

lessen the time of the halt, when it was necessary to have as short a halt as possible.

178. Then one lamp was generally sufficient for every purpose on each halt?—It would not be sufficient if lime juice were to be carried, which I consider now to be an essential article of sledging diet.

179. Therefore, if you had entertained the same opinion before arranging the equipment of the sledges, you would, no doubt, have succeeded in making arrangements whereby you could have supplied sufficient heating power for thawing rations of lime juice?—In making these arrangements I should have so totally altered the whole system of arctic travelling that I need not have started off the men until a warmer time of the season, and then the whole question is changed completely. With the increased cooking necessary I think it would be a very severe tax upon the men if they were further exposed in the cold weather to a longer halt than was necessary formerly. I may state that after our late experience, except in the case where sledging parties are employed in an endeavour to save life, I do not think the men should be taxed to such an extent as they have been; and I would, therefore, on a future occasion only arrange for the men to be absent for about sixty days, which would enable a total change to be made in both the diet and the whole system of travelling.

180. It being your opinion, as I have understood you to say, that lime juice is an essential article of the dietaries in sledging, amongst those changes which you would in future make, I have no doubt you would include lime juice as one of the articles in the dietary?—Yes; and if necessary I would issue it in lieu of the evening tea.

181. Tea is greatly appreciated, I understand, by the men engaged in sledging?—Very much so; but all men that have ever been employed in arctic travelling have had a craving for lime juice also.

182. I observe that in the dietary, which I understand has been prepared by you, and which we have now been talking of, there is included a quantity of rum, half-a-gill daily. Was this rum consumed by the men employed in the sledging parties?—Yes, generally before any attack presented itself, when the rum was immediately stopped by the officer in command, and either used as fuel or left behind in depot. A considerable portion of the allowance was left behind in this way.

183. It was unnecessary, therefore, to have carried all this rum?—It proved to be so.

184. Lime juice might therefore, to some extent, even in the dietary which we have before us, have been substituted for more or less of this rum?—Certainly not. The lime juice requires much more water to mix with it, and requires sugar, and it is very frequently for want of water mixed with the tea.

185. I understood you to say that one of the reasons why you did not adopt the recommendation of the Medical Director-General, which we are now discussing, was on account of the extra weight that would have been required. By diminishing the quantity of rum or reducing it to a very small quantity, would not some weight have been gained?—The rum for forty-two days, for eight men, weighed 42 lbs., and if lime juice were substituted for it, it would weigh about the same.

186. Then, if rum had been altogether removed from the equipment of the sledges, lime juice might have been carried in the quantity which you have named without increasing the weight to be carried by the sledging parties?—Certainly, so far as weight is concerned. I cannot speak from experience as to the extent of the breakage of the lime juice bottles which would be occasioned; but I know that it has very frequently occurred, and that the little lime juice that has been carried has been lost in a certain proportion.

187. We have heard that in the "Alert" there was a very much larger number of cases of scurvy than in the "Discovery"; was the crew of the "Alert" absent

to a greater extent from the ship than the crew of the "Discovery"?—One main party from the "Discovery," employing twenty officers and men, in consequence of discovering the termination of Lady Franklin Sound, returned to their ship at an early date, and after only a few days of laborious travelling, and then had a good rest before being engaged on other short journeys, leaving only twenty-seven men of the "Discovery" to be considered, probably only twenty-two of them were employed on the North Greenland coast, and only fourteen in the distant journeys; whereas about twenty-four men were employed out of the "Alert's" crew on distant journeys. With the exception of the occasional rests on board, the crews of both ships were equally employed during the whole of the travelling season from early April to the end of June.

188. (Dr. Donnet.) You mentioned the amount of fuel consumed, and the extra time taken, and the extra weights added; might not the fuel used for thawing snow and making tea have served for thawing the lime juice?—Only just that quantity of water is formed which is necessary at the time.

189. As water is required for the making of tea, might not the lime juice have been mixed with this tea, and by adding the double allowance of sugar have made this beverage a pleasant and a necessary one?—Certainly, if it should prove to be a pleasant beverage, and if we could get over the difficulty of the actual carriage of the lime juice in its present state.

190. With regard to this addition to the weights of the sledges, is there not some article which might be dispensed with, and might not some precaution be taken to prevent the breaking of the jars of lime juice?—In preparing an arctic sledge its equipment is calculated to the very last ounce, and any alteration that can possibly be made now, must be either in addition to our present weights, or by the substitution of a new article for something formerly carried.

191. Do you consider spirits indispensable in an arctic sledge journey?—Not more so than elsewhere.

192. In your own experience have you not found a preference made in favour of tea, inasmuch as spirit, although having an invigorating effect upon the system, possesses an effect less lasting than that produced by tea?—I cannot state fully the different effect of tea and spirits, but knowing from my former experience that the men, one and all, considerably preferred tea to spirits on the last expedition, I doubled the allowance of tea, and contracted the allowance of spirits, and one and all were in favour of the change, and have reported upon it since their return. I personally am also in favour of the change, but the necessary halt that it occasioned for an hour and an half in the middle of a journey daily, was, I am sure, a very severe tax on the men, which was not suffered by the crews of former expeditions, who never halted for more than half an hour, and, in fact, proceeded on the afternoon journey after the allowance of spirit without the men getting cold by the halt.

193. Was a glass of spirits taken during this halt?—The halt was for luncheon, when half-a-gill of reduced rum was drunk with what little water was obtainable, but more frequently, in consequence of the want of water, drunk in its raw state.

194. Was tea taken at the same time with the spirits?—The ration of tea admitted of a supply only in the evening, when I personally used to mix my evening ration of rum in it; but those who did not do so could seldom obtain water to mix with it, and it was more frequently drunk raw. I may here state that all these remarks have reference only to the cold travelling during the month of April, and the first ten or twelve days of May.

195. Can you state from personal experience that spirits from their stimulating effects, may for a time resist the depressing influence of cold, but when this stimulus has subsided the cold acts with greater severity?—The change has been most marked; whereas in former journeys after their ration of rum the men

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