Paleozoic, as a result of stresses in the earth's crust, mountains (the Rocky Mountains and Coastal Range) and rocks were pushed upwards. Large gaps between these pushed areas provided space for boiling lavas to escape and thus form volcanoes and new hills and mountains by solidification of these lava masses. This process took place in the Mesozoic and tertiary. On the eroded edges of the new mountains, sediments were deposited. This process continues even today.

Active vulcanism in history proves that the deep-seated disturbance is not yet over along the shores of the Pacific.

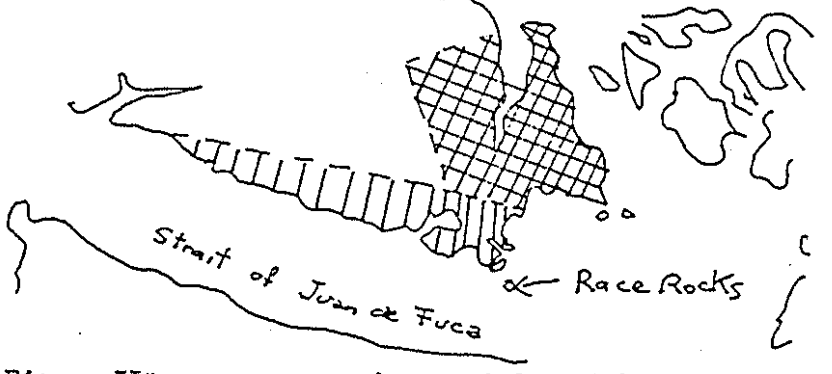


Figure II*- -tertiary undeformed lavas and marine sediment (75 millions years and younger)

-intensive rock containing granite and quartz. (200-75 mill. years old)

Sooke and surrounding areas are characterized by the intermingled glacio-marine,glacio-fluvial and till deposits (left behind by glacial retreat).The shapes of the Strait of Georgia and Juan de Fuca Strait were determined by the glaciers in the ice ages and an uplift of 200-400 feet that occured later. Metchosin and Sooke both had volcanos erupting during the granite intrusion.Powerful Earthquake and sediment,metamorphosed the lava,sand and quartz stone formation**.

Race Rocks clearly consists of granite and quartz containing rocks,probably of the undeformed kind.Being below sea level and exposed to waves it has not seen the settlement of sediments, thus leaving them relatively undeformed.

POSITION AND SIGNIFICANCE

Race Rocks is situated 2 km. off the South-western tip of Vancouver Island,B.C.,(123° 31' W,48° 28' N)at the eastern end of Juan de Fuca Strait,South of Victoria and the Strait of Georgia. Its rocks and reefs are a danger for shipping.The light erected on these rocks is of great importance.Not only because of the rocksand reefs,but also because of the confluence of shipping outward bound from Seattle,Vancouver and Victoria.This importance was recognized early and contributed to the building of Race Rocks light station in 1860.It was one of the first lighthouses on these coasts.Tankers from Alaska play an important part these days,as do freighters with industrial goods,ranging from cars from Europe and Japan,to forest products.Logging booms used to frequently passRace Rocks,now,some of these have been replaced by barges ,of which several pass Race Rocks every day. The ships used to come very close (within half a mile)of Race Rocks,but since the Traffic Seperation Lanes came into existence ships pass further away and their observation has become more difficult.Smaller ships still come close or pass through Race Passage.This group consists mainly of tenders and fishing boats from Vancouver and Victoria on their way to or from the salmon and herring grounds in the Pacific.In the wwek-ends and summers the surrounding waters are crowded with sport fishermen and yachts.The annual swift shore race includes the passing of Race Rocks.With the ever increasing presence and quantity of boats and ships passing,Race Rocks light station continues to play an important role in the navigation in Juan de Fuca Strait.

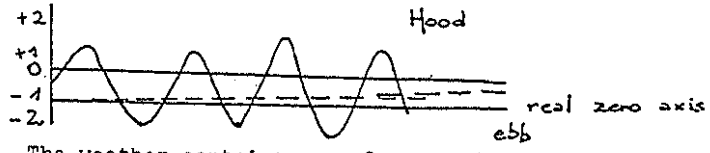
(** Clapp,C.H.,Southern Vancouver Island,Canada Geological Survey Memoir 13,Ottawa,G.P.B.)

CURRENTS

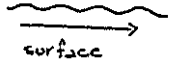
Tide predictions on the basis of relatively short observation time(6 months)have made up for the Race Rocks area.They serve as a general guideline but are not necessarily highly accurate at all.The currents due to ebb and flood movements are a function and combination of a large number of factors.

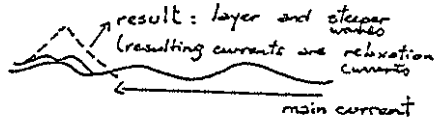
First of all,the difference in height of the tides,then the weather(not only of the area and same day,but also that of previous days in the Pacific and on the mainland)and depth waves depend on the same factors including the shipping that passed.

Large variations in tides will increase the velocity of the currents,and small variations will cause a much smaller current. Because of the geography of the island,the ebbs are usually stronger than the floods,because of an underlying ebb current of 1 knot.



The weather contains many factors that influence the tides and currents and waves.The most obvious is wind.Winds following a current will support it,increase it by pushing along with it an extra amount of surface water.Winds contrary to current may retard them,but mainly cause extra large waves as the surface and main current meet and collide





Also a longprevailing W-wind in the Pacific usually pushes enormous amount of water towards the eastern shore.These masses are pushed into (together with a flood tide)the Juan de Fuca Strait and may cause a variation homes compared to the predictions. Ebbs are helped in the same manner by a longer Eastern wind in the Strait of Georgia.These effects produce not only

normalities in the tides,but also heavy swells that can create
rge waves even in conditions of no winds.
Prolonged heavy rainfall may have a small effect on the currents,
d a large effect on tides and waves.Tides tend to be higher,
creasing the ebb,while the wave height may be reduced
gnificantly by the rain.
In the mid-channel of Juan de Fuca Strait all these effects
e dampened but still present.Although tides may be off as
ch as 1-2 hours (sometimes even 3)they are more accurate in
e mid-channel areas.
The depth is an important factor in current and wave formation.
ally "the deeper the faster"holds true,except near the sandbanks
the Southern shore of Vancouver Island,where the reverse
ds.Waves are increased many fold by passing from deep to
llower waters.Tidal waves that had disastrous effects on
res measured to be only 2-3 ft. high in the open ocean.
For direction and strength of current near Race Rocks
can see the charts.The currents vary mostly between 3-6
ts,although the range is from 0-10 knots.

LIGHTHOUSES

Fisgard lighthouse-first erected on coast of B.C.
Establishment of lighthouse:Gov. James Douglas to Sir EdwardBulwer Lytton,Oct.26/1858;encl.7;copy of letter from George Henry Richards ,Capt. H.M. Surveying Ship "Plumper" to Gov.Douglas,dated Brick Bay,Gulf of Georgia,Oct.23/1858

Sub Encl.(report on harbours of Vancouver's Island and the coast of B.C.)The facility of entering and navigating this strai (i.e.Strait of Juan de Fuca)has lately been much increased by t erection of lighthouses on the Southern shore by the Government of the United States.In order to render the strait perfectly safe and accesible to vessels at all times,I should recommend that the British or Vancouver shore,should be lighted in a similar manner.Thus,a light should be placed on Bonilla Point opposite to Cape Flattery...and another on the Race Islands... It would also be very desirable that a harbour light should be placed at the entrance of Esquimalt,which would enable vessels to enter at night or pick up an anchorage in Royal roads outsid

B.C.papers,part2,1859

Douglas to Lytton,Jan. 15/1859

1-Ibeg you will allow me to solicit your earnest attention to a subject which is of the highest importance to the progress and prosperity of the colonies of Vancouver Island and British Columbia.

2-I allude to the necesity which exists for the early constructi of lighthouses upon some of the salient points of the approache to the harbours and anchorages of these Colonies.

3-At the present moment,however,I will only mention two position which are of the first importance,and which the experience of every succeeding day renders more and more evident should be properly lighted at the earliest possible period.

4- The first of these is the Race Rocks...

5- The next spot...is the Fisgard rocks...

Douglas to Lytton,Feb.4/1859 enclosing a"report upon the subject made by Captn. Richards of Her Majesty's ship "Plumper" together with tracings of the line of the coast,exhibiting the exact upon which the lights should be placed" (report dated Jan. 21/1859) 1 bid pp.58-59

Douglas' despatches acknowledged by Carnarvon,in absence of Lytton,on May 11/1859.
-transmited copies of correspondence Admiralty,Board of Trade, Treasury,and own department,on the subject.
-Catn. Sullivan,Board of Trade,estimated expenses of construction of the two lighthouses at 7000 lbs.
-Lord Commissioners of the Trasury advance sum on condition that half be paid by Colonies of Vancouver's Island and British Columbia jointly.
-Board of Trade requested to send necessary apparatus and give advice or information.
-Lords Commissioners of the Admiralty to instruct naval officers on spot to facilitate work.
-Selection of proper sites and superintendance of work rests with Douglas
-acknowledged by Douglas,July 23/1859
-sites selected by Captn. John Hilford,H.M.S. Ganges
Gen. H. Richards.H.M.S., Plumper
The Master of the Ganges
Jan. civilians appointed by the Governor J.D. Lemberton, Colonial Surveyor,Jeremiah nagle,Harbour Master of Victoria
James Cooper,Harbour Master of Esquimalt
W.A. Monet, Master of the HBC steamer OTTER

selected sites proposed by Captn. Richards in the plans

Construction

Aug. 23 1859-preliminary estimate of cost,exclusive of lanterns and gallery part(Pemberton)
Aug. 24/1859- tenders called for the two lighthouses-Victoria Gazete,Aug.25/1859
-design prepared by H.O. Tiedeman-Colonial Surveyor's office-Victoria Colonist,June 9/1860
-contract- John Wright
Oct. 21-excavation completed
-dwelling commenced
-stone blocks for plinth of Tower being prepared
Apr. 5/1860-all brickwork and Masonry completed
-left to-carpentry and plastering
-staricase expected by next steamer fum San Francisco
June 10 1860-report-20 May masonry and brickwork completed
-30 iron staircase

-only remained lantern and gallery railing;to be done 10 days after arrival.
Aug.5/1860-arrival of lantern and railing Colonist Aug.9/1860
"By the Grecian,on Sunday,tho lanterns for the Fisgard Island and Race Rocks lighthouses,and the keepers of the same, arrived.The lanterns transported to stations by gundoat Edward
Aug.29;Aug.30-Colonist
"ruby glasses" smashed .....reported for Fisgard
-iron work rusted.....probably same for Race Rocks
-Fisgard-first lit-Nov.16/1860
-first light keeper at Race Rocks-George N. Davis-Colonist,Dec. 17/1860
-Roberts principal lightkeeper at Race Rocks;incompetent-dismissed; Davies assigned there with Roberts as second assistant
-Davies first keeper at Fisgard,transferred 1 month later
-Race Rocks lighted-Dec.26/1860 B.W.Pears to W.A.G. Young, Jan.25/1861
-Light House Board constituted-Feb 4/1861
:Richards
:J.D.Pemberton
:Alfred Howse Hasler Nelby
:Charles Rufus Robson
:Daniel Pinder-Master
*lighthouses taken over by Domonion Government when B.C. entered Confederation
-sum for payment of lighthouses by VI and B.C. never paid and dispute over cost of maintaining light and sharing of cost

RECOMMENDATIONS CONCERNING CONSTRUCTION

Douglas by J.D. Pemberton
where enough space and no danger from waves--narrow tower and attached dwellings preferred to brood tower with in
-stone quarried on spot at Race Rocks
-semicircular arches adopted in stone tower
-dwellings-attached
-same material as tower
-four rooms,comfotable,slated
-iron stairs cost in San Francisco almost as cheap as wood; stone too expensive
-larger lighthouse erected in 8 months

-report ,Oct.21/1859-at Race Rocks excavation is completed
Wharf and temporary buildings nearly
so considerable amount of material collected
and prepared
-preliminar estimated cost Race Rocks 5319 pounds
-sec.est. 4525 "
-height house tower: top of lantern:123 ft.above high water mark
150 ft. of lightning required

Land Works Report;April 7/1860

"The works at Race Rocks are being now carried on with vigour.The Contractor has sustained some severe losses, owing to the heavy weather and rapidity of the currents, but now the Spring has fairly set in,it is to be hoped that such contingencies will be avoided"

-sufficient stone has been dressed to build one third of the tower
-enough stone to build the lightkeeper's house
-large quantities of material stores safely landed

"The whole of the work,including the stone staircase,will be completed by the first day of August next"

Race Rocks

Blasting foundations	160	"	"
Masonry in D:	200	"	"
Tower,100 ft. above H.W-mark in ashlar Masonry and small,confortable slated dwelling house attached ,in coarse Rubble and Masonry	3439	"	"
Wharf,to enable small vessels to discharge cargo at the rock	100	"	"
Boatlanding,Storehouse,and Tanks	50	"	"
Metal staircase,and fixing same	300	"	"
Freight of lanterns from Victoria, fixing same Superintendance	200	"	"
	4525	"	"

-Aug 10/1859-site selected
-Aug 29/1860-light equipment arrived

Lightkeepers	Roberts	Feb.1860	1861
	Davies	Feb.1861	1866
	T.Argyle	Feb.1867	1888

Eastwood	Jan.1917(?)		Jan.1919
Forsyth	Feb.1919		Nov.1932
McKenzie	Dec.1932	24	Oct.1933
A.Ritchie	24 Oct.1933	20	Sep.1940
Westhead	20 Sep.1940	15	Sep.1948
A.Anderson	15 Sep.1948	23	Jan.1950 (drowned)
S.Footman	23 Jan.1950		Feb.1950
P.Pike	Feb.1950	1	Oct.1952
G.Odlum	1 Oct.1952	31	Jul.1961
C.Slater	Aug.1961	1	Sep.1961
C.Clark	1 Sep.1961	1	Nov.1961
Rogers	1 Nov.1961	27	Jul.1964
A.Tully	27 Jul.1964	26	Jul.1966
T.Anderson	26 Jul.1966		

1867-mechanical fog bell installed
1889-present light equipment installed
-records burnt in Victoria

Dec.1932- "Funeral services for the last lightkeeper were held at
Wed.14th. St.Andrews Cathedral,9a.m.....On the 15th. inst.he was to have retired from the service;and his son in law,Henry McKenzie,succeeds him as temporary keeper here"
Sat.10th. "James Forsyth,lightkeeper at this station since Feb.1st., 1919,passed away in Victoria this afternoon".

LIGHTKEEPERS LOG -weather 4 or 5 times a day or more: wind
sky
sea not recorded
pressure

-check vessels going by
-incidents-oil for light being brought by steamer(coal oil,in drums)
-changing of buoy off Rosedale reef (buoy used to be a can buoy)
-1918-Str. Lutro

Sunday 15th.

11 a.m. 4 masted Schooner Rosemond drifted in to the rocks with strong flood tide calm and dense fog.Went to William Head for assistance and telephoned.

Midnight Str Alaskan trying to pull Schooner of the rocks.Could not do so.
Monday 16th.
5 p.m. Tug Qualicum pulled the Schooner Rosamond off the rocks.
Str Tees Standing By.
January 24 1919
10 a.m. Str Empress of Asia bound in with troops
-lightkeeper after Eastwood-(arr.Feb.1919)recorded seas
-visits (launch)
-light
-going out to Rocky Point,etc.(mail)
-freight brought in (Str Leebro)1918
-stn inspections
Aug 22 1920-M.S. Pacific ashore below Beechy Head floated off(fog, west wind (fresh),sea rough)
-Str Estevan often mentioned
-Bentinck Island-leper colony opened?-closed 1957
-light-auxiliary-if power failure-kerosene lamp
-on to mechanical(wts)for turning reflectors
-now-switches automatically to battery
-emergency light(supposed to be in top of tower but is still in box(3yrs)-not installed)
If on emergency-call Motor VHF
-main light-supposed to be replaced;but been waiting in box for 2 years-new one band type lens
-horn servicing-rubber diaphragms need changing if punctured-eg. in cold weather-snow and ice freezing in
-supposed to be changed eventually to electrical air chime-not too efficient but better than electronic horn
July 29/1923
Stm Siberian Prince ashore at Bentick Island 01:54 a.m.
-fog,strong west wind,sea rough
Aug.13/1923
Str Siberian Prince floated off Bentick Island p.m.
Aug.11/1924
Str Rochelle broke down off L.H.Tug Nitinat came to her assistance at 7p.m.
-new light put in July/25
Oct. 1925-fog, mod. sea, wind west, S.S. Edmdyke went ashore on Bentinck Id. 2:00 am. dense fog

Oct.17-Tug boat "Hoke" sunk off Bentick Island.7 lines lost sea calm,fog
19-S.S."Edmyke" floated off Bentick Id.2:00p.m.
24-stopped alarm at 6:00a.m. after a continuous run 275 hrs.
Sept. 24/1926-Gas boat "Moirwenn" Wm. Parks went ashore at Spring Bay
April 25/1927-Gas boat"Dorothy Engvick" went ashore on North Rock at 2:15 a.m.,floated off at 11:30 p.m.
June 29/1927-Started for Rocky Point p.m. engine stopped was towed to Wm. Head by "Imp. Cannery"
July 18/1927-radio Installed-started
-aerial mast
July 25/1927-erected aerial mast and tested radio set
Jan.18/1928-Mr. Stevenson and Mr. Gilbert to adjust the Radio beacon.