development of the disease. The presence of a large amount of free acid in this juice endows it with the special action of an acid which is distinct from that it possesses as an antiscorbutic. If too large a quantity be given for a long time, the former action may become injurious by impairing digestion and diminishing appetite; and although in certain circumstances this injury may be counterbalanced by the prevention of otherwise inevitable scorbutic disease, still care should be taken not to increase the ration above that required for this purpose. The necessity for an increase above the usual ration of one ounce will occur when some condition obviously tending to produce scurvy is found to exist, or when by careful observation symptoms suggestive of a scorbutic taint are first detected.

Some further reference will be made to lime juice as well as to other reputed antiscorbutics in a subsequent portion of this paper.

(*b.*) The experience of the recent expedition has shown in a very conspicuous manner that fatigue resulting from severe muscular exertion (3169, 3188), especially when undergone after a period of comparative inaction (153, 2980), is one of the main accessory conditions favourable to the development of scorbutic malnutrition. It is, therefore, important to avoid this condition as far as possible; by lessening the weight to be advanced, by refraining from severe labour during the first few days of the journey, and by adopting sledges of such a construction that they may be as well adapted for being dragged over the kind of road encountered as the circumstances will permit (952, 1303, 8728). It is also of much importance to avoid any abrupt change of diet, especially when severe labour is at the same time suddenly undertaken; and this may to some extent be done by accustoming the travellers before their start to any unusual articles of food contained in the sledge diet.

Unless these precautions be observed great risk is incurred of impaired digestion and nutrition, which may precipitate the occurrence of scorbutic malnutrition should the diet unfortunately be defective in the required direction.

The work of sledging being attended, even in the best of circumstances, with severe muscular exertion, the quantity of food represented in the scale of diet should be large, and non-nutritious substances should be eliminated from it to as great an extent as possible. The latter object is successfully attained by the use of condensed foods, such as pemmican and dry preserved potato. Pemmican is a nutritious food well adapted from its composition* for severe work in a cold climate. The experience of the recent expedition showed, however, that some men did not at first care for this food (338, 592, 961, 1303); but this distaste appears to have disappeared greatly on further trial (729, 961). It would be advisable to provide for such exceptional cases, and at the same time introduce variety, by having other meats at the command of sledgers, such as dried beef or venison, tinned meats, or bacon, many of which might be advantagously stored in depôts. In the more northern latitudes, sledge parties cannot hope to supplement their supplies to any material extent with game, but the great value of fresh meat to sledgers will always render it desirable that no opportunity be lost of securing game whenever it is met with.

For reasons previously stated, the addition of milk to the dietary would prove valuable, in the form either of condensed or of desiccated milk (836, 4190, 3664–3671), the latter being even a more concentrated food than the former.

A diversity of opinion has been expressed in the evidence with regard to the use of alcohol during sledging. On the one side it is stated to be injurious (4686, 5249, 8808), while on the other it is stated to serve many useful purposes. The chief of the latter are the removal of wakefulness resulting from exhaustion (5204, 5415), and the production of a feeling of comfort and a disposition to undertake further labour towards the end of a day's work (503, 667, 6778–6782). The evidence is decidedly opposed to its possessing any power of increasing the amount of work above what may be done without its use; while the opinion has even been expressed that in place of increasing it really diminishes the capacity for work (4865, 5204, 5249, 5964, 9012). Apart from any question of its influence upon nutrition or health, there does not appear to be any marked advantage derivable from its use, although previous habit or custom may be regarded as a reasonable ground for its continuance in small quantity; and it is probable that nutrition or health cannot be materially affected by so small a daily ration as half-a-gill of rum, at least in selected men undergoing severe but not excessive outdoor labour in a cold climate. The experience of sledge travellers does not afford any decided evidence either of its power to prevent or to cause scurvy. Long sledge journeys have been accomplished by men supplied with rations of rum without scurvy having obviously appeared (3008, 3119, 5753), and

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* See Professor Frankland's Analysis, p. xliv.; and Professor De Chaumont's Analysis, Appendix, No. 23.