3651 Osler Avenue,
Vancouver, B.C.
19th January 1939.

Geo. A. Rounsefell, Esq.,
99 Hammond Road,
Belmont, Mass.

Dear Mr. Rounsefell;-

I have to thank you for your letter of the 25th ulto., also copy of Bulletin #27, and since writing you last have made a more thorough study of your report. I must again congratulate you on the thoroughness of your accomplishment and in the main concur in your findings. However, I differ from you concerning some of the conclusions arrived at and am taking the liberty of pointing out to you what these differences are. Please understand I am not doing so in any spirit of criticism but only with the idea of presenting other possible viewpoints and explanations of past results and records. The rehabilitation of the industry is so important that every phase possessing a possible bearing on the causes of the present situation should be considered, and if the conclusions I have arrived at modify or change the picture you have painted I am sure you will take same into consideration for any future revision of the very able report you have prepared.

First however I wish to refer to the comparison of the runs of 1886 and 1914 and your conclusion that this indicates the escapement of the latter year was the poorest on record.

As I mentioned to you on one of your visits to this city the fishing season of 1886 extended from May until November; fish were brought to the canneries from as far up river as Yale; yet out of a pack preparation of 200,000 cases only 36,000 cases were secured; and the run was consistently poor throughout the entire season. The total catch was but 387,720 sockeye as compared with 5,693,067 in 1914.

It must be remembered that in 1886 there were no traps or purse seines fished on Puget Sound to intercept and break up the schools of salmon so that they entered Fraser river in the same compact bodies as passed through the Sound, and only 734 gill nets intercepted the run on the river. The fact that despite this monopoly of fishing effort the take per unit of gear was only 500, (as compared to 441 in 1914), indicates the scarcity of fish, while the low take per gear unit in 1914 has not the same significance.

To illustrate this point I would mention what happened at Alert Bay in 1927. For many years all the sockeye catch of Nimpkish river salmon were taken by 1 or 2 drag seines but subsequently the area was thrown open to purse seiners as well and in 1927 2 drag seines and 55 purse seines operated at that river. Despite the greatest exertions on the part of these seiners the take per unit of gear was the smallest on record yet reports from the spawning beds showed the escapement had been one of the largest ever noted.

What had happened was that the very multiplicity of gear broke up the schools of fish and scattered them so that more escaped up river

than would have got by had there been but 2 drag seines as formerly. I believe much the same thing happened in 1914 and that the poor season of 1918 was due to unfavourable conditions on the spawning grounds, just as unusually favourable conditions there in 1886 probably accounted for the good results in 1890.

I would also mention Rivers Inlet where the number of gill nets operating have more than doubled in the past 20 years with no increase in total catch and a consequent lower return per unit of gear fished. And yet despite this increase of effort the same average escapement year after year has been maintained. There has been no depletion in the run as a whole.

Now to get on with the Report itself, taking same in consecutive order.

P. 697. The cannery at Semiahmoo was built in 1891 by D. Drysdale who formerly operated on Fraser river. In the same year E. A. Wadhams, also from Fraser river, built the cannery at Point Roberts. Both plants were acquired by the Alaska Packers Association in 1893.

P. 703. Table 1. Three canneries operated on Puget Sound in 1891 and 1892.

P. 708. Your conclusion that the use of engines in gill net boats has been accompanied by an increase in efficiency is to my mind questionable. Theoretically they should aid effency but this maybe offset by engine noises, and disturbance of water caused by the propellers, breaking up the schools and reducing the catch. Records of Rivers Inlet and other District No.2 fishing areas show the take of fish per annum is practically the same as it was 30 years ago, when only oar propelled boats were used, while spawning ground records show escapement past the fishing areas has not decreased.

P. 715. The first traps were put in around Blaine and Point Roberts in 1891 but that year and the next the "set" was not in the proper line of the moving sockeye schools and although fish were plentiful both years the catches were small. In 1893 the proper set having been ascertained large packs were secured, resulting in the Alaska Packers Association purchasing the two operating plants that year.

P. 719. The earliest date for commencing trap fishing has no bearing on the sockeye fishery. Nearly 50% of the spring salmon catch is made before the end of the first week in July and it was to secure this species trap fishing commenced earlier.

P. 760. In the foot note on this page attention is drawn to the fact that "especially on the years of the 'big run" it took more sockeye to fill a case of salmon. This was not due to the fish being any smaller in size but was caused by the packers being more wasteful when fish were very plentiful. Fillers did not want to lose time by fitting small pieces into the tins and the packers, often with more fish than they could take care of, aided the fillers by setting their gang knives to eliminate the head and tail cuts that, owing to irregularity of size and shape, were more difficult to fill. In years of smaller runs these pieces were all utilized; hence in those years it took fewer sockeyes to fill a case.

P. 765. Falling off in quality of the fish. This does not necessarily mean that the fish themselves in any given run are poorer in quality to-day than they were in the corresponding run of earlier years. Another and more probable explanation of the difference in quality noted is that the fishing gear acts as an impediment to the fish promptly ascending the river and that they consume some of their stored up fats during this period. They would thus be of poorer quality than was the case in years when up stream migration was early, steady and while the fish were at their prime. Records of Naas river fishing showed the runs in the early 80s began in June and all had entirely passed before the end of July. In late years the principal run is in late July and often over 50% of the pack is secured in August. This is almost certainly due to fishing now being carried on as far south as Port Simpson, whereas in the earliest years it was all done above Observatory Inlet. The month or more delay and consequent depletion of fat content would thus account for the falling off in quality which buyers say occurred.

P. 767. Your conclusion that the take of fish in 1884 and 1885 was not truly indicative of the extent of the run is quite correct. Wm. T. Coleman & Co of San Francisco was financial and selling agent for many of the canneries on Fraser and Columbia rivers and the failure of this company in 1884 upset the world markets and involved in the company's crash most of the canneries represented by the Coleman company. On the Fraser arrangements were made by operating companies to fish the boats of closed down plants in addition to their own gear, but without any increase in the means of utilizing the catch. The result was that at the height of both seasons there were more fish caught than could be handled and fishermen had to be laid off. This was not the case in 1886.

P. 769. The index (table 32 and fig.24) is not an accurate indication of sockeye abundance. In 1897 canners were not prepared to handle the enormous run and many traps had to have their pot walls lowered to let the fish pass through and prevent pots and spillers being sunk and lost by the weight of smothered fish. Similar conditions prevailed in other big runs; notably in 1899; hence the recorded catch in those years was much less than the quantities that actually passed into the traps.

Also in the early years trap fishing was not interfered with by the purse seines which in later years made their principal catches right up against trap leads and intercepted sockeyes which the traps would otherwise have taken. The seines also broke up the schools of salmon and caused them to scatter to the westward, outside the trapping area. This is evidenced by the change of route of sockeyes entering Fraser river. In early years the main run entered the middle mouth while a lesser run entered through Canoe Pass and a still lesser one through the North Arm. When gas boats were successfully employed in Puget Sound and the schools became broken up and driven westward Canoe Pass ceased to be a factor and the North Arm-Point Grey-Howe Sound area increased greatly in importance as a fishing district. To-day probably more sockeye are taken in that section than in the main mouth of the river itself.

P. 772. Index of abundance. While the wording does not so state it is to be presumed the take of purse seines was combined with that of traps and gill nets in measuring the degree of abundance. How otherwise can the indexes be correct ?

P. 774. Abundance of Cycle ending in 1934. 1914 was not the lowest level of abundance this cycle has experienced. The 1886 level of abundance set an all time low. The escapement in 1886 was far less than in 1914 or 1918 but evidently spawning ground conditions were far better, resulting in the good run of 1890. 1918 compared to 1922 is another instance of this kind. Although the escapement in 1918 was less than in 1914 the season's spawning resulted in an increased catch and increased escapement in 1922 over the parent year.
(See also Page 1, 2nd paragraph of this letter re 1886 run)

P. 776. Abundance of Cycle ending in 1933. Your assumption that "big" year escapement may have occurred because of very abundant late runs is not borne out by records going back to 1806. Fraser, Harmon, Morice and others all mention the great quantities reaching upper Fraser spawning areas in this cycle and all give dates that are in July and August, whereas the late runs only reach the mouth of Fraser river in September. Furthermore, from 1902 on, all of Babcock's annual visits to the upper river spawning areas occurred before the late runs could possibly reach those waters; in fact in August, before the late fish had even entered the river's mouth. If there is one thing better authenticated than anything else it is that the tremendous numbers of sockeye in the "big" year were early run fish.

P. 777. Abundance of Cycle ending in 1932. I quite agree with you that the failure in 1916 - despite the relatively good escapement of 1912 - "was not caused by over fishing, but by some natural condition, possibly connected with spawning, that greatly reduced the rate of survival." However, I take a diametrically opposite view from yours as to a low temperature being a possible cause.

The Yukon river in Alaska and the Anadyr river in Siberia, both approximately on the Arctic Circle, the Amur river and the rivers of Kamtchatka, all lie in areas which have longer winters, lower temperatures and greater climatic fluctuations than anything experienced in the Fraser river watershed. And yet, excepting the Yukon and Amur rivers, all possess very large colonies of sockeye salmon despite the prolonged winters, intense cold and violent changes of temperature. If Siberian eggs and fry can withstand 7 to 9 months average duration of winter, with temperatures of -25° to -50° I can see no reason why a deviation from average of -17° in Central British Columbia should affect them in the slightest.

On the other hand mild winters in British Columbia generally mean wet winters with increased precipitation and very often flood conditions and the effect of such would be far more likely to bring disaster than cold weather would. 1899 was the biggest "off" year ever known; the sockeye run was tremendous; the escapement magnificient; and the known deposit of eggs incredibly large. But that fall and winter were unusually wet and it is an established fact that most of the deposited eggs did not hatch out but were left high and dry on the stream banks after the flood waters subsided. It was not excessive fishing, poor escapement or lack of eggs on the spawning beds that caused the failure of 1903, but "some natural condition, possibly connected with the spawning." This condition was undoubtedly the exceptionally mild fall and winter and its consequent floods.

Table 35 shows that the deviation from average temperature in the winter of 1899-1900 was +13.4 and the run of 1903 showed the greatest falling off except 1913, and the latter was due to a man made catastrophe. While the run of 1914 was comparatively poor the known escapement should have produced more fish than appeared in 1918 but here again the +16.1 deviation for the winter of 1914-1915 indicates that winter was exceptionally mild and wet. The winter of 1923-1924 showed +10.7 deviation and the run of 1927 fell off as compared to 1923. The index of abundance (Table 34) shows a 10% falling off in the run of 1929 after a + 23.9 temperature deviation in the winter of 1925-1926. And finally the 1931 level of abundance was low in keeping with the mild weather conditions of the winter of 1927-1928.

Taken as a whole the years of greatest minus deviations showed no such reduction in the level of abundance as was experienced in those years when temperatures at the spawning areas were unduly high. It appears to me far more likely, and better substantiated, that the greatest spawning ground losses in eggs and fry were caused by unseasonably mild weather rather than by excessive cold.

P. 778. Abundance of Cycle ending in 1931. In discussing conditions shown by Table 35 (see above) I have already shown that you are in error in supposing "there is a possibility that the escapement in 1899 (no surveys were made of the spawning grounds) was much less than the mere comparison of the catch with the level of abundance would indicate, ... it is quite possible that the catch was too heavy to allow a sufficient escapement." That the escapement was phenomenally large was well known and the deposit of eggs on the spawning beds, (as well as their subsequent destruction), was fully observed and reported. There is no question whatever as to this and the failure of 1903 is another one of those cases "not caused by overfishing, but by some natural condition, possibly connected with spawning, that greatly reduced the rate of survival."

I hope my long winded observations have not tired you out and that you may find something of merit in the opinions I have expressed.

With kindest regards, and hoping it will not be long before you return to this part of the world, I am

Yours faithfully

HD/P.