29th September 1920.

Dr E. D. Clark,

Seattle, Wash.

Dear Dr. Clark;-

We are forwarding you to-morrow by express, samples of various packs of fish which, if not troubling you too much, we would appreciate having examined for bacteria. These samples were cooked at a temperature of 240 and all were air cooled. There are six tins of each lot, but we can forward more if desired.

Lot No.	1	Naas river	sockeye	1920	pack,	processed	65	minutes.
" "	2	Skeena "	"	1920	"	"	65	"
" "	3	Bella Coola	"	1920	"	"	65	"
" "	4	Naas	"	1920	"	"	70	"
" "	5	Skeena	"	1920	"	"	75	"
" "	6	Namu	Chums	1919	") Cannot say definitely what			
" "	7	Naas	"	1918	") cooking period was used on			
" "	8	Kimsquit	"	1917	") these Chums.			

The sockeye samples are all from packs which apparently are fully processed. Packs put up in former seasons at the same plants were cooked for same period and under similar conditions; were sold when packed; and no complaints were ever made concerning them. I would like to learn if they contain living bacteria which might develope under favourable atmospheric conditions. Lots 1 to 3, cooked 65 minutes are all ½ lb. flats; lot 4, cooked 70 minutes are talls; lot 5 are ½ lb. flats cooked ten minutes longer than the other ½ flats. I am anxious to know of lots 1 to 3 show a bacteriological condition different from lot 5.

Lots 7, 8 and 9 are Chums packed in 1919, 1918, and 1917 respectively. They have therefore undergone varying alternating periods of atmospheric changes. Do these samples contain living bacteria ? The greater part of our Chum packs of these three years have been disposed of and no complaints were ever received concerning them. In a soldered tin we know that salmon will keep indefinitely, but I would like to ascertain whether goods packed in sanitary tins will do likewise. If there should be any evidence of spoilage in the samples sent, can you detirmine whether this was due to faulty processing, insufficient cooking, or to corrosion of the compound in the rolls of the can ends ? The last mentioned I consider as likely to occur - no matter how thoroughly sterilized a pack may be - especially where goods are subjected to extreme climatic changes.

I think I mentioned to you Mr Knedall's remarks about pitted fruit packs which would show good vacuum when processed, but which eight or ten months later developed into swells. This he ascribed to germination of the seed. I understood Dr Bigelow, on the contrary, to say it was due to bacteria.growth induced by warm

weather. Thinking the matter over since, I am not sure whether he meant "swells" were developed from defective sterilization due to under processing, or to the generation of hydrogen gas. If the former, I presume the fruit would ultimately sour and spoil, while, if the latter, they would remain fit for human consumption. In Mr. Kendall's case the fruit he opened for me looked and tasted perfectly good, although the tin was undoubtedly a swell. Can you enlighten me in the matter ? Would canned fruit such as Mr Kendall's spoil in a tropical climate ? If so, and if longer initial cooking would have reduced the fruit to a mushy state, how do Pacific Coast fruits stand shipment to Europe in vessels which pass through the tropics ?

Yours sincerely

HD/P.