THE BRITISH COLUMBIA HISTORICAL QUARTERLY

JULY, 1938

The

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The
BRITISH COLUMBIA HISTORICAL QUARTERLY

"Any country worthy of a future should be interested in its past."

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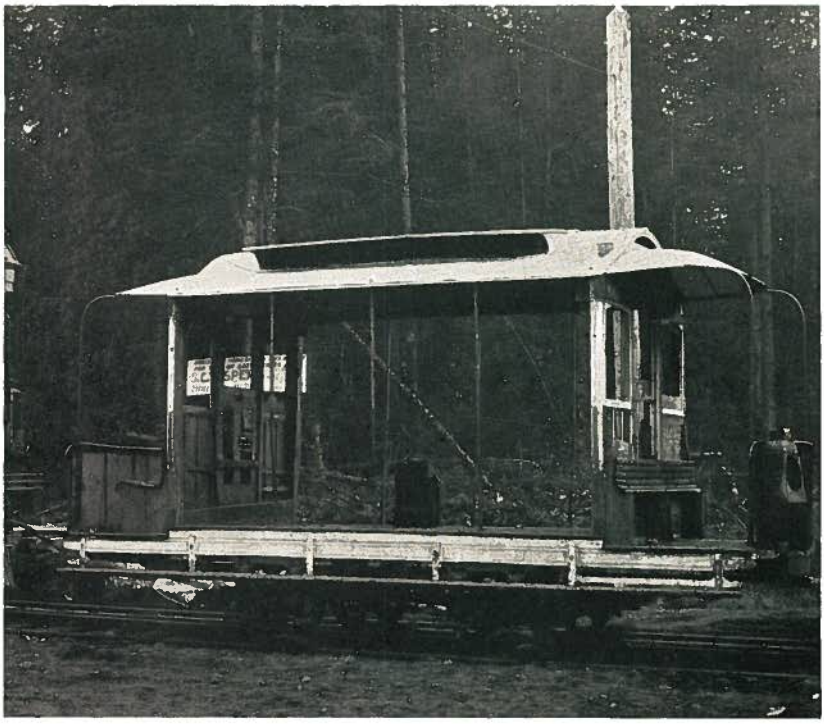
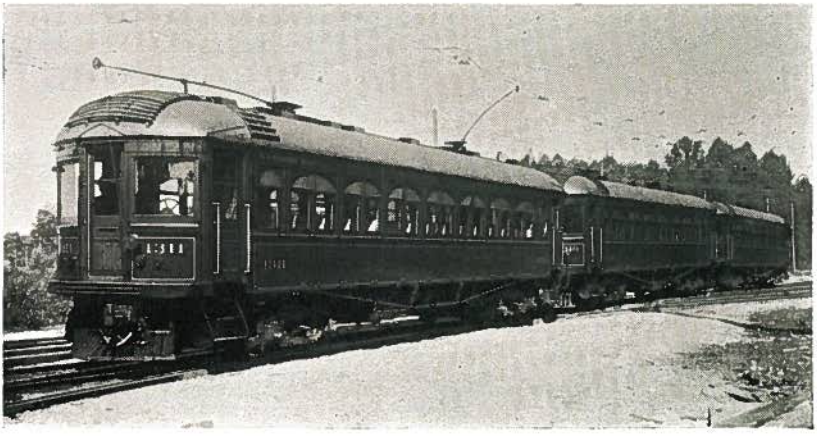


(Photo courtesy B.C. Electric.)

One of the original street-cars placed in service in the City of Vancouver, in 1890.

These cars were designed to be drawn by horses, but were equipped with motors when it was decided to electrify the tramway. The car above had been partly dismantled when the photograph was taken and the seats, which ran lengthwise in the centre, back to back, had been removed.



(Photo courtesy B.C. Electric.)

The largest and heaviest cars now operated by the British Columbia Electric Railway Company.

SOME PIONEERS OF LIGHT AND POWER.*

The story of electricity as a public utility in British Columbia covers the surprisingly long period of fifty-five years. It commences on June 27, 1883, when the Mayor and Council of the City of Victoria signed a street-lighting agreement with Robert Burns McMicking, under the terms of which he undertook to "erect and support and maintain at three several points in the said City an Electric Light with an illuminating power equal in the aggregate to Fifty Thousand Candles."

McMicking, who is now best remembered as one of the Overlanders of '62, had probably had more experience with electricity than any one else in British Columbia. He had been building and managing telegraph lines since 1865, and had built the first telephone line in Victoria in 1878. Three years later he installed in Victoria the first electric fire-alarm system in the Province. In spite of this background, his street-lighting proposal was a distinctly venturesome undertaking. The invention which made electric arc-lighting on a commercial basis possible had only been developed in 1876, and McMicking's whole plan seems more than a little fantastic to-day. It called for the erection of three 150-foot masts, each carrying four or five double arc-lamps, and these were expected to light satisfactorily the whole of the thickly settled portion of the city. The sufficiency of the light provided was to be tested by the reading of newspaper type at a distance from the masts to be agreed upon, and McMicking was to receive $6,000 a year for eight years if the lights came up to specifications.

The agreement was confirmed by a by-law on July 25, 1883, and the lighting system was installed and ready for service early in December. The power plant, which was on Yates Street not far from Quadra, consisted of a 25-horse-power steam-engine

* The author wishes to acknowledge with thanks the help received from Mr. George A. Dickie, Master Mechanic of the B.C. Electric Railway Company; from the Publicity Department of the Company; from Mr. Angus MacDonald, one of the first linemen in the City of Vancouver; and also from the papers by Mr. A. Vilstrup, Chief Electrical Engineer of the Company; and by the late A. J. Lawson, to which reference is made in the footnotes.

which drove two Brush dynamos. A mast carrying five lights was built at the corner of Yates and Government Streets, and masts with four lights each were erected at Blanshard and Burdett, and Blanshard and Chatham Streets. In his annual report, issued early in January, 1884, Mayor Redfern stated that the lights, which had been in use about three weeks, were "working very satisfactorily"; but his successor told a different story a year later. In 1885 the city decided to take advantage of the clauses in the agreement with McMicking which enabled it to take over the enterprise, and in September a by-law providing $16,000 to purchase and improve the plant was passed by the ratepayers. In the end more than $22,000 was spent in rebuilding the power-house and securing additional equipment. Two Sperry dynamos were installed, and these supplied power to forty new lamps, each of which was rated at 2,000 candle-power. Nineteen of these were mounted on five new masts, but twenty individual lamp-posts were also erected—the first in the city. The fortieth lamp was in the power-house. At the same time a fourth mast with two new double lamps was added to the system supplied by the original Brush dynamos. When these additions were completed, masts or lamp-posts were located at twenty-nine points, instead of at only three, as formerly.

In spite of these changes the lighting system was not very satisfactory, and in a report dated January, 1887, Mayor Fell admitted that all the city could do was make the best of a bad bargain. "This light," he wrote, "will become the light of the future, but in a small community like ours we should not be trying experiments. Let older cities do so, and when perfect we can adopt it." A year or so later one of the aldermen complained that apparently "the more money expended, the worse the light became." In 1889 further changes became necessary, as the Sperry system proved unsatisfactory. It was replaced with two larger Ball dynamos, with a total capacity of seventy-five 2,000-candle-power lamps; and this equipment made it possible to raise the number of points furnished with a mast or lamp-post from twenty-nine to sixty. Even so, the city's street-lights still failed to give satisfaction, and complaints were numerous. In 1891 plans were made for a thorough overhauling of the system, but on August 18 the ratepayers defeated the by-law

empowering the city to spend the $50,000 required, and the lights continued to be a source of annoyance and expense for some years to come.

Nothing daunted by the partial failure of his original scheme, McMicking took an active part in promoting the Victoria Electric Illuminating Company, which was incorporated in 1886. The shareholders included W. P. Sayward, David Spencer, and Thomas Shotbolt; and the first directors were R. P. Rithet, Joshua Davies, Louis Redon, William Heathorn, and W. J. Taylor. This company is of historic interest, for it built the first public incandescent-lighting system in Canada. Arc-lights were not suitable for use in relatively small rooms, and it was only after Thomas A. Edison produced a durable incandescent lamp, in 1881, that electric lighting for domestic purposes became practical. The Edison dynamo in the power-house built by the Victoria Electric Illuminating Company was driven by a 50-horse-power steam-engine, and, in the terminology of the day, had a capacity of 400 lights—that is to say, it could generate sufficient power to supply 400 16-candle-power lights, or their equivalent. The new plant was given a brief trial on January 28, 1887, and a longer test the next evening. The incandescent principle was so little understood that its operation and advantages over gas for domestic lighting were explained at length by the newspapers. One of the novelties pointed out by the *Colonist* was the fact that "In bedrooms touch buttons are placed at the bedsides so that a person is not under the necessity of getting out of bed to blow out the light."

In 1889 the Victoria Electric Illuminating Company entered the arc-lighting field. The Ball dynamo installed was intended to supply power for new arc-lamps specially designed "for the illumination of large offices, stores, and public buildings." About twenty-five lamps, each rated at 2,000 candle-power, were in place when the power was turned on, October 16, 1889, and more were added soon after. With this new plant in operation Victoria's electric-lighting facilities became complete after a fashion, as power was available for street, business, and domestic lighting in some parts of the city at least.

By this date electric lighting had also been introduced on the Mainland. To trace its history there we must go back for

a moment to 1884, when it was decided that the Canadian Pacific Railway should be extended from Port Moody to a new terminus farther down Burrard Inlet, which it was proposed should be called Vancouver. The right-of-way was surveyed before the end of the year, and cleared soon after by George A. Keefer. The new line to Vancouver carried the first train there on May 23, 1887. H. H. Abbott was superintendent of the division.

In 1886 he, together with Mr. Keefer and William Fitzherbert Bullen, had applied for a charter to authorize the incorporation of a Vancouver Electric Light Company. The initial authorized capital was set at $200,000, but provision was made for an increase to a maximum of $500,000. It is interesting to find that a special provision of the charter prohibited the employment in any capacity whatever, directly or indirectly, of any Chinese, under a penalty of from $10 to $25 for each day that each and every Chinese should be employed.

Although the charter was duly granted by the Legislature in an Act which received the Royal Assent on April 6, 1886, no use was made of it, the apparent object being to be first in the field. It was felt that the City of Vancouver had a bright future as the terminus of the transcontinental railway, and the development of electric lighting was being watched intently. The new city was still in such an embryo state, however, that it was considered prudent to await further developments for a limited time at least. Less than ten weeks after the granting of the charter most of the city was swept away in the holocaust of June 13, 1886, and, of necessity, the Vancouver Electric Light Company remained dormant.

But with the energetic rebuilding of the city on the embers of the disastrous fire, thoughts of street-lighting came again, and a number of Vancouver business-men formed the Vancouver Electric Illuminating Company, Limited. The trustees were John Boultbee, Hugh Forbes Keefer, R. Balfour, Jonathan Miller, and Ben Springer. Its capital was set at the modest sum of $35,000, divided into 1,400 shares of a par value of $25. A by-law empowering the company to build and operate an electric-lighting system was passed by the City of Vancouver in January, 1887, and in the spring construction of a power plant commenced at the north-east corner of Pender and Abbott Streets. The

equipment consisted of an 80-horse-power steam-engine and two Edison-type dynamos intended to supply incandescent lights for both street and domestic purposes—the second installation of the kind in Canada. Both generated direct current at about 50 volts. This plant and the distribution system, costing in all about $35,000, were built by Messrs. Mitchell, McMullen & Giltner, contractors of Tacoma, under the supervision of a Mr. Nicholls. The machinery came from the A. J. Lawson Company, of Montreal.[1] The incandescent lights used seem mostly to have been of 32 candle-power, and were later referred to derisively as "glow-worm lamps," but they were regarded very differently when the power was first turned on, on August 6, 1887, as the following item, taken from the *News-Advertiser* published the next morning, indicates:—

> The electric light was turned on last night over the whole circuit and gave entire satisfaction in every case. The light was bright and steady, the absence of flickering which is very common and to be expected with a new system was remarked by many who have seen the first trial made by electric light companies in other cities.
>
> If the light supplied is kept up to the standard of last night there will be no reason for anyone to complain of it.

Two later items in the *News-Advertiser* are of interest, the first being from the issue of January 1, 1888:—

> The electric lights give a much better light than formerly, and are a great comfort to travellers after nightfall. Vancouver is the best lighted city of its size [about 5,000 population] in the World.

On February 23, 1888, we find the following:—

> Commencing with our issue of yesterday, the *News-Advertiser* is now being printed by electricity, the power being supplied by the Electric Light Co. It will doubtless be interesting to the people of Vancouver to know that this is the first paper in the Dominion to be printed in this manner.

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(1) *See* A. J. Lawson, "Generation, Distribution and Measurement of Electricity for Light and Power . . .," *Transactions of the Canadian Society of Civil Engineers*, IV. (1890), pp. 179–240. This paper, read on May 8, 1890, gives a detailed account of the electrical industry as it existed in Canada at that date. In it Lawson describes himself as "one of the pioneers in construction of electric lighting plants in Canada, and the manufacturer or constructor of nearly 30 per cent. of the total capacity of incandescence lighting installations now in operation in the Dominion . . ."

Though quite satisfactory for domestic use, the early incandescent lights proved unsuitable for street-lighting in Vancouver, as elsewhere, and in 1890 they were replaced on the streets with Thomson-Houston arc lamps. Ninety of these, each of 2,000 candle-power, were installed to begin with, and the power was turned on for the first time on July 3.

Thus it was that electric light and power came to Vancouver. To the captain of the coast mission ship *Glad Tidings*, entering the harbour in October, 1888, its advent proved embarrassing. "It being excessively dark," the Vancouver *World* reported the next day, "the captain mistook the electric light on land for the light at the city wharf, the result being that the vessel stranded on the beach . . ."

It remained for the electric street-car to make its appearance in British Columbia. In 1886, when Messrs. Abbott, Keefer, and Bullen secured the charter of the original electric light company, they had also applied for, and received, a charter for a Vancouver Street Railways Company. Like that of the light company, no use was made of this charter and it was permitted to lapse. Some time passed before another company was organized, and the first tramway completed in the Province was in Victoria, not Vancouver. On November 20, 1888, an agreement was signed between the City of Victoria and five prominent Victoria citizens—James Douglas Warren, Thomas Shotbolt, David W. Higgins, Andrew Gray, and Joseph Hunter—which authorized the latter to construct a street-railway within the city limits, as well as to supply electric power for lighting and other purposes. Construction of the railway was to commence by October 1, 1889, and the cars were to be running by July 1, 1890. Incidentally it was provided that the speed of the cars should "never exceed ten miles an hour." When this agreement was confirmed by a civic by-law in December, the promoters of the tramway next proceeded to organize the National Electric Tramway and Lighting Company, Limited, which was incorporated by an Act of the Legislature on April 6, 1889. Higgins, Hunter, and Gray were among the first directors, the others being Maynard H. Cowan, Thomas J. Jones, and G. L. Milne. The initial authorized capital was $250,000, and the purpose of the company was declared to be the construction and operation of tramways "to connect with

the proposed street railway system of the City of Victoria." Cadboro Bay, Esquimalt, and Craigflower were among the destinations listed, and Metchosin, Sooke, Beechy Bay, and Goldstream were added by a supplementary statute passed in 1890. Although this company did not formally take over the city tramway and lighting franchise until 1894, for practical purposes the transfer took place immediately, and on May 14, 1889, the ratepayers of Victoria approved a by-law guaranteeing 5 per cent. interest on $40,000 worth of National Electric Company bonds. This guarantee was to take full effect when the Company had expended $70,000.

The power-house and car-barn required for the new tramway were built at the corner of Constance and Store Streets by the firm of Lyne & Milne. Construction commenced on September 2, 1889. The original power plant consisted of a 110-horse-power steam-engine and two Thomson-Houston generators. About 4 miles of line had been completed, and four cars had been delivered, when the first street-car trip was made, on February 20, 1890. The passengers included Mayor Grant and D. W. Higgins, President of the National Electric Company, and the initial run was made from the car-barn to the James Bay district. Doubts had been expressed as to the ability of the James Bay bridge to carry street-cars safely, but Grant and Higgins stood at the middle of the structure while the car crossed over and declared that the vibration was " not as perceptible as that caused by a heavily loaded wagon." " Along Superior Street," the Victoria *Times* reported, " extra speed was put on and the car whizzed along at a great rate, no jar or rocking being noticeable." The formal opening of the tramway took place two days later, on February 22. Lieutenant-Governor Nelson turned the handle which started the motors of the first car, which " started off, followed in turn by the other three, all of which were crowded with guests." The cars were decorated with bunting, and flags were up all along the line. Regular service commenced on February 23.

New lines and equipment were soon added to the tramway, and before the end of 1891 about 11½ miles of track and eleven street-cars were in operation. To keep pace with this expansion a new engine and two additional dynamos were added to the

power plant. Receipts from February 22 to December 31, 1890, had totalled $38,705, and for the whole year 1891 the total rose to $78,000. In 1892 the directors included D. W. Higgins, Joseph Hunter, Theodore Davie, Dr. T. J. Jones, and Major C. T. Dupont.

The Victoria electric tramway was the third of the kind in Canada, its only predecessors being the street-railways in Windsor and St. Catharines, Ontario. The fourth tramway in the Dominion was that in Vancouver. Late in 1888 steps were taken to form a company there, and a new Vancouver Street Railways Company was incorporated by an Act assented to on April 6, 1889. George Turner, Richard Plunkett Cooke, and Frederick C. Innes were the provisional directors, and the initial capital was $250,000. The Company was empowered to " carry passengers by the force of animals, or such other motive power as it may deem expedient." As this provision suggests, it was intended to commence operations with horse-drawn vehicles. The early activities of the company have been described by A. Vilstrup, Chief Electrical Engineer of the British Columbia Electric Railway Company, as follows:—

> On April 27th, 1889, the Company awarded a contract for the construction of the preliminary lines in Vancouver, the whole being completed by August 15th following. The tracks were built for horse-car operation; stables were erected south of False Creek near Main Street to house the horses, and a buyer sent to Oregon to purchase the necessary animals. The horses were nearly due to be shipped, and arrangements were almost ready for a start, when, on August 9th, the directors, on the assurance of electrical contractors that satisfactory electrical equipment could then be supplied, decided to change over to electric operation.
>
> Contracts for the necessary machinery were entered into with the Thompson- [*sic*] Houston Company, of Boston; electric cars were ordered from George Stevenson, of New York, and the tracks—already laid—were bonded and otherwise adapted to electric operation.
>
> This decision necessarily caused a delay of some months, but by May, 1890, the machinery was to hand and being installed, and six electric cars had been delivered. On June 28, 1890, the system was opened for public traffic over six miles of line. The horse contract was cancelled at some loss, and the stables were suitably disposed of.
>
> The direct current power equipment required for operating the electric street cars was installed in a new steam plant erected in the early part of 1890 at the foot of Barnard Street, now Union Street, on the site of the existing Steam Plant. Mr. Nicholls [who had supervised the building of

the City's first electric lighting system] again supervised the installation for the contractors.[2]

A few other details regarding these early days are worth recording. The horse-stables referred to were on the south side of Front Street, now First Avenue. The first six cars, as originally designed for horse operation, weighed no more than 1,500 lb. each, but electric machinery was bulky and heavy in early days, and their conversion increased this weight substantially. Each car was equipped with two 10-horse-power motors, and could carry about thirty-five passengers. By way of comparison it may be noted that the heaviest interurban cars now in service weigh 83,000 lb., and have four motors totalling 500 horse-power.

Regular street railway service in Vancouver started on June 28, 1890, but several test runs had been made on the 26th. These were described by the *News-Advertiser* as follows:—

In the afternoon a car was run up and down Westminster avenue [Main Street] several times, a number of shareholders and scores of citizens taking advantage of the opportunity to test the comfort of a mode of locomotion now possible for the first time in Vancouver. There are probably many persons in the city who have not before seen an electric railway in operation. . . .

In the evening, having satisfied themselves of the general satisfactory state of the track and machinery, the officials of the company ran a car to the end of the track on Powell street, and from there to the western terminus at the Granville street bridge. The return trip from the bridge to the power house on Barnard street, a distance of 2.12 miles was made in 27 minutes, including several stoppages. A run was then made to the end of the track . . . and the car returned to the car-house. . . .

Two of the original cars were used on the Westminster Avenue line, to which reference is made above, and the clock used to check the time of passing the Barnard Street power plant is now a treasured possession of the head office of the B.C. Electric Railway in Vancouver. A red line and a green line painted on the dial designated the proper passing of the cars.

Just two months before street-cars commenced running in the city an Act of the Legislature, assented to on April 26, 1890, had incorporated the Vancouver Electric Railway and Light Company, Limited, in which the Vancouver Electric Illuminating

(2) A. Vilstrup, *Early History of the British Columbia Electric Power System in the Lower Mainland of British Columbia*, an address before the Vancouver Section of the American Institute of Electrical Engineers, March 20, 1936, p. 7.

Company and the Vancouver Street Railways Company joined forces. Some time later steps were taken to consolidate the new company's two power plants. New dynamos to supply the lighting system were installed in the power-house on Barnard Street, and the old Pender Street plant was dismantled and used as a warehouse. Presumably the new dynamos generated alternating current, and a more modern system of wiring must have been introduced when they were installed. The original dynamos used for lighting generated direct current at 50 volts, and as the globes used required power at that voltage no transformers were needed. Though simple, this method of wiring was efficient only within a very restricted area, and the new dynamos therefore supplied power at 1,000 volts. This was much too high for domestic use, so that transformers to reduce the potential to the usual 50 or 52 volts were necessary. At first small transformers were placed on the front of almost every house, but this was a dangerous plan since the wires leading to the transformer, which carried power at the full 1,000 volts, might be within reach of the occupants. The modern system of line transformers was therefore introduced, whereby the transformers were placed on poles, out of harm's way, and their design was modified to make it possible for a single transformer to serve several houses.

The original line transformers were installed by Angus MacDonald, the first real lineman, and first domestic service inspector in Vancouver. He is still living in the city at the age of 81. About the same time Mr. MacDonald was responsible for a notable innovation in the field of electric tramway engineering. In 1891 the Vancouver Electric Railway and Light Company decided to build a line along Ninth Avenue (now Broadway) from Westminster Avenue (Main Street) to Centre Street (now South Granville Street)—the Fairview belt line of to-day. At this time trolley-wires were normally hauled into place with horses and tackle; but when the Fairview rails were laid MacDonald made the startling proposal that the wire should be installed by electrical power, when fully charged. To some it seemed a mad undertaking, but the plan proved completely successful. The procedure was as follows: A large spool of trolley-wire was mounted on a small flat car, coupled to a tower car, which in turn was coupled to an ordinary street-car. The wire from the

spool passed up over the insulated platform of the tower car, which was the proper height to enable the linemen there to attach it to the span wires, which were already in position. When this was done, the new section of wire was ready for the trolley of the following street-car, and as the wire was fully charged, the street-car was able to move forward, pushing the flat car and tower car ahead of it. As the flat car moved, the trolley-wire unwound from the spool, and when the platform of the tower car reached another span wire it was ready to be attached thereto as before. This was the first time this method was ever used, and it was not until two years later that the *Electrical World* recorded that it had been followed in Boston. MacDonald himself used it a second time in 1893–94, when replacing the original trolley-wire on the interurban line between New Westminster and Vancouver; and the scheme enabled the work to be done without interfering with the running schedule of a single car.

This point has carried us ahead of our story, which is next concerned with light and power developments in New Westminster. The first electric light to burn in that city did so quite unexpectedly. On the evening of December 8, 1889, George Pittendrigh, of the staff of the telephone company, received a severe shock when handling certain wires leading to Vancouver. He realized at once that these must have crossed with the electric power-line there, but being of a venturesome nature he " procured a carbon," as the *British Columbian* recorded the next day, " and having attached it to the ground-wire, brought the Vancouver line in close proximity to it, and in an instant the central telephone office was ablaze with electric light."

The establishment of a municipal lighting plant was being discussed in New Westminster at this time, and in 1890 a power-house was built on Tenth Street, not far from the Royal City Planing Mills. The equipment included a 180-horse-power steam-engine and two dynamos. One of the dynamos was intended for arc street-lighting, while the other could supply 650 incandescent lamps of the usual 16-candle-power type. A preliminary trial of the street lamps in the lower part of the city was made on January 2, 1891, when the streets were thronged with citizens " who inspected with interest and delight the new electric light." The power was turned on over the whole system

for the first time on January 28. Sixty-five street lamps were then in operation, and fifteen more were added within a few days. The incandescent lighting plant soon proved inadequate, and in October the ratepayers approved a by-law for $25,000 to purchase a new 1,500-light dynamo and other equipment. A second arc dynamo and another 1,500-light incandescent generator were added within a few years. At the end of 1895 a total of 3,286 incandescent lamps were in use in the city, and this total rose to 4,841 by the end of 1896. It is interesting to note that there was still no service during the day. As this would indicate, domestic electrical appliances were still few and far between.

Shortly before the Vancouver street-cars started to run the Westminster Street Railway Company was incorporated by an Act of the Legislature, on April 26, 1890. The authorized capital was $250,000, and the charter was secured in the name of Benjamin Douglas, Henry V. Edmonds, and Samuel T. Mackintosh. A second Act of the same date incorporated the Westminster and Vancouver Tramway Company, with a capital of $500,000. Douglas and Edmonds were joined in this second venture by David Oppenheimer, then Mayor of Vancouver. From the first these two companies were in effect one, and they were formally united by an Act of the Legislature in April, 1891, the name Westminster and Vancouver Tramway Company being retained.

Meanwhile, in June, 1890, work had been started on an interurban line between the two cities—the first electric line of its kind in Canada. It was completed in September, 1891, and service commenced while the annual exhibition was being held in New Westminster. The crowds attending gave the local city line a good send-off, but, in the words of F. E. Handy, General Superintendent for the Company, this city service proved " very small and unprofitable largely on account of the severe grades and numerous curves required to travel from south to north "—that is, up the hill. The route of the interurban line ran for the most part through forest land, in which the right-of-way had been cleared a hundred feet wide, and where all trees in the vicinity likely to fall across the track had been felled. In places the grades were as great as 9 and even 11 per cent. At first

the only stopping-places were at Central Park, so named in memory of the famous park in New York City, in the neighbourhood of which Mrs. David Oppenheimer had been born and reared, and at a siding known as Largen's Corner, at the end of the present Glen Drive, on Venables Street. In 1893 the original line was shortened by over 2 miles by the construction of a cut-off at the eastern end, which carried the cars straight down Twelfth Street to the New Westminster terminus, and thus eliminated the long, winding track through the city. This reduced the running time from Vancouver to forty-five minutes. The return fare was then 75 cents.

A few details of the line's equipment will be of interest. At the Vancouver end power was secured from the Vancouver Electric Railway and Light Company, but in view of the length of the line it was necessary to build a special power-house near Edmonds, about 3 miles from New Westminster. The machinery included four steam-engines of a total of 800 horse-power, belted to four Edison railway dynamos which generated electricity at 500 volts. In 1893 the rolling-stock included six Brill passenger-cars, each 35 feet long, and three smaller St. Catharines cars. The former were described at the time as being " wide and roomy and nicely upholstered," and " at Fair time "—a significant qualification—had carried as many as 110 passengers each.

In the early nineties a widespread depression developed which was soon gnawing at the vitals of the early electric light and tramway companies. Population and traffic failed to increase as expected, while primitive equipment, high interest rates on overdrafts, and inexperience added to their difficulties. The Vancouver Electric Railway and Light Company tried to induce the city to take over its holdings at a valuation of $477,000, but without success. Deficits ran as high as $1,300 a month, and in 1892 it defaulted on payment of its interest. The directors appointed at the annual meeting held in February, 1893—Isaac Oppenheimer (President), William Farrell, Thomas Dunn, C. D. Rand, and H. T. Ceperley (Secretary-Treasurer)—were faced with a hopeless situation, and in May the trustees for the bondholders took over the management of the Company. The same month traffic had fallen to such a low level that service on the Fairview line was discontinued for lack of patronage. Under

the circumstances it is scarcely surprising that on May 30, 1894, the Vancouver ratepayers rejected a by-law for $462,000, authorizing the city to purchase the system.

The Westminster and Vancouver Tramway Company fared no better than its neighbour. It was already in difficulties when lightning struck and burned out one of the dynamos in its Edmonds power-house, and the expensive repairs this made necessary crippled the Company. As a result it defaulted, and in May, 1893, its assets were seized on behalf of the bondholders. In January, 1894, the Bank of British Columbia filed a judgment for $261,250.17 against the Company, and three smaller judgments which followed increased the total to $280,436.75. At this point the Provincial Government came to its rescue, and by an Act of the Legislature made the Company a free grant of 196 acres of public land. This land included District Lots 36 and 51, which are now part of the City of Vancouver. This acreage, together with additional urban and suburban properties, assured the judgment holders of their equity, for, on April 13, 1895, Sheriff J. D. Hall, of the County of Vancouver, sold the tramway properties which lay within his jurisdiction, including District Lots 36 and 51, for $9,765 in excess of the liabilities. The sale took place at 10 a.m., and the same day at noon, in New Westminster, T. J. Trapp, acting for Sheriff Armstrong, sold the Westminster and Vancouver Tramway Company's holdings. The purchaser in both cases was Frank (later Sir Frank) Barnard, acting on behalf of the Consolidated Railway and Light Company. At New Westminster, David Oppenheimer bid vigorously in competition with Barnard, but doubtless with no intention of buying, as the property there would have been of relatively little value without the Vancouver holdings also.

The Consolidated Railway and Light Company had been incorporated on April 11, 1894, with an authorized capital of $1,000,000. The charter was secured in the name of Alfred Graham Ferguson, William Sully, and William Farrell, and its purpose was declared to be the acquisition of the Vancouver Electric Railway and Light Company. As we have seen, it acquired the assets of both this company and the Westminster and Vancouver Tramway Company just one year later. The Consolidated Company's capital was partly local, but much of it came

from English capitalists. These were represented by Mr. Barnard, who became President of the Company.

Barnard was also a director of the Columbia and Kootenay Navigation Company, and early in 1894 he had met, at Nelson, R. M. Horne-Payne, representing English capital, who was accompanying Sir William Van Horne, President of the Canadian Pacific, on his annual inspection tour of the West. Barnard discussed various investment projects with Horne-Payne, including the electric light and power field, and the result was that he recommended the purchase of the power and tramway services at the Coast to his principals. In November, 1895, an English syndicate, headed by Horne-Payne, purchased all the assets of the Consolidated Railway and Light Company, which gave it control of the New Westminster and Vancouver local tramways, the interurban line between the cities, and the lighting system in Vancouver. Having accomplished this, it proceeded to secure an Act of the Legislature, assented to April 17, 1896, which shortened its name to the Consolidated Railway Company, and increased its capitalization to $1,500,000.

About this time the new syndicate also extended its activities to Victoria. It will be recalled that in 1890 the street-lighting system there was owned by the city, other lighting services were operated by the Victoria Electric Illuminating Company, and the street-cars were owned by the National Electric Tramway and Lighting Company. Just what became of the Victoria Electric Illuminating Company is not clear, but its name disappeared from the directory of the city in 1892, and presumably it joined forces with the National Electric Company, which entered the electric-lighting field in 1891. Two Thomson-Houston dynamos, with a capacity of 650 lights each, were installed in February, 1891, and on the 27th of the month the power was turned on for the first time. At that time about one hundred lights were ready for use, most of which were on the water-front, including thirty-five on the property of the Canadian Pacific Navigation Company. Later many public buildings were served, including Christ Church Cathedral and the new Methodist Church, which were electrically lighted for the first time on Sunday, March 8, 1891. The new power plant generated alternating current at 1,000 volts, which was reduced to 52 volts by transformers for household use. Both

incandescent and arc lamps were used, the latter being of a new and smaller design, which was described as being free from flickering and particularly well suited for store lighting.

Additions were made to the equipment from time to time, and then in 1894, by an Act assented to on April 6, the Company was reorganized and became the Victoria Electric Railway and Lighting Company, Limited, with an authorized capital of $1,000,000. The original street-railway franchise of 1888 was specifically included in the powers of the new company, and all the electrical services in the city, with the exception of the street-lighting, were thus unified in law as well as in fact.

It was control of this new company which passed to the Consolidated Railway Company in 1896, thus linking the Island and Mainland in a single electrical corporation for the first time. Unfortunately the association did not prove a happy one at the beginning. On May 26, 1896, Mr. Horne-Payne was in Victoria, visiting Mr. Barnard. The city was *en fête*, for the Queen's birthday was being made the occasion of a three-day celebration ending with a sham battle at Esquimalt, staged by the North Pacific Coast Squadron. Horne-Payne and Barnard decided to go, for all Victoria was going. They walked down to the street-car and found it already filled to overflowing. Taking a hack, they preceded by a few minutes only the heavily laden car which, when it reached the Point Ellice bridge, plunged through the old structure to the waters of Rock Bay below, causing the death of over fifty persons. The news overtaking the officials, they hurried back and assisted in the rescue of the survivors. Damage actions arising from this accident forced the Company into the hands of a receiver, but Horne-Payne set to work diligently to raise new capital, and early in 1897 succeeded in organizing the British Columbia Electric Railway Company. The B.C. Electric, as it is familiarly known, was registered in England on April 3, 1897, and on April 15 took over the properties and others assets of the Consolidated Railway Company.

At this point the pioneering period in electric light and power may be said to have come to an end, but two important developments which took place within the next few years may be mentioned for the sake of completeness. The first of these was the decision to raise the voltage of the primary circuits of the dis-

tribution system from 1,000 to 2,000 volts, and that of the secondary circuits from 50 to 100 volts. This necessitated the installation of new transformers and meters throughout the system, but proved well worth while in the long run. Work started late in 1898 and was completed in 1903. From the point of view of the private householder, the most interesting result was probably the disappearance of the old Thomson-Houston sockets and lamps, and the substitution of Edison sockets with a screw base, like those in use to-day. The second development, which would make a long story in itself, was the generating of electricity by water-power, instead of by steam-engines, as heretofore. The first hydro-electric plant built by the Company was at Goldstream, a few miles from Victoria. The turbines developed 3,000 horse-power, and were ready for service in 1898. This plant has now been superseded by the much larger power-house at Jordan River, but is still kept in reserve for use in an emergency. In 1902 the Company started work on its first Mainland hydro-electric plant, which was the first unit of what is now known as the Coquitlam-Buntzen scheme.

Looked at through spectacles of that time, one is immediately impressed with the boldness and courage of this venture, which involved the driving of a long diversion tunnel to pierce the mountain range which separates Lakes Coquitlam and Beautiful, the building of a dam at the south end of Lake Coquitlam, another at the north end of Lake Beautiful, the construction of penstocks—to operate at a 400-foot head—to a water power plant to be built on the precipitous shores of the North Arm of Burrard Inlet.

Added to these features were the further problems of building and operating a 20,000 volt transmission line to Vancouver, through rough and heavily timbered territory, including a long water span at Barnet.

It reflects great credit on the management and on all concerned that this great programme was carried through so successfully, and that power from this development was transmitted to Vancouver in December, 1903.[3]

The original Buntzen power plant housed two dynamos, but it was found necessary almost immediately to add two more, and many other units have since been built by the Company and its affiliated corporations. For many years it has generated all the power required for the electric utilities in the three cities of Victoria, Vancouver, and New Westminster. The City of New Westminster still owns its own distribution system for both street and domestic lighting, but since October, 1904, it has pur-

(3) Vilstrup, *op. cit.*, p. 11.

chased its power from the B.C. Electric. Six years later, in 1910, the Company took over the oldest branch in its complicated family tree—the municipal street-lighting system in Victoria, which traced its history back to the original electric utility venture of Robert Burns McMicking, in 1883.

GEORGE GREEN.

VANCOUVER, B.C.

THE ADVENT OF THE "BEAVER."

Just fifty years ago, on July 26th, 1888, the pioneer steamship *Beaver,* the first steamer to ply the waters of the North Pacific, ran ashore at the entrance to Vancouver Harbour. At first it was thought that she could be salvaged; but as the months slipped by it became evident that the accident had brought to an end her amazing record of service extending over more than fifty-three years. In view of this anniversary, it seems worth while to recall the circumstances which attended her construction and arrival in the Pacific, particularly as documents kindly made available by the Governor and Committee of the Hudson's Bay Company make it possible, for the first time, to tell the story in some detail.

The *Beaver* was built to assist in carrying into effect a policy adopted by the Hudson's Bay Company after Governor Simpson's historic visit to the Pacific Coast in 1824–25. The Columbia District had never yielded a profit in the days of the North West Company, and Simpson was sent out to determine the reason for this and to advise the Governor and Committee, in London, as to whether or not the territory should be abandoned. His investigations convinced him that the unsatisfactory state of the fur trade was due primarily to lack of enterprise and mismanagement. "The trade of this side the mountain [the Rockies]," Simpson reported, "if sufficiently extended and properly managed I make bold to say can not only be made to rival, but to yield double the profit that any other part of North America does for the Amount of Capital employed therein but in order to turn it to the best advantage New Caledonia must be included and the Coasting trade must be carried on in conjunction with the inland business."[1]

The inclusion of New Caledonia simply meant that Simpson considered that the whole fur-trading area west of the Rocky Mountains should be governed as a unit. Of much greater interest in the present connection is his conviction that it was essential to enter the coastal trade. In 1825 this was almost entirely in the hands of the Russians and Americans. On the

(1) Frederick Merk, *Fur Trade and Empire: George Simpson's Journal,* Cambridge, Mass., 1931, p. 72.

whole Pacific Coast, the flag of the Hudson's Bay Company flew only at Fort George, formerly Astoria, a famous by inefficient post at the mouth of the Columbia River. Simpson felt that for at least two reasons this state of affairs must change. In the first place, the coastal trade was probably worth participating in for its own sake. In the second place, he perceived that, owing to the prevalence of intertribal trading, the lower prices placed upon trade goods by the maritime traders were a direct threat to the Company in the Interior. As Dr. McLoughlin, the Chief Factor whom Simpson placed in charge of Fort Vancouver, the new headquarters he built for the Columbia District before returning to the East, expressed it in a letter to Simpson himself, " To secure our Inland trade we must endeavor to destroy competition on the Coast, as these Coasters trade with Indians who in their turn trade with the Natives of the Interior some of these get Skins annually even from [as far inland as] the vicinity of the Babine Lake."[2]

Some years passed before the decision to enter the coastal trade could be carried into effect. The schooner *Vancouver*, of about 85 tons burden, was built on the Columbia River in 1826, and she was joined by the *Cadboro*, of 72 tons register, which was sent out from England, in the spring of 1827. But late in 1828, when Governor Simpson was paying his second visit to Fort Vancouver, he reported to London that " we have as yet done little " in the coastal trade. He added, however, that Captain Aemelius Simpson of the *Cadboro* had " collected much valuable information " on the subject, which he would transmit later. " From his report," Simpson stated, " we have little doubt of acquiring the Command of the Trade; it may however cost in the first instance a considerable sacrifice of money but the prospect it holds out in point of returns . . . we conceive fully to warrant the expence we propose entering into."[3] Four months later Simpson formally notified the Governor of the Russian American Company at New Archangel (now Sitka) that the new policy was about to be carried into effect. " Our attention on this side of the Continent has been hitherto directed to

(2) McLoughlin to Simpson, March 20, 1827. Quoted in Merk, *op. cit.*, p. 289.

(3) Simpson to William Smith, November 17, 1828. *Ibid.*, p. 300.

the business of the Interior Country," he wrote in March, 1829, "but we have it now in view to extend it to the Trade of the Coast. . . ."[4]

Simpson's plan of operation included the building of new trading-posts at strategic points on the Northwest Coast, as well as the use of trading-ships; and it may be said to have really gotten under way with the construction of the first Fort Simpson, on the Nass River, in 1831, and of Fort McLoughlin, on Milbanke Sound, in 1833. Meanwhile, Simpson had conceived the idea of adding a steam vessel to the Company's forces in the Pacific, and in August, 1832, he urged the construction of such a ship upon the Governor and Committee in a letter, written on behalf of the Council of the Northern Department, which read in part as follows:—

> . . . A steam Vessel would afford us incalculable advantages over the Americans, as we could look into every Creek and cove while they [being in sailing ships] were confined to a harbour by head winds and calms, we could ascend every stream of any consequence upon the coast, we could visit our establishments at stated periods, in short a Steam Vessel would, in our opinion, bring the contest to a close very soon, by making us masters of the trade. . . .

Simpson considered that the vessel should not be larger than 180 tons burden, that she should be of shallow draught, and equipped with machinery of the very best description. His letter continued:—

> . . . Machinery is now brought to such perfection that with good management accidents rarely occur, but in order to guard against accident it would be well to have a double sett of such parts of the machinery as are most likely to give way, and by that means, as we have forges and blacksmiths at every establishment on the coast, we could make such repairs as might be necessary from time to time. . . .[5]

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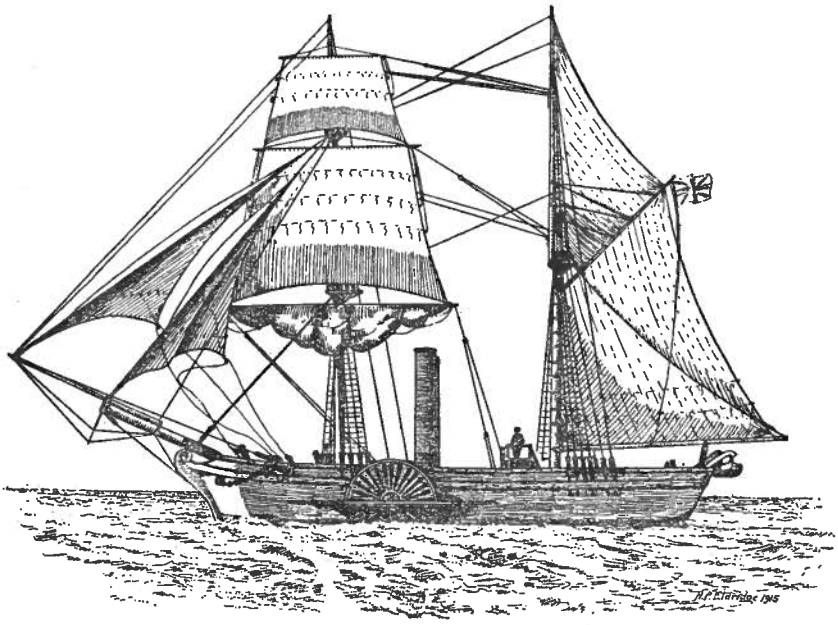
(4) Simpson to the Governor, Russian American Company, dated Fort Vancouver, March 21, 1829. *Ibid.*, p. 311.

(5) Simpson to the Governor and Committee, August 10, 1832. (H.B.C. Arch. D. 4/99, f. 16 d.–17 d.) The quotations from this and other documents in the Archives of the Hudson's Bay Company, London, are printed by permission of the Governor and Committee, whose kindness in making this material available is much appreciated.



The Steamer *Beaver*, as originally completed.

The paddle-wheel and paddle-box should be slightly larger and rise higher above the gunwale, but otherwise this sketch is believed to be accurate. No contemporary picture of the *Beaver* in her original rig is known to exist.

Though Simpson had obviously considered the matter with care, the Governor and Committee did not think that a steam vessel would be practicable, and the plan was carried no further for the moment.[6]

The next reference to a steam vessel is found in a dispatch from Dr. McLoughlin, written in August, 1833. Though he admitted that a steamer would be the most convenient craft for use in the coastal trade, McLoughlin did not favour the construction of such a vessel because of the great expense involved[7]—a view, it may be added, to which he clung even after the commissioning of the *Beaver*. Simpson, however, held to his opinion and repeated his recommendation to the Governor and Committee. Upon this occasion his suggestion was approved, and on March 5, 1834, the Company informed him of this decision and added the following comment:—

> . . . The Steam Vessel about to be sent out will be expensive, but she will possess so many advantages over sailing craft on the Coast, which from its broken character, and the protection afforded by Islands render it peculiarly well adapted for Steam navigation, so that this Vessel, altho costly in the first instance, will soon be productive of a considerable saving, as she is expected to perform the Service of four of the sailing Vessels now employed on the Coast. . . .[8]

The hull of the steamer was ordered in June, 1834, from Messrs. Green, Wigrams & Green, of Blackwall, on the Thames, who agreed to build it "at and after the rate of £16 per ton for 187 tons."[9] Two engines, each of 35 horse-power, and a boiler capable of burning either wood or coal, together with duplicate tools, stores, etc., were ordered from Messrs. Bolton, Watt & Company, the celebrated pioneer manufacturers of steam machinery, in September.[10] Eight months later the vessel was ready for launching, and on May 2, 1835—not on May 7, as is usually stated—she took the water and was named *Beaver*. Contrary

(6) H.B. Co., London, to Simpson, March 1, 1833. (H.B.C. Arch. A. 6/23, p. 5.)

(7) McLoughlin to H.B. Co., London, dated Fort Vancouver, August 31, 1833. (H.B.C. Arch. B. 223/b/9, p. 21.)

(8) H.B. Co., London, to Simpson, March 5, 1834. (H.B.C. Arch. A. 6/23, p. 123.)

(9) H.B.C. Arch. C. 7/12.

(10) H.B. Co., London, to Messrs. Bolton, Watt & Co., September 20, 1834. (H.B.C. Arch. A. 5/10, p. 256.)

to the usual story, the event does not seem to have caused any great stir. "There is no evidence in the Company's archives," the Secretary to the Governor and Committee states, "that the launching was made the occasion of a special ceremony, and no records on the subject are to be found in the Archives of the Board of Trade, the Port of London Authority, Lloyd's, or Scotland Yard. Some writers have stated that His Majesty King William IV. was present at the launching, but this statement is obviously untrue as both the *Times* and the *Morning Post* record the fact that the King was staying at Windsor Castle on the 2nd May.[11] Even the customary ceremony of the Hudson's Bay Company's Committee Members and their friends being present at Gravesend on the departure of the ships to Hudson Bay was cancelled in June, 1835, owing to the death of William Smith, one of the Members. The *Beaver*, although not due for sailing, was to have been present."

On May 6, the *Beaver* was registered at Lloyd's. As the very complete details of her construction given in the Certificate of Registry are printed in the appendix to this article, along with further particulars drawn from her Certificate of Machinery and the records of the General Register Office of Merchant Seamen, only a brief description of the vessel need be given here. Her length was 100 feet 9 inches, her width, not including paddle-boxes, was 20 feet, and her depth of hold 11 feet. She was very heavily built, and was probably as sturdy a craft for her size as was ever put afloat. Her massive keel was of elm, and the rest of her timbers were mostly of English or African oak. Under the old tonnage rules she was of 109 tons burthen, and 187 tons builders' measurement. Her draught when loaded was about 8½ feet. Her paddle-wheels, which were placed rather far forward, were 13 feet in diameter, with paddles 6½ feet long. They revolved thirty times a minute upon the very few occasions when she made her top speed of 9¾ miles per hour. Her iron boiler had a working-pressure of only 2½ lb. to the square inch, and her coal-boxes had a capacity of 20 tons. In service she burned about 700 lb. of coal each hour. As is shown by the accompanying drawing, she had two masts and a single

(11) London *Times* and *Morning Post*, May 4, 1835.

tall funnel, but a small bridge was the only deck erection which rose above the level of her gunwale.

On June 25, 1835, the *Beaver* left for a trial cruise in the English Channel, which lasted a week. It had been decided that she was to make the long voyage to the North Pacific under sail, and when she returned her machinery was therefore dismantled and her paddle-wheels unshipped. According to Lloyd's Certificate of Registry she was rigged as a brigantine. On July 8, a few days after the *Beaver* concluded her trials, a second and larger new vessel, the barque *Columbia*, was launched at the yard of Green, Wigrams & Green for the Hudson's Bay Company.[12] She was designed to be the annual supply-ship to the Northwest Coast, and it was intended that she and the *Beaver* should proceed thither together.

Though the original log-book of the *Beaver* has disappeared, the late Harry Glide, of Victoria, possessed a copy of the portion of it which recorded her voyage to the Pacific, and this was published, in 1895, in Lewis & Dryden's *Marine History of the Pacific Northwest*.[13] The text as there presented is unfortunately marred by both errors and omissions; but in spite of these imperfections the document is of the greatest interest. For one thing, it preserves the names of the twelve men who, along with Captain David Home, made up the crew. These were as follows: first mate, W. C. Hamilton; second mate, Charles Dodd; chief engineer, Peter Arthur; second engineer, John Donald; carpenter, Henry Barrett; able seamen, William Wilson, George Gordon, William Phillips, James Dick, George Holland, James McIntyre and William Burns.

The *Beaver*, along with the *Columbia*, Captain William Darby, left Gravesend on August 29, 1835; but owing to a delay occasioned by the necessity of securing an anchor stock she did not reach the Downs and drop her pilot until noon on the 31st. Once the voyage proper was well begun she proved to be definitely faster than the *Columbia*, and the log contains numerous entries recording that the *Beaver* was obliged to slacken sail to keep her in company. On September 13 the two vessels were off Madeira, but on the 30th, when near the line, the *Beaver* lost sight of her

(12) E. W. Green to W. Kaye Lamb, dated London, January 5, 1938.
(13) Edited by E. W. Wright; Portland, Oregon, 1895, pp. 15–17.

consort in a sudden squall and was unable to find her when it subsided. Sailing on alone, she was off Trinidad on October 15, and sighted the Falkland Islands on November 11. A week later she rounded Cape Horn, in the vicinity of which she encountered the fogs, squalls, strong gales, and heavy seas for which the area is notorious. The entry in the log for November 25 reads: "Fresh breeze. A sudden squall carried away topmast steering sail boom. Heavy fall of snow." This very rough weather continued for some days, but she seems to have suffered no further damage, and on December 12 made the Island of Juan Fernandez, almost due west of Valparaiso. Here she anchored in Cumberland Harbour. A day or two later, to the great relief of Captain Home, the *Columbia* hove in sight. Once more in company, the two vessels sailed for the Sandwich Islands; but before their departure Captain Home reported to his owners in a letter from which the following is an extract:—

I have much pleasure in informing you of the safe arrival of the *Beaver* at this place [Juan Fernandez] after a very stormy passage. I have been induced to put into this port, partly to get a fresh supply of water, as ours (from the constant & excessive motion of the Vessel, [)] had become so thick it was almost impossible to drink it also to refresh the Crew, who stand much in need of it, we have had 4 Men sick, Messrs Hamilton, Dodds, & myself have also been unwell, in fact, for the last 6 weeks we have not had 2 successive dry days. The *Beaver* is an excellent Sea Boat, & should the Engines go wrong will answer as a sailing Vessel perfectly well. We lost sight of the *Columbia* in a heavy squall near the Line, but I am happy to acquaint you with her safety also, she hove in sight two days after our arrival here, intending to anchor here for water, but could not get in this is the most infamous place ever I was in, I have had to shift my birth 3 times, and have been lying with two Anchors down, the wind blowing from all points of the Compass, & heavy gusts from the shore, we drove with 55 fms of chain in 12 fms I therefore, thought it better for Capt Darby [in the *Columbia*] to remain outside, & take sufficient water on bd to supply him at sea. We have been detained here 5 days, & sail today.[14]

Hawaii was sighted on February 1, 1836, and three days later the *Beaver* anchored at Honolulu, where she remained about three weeks. One entry in the log at this time is of interest: "Feb. 19—Let the old stock of water out of the boilers, it being very bad. Took on board 1,000 gallons of water."

(14) Captain David Home to the H.B. Co., London, dated Juan Fernandez, December 17, 1835. (H.B.C. Arch. A. 10/2.)

From this it is evident that the boilers were being used as fresh-water tanks.

On February 25 the vessels left Honolulu, bound for the Columbia River. Four Sandwich Islanders, who were to work their passage, were on board the *Beaver*, and, by mutual consent of the captains, Mr. Dodd, second mate, exchanged places with Mr. Prattent, of the *Columbia*, for this last lap of the long journey from England. Land was sighted on March 14, but almost a month was still to pass before the *Beaver* reached Fort Vancouver. Some delay was caused by the Columbia bar, which was not crossed until the 19th, and Alexander Lattie of the Company's service, who was to pilot her up the river, did not arrive until the 25th. Thereafter the log records her slow progress up-stream, day by day, along with the *Columbia*. The end of the voyage is recorded as follows: "April 10—At 4.30 p.m weighed with a light breeze from the west. At 6.30 rounded Parting Point; fired two guns. At 7.30 came to, abreast of Ft. Vancouver, in 9 fathoms. Found lying there the Honorable H.B. schooner *Cadboro*. *Columbia* still in company." Two hundred and twenty-five days had passed since the departure from Gravesend.[15]

The only details available regarding the fitting-out of the *Beaver* as a steamer, at Fort Vancouver, are those given in the log. The entries, as given in Lewis & Dryden's *Marine History*, are as follows:—

Monday, May 16—Variable winds and fine weather. Carpenters shipping the paddle-wheels. At 4 p.m. the engineers got the steam up and tried the engines and found to answer very well. Sailed—The schooner *Cadboro*.

Tuesday, May 17—At daylight unmoored ship and got the steam up. At 3.30 weighed and ran down abreast of the lower plain for firewood. At noon lashed alongside the *Columbia*. At 1.30 took the *Columbia* in tow up to the sawmill. At 6 returned and anchored off Fort Vancouver in 5 fathoms. Received the 9-lb. long gun from the *Columbia*.

May 23—At daylight engineers employed getting up steam. At 9 weighed anchor and ran down with steam to the lower plain to take on firewood. At 2 p.m. returned to the fort and received a party of gentlemen on board and ran up to the sawmill and back to the lower part of Menzies Island. At 7 anchored off the fort and found the engines to act very well.

(15) Not 163 days, as stated in the *Marine History of the Pacific Northwest*, p. 15.

These trial runs seem to have convinced the Company officials that the vessel was reliable and safe, and the next entries record the first steamboat excursions ever held in the Pacific Northwest:—

May 31—At 9.30 a party of ladies and gentlemen from the fort came on board. At 9.45 weighed anchor and ran down the river under steam and entered the upper branch of the Wilhammet; ran under half power until we cleared the lower branch at 3.50, and ran up towards Vancouver. At 5 came to anchor and moored in our old berth. At 8 called all hands to 'splice the main brace.'

June 5—Our draft of water with boilers empty is 8 ft. 5 forward and 8 ft. 6 aft.

June 9—*Columbia* sailed for the Sandwich Islands. Engineers painting the engines, crew whitewashing the funnel.

June 11—At 12.30, the steam being up, hove short and received on board a party of ladies and gentlemen and weighed and ran down the river and entered the lower branch of the Wilhammet. At 7.15 cleared the upper branch and ran up towards Vancouver and anchored in our old berth.

Archibald McDonald, then in charge of Fort Colville, was on board when the *Beaver* made one of these early trips, and noted the fact briefly in a letter to Edward Ermatinger. "I was at the sea last season," he wrote early in 1837, "with Ogden & Black—the home ship [the *Columbia*] arrived early, accompanied by a beautiful Steamer for the N.W. Coast trade—we had one delightful cruise in her round the mouth of the Willamattee. . . ."[16] A longer and more philosophical account of one of the excursions was written by the Rev. Samuel Parker, who gives the date as June 14. As no copy of the entry in the log of the *Beaver* for that day is available, it is possible that this trip was made in addition to those recorded above. The account reads:—

On the 14th, we took a water excursion in the steam-boat *Beaver*, Capt. Home, down the Columbia to the confluence of the western branch of the Multnomah; up this river into the Willamette, and then into the middle branch of the Multnomah, and through it, into the Columbia, and back to the fort. All the low lands were overflowed with the annual freshet, and presented the appearance of an immense bay, extending far into the country. The day was pleasant and our company cheerful. The novelty of a steamboat on the Columbia, awakened a train of prospective reflections upon the probable changes which would take place in these remote regions, in a very

(16) McDonald to Ermatinger, dated Fort Colville, January 25, 1837. (MS. in Provincial Archives.)

few years. It was wholly an unthought of thing when I first contemplated this enterprise [his journey across the continent to the Pacific Coast], that I should find here this forerunner of commerce and business. The gayety which prevailed was often suspended, while we conversed of coming days, when with civilized men, all the rapid improvements in the arts of life, should be introduced over this new world, and when cities and villages shall spring up on the west, as they are springing up on the east of the great mountains, and a new empire be added to the kingdoms of the earth.[17]

The *Beaver* was now ready to take up her appointed task in the coastal trade, and on June 18 she left Fort Vancouver, bound for the Northwest Coast on her first trading cruise. Captain Home was in command, with Charles Dodd as first mate and Alexander Lattie, who had piloted her up the river, as second mate. Her crew numbered thirty-one, and included four stokers and thirteen woodcutters, many of whom were Kanakas or Indians.[18] The Rev. Samuel Parker was on board, and has left us this account of the trip down the river:—

On the 18th of June, according to previous arrangements, I took passage in the steam-ship *Beaver* for Fort George, to join the barque *Columbia* for the Sandwich islands. As the *Beaver* was commencing her first voyage upon the Pacific, under the power of steam, destined for the northwest coast, the people of the fort, and those residing around, assembled upon the shore of the Columbia, and as she moved majestically from her anchorage, they saluted us with cheers, which were reciprocated by all on board, and they responded, "A happy voyage, a prosperous voyage." The ship anchored at night a little above Tongue Point; and the next day, after being detained upon a sand bar, from which the tide after awhile set us free, we arrived at Fort George.[19]

The log tells much the same story in its own nautical way, and adds that on June 21 the *Beaver* continued on to the mouth of the river, where she "anchored in Baker's Bay in company with the *Columbia;* found the engines to work extremely well. Draught of water 9-6 forward, 10-6 aft."[20] Baker Bay was a strategic point from which to watch the dreaded Columbia bar, and the *Beaver* lay at anchor there for some days, waiting for the swell to subside. Her final departure is described by Mr. Parker, who observed it from the deck of the *Columbia:*—

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(17) Samuel Parker, *Journal of an Exploring Tour beyond the Rocky Mountains. . . .* Second edition, Ithaca, 1840, p. 314.

(18) For the names of the men *see* Lewis & Dryden, *op. cit.*, p. 17.

(19) Parker, *op. cit.*, p. 347.

(20) Lewis & Dryden, *op. cit.*, p. 17.

On the 25th, the bar being smooth, with only a light wind, though ahead, and the tide favoring, the *Beaver* weighed anchor and put out to sea for her northern voyage. She went over the bar finely, and could have towed us over, but it being her first experiment, it was not thought advisable.[21]

This was also the last occasion upon which the *Beaver* crossed the bar, as she never returned to the Columbia in all the years that she served the Hudson's Bay Company.

The *Beaver's* first port of call was Fort McLoughlin, on Millbanke Sound, where she arrived on June 29 or 30—the log-book entry and Chief Factor Finlayson's report differ as to the date.[22] She suffered some damage on the voyage, as she was very heavily loaded and the weather was stormy. Her log records that the carpenter was called upon to secure the planking in the deck cabins, which was working loose in a cross-sea, and the next morning "The after part of the starboard paddle-box carried away." The description of her arrival at Fort McLoughlin is interesting:—

June 29—Finding that we had not enough fuel to carry us to Millbank fort, stopped the steam and made sail to the topsail and unshipped five paddle-blades on each side to avoid holding so much water, afterwards shipped the paddle-blades, made steam, and entered Millbank Sound, anchoring at 11 in 10 fathoms.

June 30—At 4, after taking on a supply of wood, weighed and ran up the Sound, anchored at 6.30 opposite Millbank fort, saluted the fort with seven guns, which were returned.

The fur-trading staff on the *Beaver*, as distinct from her crew, included John Dunn, who has left an amusing account of the reaction of the Indians of the region, whom he describes as being "very ingenious and imitative," to the first steam vessel they had ever seen.

They watched sharply all our proceedings, and gave us striking examples of their native talent. They promised to construct a steam-ship on the model of ours. We listened, and shook our heads incredulously; but in a

(21) Parker, *op. cit.*, p. 349.

(22) The latter part of the extract from the log as given in Lewis & Dryden's *Marine History* has been copied very carelessly, and Finlayson's report is probably more accurate. Many of the dates in the log differ by a day or more with those given in original documents now in the Archives of the Hudson's Bay Company, but in some instances this may be due to the fact that, during the voyage from England, the ship's day was reckoned from noon to noon, and not by the calendar.

short time we found that they had felled a large tree, and were making the hull out of its scooped trunk. Some time after, this rude steamer appeared. She was from twenty to thirty feet long, all in one piece—a large tree hollowed out—resembling the model of our steamer. She was black, with painted ports; decked over; and had paddles painted red, and Indians, under cover, to turn them round. The steersman, was not seen. She was floated triumphantly, and went at the rate of three miles an hour. They thought they had nearly come up to the point of external structure: But then the enginery baffled them: and this they thought they could imitate in time, by perseverance, and the helping illumination of the Great Spirit.[23]

Amongst the papers of James Douglas there is an undated page of instructions from London, intended for the guidance of the officer in charge of the Northwest Coast, which outlines the part the Governor and Committee expected the *Beaver* to play in the fur trade west of the Rocky Mountains. "We think," it reads, "by proper arrangements it [the trade] may be made to produce very considerable profits, and we think it good policy not to exercise too close economy in guarding both the coast and Interior trade from opposition. With this view we send out the steam vessel and we think that she and two sailing vessels should be kept employed upon the Coast, (unless experience should prove that one sailing vessel with the steamboat is sufficient) for the purpose of carrying on the trade and watching any opposition which may arrive on the Coast." A later passage indicates not only the exploratory work which it was hoped the *Beaver* would be able to do, but also shows how carefully the Company kept check upon every move on the part of its rivals:—

The Steam vessel may enable the gentleman who may be in charge of the District to examine accurately the different Inlets on the Coast, and we trust will also enable him to obtain a trade along the coast, to the Northward. . . .

It appears that Mr. French an American at the Sandwich Islands carries on intercourse with the Russian Company and has a contract with them for the supply of certain articles, and that he combines with this a fur trade along the Coast, on the return of the ship to the Sandwich Islands.

(23) John Dunn, *History of the Oregon Territory and British North-American Fur Trade*, London, 1844, pp. 271–272.

It would be of importance if it can be accomplished without loss, to interrupt this intercourse by offering to supply the Russians on better terms.[24]

Chief Factor Duncan Finlayson joined the *Beaver* before she left the Columbia, and her first trading cruise was carried out under his personal supervision. Dunn tells us that his purpose was " to push on along the numerous and intricate inlets (that interlace the whole country) as far as possible inland, in order to come as much within reach of the interior tribes as possible. Therefore we ran into their uttermost extremities, along almost the whole of the labyrinth; stopping sometimes to trade, and ascertain the capabilities of the country, and the character of the natives, who had never seen a large vessel (and especially a steamer) or a white man before."[25] A report from Finlayson himself to Dr. McLoughlin, which is preserved in the Archives of the Hudson's Bay Company, describes the *Beaver's* course in some detail:—

I shall now give you a brief detail of the steamer's cruizes and operations since we left the Columbia. At noon on the 25th June last we crossed the bar and reached Fort McLoughlin without any accident on the 29th of the same month. Our progress was much impeded by the steamer's being so heavily laden the paddles sometimes plunging into the waves which shook the vessel much—and in a very heavy sea I would consider a vessel under sail as the safest mode of conveyance. From Fort McLoughlin we proceeded to Fort Simpson through the interior canals say through Canada de Laredo [Laredo Channel], Nepean Sound, Grenville's Canal, inside Stephen's and Dundass Islands. The navigation in these, for steam, is very favorable—not a rock to be seen in mid channel; and the shores on both sides, with the exception of a few coves, where a good safe anchorage may be found are composed of bold steep rocks well covered with wood. Wishing to ascertain if the Russian Governor would at that season be found at Sitka I proceeded from Fort Simpson to Tongasse where I was informed a Russian vessel was stationed. From Tongass we returned again to Fort Simpson, and from the latter she was dispatched to Nass on a trading cruize for the purpose of securing all the Furs there Harris [supercargo] of the *Lagrange* [an opposition trading vessel] having made an appointment with the Nass Indians about that time. On her return we proceeded again through the interior canals, say Grenville's and another to the East of Princess Royal's Islands [Fraser Reach, Graham Reach and Tolmie Channel] to Milbank Sound—thence she was sent to Deans Canal and Bentincks Arms from

(24) *Private Papers of Sir James Douglas, First Series*, pp. 51–52. (Transcript in Provincial Archives.)

(25) Dunn, *op. cit.*, pp. 265–266.

whence the greatest part of the Furs sold at Milbank are collected and this will shut up that drain, and leave little to glean by vessels sailing along the coast. On her return from this cruize we set out for Nawitie visited the Quaquills [Kwakiutls?]—where the coals are situated the Numkeys tribe or those, called by Vancouver the Cheslakees, and entered Johnstone's Straits and went up them to the distance of 16 or 20 miles. Returned again to Milbank and Fort Simpson, where I left her and joined the *Llama* for Sitka. She [the *Beaver*] then proceeded to explore the eastern side of Queen Charlotte's Sound there being several villages there which we have not as yet visited, and now she will proceed as already mentioned to Nusqually, touching at Fort Langley and Whidbey's Island.[26]

Dunn states that upon her first arrival at Fort McLoughlin the *Beaver* "took on board about twenty-six cords of wood, for fuel, which was ready cut for us," and adds that "this generally lasted us, when running on, between three and four days."[27] In his report Finlayson gives further details of the practical side of steamboat operation:—

The result of these trials is that she can stow enough of wood to take her from one Fort to another, through the canals where the water is smooth, or from 2 to 230 miles. When we have to provide wood that the six axemen will cut in two days as much wood as serves her for one, that is for 12 or 14 hours—so that when not supplied with wood from the Forts, we have to stop 2 days to provide fuel for the consumption of one. In such cases our progress is slow and may be estimated one day with another at 90 miles in 3 days or 30 per day.

In the canals we do not find it safe to run at night owing to the quantity of drift timber which the tide carries along; and which if it came in contact with the Paddles, would break them to pieces, and perhaps cause some serious injury to the vessel and engine. On the whole she will give the most effectual blow to the opposition which they have ever met with on the Coast, and will also lessen in a great measure the traffic carried on amongst the natives themselves.[28]

Regarding the trading results of this first cruise, Finlayson had this to say:—

The Returns of the Steamer are from various causes smaller than they would under circumstances of a different nature, have been. Her late arrival on the coast; together with the duty of examining many of the

(26) Finlayson to McLoughlin, dated Fort McLoughlin, September 29, 1836. (H.B.C. Arch. B. 223/b/12.) In transcribing this report, periods have been substituted for the dashes commonly used in the old fur-trade correspondence, when the end of a sentence is obviously intended.

(27) Dunn, *op. cit.*, p. 266.

(28) Finlayson to McLoughlin, September 29, 1836.

interior Canals operated against her collecting many Furs this season so that it was the 18th July [*sic*, should be June] before she set out on her first trading voyage, and since that time she has made several cruizes the result of which considering the late season of the year are not discouraging —and in comparing the general returns of the N. W. Coast this season with those of the former I am happy to say there is a considerable increase in favor of this one.[29]

Finlayson had been instructed to investigate the report, brought by natives to Fort McLoughlin, that outcroppings of coal were to be found on Vancouver Island,[30] and when writing to Dr. McLoughlin he supplemented the brief reference to the matter already quoted with the statement that it was "situated on the N. E. end of Vancouver's Island about Lat: 50–30 N. and Long: 126–35 W. It was examined," he adds, "so far as our time and means would permit very minutely and Mr [Peter] Arthur, the first Engineer pronounces them to be of very good quality."[31] John Dunn once again supplies additional details:—

Mr. Finlayson with a part of the crew, went on shore, leaving me in the ship, to conduct the trade; and after some enquiries and a small distribution of rewards, found, from the natives, that the original account given at Fort M'Loughlin was true. The coal turned out to be of excellent quality, running in extensive fields, and even in clumpy mounds, and most easily worked all along that part of the country.

The natives were anxious that we should employ them to work the coal; to this we consented, and agreed to give them a certain sum for each large box. The natives being so numerous, and labour so cheap, for us to attempt to work the coal would have been madness. They were greatly surprised when they first saw the steam boat, saying she could do anything but speak; and the white man must have been assisted in the work by the Great Spirit.[32]

This was the coal deposit near which Fort Rupert was later constructed, and to which reference was made recently in this *Quarterly*.[33]

Finlayson's report covered the activities of the *Beaver* until September 29, 1836. After making the cruise to Nisqually which he mentions she went north to Fort Simpson, and there spent the

(29) *Ibid.*

(30) On this report *see* Dunn, *op. cit.*, pp. 240–244; H. H. Bancroft, *History of British Columbia*, San Francisco, 1887, pp. 186–187.

(31) Finlayson to McLoughlin, September 29, 1836.

(32) Dunn, *op. cit.*, p. 241.

(33) *See* John Haskell Kemble, "Coal from the Northwest Coast, 1848–1850," *British Columbia Historical Quarterly*, II. (1938), pp. 123–130.

winter. What may be regarded as her trial cruises were over; and in the spring of 1837 Captain Home relinquished command to Captain W. H. McNeill, under whose guidance she resumed the trading, freighting, and exploring for the Company, which were to be her trivial round and common task for two decades to come.

W. KAYE LAMB.

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APPENDIX.

1. Particulars taken from a copy of the Certificate of Registry of the steamer *Beaver*, registered at Lloyd's May 6, 1835. (From the copy in the Archives of the Hudson's Bay Company.)

Dimensions

Length of Keel, Rake of Stem, Rake of Stern Post	100′ 9″
Extreme Breadth	20′
Depth of Hold	11′

Power of Engines — 2 of 35 H.P. each.

Scantling of Timber

	No.	Length	Sided Inches	Moulded Inches	Sort of Wood
Timber and space, each			12 and	10½ in	Engine Room
Floors in the middle			9	10	English oak
1st Foothooks			8½	7½	,, ,,
2nd ,,			7	6½	,, ,,
3rd ,,			6½	6	,, ,,
Top Timbers			6	4½	,, ,,
Deck Middle Beams			8	7	African oak
Iron Hanging Knees					Iron
Paddle Beams			12	12	African oak
Main Keelson			12	12	,, ,,
Keel			11	14	Elm
Engine and Boiler Sleepers	4	48′ & 50′	10	16	African oak

Thickness of Plank

Outside		Inside	
Bottom	2½″	Ceiling	2½″
2 Wales	4″	2 Bilge Planks	4″
3	3″	8 Upper Deck Clamps	3″
Topsides	2½	Shelf Pieces	6″
Shear Strake	3″		
Plank Shears	3″		

Decks

Thickness	2½″
Waterways	3″

Bolts

Heel-knee and Dead Wood	1⅛″
Scarphs of the Keel	1⅛″
Keelson Bolts	1⅛″
Sleeper Bolts	1″
Bolts thro' the Bilge and Foot Waling	¾″
Butt Bolts	⅝″
Upper Deck Beam Bolts	⅞″
Hooks Forward at Throat	1″
Hooks Forward at Arms	⅞″

Masts, Yards etc.

Bowsprit, Foremast, Main Mast, Mizen Mast — Of sufficient size and length

Sails

Two suits new.
2 Pumps and 1 Force Pump.

Cables, Cordage etc.

Cables, Iron	240 fathoms
Hawser	7″
Towlines	4½″
Warp	3½″

Anchors

3 Bowers
1 Steam
1 Kedge

Boats

2

Standing and Running Rigging all found to be sufficient in size and good in quality — Yes. New.

SURVEYOR'S REMARKS.

Timbering.

The quality, squaring and workmanship. — All frames English oak of good quality, well squared and free from sap. Frames dowelled together at the heads. Good workmanship.

Engine Room.

Floors filled in solid to the floor heads or to what place. Arrangement of sleepers. — Filled in to the floor heads. 4 sleepers —2 on each side of main keelson.

Planking.

Outside and inside. Quality, edging and workmanship. — English oak plank down to the bilge from thence to the keel elm The bottom shifted 3 between and 5 feet shift. Plank well wrought and edged.

Fastenings.

Iron or copper. — Copper to the wales.
Butt bolts through and clenched, or otherwise. — Through and clenched inside.
If diagonally trussed or otherwise. — Respective plates diagonally placed.
If sheathed, coppered, doubled, felted. — Wood sheathed, fitted and coppered 1835.

General observations and opinion as required by the instructions. — The vessel was all framed in the square body, and the 1st tuttocks bolted to the floors. The shifting of the 1st and 2nd tuttocks was 2′ 11″ to 3′ 3″; 2nd and 3rd from 3′ to 3′ 6″. Dowelled together with square heads and heels. Cross checked fore and aft under the keelson. Well constructed and workmanship generally of the best quality. Shifted 3 between with not less than 5″ shift. In the opinion of George Bayley, the surveyor, the vessel was entitled to be classed 12 A.

2. Particulars taken from the Certificate of Machinery of the steamer *Beaver*, issued by Lloyd's December 1, 1839.

Engines

No.	2
Estimated power;	70 h.p.
Diameter of Paddle Wheels;	13′
Length of Paddles;	6½′
Breadth of Paddles;	19″
If upon 1st or 2nd motion:	1st motion
No. of revolutions per minute	average 27
Size and condition of holding down bolts.	1½″ in diameter. Good condition

Fuel

Where stowed:	In coal boxes.
If in contact with boiler:	Not in contact
For what quantity room provided:	20 tons.
If liable to get wetted:	Not liable.

Boilers

Whether iron or copper:	Iron
Working pressure:	2½ lbs. on sq. inch.
If it could be increased at pleasure:	No.
If and what means of changing the water without extinguishing the fires and blowing off:	Water changed by blowing off a certain portion every 2 hours without extinguishing the fires.
No. of feed pumps:	2
How attached:	To the air lump cross head
State of boilers:	Clean and in good order.
What clear space upon the top side of the boiler:	2′
Do. at the end:	2′
Do. round the chimney.	Steam chest and chimney above deck and clear from anything.

Pumps

No. of hand pumps:	2
If any attached to engines: their purpose and power:	2 plunger pumps for b'lg water
No. of force pumps, with a branch and hose of sufficient length to reach every part of the vessel:	2½″ bore. 1.

3. Particulars respecting the steamer *Beaver* furnished to the General Register Office of Merchant Seamen, Custom House, August 7, 1838. (From H.B.C. Arch. A 7/1/101.)

Number & date of Register	154 1835
Vessell's Name	Beaver
Rig	Schooner
When, where & by whom built	1835. Blackwall, Green, Wigrams & Green.
Of Wood or Iron	Wood
Dimensions Length	feet 101
Breadth	„ 20

Depth	„ 11
Draught Water at Load Line Forward	Feet 8.4 including 14 Ins drop.
Aft	Feet 8.6 Keel
Burthen in Tons, registered Tons Old	109
„ New	
Tonnage Engine Room	78
Final Tonnage	187 Builders Measurement
Engines No.	Two
Horse Power of each	35
Total Horse Power	70
Length of Stroke & Number p Minute at full speed	3 feet
High or Low Pressure	Low
Diameter of Cylinder in Inches	35½
Made by	Boulton Watt & Co.
Speed Greatest p Hour Average	9¾
Coals quantity carried in Boxes	20 Tons
consumed p Hour	7 Cwt
Master	David Home
Owner	Hudson's Bay Company
How employed	In Trade on N.W. Coast of America
Paddle Wheels diameter	13 feet
revolution p Minute full speed	30.

4. Mr. E. W. Green, of the firm of R. & H. Green & Silley Weir, Limited, Blackwall, successors to Messrs. Green, Wigrams & Green, who built the hull of the *Beaver*, states that the following entries are found in an old manuscript list of ships in his possession:—

			Draft fore and aft	
May 2, 1835.	*Beaver* (steamer)	Tonnage 187$^{78}/_{94}$	4'8"	5'4½"
July 8, 1835.	*Columbia*	„ 288$^{64}/_{94}$	5'6"	7'10"

The date is evidently the date of launch, and it is surmised that the draft was that of the vessels when they took the water. Most of the old records of the shipyard were unfortunately destroyed by fire about fifty years ago.—(E. W. Green to W. Kaye Lamb, January 5, 1938.)

5. Description of the hull and machinery of the *Beaver* given in the *History of the SS. "Beaver,"* by Charles W. McCain (Vancouver, B.C., 1894, pp. 16–19). In some instances the details given conflict with the entries in the official certificates printed above, but McCain gives some information, which, so far as is known, does not appear elsewhere in print. Unfortunately he does not state the source from which this information was obtained.

"The elm keel was of unusual size and strength, as was also the British oak stem and stern-post. Along the keel were placed the frames, or ribs, at about 2 feet centres. These were of the best oak and greenheart, carefully dressed and of large proportions. The spaces between the frames were filled in solid, to a level above the water line with curved timbers of the same material and thickness. The outside planking was of oak and African teak, especially thick at the wales, and was securely fastened to the frames with copper bolts and oak treenails. This was covered with a thick layer of tarred paper, over which was placed a planking of fir, securely held in position with spikes of a bronze composition. Then to preserve the woodwork from the ravages of the destructive teredo, and also from the attacks of barnacles, a sheathing of copper was tack-fastened all over the exterior of the hull, with the exception of a narrow strip just below the gunwale. The inside lining of

the frame consisted also of oak and teak planking, across which on either side ran diagonally heavy iron straps, which were fastened to the frames with rivetted copper bolts.

"The main keelson was a massive stick of greenheart, 12 inches square, extending the entire length of the keel, to which it was securely bolted with stout copper bolts, which passed entirely through both timbers. Parallel to this, on either side, were the sister keelsons, of the same material, only not quite so heavy; these were also bolted in a substantial manner on the floor planks, and through into the floor timbers. Across the keelsons were fastened large greenheart timbers, which formed the bed for the engines as well as the foundation for the furnaces. The deck was supported by a series of stout beams, mostly of greenheart, the remainder being African oak, or, as it is more commonly called, African teak. These were placed at frequent intervals across the hull, to which they were fastened, their supports being oak knees and massive angle irons. In addition to these were two oak beams, about 10 inches by 14, which crossed at the points where the two spars penetrated the deck.

"Copper was usually employed for all fastenings, and where this was the case we found, on working about the wreck, that the wood around the bolts was almost as sound as the day the bolts had been driven nearly sixty years previous. But where iron had been used the wood about the bolts was badly decayed, and even the bolts themselves, in some cases an inch in diameter, had almost entirely been eaten away by the rust."

"The Beaver's engines, when packed at the works for shipment to London, weighed 63½ tons. This included the boiler and also the gearing for the paddle-wheels, the cost being £4,500 sterling (over $22,000), or nearly ten times the weight and cost of engines of like power at the present day.

"These engines, of which there were two of the same design, were termed 35 nominal horse-power each, and were of the side-lever type, which, in the earliest experiments of steam marine navigation, was the style universally favored; but this had long since become obsolete.

"The cylinders stood vertical and had a diameter of 42 inches, with a 36-inch stroke. The piston-rod projected through the top of the cylinder to the centre of a sliding cross-head, at the ends of which linked rods ran down on either side of the cylinder to a pair of horizontal beams, or levers, which oscillated on a fixed gudgeon at the middle of their length. The opposite ends of these beams were joined by means of a crosstail, from which connecting rods led up to the crank shaft above. This shaft, six inches in diameter, was in three sections, and was thus supplied with four cranks, each of which was 18 inches in length. At each extremity of the outer portions of this shaft was a paddle-wheel 13 feet in diameter, made up of 11 radial arms 5 feet in width.

"The low-pressure boiler, which rested on brick furnaces, and from which steam was carried through large copper tubes to the steam chests, was situated about midship, but still some distance aft of the engines. This arrangement crowded the paddle-wheels far forward, like the fins of a seal, thus giving the little steamer a very unique appearance.

"As soon as the machinery was in position a trial trip was made, when, according to Lloyd's records, the Beaver attained a speed of 9¾ miles per hour, which must have been exceedingly gratifying to her builders as well as to her owners, for in those days this would be considered a very good rate of speed.

"During the time this steamer was under construction, the Hudson's Bay Company was also having a bark built which should accompany the Beaver across the seas to her destination. This bark was called the Columbia, and was of 310 tons burden, carried 6 pieces of artillery and 24 men.

"The Beaver's dimensions were: Length over all, 101⅛ feet; breadth, inside of paddle-boxes, 20 feet; outside, 33 feet; depth, 11½ feet; her register was 109⅛ tons burden; she was armed with 5 guns—nine pounders—and carried a crew of 26 men."

MY DAYS ABOARD THE "BEAVER."

I joined the *Beaver* as second engineer in the fall of 1877, and stayed with her until 1879. Captain J. D. Warren was in command all the time I was on her. He was part owner as well, along with Benjamin Madigan, the chief engineer, and Henry Saunders, a grocer in Victoria.

She had just been rebuilt—in fact I worked on her and helped to fix her up during this overhaul. The work was done by the Albion Iron Works, at Victoria, while she lay at the old rice mills wharf. She was given a new boiler—what is called a "bricked-in" boiler—but she still worked at very low pressure. They used to say that she could "travel on a vacuum," and not on boiler-pressure at all. Not much was done to the engines themselves; the important change made there was the installation of a new valve motion. The old Watt "D" valve she had at first was awfully hard on fuel and hard to run. The Albion Iron Works made the new set, which were poppet valves, like those used in beam engines. Her housework was changed considerably during the overhaul, and was cut down near the stern. Some of the cabins were removed, but she still had many good staterooms down below. I didn't like it there, however, and had one up on deck, just beside the paddle-wheel. I well remember the thud-thud-thud of the paddles as they went round beside me.

The Victoria *Colonist* published an amusing description of the *Beaver* when she was about to re-enter service. It appeared in the issue dated October 27, 1877, and reads as follows:—

"What have we here—skimming with the grace of a sea-bird over the surface of the harbor and making the water boil and surge in her wake in great, foam-laden swirls? A strange-looking steam-craft truly, with rapidly revolving wheels set well forward, and rakish funnel emitting a volume of intensely black smoke. Friend, that strange-looking craft is the *Beaver*—the pioneer steamer—the first steam-vessel of any class that disturbed the placid waters of the wide expanse of water known as the Pacific ocean. She was built of live oak just 42 years ago at a Thames shipyard, came around the Horn the same year, ascended Columbia River under steam in the spring of 1836 [*sic*]: brought the late Sir James Douglas to Vancouver Island

to locate and found the future metropolis of British Columbia, and has performed more hard work than any vessel now afloat and now converted into a tow-boat is as sound as a dollar and in better condition than ever for active service. She had just left the Albion Foundry with a new boiler and modern improvements to her machinery, has made the run from the wharf in Victoria to Esquimalt harbor, passed round the Royal Squadron lying at anchor there, and as we write is returning to her wharf at Victoria—having occupied only one hour and eight minutes in the trip. Captain Dug. Warren looks proud of the craft he commands, and Mr. Madigan, the obliging engineer, under whose supervision the improvements were perfected, informs us that the live-oak timbers and frame of the *Beaver* are as sound as the day on which they were placed in her hull."

This was all very well, but only three days later the *Colonist* had to publish another item telling that the *Beaver* was in trouble. We had the *Henry Buck* in tow. She was a coal carrier—a sailing ship—and we were taking her up to load at Nanaimo. When we got to Dodd Narrows we tried to go through without waiting for the tide, but the current was too strong. The *Beaver's* head swung round and the *Henry Buck* bumped into her. Her smoke-stack fell off, and she was pretty well disabled, as the outer bearing of her paddle-wheel cracked and dropped down. We had to wait until another steamer came and took the *Henry Buck* to Nanaimo, and then came back and towed us to Victoria. Repairs did not take very long, however, and we sailed for Burrard Inlet, as good as new, a few days later. From there we crossed to Nanaimo, where we picked up our old enemy the *Henry Buck*, which had been loading coal in the meantime, and took her down to the Straits, where we cast her off in a fair wind.

The *Beaver* was in the general tow-boat business at this time. She towed coal-ships to and from Nanaimo, and lumber carriers to and from Burrard Inlet most of the time. If things were slack she would go out to Albert Head and anchor there, and wait for sailing ships to come up from Cape Flattery. The crew went ashore if there was nothing in sight, and I have known her to lie there a whole week waiting. At other times she was very

busy. For instance you will find this item in the *Colonist,* early in 1879:—

"The American bark *Crusader,* laden with 43,000 feet of lumber from Hastings Mill, Burrard Inlet, and bound for Montevideo, was towed down yesterday by the steamer *Beaver.* The *Beaver* then took out the bark *Rover of the Seas,* laden with Wellington coal for Oakland, Cal., after which she left for Departure Bay, having in tow the bark *Fanny Skolfield,* chartered to load coal at South Wellington mine for San Francisco. The *Beaver* will return with the American bark *Thomas Fletcher* laden with South Wellington coal for the 'Bay City.'"

She was dropping into the background, however, as larger and faster boats appeared. When I served on her, the *Alexander* and the *Pilot* were the chief rivals in the towing trade, and both of them were much more powerful than she. In addition to coal and lumber ships the *Beaver* towed booms of logs occasionally, and later she carried cattle and did some general freighting. China Creek was being worked by Chinese in the late seventies, and the *Beaver* took about fifty of them to Alberni one time. She was a good sea-boat, and could weather a storm without difficulty; but I did not like travelling in her on the West Coast, especially at night.

As I have said, Captain Warren was in command all the time I served aboard. Mr. Jaggers—later Captain Jaggers—was mate, and the rest of the crew consisted of two engineers, two firemen, two coal-passers, a deck-hand, and a steward.

Though built so many years before, the *Beaver* was not hard on fuel. The new valve motion installed when she was overhauled made her much cheaper to run, and was much spoken of in this connection. She used slack for fuel as a rule, and never burned wood while I was on her. She always called at Nanaimo, as it was the only place where she could get coal. She burned about 10 tons a day, or rather less than a ton an hour. If she made six or seven knots we considered she was doing well, and five knots was good going with a tow. It took her from morning to dusk to travel from Victoria to Burrard Inlet. I remember once we came out of Active Pass and there was quite a gale blowing. We were towing a sailing ship, and had to let her go,

as she was catching up on us. She went on under sail, and beat the *Beaver* to English Bay.

She had a wonderfully well-built old hull, which seemed able to stand any amount of pounding. Once on the Burrard Inlet–Nanaimo trip she ran clump on the rocks at Nanaimo, near the lighthouse, though it was a fine night. She went hard aground, but when we examined her forward we found she wasn't leaking. All we had to do was wait until the tide rose and floated her off. She could take care of herself in a blow, and safely weathered a storm which drove four or five ships ashore in Victoria Harbour. Having kept clear herself, the *Beaver* helped to pull them off. She did not always succeed in her attempts at salvage, however. Early in 1879, when the steamer *Empire,* which was then on the San Francisco run, ran on the rocks near Active Pass, the *Beaver* made every effort to pull her off, but without success. A few days later the more powerful *Alexander* floated her without great difficulty.

I left the *Beaver* in 1879 under rather interesting circumstances. One day I met Gus Hawk, who was well known among the old timers, and he told me that he had taken over the *Lady of the Lake,* a little steamer then running on Dease Lake, in Cassiar. The year before she had nearly blown up, and people were scared of her. Hawk said he needed a reliable engineer, and offered me $150 a month and my expenses up and back in the fall if I would take the job. I accepted, and that summer I bought a one-third interest in the boat. The next summer I bought her outright; and for the next five years I ran her on Dease Lake—far from the Coast, and from my famous old ship, the *Beaver.*

JOHN FULLERTON.

VICTORIA, B.C.

THE JOURNAL OF JACINTO CAAMANO.

TRANSLATED BY

CAPTAIN HAROLD GRENFELL, R.N.

EDITED WITH AN INTRODUCTION AND NOTES

BY

HENRY R. WAGNER AND W. A. NEWCOMBE.

INTRODUCTION.

In the first part of this journal Caamaño recites the events which led up to his appointment to the command of the *Aranzazu,* in January, 1792. He was anxious to take part in the explorations in the north and hoped to command the *Sutil* and *Mexicana* which were to explore the Strait of Juan de Fuca. Francisco Antonio Mourelle, however, had been slated for this position. December 1, 1791, when the *Mexicana* was ready to sail Mourelle was sick and it appears that Caamaño was appointed to take his place. Owing to an injury he received by having his horse fall upon him he became incapacitated, and finally Captain Alejandro Malaspina who was in Acapulco at the time loaned the viceroy two of his lieutenants, Dionisio Alcala Galiano and Cayetano Valdes, to make the exploration. Caamaño was then transferred to the *Aranzazu,* it having been decided to make an independent examination of that part of the coast in the neighbourhood of 53° of latitude. This decision seems to have been brought about by an interesting occurrence.

James Colnett, in command of the *Argonaut,* had appeared in Nootka in 1789 with the intention of founding a colony or at least a trading-post at that place or at some other farther north. During the course of an altercation between him and Esteban Jose Martinez, the Spanish commander who had recently occupied this port, Martinez seized him and his ship and sent him to San Blas in his own ship. Jose Tobar y Tamariz, one of Martinez' pilots, was placed in charge of the vessel. While Colnett's men were prisoners at Nootka one of his pilots showed Gonzalo Lopez de Haro a map of which Lopez de Haro gave some description in a letter to the viceroy of August 18, 1789. Nothing is said in the letter about anything north of the Strait of Juan de Fuca and

its north-east arm, but we know that Colnett had been trading for furs as far south as Queen Charlotte Sound in 1787 and 1788, and he no doubt suspected that a passage existed around Vancouver Island.

Colnett was finally released at San Blas, and with the *Argonaut*, and his long-boat rigged as a schooner, he set sail July 2, 1790. Some damage to the ships from stormy weather obliged him to run into Bodega Bay and make some temporary repairs. After leaving Bodega the ships parted company and Colnett, unable to reach Nootka, put in at Clayoquot Sound, to the southeast of that port. January 4, 1791, he made Nootka with his vessel, finding Francisco de Eliza in command there. Both vessels had to be repaired and Eliza gave him all the aid he could. Colnett soon departed for the Sandwich Islands, and in gratitude (so Eliza said) for the favours he had received allowed Eliza to have his map copied. What is presumably this copy is now in the Museo Naval, Madrid, and Judge F. W. Howay obtained a photostat of it for me some years ago through the British Consul in Madrid. This map shows the coast from 49° to 58° and contains two insets, the Puerto de San Jayme and Puerto Brooks. From the change of English to Spanish in most of the names it is evidently not an exact copy of Colnett's map but only a partial one, and I am inclined to think with some additions later by Caamaño. The Arrowsmith map of 1790, plate XXXVI., in my *Cartography of the Northwest Coast of America down to the year 1800*, probably reproduces the main features of Colnett's map or, at least, of Colnett's and Duncan's discoveries of 1787. Nepean Sound, the theatre of most of Caamaño's later work, is plainly shown on it.

On October 10, 1791, Eliza sent the map to the viceroy, seeming somewhat doubtful of its accuracy. The letter reached San Blas December 21, with the result apparently that a sudden determination was taken to send a vessel to examine that part of the coast in the neighbourhood of 53°. The Strait of Bartolome de Fonte might be there, as Colnett evidently thought it was, judging from subsequent entries in Caamaño's journal. Colnett, himself, in his Introduction to *A late Voyage to the South Atlantic Ocean*, published in 1798, merely remarked that he had discovered many considerable inlets between 50° and

53° N., which were supposed to communicate with Hudson Bay. Until such time as Colnett's recently discovered journal of his fur-trading ventures of 1787 and 1788 shall be published we can merely surmise that he considered Douglas Channel to be the long-sought-for strait, or just possibly Clarence Strait, although to be sure that trends in the wrong direction to connect with Hudson Bay.

Another expedition was ready to depart when Eliza's letter reached Mexico, that of the *Mexicana* and *Sutil,* destined to explore the Strait of Juan de Fuca. Juan Francisco de la Bodega y Quadra, the commandant of the San Blas department, had been ordered to proceed to Nootka to serve as Spanish commissioner in carrying out the terms of the Nootka Convention with the British representative scheduled to arrive at Nootka in the summer of 1792. A Spanish frigate, the *Santa Gertrudis,* under the command of Captain Alonso de Torres, had been sent all the way from Spain, no doubt to add some show of force at the time of the negotiations at Nootka. She reached Acapulco at the end of October, 1791, and January 15, 1792, arrived at San Blas. March 5 she sailed for Nootka with Bodega aboard, together with the *Princesa* under Salvador Fidalgo and the *Activa.*

In the meantime, the *Aranzazu* had been fitted out to examine the coast north of Nootka. She was a slow sailer and drew 14½ feet of water, too much for exploring inlets. All the other vessels had already been assigned to duty and Caamaño, who was appointed to command this expedition, had to be content with her. The first notice that I have seen of the *Aranzazu* was her trip from San Blas to Loreto under Tovar in 1784. In 1788 she carried supplies to California and in 1789 made a voyage to Nootka under Canizares. In the following year she carried supplies to Monterey and in 1791 to Nootka. After the exploration under Caamaño she still continued in service, carrying the supplies and materials to Bodega Bay in 1793 for the construction of an establishment there, and in 1794 she made another trip to Monterey and Nootka. I have seen no reference to her after 1796, but she probably continued in the service for some time. The proper name of the vessel was *Nuestra Señora de Aranzazu,* probably in honour of a famous image of the

Virgin to which a chapel had been dedicated in the Convent of San Francisco in 1682. Aranzazu was a famous Franciscan convent in Guipuzcoa, Spain.

No muster-roll of the vessel has been found and Caamaño in his journal only mentions two or three of his officers. We know, however, that Juan Pantoja y Arriaga was his chief pilot, and that Juan Martinez y Zayas, who had gone north on the *Activa*, was transferred in Nootka to the *Aranzazu* as second pilot. José Maria Maldonado, a surgeon and an anatomist, who had also gone to Nootka in the *Activa*, was assigned to Caamaño. He seems to have acted as botanist, and Luis Paba may have acted as surgeon. In all probability Agustin de la Peña was the chaplain and there seems to have been a draughtsman on board named Atanasio (or José) Echeverria.

The instructions issued to Caamaño provided that in the first place he should make an examination of Bucareli Bay to ascertain whether some of the inlets seen in 1779 simply ended in dead ends or extended to the sea. After that he was to examine the mainland coast in the neighbourhood of 53°. This re-examination of Bucareli Bay had been for several years one of the objects which the viceroy had in mind. We can only speculate as to why this seemed of such importance, considering the almost meticulous survey that had been made of this sound by the Arteaga expedition of 1779. After the return of that expedition it had been suggested that this bay was peculiarly adapted for a Spanish settlement in the far north. I suspect that the obvious efforts of the English fur-traders to form a settlement somewhere along the coast, and the further fact that at the end of 1791 rumours reached Mexico that the Russians were enlarging their establishments, had much to do with the revisit by Caamaño. As will be seen in the course of the narrative he found that one of the inlets extended to the sea; a discovery of no value or importance.

It is hardly necessary to say that Caamaño discovered little or nothing, so far as we know at present. The fur-traders had been frequenting the ports on the north side of the Queen Charlotte Group and inlets on the mainland opposite for five or six years. Under his instructions Juan Zayas apparently followed Douglas Channel up to or near its end, probably the

first European to do so. He adopted some of Colnett's place-names and gave new ones to other places which in some cases had already been named two or three times. His main interest seems to have been in the natives, and his descriptions of them and their customs are long and sometimes tiresome, but always instructive as the earliest known extended description of those on the mainland. Vancouver in his explorations of the following year made use of Caamaño's map and possibly of his journal as he rather carefully refrained from changing the names which Caamaño had given to places not previously named. Although Vancouver was in Nepean Sound neither he nor Caamaño discovered the famous Estrecho de Fonte, which according to Colnett was in this vicinity. This is not at all strange considering that it did not exist.

Caamaño first appeared on the coast in command of the *Princesa,* which left San Blas April 13, 1790. At this time he was a *teniente de fragata,* equivalent to a second lieutenant. He had obviously come out from Spain the year previous with Bodega in company with several other naval officials whom the government sent out to renew the exploration on the coast. He remained in Nootka until the following May when he returned to San Blas with his ship. He brought back a diary which at present is in the Archivo General in Mexico, *Seccion Historia,* Volume 69. Attached to it are six small maps (numbered 773–78 in my *Cartography*). Two of these maps seem to have been copied from Colnett's map, the others deal with Nootka or near-by places. His diary for 1792, a translation of which is printed here, is contained in the same archives and the same section but in Volume 71. A substantial extract from this journal was published by Martin Fernandez de Navarrete in *Tomo* XV. of the *Documentos Ineditos para la historia de España,* Madrid, 1849.

Attached to the document in the archives in Mexico are two maps (numbers 801 and 804 in my *Cartography*). These embrace the large general map on which the route of the vessel is marked down and a plan of Bucareli Bay. Five other plans of various ports are now to be found in the Library of Congress. They constitute numbers 802, 803, 805, 806, and 807 in the List of Maps in my *Cartography.* Two plans very much reduced

and the general map are reproduced in this translation. The presence of these maps in the Library of Congress is rather singular. They were originally bound with a large number of others in a volume which, I understand, was transferred from the War Department to the Library of Congress some years ago. The volume must at some time have been in the archives in Mexico and it seems to have been there even later than the Mexican war, so it does not appear to have been looted during the American occupation of the city.

Caamaño continued in the service for some time. In 1793 he made a voyage to the Philippines. In 1797 he was for a time in command of the department of San Blas, having previously made a trip to California in the same year. In 1798 and in 1800, as commander of the *Concepcion,* he carried the supplies to California. In 1803 he was absent from the department on leave. He was at that time a *teniente de navio,* that is to say, a first lieutenant, and was receiving pay at the rate of 160 pesos a month. I have no later record of him, but an examination of the documents relating to the San Blas establishment of later date might disclose more information. I have never seen an account of his services nor a petition for promotion, but such may exist somewhere in the great mass of documents relating to the San Blas establishment. From the fact that he was a *teniente de fragata* when he came to California, a rank not often reached before a man was 35 or 40 years of age, he was probably born about 1750, and as he was a man of considerable education we may be sure that he had had a good technical training in one of the government academies at which men were trained to become officers in the navy.

All of us who are connected in any way with the publication of this translation are indebted to Captain Harold Grenfell, a retired officer of the Royal Navy, who very kindly consented to do the work without remuneration but as a contribution to the history of the northwest coast.

HENRY R. WAGNER.

Extract from

THE JOURNAL OF DON JACINTO CAAMANO

lieutenant in the Royal Spanish Navy, commanding U.C.M. Frigate *Nuesora Señora de Aranzazu*, giving an account of the courses made in this vessel, and of the discoveries and surveys effected by him on the coasts of North America, since sailing from the Port of San Blas on March 20, 1792.*

Considering it desirable to obtain more detailed information concerning the Northwestern coast of North America, His Excellency the Cande de Revilla Gigedo, Viceroy of New Spain, on November 20, 1791, appointed me to carry out a survey of the Straits of Juan de Fuca under the orders and direction of Commander [*capitan de fragata*] Don Dionisio Galiano.

I was informed of this appointment on December 7 by Captain [*capitan de navio*] Don Francisco de la Bodega y Quadra, the night of his arrival at Tepic from Mexico City (whither he had been summoned), at the same time I received his instructions to take at once the two schooners, *Sutil* and *Mexicana*, under my command so far as Acapulco, from whence they were to proceed in execution of the above named commission.

Delighted by this prospect of fulfilment of my own ardent wishes, the following day I put together my most necessary belongings and set out in all haste at three in the afternoon on December 9, to ride the seventy miles from Tepic to San Blas, so as to reach the latter by daybreak of the 10th, the date on which I was due to sail.

In spite of the rain that had continuously fallen since the morning, and of the hilly nature of the country, my speed was such that I had already covered seventeen miles in the first one and one half hours, when misfortune overtook me. My horse stumbled descending a slope, and came down so suddenly that I fell with my left leg under him, and struck the ground heavily with my left shoulder. The disabled state in which I was lying

* "Extracto del Diario de las navegaciones, exploraciones, y descubrimientos hechos en La America Septentrional por Don Jacinto Caamaño, Teniente de Navio de La Real Armada, y Comandante de la Fragate de S. M. Nombrada *Nuestra Señora de Aranzazu* desde el Puerto de San Blas, de a donde salió en 20 de Marzo, de 1792."

led me to suppose that I had suffered a serious injury, though this turned out to be no more than a few bruises and a slight dislocation of the shoulder.

I decided, then, to return to Tepic, whence I made a report of this unlucky accident both to the Viceroy and to the Commandant of San Blas Naval Station.

The latter, unwilling to delay the sailing of the schooners until my recovery, now ordered them to sea under command of Lieutenant Don Francisco Maurelle, who had earlier been appointed for this service. On hearing this news, which greatly upset me, I wrote to the Viceroy by the following post, begging to be allowed to proceed overland to Acapulco, without waiting for my complete recovery, so that I might still be able to execute the commission with which he had been pleased to honour me.

However, on the 28th of this same month, and by the identical courier who had brought the report to him of the schooners having sailed and of my accident, His Excellency had already written, informing me through my commanding officer that since these vessels would be detained in Acapulco up to the end of February or early March of the new year, I was to repair thither in order to proceed with them, should my health by that time be sufficiently restored.

Fortune, it seemed, had now returned to favour my wishes. Therefore, although hardly convalescent, but trusting that determination would carry me through, on January 1, 1792, I set out for Mexico City, 700 miles distant, and covered this distance in eighteen days. I wanted to lay my case before the Viceroy, as I had now been offered the command of the frigate *Aranzazu* for the purpose of carrying out the survey that I have since made in her, feeling still strongly attracted by the prospect of taking part in that of the Juan de Fuca Strait, even though in a subordinate capacity.

On January 19, therefore, I waited on His Excellency, who received me with all the customary kindness of his gracious character.

In the most courteous fashion he explained the reasons that had led him to stand by his earlier decisions, adding however, that since the San Blas naval authorities wished Maurelle and

myself to take part in that voyage, he left it to our option to do so or not.

Surprised by such great consideration, being also anxious to choose to the best advantage, I asked for a little time in which to make up my mind. This granted, I began further to turn the matter over, and then realising that the difficulty of finding accommodation for three officers in each of the schooners as represented by their captains, was a real one; in view, too, of the fact that two officers had already been lent to them from the corvettes under command of Don Alexandro Malaspina, and that in my present lame condition I could be but of small help to them, also that the survey of Puerto de Bucarely and of the coast between it and Nootka was of equal importance (since not so much was yet known about it as of Fuca Strait); it was not long before I came to a decision. On the 22nd therefore, I again sought an audience with the Viceroy, at which I explained to him that should he think proper to appoint me to the command of the *Aranzazu*, I would return to San Blas to take it over, and trusted to give proof in her of my zeal for the service. As the Viceroy entirely approved of this determination, I set out again from Mexico at 11 on the forenoon of January 25, and making the most of every opportunity, reached Tepic on February 6. Indeed, during the twenty-six days elapsed since leaving the latter place, I had spent but six in the capital, while covering 1350 miles in the saddle, over not the best of roads.

Although the series of mishaps just related had been enough to dampen anyone's ardour, my original decision to let nothing stand in the way of sailing on this expedition during the current year, remained unshaken. From February 8, therefore, the date when the San Blas naval commandant officially notified me of my appointment to command the *Aranzazu* stating that she must be ready to sail in his company by the 20th, I continued to push forward the work with as much energy as if nothing had befallen me. My greatest worry was the difficulty experienced of fitting out my own vessel, in this country of poor resources, after having done the same for the two frigates, *Xertrudis* and *Princesa*, and the brig *Activo*. My efforts, however, served to provide all that was indispensable, and to be ready for sea by the given date. In spite of this, the *Aranzazu* remained inactive

until March 20, because the commander of the expedition (who had sailed with the *Xertrudis* and *Activo* on the 1st) had ordered me to wait for the reply to an urgent dispatch sent by him to the Viceroy on that day.

This unexpected delay was the cause of fresh losses; that of time being the most sensible, since I had foreseen that there was none to spare.

His Excellency's answer at last arrived on March 18 at about 10 o'clock at night.

I would at once have asked permission to weigh, were it not that the ship's company had to be paid. But as, in order to check desertion, this is done only on the actual day of sailing, it was not until 3 in the morning of the 20th that we weighed to proceed in execution of my commission, as will be seen by the attached summary of the *Aranzazu's* log-book.

In this letter, I have included only matters of moment, giving but small space to the ordinary events of a passage so well known as that from San Blas to Nootka and thence to Bucarely. In doing so, I feel confident that the kindness of those to whose notice this account may come, will excuse the various errors sure to be found in it and in the subsequent ones, but at the same time will look favourably on any parts that may seem deserving of merit. To make it easier for them to do so, I must here state that probably some of my longitudes, based only upon dead-reckoning, may be found in fault; as, already, has been the case with the general chart (embracing from Acapulco to Unalaska) lately made by Don Juan Francisco de la Bodega y Quadra, the officer commanding the San Blas naval district, although this chart was compiled and corrected according to the most reliable information derived from recent surveys and accounts of voyages, as well as from the various astronomical observations for longitude, etc., made by Don Alexandro Malaspina, and others. But if errors, due either to the instruments used or to the observer, are to be found in positions charted by Cook, La Pérouse, Malaspina, or Vancouver, each employing the best perfected means of his period, it should be excusable to discover some when the compass and log alone have been available.

On this point, therefore, I have no fears of censure from well informed readers.

Brief summary of Events during the Cruise; together with my Notes concerning the Life and Customs of the Indians.

Departure from San Blas, and arrival at Nootka.

At 3 in the morning of March 20 [1792] we weighed and made sail with the land breeze from San Blas. On May 14, a couple of hours before sunrise, we anchored in Nootka Sound.

Nothing worthy of note happened on this fifty-five days passage, in the course of which we experienced fine weather, and the prevailing winds of these latitudes.

In this harbour, we found laying at anchor the following men of war belonging to His Catholic Majesty: the *Xertrudis*, frigate; the *Activo*, brig; and the two schooners, *Sutil* and *Mexicana*. These vessels had rendezvoused here preparatory to sailing on their various commissions.

Captain Don J. F. de la Bodega y Quadra, commanding H.C.M.S. the *Xertrudis*, was awaiting the arrival of the British naval officers despatched as commissioners, in order to hand over to them territory according to the convention concluded between the two governments.

On May 16 he ordered me to prepare for sea with all despatch, so as to be ready to sail for Puerto de Bucarely for the purpose of exploring its various arms, and surveying the coast lying between it and Nootka. I was to use every effort to discover and chart the principal channels, gulfs, and harbours, so far as these were yet unknown.

I was also instructed to determine the actual position and existence of the Straits of " de Fonte," considered by recent opinion as doubtful, or even imaginary; and was informed that all these points were in accordance with His Majesty's wishes.

Having refitted the *Aranzazu* so well as the poor resources of this station allowed, for, although my appointment was to undertake this surveying expedition, we had left San Blas carrying stores and provisions for the vessels lying in Nootka and despatches for the New Californian " Presidios," we weighed and made sail from Nootka at 6 a.m. on June 13.

The matter of greatest anxiety to me was the advanced season of the year, that now left us hardly more than a couple of months for the execution of a commission embracing so many

objects of interest and of danger. My cares, too, were made heavier by the poor sailing qualities of the ship under my command, and the fact that she drew so much as fourteen and one half feet of water. At the same time, our difficulties were increased through the scanty, confused, and nonconsonant accounts of this stretch of coast given by private adventurers (for no government expedition as yet had visited it), and by the continued fogs that are so often experienced off it.

All these circumstances, however, together with others that I do not particularize, exercised no effect on my resolution to carry out the orders of my Sovereign, even to the last extremity, in conformity with his wishes as these had been explained to me.

The only interesting event during the month of our stay in Nootka, was the arrival, on May 26, of the French frigate *La Flavie* from Valparaiso. She had been despatched from L'Orient, with instructions to search for tidings of M. de la Pérouse, and was now come to these shores, intending to call at the Russian settlements, and thence to visit Chinese waters.

On June 1, the two schooners *Sutil* and *Mexicana,* respectively commanded by Don Dionisio Galiano, and Don Cayetano Valdes, each *capitan de fragata,* left for the Straits of Fuca. Bad weather drove them back the same evening; but they again sailed on the 5th.

I was unable, during this stay, to gather any fresh information in regard to the Nootka Sound Indians, to supplement the observations noted in the Journal sent by me to His Excellency the Viceroy of New Spain, in 1791; wherein I gave details of their life and customs. Being already well known, there is no need for me to repeat them here.

Departure from Nootka Sound, and arrival in Bucarely Harbour; together with some Notice of the Natives at the latter Place.

After a passage of twelve days, we reached Bucarely on June 24. Owing to constant fogs and thick weather, it had been possible to get sights on but two occasions. In spite of this, our first land fall was the Farallones, off the entrance to the harbour, wherein we anchored at midnight.

The winds experienced on this passage were mostly southerly, south easterly, and south westerly, blowing fresh, with heavy seas.

The approach to Puerto de Bucarely is seven miles wide, and very deep water, with soundings of six to eight fathoms at a distance of one or two cables[1] from its steep and rocky shores. The bottom is all of rock or large shingle. It is free of shoals or hidden dangers, except off the western headland, named Punta de San Bartolomé, where rocks extend for not quite a mile to the southward of the point. Viewed from seaward, at distances between twelve and eighteen miles, this point gives a false appearance of being three small islands, of which the middle one is the largest and looks like table-land.

The eastern headland, Punta de San Felix, is a flattish bluff, off which the only danger that I could observe was a single rock.

Within the entrance, one sees numerous large and small islands, covered with pine trees of several kinds; also, various arms and inlets.

On the eastern shore, the inlet known as Puerto de Santa Cruz is at once noticeable. This roomy and secure harbour is easy of entrance, by borrowing on either shore, so as to avoid a sunken rock that lies in mid-channel. Continuing to the northward, there are, successively, the following arms: Dolores, Refugio, and Estrella.

These are all very good anchorages, but useful only when Puerto de Santa Cruz is already occupied, or unable to be made. All the land in this neighbourhood, up to Punta Delgada, is less hilly, but more fertile, and grows a larger amount of plants fit for human use than that to the westward of this point, where the high steep mountains, broken by the various inlets as shown on the plan, offer neither space nor facilities on the narrow strips of ground between them and the water.

The two harbours on this western side, named Asuncion and San Antonio, I consider preferable to the foregoing; and especially San Antonio wherein we anchored, in twenty-three fathoms, at 8 a.m. of the 25th. This port, owing to the surrounding hills, affords complete shelter from all winds, except

(1) A cable is 100 fathoms, or 600 feet, approximately.—H. R. W.

those from between S.E. and East, to a vessel anchored either in the entrance or the middle.

There is excellent holding ground throughout, but the best berth is in the S.E. portion of the harbour, in twenty-eight, twenty-four, or twenty fathoms water, on a bottom of sand and gravel.

Rain continued throughout the 26th and 27th, but was somewhat less on the 28th. On this day the pinnace and cutter, commanded by two master's mates, and manned by twenty-nine seamen and marines, well armed and provisioned for twenty days, were sent away in order to survey the channels that had not been previously examined by our expedition in the year 1779, but with directions not to spend more than fifteen days in this work unless something presented itself to justify a more thorough examination.[2]

Being desirous of acquiring information in regard to the customs and manner of living of the natives, I pursued various enquiries concerning them during the period of our boats' absence. The result, however, was not very convincing; for, besides the fact of the local dialect being totally different from that of the Nootka Indians, with which I had some acquaintance through having spent a whole year on that tedious station, I actually saw but a few natives, who came alongside the ship to barter sea otter skins, mats made of the inner bark of pine trees,[3] cloaks woven from the same material, and other trifles. These Indians seemed anxious chiefly to obtain cloth of serge or baize, or other material that might serve for protective covering.

(2) This bay, which is in reality more like a sound, had been thoroughly examined in 1779 by the expedition of Ignacio Arteaga. The vessels lay in the Puerto de Santa Cruz while a reconaissance was made by Francisco Antonio Mourelle in the long-boat. It had been discovered by Juan Francisco Bodega y Quadra in 1775 on his return from the north, and he had named it in honour of the then viceroy, Bucareli y Ursua. The various place-names which Caamaño mentions in his journal, with the exception of the two points at the entrance and that of the sound, which had been named by Bodega, had been given by the Artega expedition. Caamaño did not apparently visit the northern part of the sound.—H. R. W.

(3) In this and the many other references later in the journal, the inner bark of the cedar-tree is meant—that of yellow cedar for clothing, and red cedar for matting and basketry, though yellow cedar was used sparingly for the latter class of work also.—W. A. N.

They would however, also accept small shells, provided these were green. They never asked for either iron or copper, articles that they seemed to hold in small account, and with which they appeared to be well supplied.[4]

The men were all lusty and well shaped, with heads not disproportioned to their bodies. They are of light colour, large-framed, with cheerful faces and good features. Their hair was lank and about twelve inches in length. Everyone carries a sheath knife slung around the neck. This is a well sharpened dagger,[5] consisting of a blade some twelve inches long and four in width. The pommel encloses another smaller knife about six inches long and four broad with a rounded point and rather blunt edges, which is used to give the first blows, and for wounding the face. Few of them, indeed, are without ugly scars of wounds made by these or other weapons, on different parts of the body. The hilt, also of iron, is leather covered, and is fitted with a thong some seventeen inches long, for securing it to the hand. These knives were so well fashioned and finished, that at first I felt sure they were not of native manufacture, but later I found that the Indians make them themselves quite easily from the iron that they obtain by barter, heating it in the fire and forging it by beating it with stones in the water.

The women are of the same colour as the men, equally large framed, and are healthy looking creatures, with pleasing faces and well proportioned features. The mouth, alone, disfigures them, since the lower lip is pierced at birth with a wire that is left in place, but from time to time changed for a larger one as the child grows; until, finally, an oval piece of wood, concave on

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(4) From this statement it would appear likely that the iron and copper had been obtained from fur-traders. While undoubtedly some of these had entered the bay it was generally stated that sea-otter skins were very scarce there and consequently it is unlikely that the place was much frequented.—H. R. W.

It is not surprising that the Indians in Bucareli Bay were well stocked with iron and copper. Though they may not have had sea-otter skins to trade, they undoubtedly had other commodities that were sought after by the Haida of Dixon Entrance, to whom they were of easy access.—W. A. N.

(5) A good illustration of a dagger used in this area will be found in George Dixon, *Voyage . . . to the North-West Coast of America*, London, 1789, plate facing p. 188.—W. A. N.

each side is inserted.[6] This has a groove cut all round the circumference, into which fit the edges of the hole in the flesh. Through their habit of enlarging this wooden toggle, the distention of the hole in the case of some of the older women becomes so marked that the lower lip almost touches the nose when turned up, while it entirely covers the chin when turned down; a deformity that gives these women a disgusting appearance. The girls, until married, wear very small earrings, and also hang little half-moons of copper or mother-of-pearl from the gristle of the nose, which generally is bored through for this purpose. They set great store by mother-of-pearl[7] for this reason, and for placing square bits of it in their ears.

I was unable to find out about their marriage customs; whether they live with one, or with several wives, for, though I noticed some canoes alongside the ship in which the sexes were about equally divided, in others the men greatly outnumbered the women, and vice versa.

As this [Bucarely] harbour contains not one Indian village, probably due to the fact that here there is no fishing, it was not possible for me to obtain more information.

I could never distinguish any chief among these natives, although such are usual among them. It was apparent that they are a bold race and accustomed to fighting. Not only is this shown by their offensive and defensive weapons, and the scars of old wounds, as already related, but also by the following incident: An Indian who had come on board, was stopped by the sentry, in accordance with my orders, from going below on to the main deck; whereupon he laid hold of the musket of the marine; who immediately brought it to the "Charge" and, doubtless, would have wounded the man had I not interfered to stop him. Nevertheless, the Indian, without showing the least

(6) This is the famous *labret*, which word will be used hereafter in the translation.—H. R. W.

The *labret* is noted in many journals of the period when describing Indian customs north of Queen Charlotte Sound. To the south of this locality we have no records in historic times, though labrets have been found in middens as far south as the Straits of Juan de Fuca.—W. A. N.

(7) In all probability haliotis (abalone) shell secured in trade, the species native to the locality not being suitable.—W. A. N.

sign of fear or of haste, just turned round and made his way quietly back into his canoe.

They use, in their wars, spears of 14 to 16 feet in length,[8] with very broad, sharp, iron heads; bows, much larger and better made than those around Nootka, arrows headed with bone or iron barbed points, wooden swords, edged with flints, and clubs, both of ordinary size.[9]

As defensive armour, they wear breast and back pieces, covering from the shoulder to below the groin. These are made of very smooth, cylindrical pieces of wood, about two-thirds of an inch in diameter, strung on hempen thread like spun yarn, and forming a cloth or covering that easily adapts itself to the body and is proof against all native weapons, or even a musket shot at moderate range. They wear similar protection on the thigh; and, over all, a long ample shirt of buff[10] or thick deer hide. I was also told, though I did not actually see one, that they use a kind of wooden helmet, or morion.

The women are better than the men at bargaining; should they oppose or disapprove of a deal made by the men, it falls through.[11] They are active, vigorous, and show great vivacity. By themselves they handle their paddles, or manage any canoe, extremely well; although both the one and the other are heavier and not so well built as those of Nootka. They go modestly dressed; as, over the tunic made of fine deer skin or of some

(8) Original Spanish states five or six *varas*. A *vara* is about 33 inches.—H. R. W.

(9) These spears were more likely used in hunting sea-otter, as the measurements agree with those to be found in many museums. They are thrown from the canoes, so are not suitable for fighting. I have no information regarding a *sword* edged with flints, but mounted stone weapons are known from this area. Defensive armour of various types was used by most of the Coast Indians. Good illustrations of that described here will be found in Lisiansky, *Voyage Round the World*, London, 1814, plate I., and *Pacific Historical Review*, V. (1936), p. 266, plate III.—W. A. N.

(10) Spanish *vura*. Later, Captain Grenfell translates this word as elk.—H. R. W.

No elk inhabit this vicinity. Specimens preserved are identified as moose hide, secured in trade with the Coast mainland Indians, who in turn secured them from the Interior tribes. Later elk skins, obtained very largely on the Columbia, became a regular article of trade.—W.A.N.

(11) Similar references to the women being the better traders can be found for other tribes of the Northwest Coast.—W. A. N.

goods they have acquired that reaches from neck to ankle, they wear a cape made from the skin of sea-otter, bear, or other animal, that completes their covering.

One of their chief ornaments consists of three or four rings, worn round the ankle and wrist, made of copper or iron. These are so extremely heavy as to give the idea of being fetters;[12] especially those that some of the women and most of the men wear round the neck. These are formed on a twisted, hawser-laid, pattern; and are so large as to reach from one shoulder to the other, as well as partly over the breast. They commonly paint themselves with some black or red pigment, stick eagle's feathers in their hair, and all stink foully.

The dress of the men is no more than a cloak made from the skins of the animals described above, or from the inner bark of the pine tree. One in particular that I bought, the only example of its kind that I saw, was made of deer skin dressed a white colour.[13] It was of the same fashion as the tunics already mentioned. The front was trimmed with five rows or bands of the same material, one above the other, about two and three-quarter inches wide, from each of which depends a four-inch fringe. Both this, and the bands, were ornamented with feathers of various colours, bits of whalebone, and of the inner pine bark, dyed green, red, or purple. On the sleeves are several narrow rows of similar kind. Altogether, this produced quite a good effect at a little distance; and I was told by the Indians that these were their best, or holiday, clothes.

I also obtained a cloak, or mantle, made from the inner wool of the wild goat.[14] This wool is very fine in the thread; well spun, and well woven. Narrow strips of sea-otter fur are worked into this; and are so neatly sewn that the outer side of the garment has the appearance of a whole skin, while nothing in noticeable on the inner side. A flounce is left all around the smaller circumference, deepened at the back, except where the collar is.

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(12) Twisted iron neck-rings were made by ships' armourers in great numbers about this period, as they were in great demand by the Haidas about Dixon Entrance.—W. A. N.

(13) The tunic described apparently is one secured in trade from an interior tribe and made of caribou skin.—W. A. N.

(14) Possibly a type of Chilcat blanket with the addition of sea-otter fur.—W. A. N.

This is well twisted, and rolls over for about nine inches, made also of strips of lutria [sea-otter] fur. The back part is decorated with various figures or patterns in a purple colour. Altogether, this cloak is quite the best piece that I have seen made by them.

The interior bark of the pine tree is also used to weave large bags, or baskets, of so close a texture that they are employed as containers for drinking water carried in their canoes.[15]

I was unable to get details of the construction of their houses, beyond that they use pine bark cut into five or six foot lengths, for roofing.[16] These are placed, in the manner of tiles, over long rafters, supported on forked posts of convenient height. Whenever the Indians leave on a canoe expedition, intending to be absent at night, they take these roof tiles along with them, divided into handy sizes, and so set up their houses wherever they happen to stay. We had evidence of this from those who came to the harbour in order to barter with us, and then remained there for the night.

The natives were greatly surprised at our abstaining from any commerce with their women, whom they brought with them, so we understood, for that purpose, since they are accustomed to the English, and others, who trade in these parts, not only accepting, but also demanding, and choosing, them.

On June 29, the French frigate [*La Flavie*] that we had left in Nootka Sound arrived and anchored near us. Evidently they wished to make enquiries among these Indians for news of M. de la Pérouse, and, for this purpose, had brought with them large quantities of toys and gew-gaws so greatly to the natives' taste, that I fancy these would give away any intelligence in order to acquire them.

On July 1, a brig came in from seaward, and proceeded up into the interior waters of Puerto de Bucarely. The following day she returned and passed out to sea, but we could not make out her nationality, as she showed no colours.

(15) The water-tight baskets of this area were made of spruce root.—W. A. N.

(16) Houses with roofing of cedar bark are now known to have been only temporary shelters, erected when the Indians were unable to return to their permanent homes.—W. A. N.

On July 8 our boats returned from the exploration of the harbour. During the 10 days of their absence they had carried out this duty to my satisfaction, having left no channel, or entrance, unexamined; saving Ulloa Channel, as shown on the plan. The latter seemed to offer little that was worthy of notice, since innumerable islets were seen towards the N.E.^{d}. in it, which presumably indicated shoal water; while, to the S.W.^{d}., one could see its exit to the sea. As, too, they did not wish, contrary to my orders, to make further delay, they then decided to come back, having experienced nothing remarkable during the expedition. The few Indians met with behaved in a courteous and hospitable manner, and showed signs of some contact with civilization.

They brought fish to our people, and offered them the use of their dwellings. This tends to prove that the continual intercourse now taking place between them and the different nationalities who come to trade for sea-otter skins—of which there is great quantity—is causing them to lose some of that fierce character, of which we Spaniards had experience in the year 1779.

Don Josef Maldonado, the botanist attached to our expedition for the purpose of acquiring information relative to the natural history of these regions, had accompanied the party making the survey of the port. He came across the following:—[17]

LAND AND WATER ANIMALS.

Quadrupeds.

Black Bear.	Weasels.
Elk.	Stoats.
Red Deer.	Wolves.
Wild Goat.	Seals.
Coyotes (or " Indian Dogs ").	Sea-otters.

(17) Maldonado's lists of natural history specimens are evidently compiled from those actually seen in the case of the birds, fish, and plants, though from the terms used it is practically impossible to identify many of them. With regard to the mammals, he possibly saw some of the species mentioned, but the remainder he has listed from the materials used in various articles of Indian manufacture. For instance, the elk (moose) and wild goat do not inhabit the localities he visited.—W. A. N.

Birds.

Sparrow Hawks.

Procelarias pelagica [Stormy petrels?].
Procelarias litoral [Sand pipers?].
Oyster Catchers.
Gulls.

Woodpeckers—a new variety.
Snipes.
Linnets.
Crows.

Fish.

Salmon—of various kinds.
Halibut—of huge size.
Sardines—in great numbers.
Mojarras—(Sea-Fish: about 8 inches long: broad head: large eyes: black spot near tail: 2 blk. spots on gills: dark in colour: oval shaped body: sides rather compressed).

Cod.
Red Bream.
Dog Fish.
Grampus [Killer whale; a mammal] in great numbers.

Shell Fish.

Limpets.
Cockles [Spanish *pies de Vurro*].

Mussels (small).
Crabs—of various kinds.

Plants.

Canadian Pine.
Spruce.
Cypress (evergreen).
Speedwell.
Valerian.
Circæa alpina.
A variety of "Dog's Grass" [*Triticum repens?*].
Greater Plantain [*Plantago major?*].
Seaside Plantain [*Plantago maritima?*].
Canadian Cork Tree.
Goose Grass.
Acena alargada [Plant of the Rose family].
Sandal Wood [*Santalum album*].
Nightshade.
Narcissus [Spanish *Uva crespa ó Uba espina*].
False Spinach.
Beet Root.
Moorish Carrot.

Salt Wort.
Variety of Fennel.

Siberian Garlic.
Lily-of-the-Valley.
Dog-tooth Violet.
Curly Dock.
Common Cranberry.
Winter Green.
Whortle Berry.

Three-leaved Heliotrope.
Sorrel.
Berry Pear.
Common Rose.
Gooseberry.

Raspberry.
Black Berry (Bramble).
Strawberry.

Molucca Bramble.
Cinque-Foil.
Pennsylvanian Ranunculus.
Common Sloe.
Maryland Figwort.

Plants—Continued.

Celery—strong smelling.	Bearded Yellow Mimulus.
Coriander.	St. John's Wort.
Elder Berry.	Common Bramble.
Garlic—strong smelling.	A kind of Cabbage.
Willow-Herb, or Willow-Epilobe [*Epilobium angustifolium?*].	Violet.
Broad Epilobe [*Epilobium alpinum?*].	Nettle.
Marsh Epilobe [*Epilobium palustre?*].	Common Fern.
Strawberry Tree [Salmon berry?].	Maidenhair Fern.
Three-nerved Sandwort [*Arenaria trinervis?*].	Lichens.
Service Tree [*Pyrus sorbus?*].	Mushrooms.
Sea Pea [*Lathyrus maritimus?*].	Siberian Star-wort.
Thistle.	
Apple.	Milfoil.

Around Puerto de San Antonio the ground rises, almost from the sea shore, in precipitous heights, leaving but a narrow margin consisting chiefly of shingle with a slender strip of earthy matter, strewn with boulders. Several of the latter showed veins of silver and copper, according to the opinion of some among us acquainted with these matters. Several small pieces were detached for future examination; and the fact of the summits of these mountains being continually covered with thick mist, is attributed to the attraction exercised by these metallic ores.

By my observations it was established that the rise and fall of the tide, at full and change of the moon (i.e., at "Springs"), amounted to seventeen feet for three days in succession; but at other times, only to fourteen feet. It was also noticed that there was two foot more of rise in the tide by night than by day. The time of high water (at full and change) was 12h. 30m.; and the tidal interval was a regular one of 6h. 12m.

On the day of the boat's return, we unmoored, and lay at single anchor, ready to proceed in execution of my instructions. The wind, however, hanging in the S.E. quarter, the one that we remarked as being the most prevalent in this region, hindered our actual leaving until the 11th, on which day we weighed and made sail to a N. W.ly breeze at 9 in the forenoon.

Our first Departure from Bucarely, in order to carry out the coast survey.

After passing Punta de San Felix, since my instructions required me to view and survey the coast, we laid along shore at a distance of five or six miles, as will be seen by the courses and distances set down on the accompanying plan.

The wind, however, at 9 in the evening shifted into the S.S.E.; whereupon we steered S.W., in order to clear the Isla Basa and that of San Carlos,[18] as well as to keep to windward of the harbour (Bucarely). The night then setting in very thick, I decided to stand off and on until morning, and then at daylight to close the shore, so as to continue the running survey during the following day if the weather would allow. Both the wind, and my determination, held until the 14th; when, considering its constancy and our own danger, I thought it advisable to bear up and run back into the port that we had just left, as already I observed warning signs of an approaching gale, such as we knew to be frequent at all seasons of the year, in these latitudes, and feared lest the changes to which this could give rise in the direction of the swell and strength of currents, might expose the frigate to the risk of stranding during the subsequent calm; especially as already we had been several times set within less than a couple of miles distance of the land; and no reliance could be placed in our anchors, as the bottom consisted of rock besides shelving with great rapidity.

At 12.30 a.m. on the morning of July 15, in weather that although not too clear was less thick than it would have been in day time, we entered Bucarely Harbour, and by 7 a.m. came to anchor in Puerto Del San Antonio. During this and the following day, we had a continuance of S. E.ly wind, with rain; but at daybreak of the 17th, it was already rather clearer; and the wind, shifting to N.W.ly, soon dissipated the clouds that hang around these lofty peaks, although it was but a light breeze. Not to miss this opportunity, the frigate was at once hove short, but the faintness of the wind hindered us from making sail until 3.30 in the afternoon, when anxiety to carry out my orders overcame

(18) Now known as " Wolf Island " and " Forrester Island." The latter was discovered by Juan Perez in 1774 and named " Santa Cristina," but Bodega changed it to " San Carlos " in 1775.—H. R. W.

any confidence that I could feel in the likelihood of the breeze holding. During these three days of our second stay in Bucarely Harbour, but one canoe, with two Indians in her, came alongside to barter fish. This fact, coupled with those that I had already observed on the former occasion, confirmed me in the opinion that this locality is only very thinly populated, as the greatest number that came at any one time did not amount to forty people, counting men and women together.

Second Departure from Bucarely Harbour, to survey the coast between it and Nootka Sound.

Arrival at Puerto Florida Blanca in Isla Queen Charlotte together with some remarks upon the inhabitants.

N.B.—Henceforth, all names of localities underlined [printed in small capitals] in the narrative, are those given by me to places which I had discovered.

By 8 p.m. of July 17, the frigate was abreast of Punta de San Felix, about 6 miles off.

We then continued to range the shore, at and inside of this distance, until up with CABO DE MUÑOZ GOCENS.[19] I noticed nothing worthy of remark on this stretch of coast, except the PUERTO DE BAYLIO BAZAN; into which I sent the pinnace under one of the master's mates, with orders to explore it; a duty that he exhaustively carried out.

This harbour is situated in Lat. 54° 50′ N., and Long. 29° 30′ W. of San Blas. Along all this reach of the shore (which I take to be an island), it can be recognized through lying under the slope of a mountain shaped like an equilateral triangle, whose summit both stands out from and overtops those of its neighbouring hills. Isla Valdes,[20] lying in the midst of its mouth, leaves a wide channel on either hand, convenient for entering or leaving, and effectually shelters the interior area from winds all round

(19) Muñoz Goosens. So named by Caamaño in honour of Francisco Muñoz y Goosens, a Spanish naval officer. It was usually simply called "Muñoz." This, by error, Vancouver changed to "Muzon," by which it is now known.—H. R. W.

(20.) These names were given by Caamaño in honour of Antonio Valdes y Bazan. The bay is still called "Bazan," as Caamaño's name was adopted by Vancouver. All longitudes are west of San Blas, which is 105° 20′ west of Greenwich.—H. R. W.

the compass. Inside, the anchorage is clean and roomy enough for several vessels, besides being very convenient for wooding and watering. I am, however, ignorant as to the natural products and the place appears to be uninhabited.

We anchored in PUERTO DE FLORIDA BLANCA[21] at 7.30 in the evening of the 20th, having spent the intervening time since the 17th off the range of coast lying between it and Bucarely.

I had decided to come hither because it seemed to me of very great importance to acquire a definite knowledge of the point, between which and Cabo Muños [Muzon] is formed the entrance to the northern channel separating Isla Queen Charlotte from the Isla Prince William [Prince of Wales and neighbouring islands] which used to be thought mainland, but which actually is part of an archipelago.

The day before entering Puerto de Florida Blanca, when off ISLA LANGARA about 8 o'clock of the evening, a canoe containing four Indians came alongside, who asked for the captain.

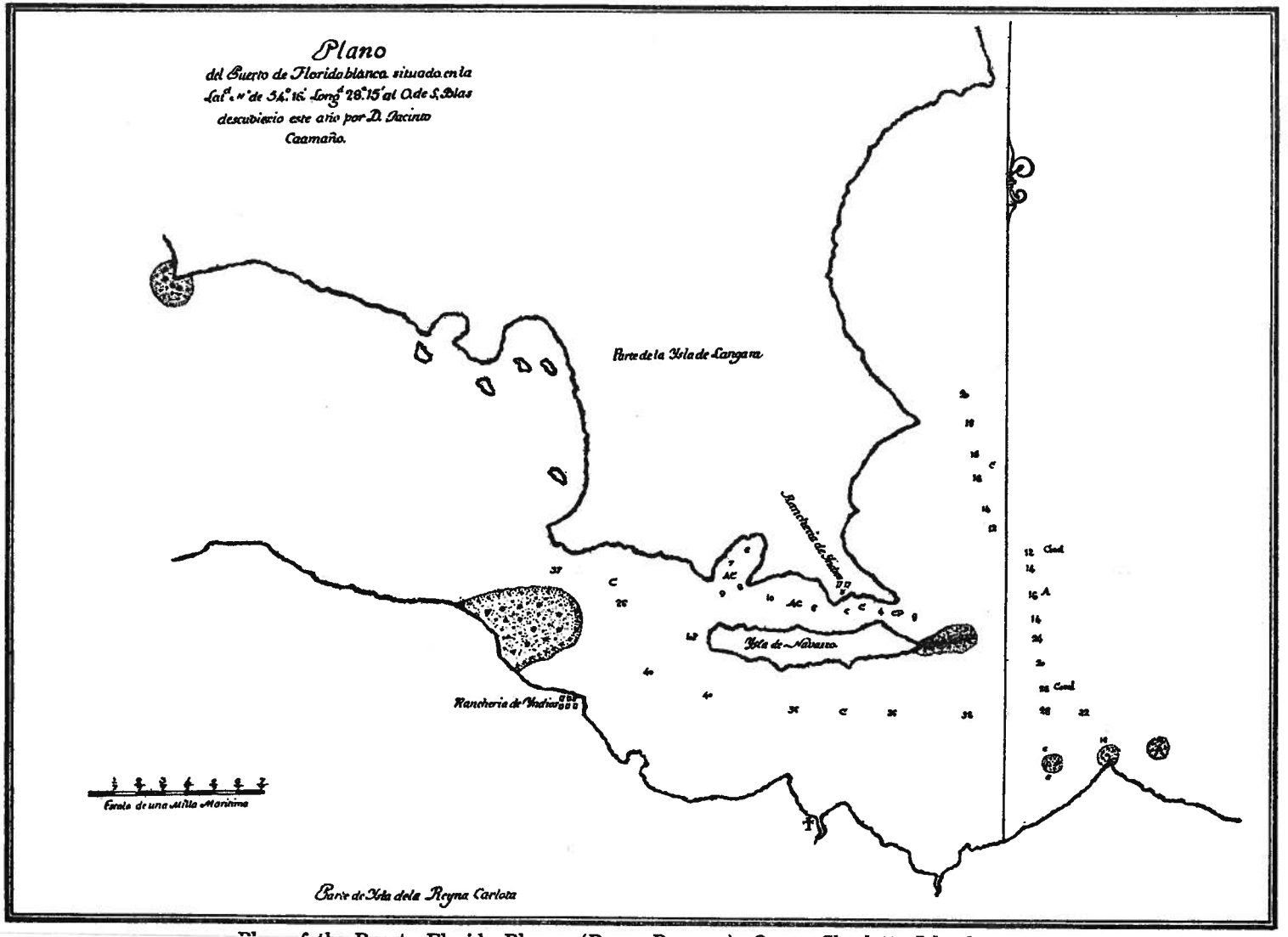
So soon as I was pointed out to them, they begged my leave to come on board.

This granted, one of the number immediately leapt up the side with great agility, and came aft on to the quarter deck with the utmost composure. Here he greeted me by the hand, gave me pressingly to understand that he wished us to go down to my cabin.

I agreed; and there he again renewed his professions of friendship; and enquired whether I intended bringing the frigate into the harbour. On my replying that this was the case, he at once opened the door of the larboard quarter gallery, from whence he called to those in the canoe for an otter skin, and presented it to me.

I then sent for some shells, knives, and looking glasses, to give to him; with which he was greatly pleased. I then made him understand that I must go on deck; whither he accompanied me, and where already was one of his companions. He soon again asked me whether the ship would enter the harbour;

(21) This port was identified by Bancroft as the " Cloak Bay " of Dixon, and in one sense this is correct; but Caamaño's plan of the port shows that the ship was anchored on the south side of Langara Island, between that and the present Lucy Island, in Parry Passage.—H. R. W.



Plano of the Puerto Florida Blanca (Prince Passage), Queen Charlotte Islands

and, upon my assuring him that she would, explained to me by signs that he and his friend desired to remain and sleep on board. I consented, whereupon he at once sent away the canoe, leaving us all in admiration of the courage and confidence of these natives.

They wandered all over the ship, without showing wonder at anything, nor was there any object of which they did not appear to know the use, until 9 o'clock, when I had them to supper with me. They ate of all that was on the table, showing no sign of dislike of anything, or wishing first to taste it; and were more at home in the management of fork and spoon than any Spanish squireen. They drank wine and spirits at first sight; and, altogether, their behaviour seemed to point to a considerable intercourse with Europeans. After supper they returned to the quarter deck; but very soon came down into my cabin, where they were quickly asleep. This night, during which I had hoped to bring the frigate to anchor (but was prevented by the wind falling to a calm and by a powerful current setting her away from the harbour), a schooner, that we had sighted in the evening, crossed our bows just ahead of us.

We hailed to ask her nationality, whence from, and whither bound. She answered, "English, from Macao," but we could not catch her destination.[22]

Daylight on the 20th found the frigate set nine miles distant from Isla de Langara, from whence two canoes could be seen coming out to us. The first to arrive was that of the principal chief in the harbour, by name Taglas Cania,[23] and father of the Indian who had boarded us the night before. He was accompanied by some forty-five people, including women and children. This canoe had eight paddles each side. All, men and women, were seated or kneeling except the Samoguet (a native word meaning "skipper" or "coxswain"), who stood upright intoning one of their songs or chants, in which he was followed by the rest in unison, and to which the paddlers kept time with their strokes.

(22) Judge Howay identifies this vessel as the *Grace*.

(23) This was the chief usually known to the fur-traders as "Cuneah," "Concehaw," etc. The "Taglas was adopted by Cuneah when he exchanged names with Captain William Douglas, of the *Iphigenia*, in 1789. Descendents of this chief still use the name Douglas.—W. A. N.

Two men, in the bows of the canoe, also beat this time with the hilt of their paddles on a small thwart, placed for this purpose and for the support of a large drum,[24] which a lusty native struck with his fists, producing sounds much the same as those of a European bass drum. This sight greatly astonished us, as did also the size of the canoe. I had the latter measured, and found the following dimensions: length fifty-three feet; beam, averaging six feet; depth, including that of two well fitted wash-streaks, four and one half feet.[25] These latter raised the height of the gunwhale, and ran from stem to stern, which were both fashioned as bluff cutwaters. We were not less struck by the fine features and good figures of almost all in the canoe. These, so soon as they came alongside, dropped their paddles and proceeded to dress themselves, some in their native clothes, much the same as those of Bucarely, but the greater number in long frocks, coats, or jumpers, trousers, or loose short breeches, and pieces of cloth serving as capes of different colours, but blue predominating.

The Samoguet's dress consisted of wide breeches made of a light blue-grey serge, and a large cloak formed of marten skins. This latter is the distinguishing mark of a village chief, and was ornamented with a great number of extra tails. His son was the first to speak, pointing me out as captain of the ship to his father, who then saluted me, and asked leave to come on board.

This granted, he at once mounted the side, walked aft to me, and gave me his hand. Then, gently touching my face with both his hands, he said, "Bueno, Bueno." This was the first time that I had seen this form of friendly greeting used by the Indians; but, no doubt, they had learnt it from intercourse with Europeans. Shortly afterwards, several more of the natives came on board. Amongst these was one of the chief's own daughters. She wore no wooden toggle [labret] in her lower lip, and was, indeed, a good looking girl.

Her father made me a gift of her, with a view to the girl being for my pleasure, as she herself later hinted to me in the

(24) Drums of this type were made of cedar in the shape of an oblong, deep box, without a lid.—W. A. N.

(25) Canoes of this size were quite plentiful up to the beginning of the present century.—W. A. N.

cabin, to which she had quickly betaken herself. Soon afterwards the second canoe arrived alongside. It was rather smaller, and contained about twenty-five Indians of both sexes and all ages, as well as another chief, called the "Tasen." All were singing similarly to the first lot, though with less noise and show. From this, I gathered that he was of inferior quality to Taglas Cania; but he went through the same ceremonies and saluted me in just the same manner.

I asked if there were good anchorage for the frigate inside, or any dangers off the entrance. They assured me that the entrance was clear and the riding within good. They also explained the nature of the approach from the position in which we then were, and acted as pilots to bring the vessel in. On noticing that the frigate did not head directly for the harbour, they displayed considerable impatience; but were reassured when I showed them how the wind did not allow of it. Again declaring the anchorage was "Bueno, Bueno," they promised that we should find there plenty of first rate nutria [sea otter] skins for our barter.

About an hour before noon, the wind, which had been easterly, shifted to the S.W.^{d}., with which we still could lie our course for the entrance. By this time, several more canoes had come out to us, and were followed by others up to 7.30 in the evening, when we anchored in twenty-three fathoms off the mouth of the channel leading up to the harbour, as the wind did not allow of a nearer approach. Shortly before this I sent for the chiefs, telling them that they must go, as the frigate was unable any longer to tow the canoes, whose number was now increased to ten or twelve filled with upward of 200 people in addition to our own pinnace and cutter. So soon as they caught my meaning, they ran to the gangways, one each side, ordering every Indian into the canoes, and these to cast off. They then followed in their own, the principal chief taking his daughter along with him. She, apparently, was not too well satisfied with the attentions that I had paid her, or the various trifles that I had given her. I had also entertained her father and brother. Both had dinner with me, when it gave me no little pleasure to observe the former's graceful and easy manners. Indeed, in this respect, the bearing, simplicity, and dignity of this fine Indian would bear

comparison with the character and qualities of a respectable inhabitant of " Old Castile."

During the night, the frigate dragged her anchor into a depth of 36 fathoms, caused by the current which sets through the western entrance at a rate of over three knots. As, however, I had no intentions of making a long stay, it was not worth while to shift berth.

On the 21st, I sent the two master's mates away with orders to survey the harbour and make a plan of it.

This day, also, a great number of natives came aboard; for, besides those from the seven good-sized villages in its vicinity,[26] the news of the arrival of the largest ship that had yet been seen there, attracted people from those roundabout. The furs they brought were of very fine quality, and also extremely well cured.[27] The Indians wanted to exchange them for clothing, or shells, but the latter they desired to have of as green a colour as those that some wore in great numbers hanging at their ears. We were surprised to see that several had those of a sort that is found only at Monterey, and even more surprised when they told us that we ought to arrange that in Spain the meat be not extracted by heating the shells, as this process damaged the enamel, but that it should be done with a knife.[28] I enquired who had taught them this, or had given them the Monterey shells, but either they did not catch my meaning, or I misunderstood their reply. The Tasen having come aboard in the forenoon, I invited him to dine with me, and I noticed that his manners were equally as good as those of the

(26) In his *Contributions to the Ethnology of the Haida*, J. R. Swanton records the names of these villages, though remains of houses and totem-poles were to be found at only three of the sites in 1900. The Rancheria de Indian shown on Caamaño's plan of del Puerto de Florida Blanca was called Kiusta.—W. A. N.

(27) This neighbourhood was famous for fine sea-otter skins, and the Indians obtained almost incredible quantities of them in the early days.—H. R. W.

(28) These instructions on how to remove the meat from abalone-shells are very interesting, as one of the unsolved puzzles of the Northwest Coast is where the natives secured the many large pieces of deep green flawless shell used as ornaments and for inlay work. Many of the shells gathered to-day in California have little, if any, of the desired colour.—W. A. N.

former chiefs. This fact, together with the quality of his surroundings, led me to judge that he was in no respect inferior to them.

He was of ordinary height, and spare in body. He had a cheerful expression, regular features, was light in colour, and about fifty years of age. He wore the distinguished cloak of a chief, breeches of flesh coloured silk ornamented with small gold stamped flowers, and on his head a high hat. This went very well with all the remainder, so that with his hair tied up in a neat cue by a narrow lace of leather he gave the appearance of being something quite different from what he really was.

Cania came on board at 5 o'clock that evening. He is of very big frame, and stout in proportion, with a handsome face, and is about seventy years old. His clothing, all of sky-blue cloth, consisted of two loose frock coats one over the other, ornamented with Chinese cash,[29] each one strung on a piece of sail-making twine with a large light-blue glass bead the size of a hazel nut, loosely attached to the material, and together forming a button. His breeches, in the form of trousers, were also trimmed with many of these cash, so that he sounded like a carriage mule, as he walked. He had on a frilled shirt, and wore a pair of unlike silver buckles; not, however, in his shoes, but at the feet of his trousers. The trimming of his clothes was formed by the selvage of the cloth; and this made up for the lining, which was altogether lacking. He wore a head-dress similar to that of the Tasen; and, at a little distance, looked very fine in his extravagant costume.

Before leaving the ship, which they generally did at sunset, the natives gave me one of their musical performances; but this consisted of little more than a series of discordant shouts. A blind man in one of the canoes began dancing to this accompaniment. In each hand he held the tail feathers of an eagle, which appeared in jerking fashion from under his cloak, or as imitating the gesture of flying, as he leapt to the cadence of the music, thundering meanwhile at the singers in a terrifying voice, each time more loudly. The concert over, they all took their departure,

(29) Chinese cash and brass thimbles replaced the puffin beaks or deer hoofs commonly used on ceremonial costumes as rattles.—W. A. N.

seemingly well pleased with themselves, and leaving us no less so at their great civility.

At daylight of the 22nd, the cutter in charge of a master's mate, was sent to complete the survey and plan of the harbour, with orders to return so soon as possible. They were back by 9 o'clock of the forenoon; and at 10, I landed with the greater part of the seamen and marines in the pinnace and cutter, and Mass was celebrated under an awning formed of the ships' flags. This service was attended by the Tasen and several other Indians, all of whom showed great respect and attention. I then went through the ceremonies of taking possession of the country with all the prescribed formalities and set up a Cross, over twenty feet in height, charging the natives not to over-set it; which they promised to observe.[30]

When all this was finished, I returned on board accompanied by the chief and one of his sons, who is also chief of another village. I kept them to dinner with me, and during the meal explained to them that I must weigh and get under sail directly it was over. As they imagined that this was for the purpose of proceeding into the harbour, they showed great pleasure, but, on learning that it was in order to begin our journey homewards for Spain, they became very sorrowful and with much insistence begged me not to leave so soon, but to bring the frigate inside the harbour, assuring me that the anchorage was both safe and convenient, and that they would supply good store of nutria skins. As, however, our business was not that to which they are accustomed, we got under weigh at 4 that afternoon, parting from the inhabitants with considerable regret on each side. Indeed, along the whole of this coast populated by Indians, I do not believe that one will meet with kinder people, more civilized in essentials or of better disposition.[31]

In general, the women are well made, and not bad looking. Many of them do not wear the labret through the lower lip, but

(30) The chart of Puerto de Florida Blanca, herewith reproduced, shows plainly where the act of possession was taken by the position of the cross. It was on Graham Island due south of Lucy Island.—H. R. W.

(31) The Haidas, when first contacted by the whites, were apparently quite friendly, but soon became treacherous and dishonest in retaliation for similar treatment accorded them by many of the fur-traders.—W. A. N.

their dress is less modest than those of Bucarely, for their cloak alone serves to cover their breasts, and they seem quite careless whether it does so or not. The dialect appears to be the same as at Bucarely. I was not able to learn much about their customs and managed only to gather that they practise monogamy. Their houses, built of boards, are spacious, clean and well kept. They are protected against the attacks of possible raiders by large wooden towers standing on steep rocks, and, for such occasions are provided with a couple of pretty good brass swivels, some muskets, long bows, darts, and daggers. Ordinarily, however, they carry none of these weapons; except the spears used for killing the nutria, of which they always take a sufficient number with them in their canoes.

An Indian youth, aged about sixteen to eighteen, of pleasant appearance, who had come on the first day with Cania, asked leave to sleep that night on board the ship. This I allowed, and the next day he told me that he wished to go with us. I said that I had no objection, but, fearing that his request was prompted merely by the desire of seeing strange countries, on the understanding that he was to be repatriated, as had been the case already on several occasions with British vessels in this district, which conveyed them to Macao, I explained that if he came with us, it would be not for Macao but for Spain, and for all time, as I should never be returning again to his country or to see Cania.

On hearing this he remained some time in thought and then intimated that he preferred staying at home. Then he seemed to turn the proposition over again in his mind for, a second time, he expressed in most determined manner his wish to come. I told him, repeatedly, that in such case he would never return to his native land, but was unable to shake his resolution. On the eve of sailing, he begged me to give him some clothing, as he intended to leave his nutria cloak behind. I gave him a shirt and trousers, also a piece of serge, whereupon he threw his own garments into one of the canoes last remaining alongside, and that too not belonging to his own village. Later on, during the time we spent in surveying these coasts, several of his compatriots endeavoured to induce him to remain with them. Not only, however, did he disregard all their persuasions, but he also

avoided their company, shunned their conversation and would even rail at them.

The trees, plants, etc., that we noticed, or that our botanist found growing near the shore where there is generally good soil, or along the sandy beaches, were the same as those of Bucarely, but more abundant, and of finer growth, especially the plants.

The Puerto de Florida Blanca [Parry Passage], in the southern part of Isla Langara, off the northern coast of Isla Reyna Carlota [Graham Island] is situated in Lat. 54° 14′ North, and Long. 29° 33′ West (from San Blas).[32] It is of very limited extent, there being room for no more than one good-sized, or two smaller vessels, but the anchorage is sheltered from winds all round the compass.

There is good riding, also, off the eastern end of Isla Navarro [Lucy Island], in from sixteen to twenty-five fathoms. As, however, the tidal streams set through the western entrance at a rate of over three knots, forming strong eddies, it is advisable to anchor where the depth is from sixteen to eighteen fathoms, on a bottom of sand and gravel.

A vessel can also enter Puerto de Florida Blanca by this western entrance: indeed, I consider the latter preferable to the eastern one. The actual position of the ship, and direction of the wind, will of course determine which may be the more convenient. Isla Langara is higher and more hilly than the neighbouring portion of Isla Reyna Carlota, which is here flat and thickly wooded.

(The concluding part of the Journal will appear in the October issue of the *Quarterly*.)

(32) Actually in latitude 54° 11′ and 132° 59′ west of Greenwich. Caamaño's latitudes are about three minutes in excess of those on the latest Admiralty charts. The longitude is 2° too far west.—H. R. W.

THE NORTHWEST BOOKSHELF.

The Cartography of the Northwest Coast of America to the Year 1800. By Henry R. Wagner. Berkeley, California: University of California Press, 1937. Two volumes: pp. xi., 543. $20.

For many years Mr. H. R. Wagner has devoted his leisure to historical research. His chosen field has been the advance of the Spaniards northward from Mexico. His ambition is, as stated in the foreword, "to publish a translation of some original journal of every important expedition by sea to that coast, which had not yet seen its way into print." In pursuance of this purpose he began in 1923 the publication of such journals in the *California Historical Quarterly.* These with others were in 1929, issued as *Spanish Voyages to the Northwest Coast of America in the Sixteenth Century.* Meanwhile his interest had broadened internationally to include *The Voyage around the World of Sir Francis Drake.* Later it stretched geographically to the *Spanish Explorations in the Strait of Juan de Fuca.* Desiring a yet larger field he took a flyer into the imaginary geography of California and British Columbia.

Out of the historical interest came the study of the maps and charts in which the explorers or some draughtsman or professional map-maker had set down pictorially and so as to be easily grasped by the eye the results achieved by the voyage and the advance in general geographical knowledge. Truly, as Mr. Wagner says: "There is nothing that has such an air of verisimilitude as a map." It induces the belief that some one has really been there and seen the country depicted. Dean Swift doubtless felt this when in his *Gulliver's Travels* he included maps showing the location of the land of Brobingnag, the islands of Laputa and Lilliput, and the country of the Houyhnhnms.

The purpose of these volumes is to show the evolution of the cartography of the western coast of North America, which is to the author synonymous with the Northwest Coast, during the three centuries after Balboa (and not stout Cortes, as Keats has it) stared at the Pacific, "silent upon a rock in Darien." He carries the story down to the epoch-making exploration of Captain George Vancouver, whose work gave the complete picture

of the mainland side of the continent from Cape Flattery to Kodiak.

The first volume sketches in thirty-nine chapters the Spanish, Russian, British, French, and American voyages down to Vancouver's definitive exploration and survey of 1792–94. The emphasis is on the map record of their work; the incidents of the voyages serve merely as pegs on which to hang the cartographical exposition or criticism. Beginning with the Waldseemüller globe gores of 1507 and those of Schöner in 1524, which reflect the error we still perpetuate in the word "Indian," the author reviews the state of geographical knowledge, or what passed therefor, and completes the background down to 1533 when Cortes sent out the expedition that probably discovered the peninsula of Lower California. Then follow the explorations of Ulloa and others which changed the original "island" of California into a peninsula and disclosed bit by bit, though dimly, its western coast, until Vizcaino's great voyage of 1602 threw light as far as Point Reyes at least. Myths are proverbially hard to kill; around all these voyages and many later ones cling the "Strait of Anian" and the "Seven Cities."

As Spain now thought that the knowledge obtained was sufficient for the protection of the rich Manila galleons, orders were issued that no further expeditions of discovery be dispatched. The urge of the Northwest Passage, so strong in England, was not felt in Spain; in fact many believed that efforts to find it should be discouraged, as its discovery might let loose on the Pacific a horde of foreign adventurers. Mr. Wagner passes lightly over Drake's voyage for the reason that it did not produce any marked effect on the cartography. From 1602 to 1774 Spain therefore made no attempt to push back the line of the unknown. But the arm-chair explorers and the theoretical geographers were busy. Then it was that de Fuca and de Fonte made their famous paper voyages; but they had to wait for a cartographer until Delisle and Buache in the middle of the eighteenth century strove to fit their fictions with the known facts. The result was a choice cartographical farrago.

This portion of the book is illustrated by thirty-three maps, selected as types out of some 640, which are individually described at length, together with information upon their draughtsmen and publishers, their measurements and places of deposit. But even

this immense number, we are told, does not by any means represent all the maps that have been examined. Many have been omitted as being mere duplicates or servile copies. The intensive search that has been made is shown by the list of repositories from which they have come. The mere physical work involved must have been enormous. All of these maps have been subjected to close examination and collation. Minute correspondences or discrepancies have thus been discovered and therefrom Mr. Wagner has reached conclusions regarding their origins and the circumstances surrounding their publication that will be accepted by students without any hesitation and with grateful thanks for such painstaking and meticulous work.

The activity of the Russians, following in the path of Bering, aroused Spain from her lethargy; and that brings the story to our shores. From 1769 the fever of mission building raged in California; but to the northward Spain was content with discovery and the empty formality of taking possession. In 1774, Juan Perez was dispatched from San Blas with instructions to proceed as far as 60° North and claim the country for the Spanish Crown. He landed nowhere during the voyage, but he saw parts of Queen Charlotte Islands, the neighbouring shores, and the vicinity of Nootka Sound. He was followed by Hezeta's expedition of 1775, in which Bodega in the little *Sonora* reached southern Alaska and took possession.

In 1776 England had again become interested in the possibility of a passage between the Atlantic and the Pacific. As a result Captain James Cook undertook his third and last voyage in which he discovered Nootka Sound, and by casual barter for sea-otter skins laid the foundation of the maritime fur-trade. But before the trading vessels began to arrive Spain launched another exploring expedition—that of Arteaga—which in 1779 took possession in southern Alaska, explored in that region, and thence northward to the Aleutian Islands, covering much the same ground as Captain Cook had done in the preceding year. The French, who had lost Canada in 1763 sent out La Pérouse in 1785, apparently with some plan of gaining a foothold on the western shore of America. By this time the maritime fur-trade had commenced. At first it was confined to the English, though their vessels sometimes masqueraded under other flags. The citizens of the United States entered the maritime trade in 1788;

and in 1791 the French ventured into it. This influx determined Spain to assert her claim to the coast, a determination which took visible form in the establishment of the settlement at Nootka Sound and in the seizure of Meare's ships. Then followed more Spanish voyages, including those of Quimper, Eliza, Galiano, and Valdes in, into, and through the Strait of Fuca and its connecting waters. The difficulty with Spain arising out of the seizure of those British vessels, though settled by the Nootka Convention, left an aftermath that required a representative of Britain on the coast. In consequence Captain George Vancouver was sent out with instructions (over and above his diplomatic duties) to make a thorough exploration of the mainland to ascertain whether a Northwest Passage were lurking anywhere in its shadows.

Before dealing with the seven maps which Mr. Wagner has selected as typical for the period from 1774 to 1793 and which he has chosen out of some 220 that are listed, reference may be made to a number of historical inferences and suggestions which he has made in this portion of the book. Some of these appear to this reviewer rather startling. Knowing the author's meticulously careful work it is presumed that he has support for his views which unfortunately the absence of foot-notes prevents the reader from examining. For example here are some statements dealing with Captain Cook that may be challenged: that Cook had instructions other than those printed in his *Voyage* (p. 185); that the return of Omai furnished the "ostensible excuse" for the voyage (p. 183); that Cook had with him a copy of Mourelle's journal of the 1775 expedition which had been confidentially sent by the Spanish to the British government (p. 179); that some ulterior motive underlay the omission, in the early newspaper accounts of his voyage, of his visit to the Northwest Coast (p. 188); that Arteaga had no knowledge of Cook's voyage (p. 190), though the Spanish government knew of its intended departure and its purpose three years before he sailed from San Blas (p. 191). It is not clear to this reviewer what the author means by the "diversion" of Cook's voyage "to the coasts of Oregon and Washington," and the motives behind it, inasmuch as the Introduction to Cook's *Third Voyage*, p. xxix., and Kitson's *Captain James Cook*, p. 345, show that from the outset the expedition was planned as one of discovery. Again there is a suggestion that

the impounding of the crew's journals and the delay in the publication of the *Voyage* arose from some desire on the part of the British government to conceal the discoveries (p. 189). The men's journals were impounded, not "taken away" as stated on page 189; three at any rate were not turned in: Rickman's, Zimmerman's, and Ellis's. For an explanation, why is it necessary to look beyond the experiences which the government had had with the Forsters and Newbery in regard to unauthorized accounts of the second voyage? The Introduction to the *Third Voyage* gives the reasons for the delay in the appearance of the work: the preparation of the charts, the reduction of Weber's drawings, the engraving of the plates, the obtaining of the special paper therefor, etc. It concludes: "When all these circumstances are taken into consideration we trust we shall hear no more of the delay" (p. lxxxii.). In view of this it would seem that the suggestion (p. 189) that the delay was in some way connected with the future fur-trade is a trifle far-fetched. It may be added that the official account of the second voyage did not appear until more than two years after the ships had returned to England; and that though the French National Assembly in 1791 ordered the publication of La Pérouse's *Voyage* on a scale similar to that of Cook's the volumes were not ready for the public until 1797. In this connection the statement (p. 189) that the official account was "edited" by the Rev. Dr. Douglas may convey a wrong impression. The introduction clearly states that Cook's portion of the work came to his hands ready for publication, and that King's portion was placed in his possession before that officer left for the West Indies, which we know was in 1781 (p. lxxix.).

We come now to the cartographical records of this period, 1774–1793. These begin with the map of Bodega's voyage of 1775, though Jeffery's chart of that exploration contains references to the exploration of Perez in the preceding year. After some detailed plans of Bucareli Bay comes the map of Cook's discoveries in the Anonymous (Rickman's) Journal which, so far as the coast is concerned, Mr. Wagner shows to be a composite affair, partly based on that in Barrington's *Miscellanies*. Here the learned author has fallen into what this reviewer believes to be an error. He suggests (p. 346) that this book was printed from some manuscript sent back before the ships returned to

England. But the account itself carries down to the arrival of the vessels at Deptford; and, moreover, the map shows the homeward route as far as the Straits of Sunda, and only stops there because no more of the earth's surface is shown. The list of maps makes no reference to that contained in Ellis's *Voyage of Cook and Clerke*, London, 1782, which appears to be a copy of the map in the Anonymous (Rickman's) *Journal*. The map in the French translation of that *Journal*, Paris, 1783, appears to this reviewer to be redrawn from that in the English edition of 1781, rather than from Kitchin's of 1780 (pp. 348, 346). The statement on page 351 that there seems to be no record of a voyage to the coast by John Henry Cox is scarcely accurate. The account of Cox's voyage is to be found in a rare book, *Observations and Remarks made during a Voyage to . . . the Fox Islands on the North West Coast of America . . . in the brig Mercury commanded by John Henry Cox*, by Lieut. George Mortimer, Dublin, 1791. From the time of Cook to that of Dixon, a period of about ten years—1778–1787—the maps listed are principally sketches of bays and inlets, made by Johnstone and Duncan, and published by the well-known Alexander Dalrymple. Unfortunately, the many sketches made by James Colnett, 1787–88, still remain in manuscript, though it is possible that they may soon be published. Then follow the maps and sketches by Portlock and Dixon, 1786–87. Portlock's map is principally concerned with the vicinity of Cook's Inlet, Prince William's Sound, and the Alaskan coast, but leaves a great blank almost to Sitka. Dixon's shows roughly the northern end of Vancouver Island and a general outline of Queen Charlotte Islands, whose insularity he inferred, but did not prove. It leaves the opposite tortuous mainland shore merely a couple of capes connected by dotted lines. In 1790, Meares produced his composite map, with its supposititious "track of the American sloop *Washington* in the autumn of 1789," in which as Mr. Wagner points out he took credit for discoveries made by others —conduct quite in keeping with his character. La Pérouse's maps of 1797, based on his voyage of 1786–87 have, of course, no original information upon the mainland of northern British Columbia. The Spanish voyages of Lopez de Haro, 1790, and Eliza, 1791, furnish us with the earliest maps of the Strait of Fuca. It is not until Vancouver's careful examination and survey in 1792–93–94, that the labyrinthine mainland coast from

Puget Sound to Dixon Entrance and beyond finds its place in the cartography of Northwest America. Then for the first time that complicated network of inlets, bays, and islands is shown as a complete and connected whole. The American traders made but few maps or plans; Ingraham's manuscript sketches are included in the list, but those of Haswell have been omitted. In any event they were superseded by Vancouver's monumental work.

A most valuable part of the book is the two chapters, pages 371 to 525, dealing with "Place names still in use" and "Obsolete place names." They represent a vast amount of reading, comparison, and patient examination. Every student has felt the necessity for a compilation of identifications of places now bearing different names from those originally conferred, and has also puzzled over the origin of names at present in use and their possible association with some person or event. In this connection, as Mr. Wagner shows from time to time, one notes that these names frequently contain much information, especially where, as in the nomenclature of the Spanish explorations, they are based on saints' days and holy days. In such a host of identifications covering more than 150 pages it would be humanly impossible that all of them should meet with general and unqualified acceptance. The identification of Boca de Florida Blanca as the Nicomekl River (p. 454) is at variance with the local view, which regards it as a groping for the Fraser River, whose existence had been surmised by Eliza but not verified. (See *Viage hecho por las Goletas Sutil y Mexicana*, p. 64.) Boundary Bay is, of course, in British Columbia, though by a slip of the pen it is said (p. 454) to be in the State of Washington. The identification of Islas de Apodaca as Bowen and nearby islands (p. 427) is in accord with general opinion; but Punta de la Bodega is usually thought to be Stanley Park and not Point Atkinson (p. 433). It is surprising to meet the suggestion that the northerly of Narvaez's Islas de Langara may be Westham Island (p. 466) seeing that it is south of both Sea and Lulu Islands. Mr. Wagner identifies Ingraham's Magee Sound as being, perhaps, Big Bay on the west side of Graham Island (p. 469). This, however, seems doubtful in view of the detailed sketch of the sound which is included in Ingraham's manuscript journal. That sketch shows a large island in the centre of the sound, and four inlets leading therefrom, which would point rather to Port Kuper than to Big Bay. He gives the

latitude as 52° 46′, which does not suit either of these places. It may be added that the map of British Columbia, 1933, shows only two inlets in Big Bay and no island. Magee Sound was named after Captain James Magee of the *Margaret*, who was also one of the owners of the *Hope* (*see* Joseph Ingraham's manuscript journal of the voyage of the *Hope*, June 29, 1791, and August 7, 1792). It would appear that two identifications have been made of Cape Mazari or Mezari: one as Cape Lookout (p. 361); and the other as Tillamook Head (p. 473).

Despite these minor criticisms, one rises from a perusal of the work with a sense, vague and indefinite, of the vast amount of study that its preparation has entailed; and when one considers the overwhelming mass of facts and figures, names and dates, one can only marvel at the high level of accuracy that has been attained. Plainly it has been a labour of love, for mere human patience alone would, long before the end was reached, have succumbed under the strain of collecting, comparing, and collating the maps and books that have been examined.

Though the work has been referred to as a book, it actually consists of two volumes paged consecutively. The first volume contains the discussion of the various voyages and their maps; the second is really one of reference. The list of maps is arranged in chronological and alphabetical order and numbered consecutively, thus aiding the reader in referring to them; and their inclusion in a separate volume enables their easy consultation. They are made even more accessible by a fine and complete index. To complete the volumes a bibliography is added, which is tied in with the maps by reference to their numbers in the list. The book is printed in the best style of the University of California Press. It is remarkably free from typographical errors, not one having been noticed by this reviewer. The general index at the end of the first volume is a model of what an index should be. As the place-names, both obsolete and in use, are arranged alphabetically, they require no index.

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