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# Emergency Rations For Expeditions In Different Climates

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## Abstract

Lifeboats have for long been provided with rations for those who survive the immediate disaster of shipwreck. Many civilian and military airplanes also carry emergency rations for use in the event of a forced landing in an isolated place. In some military planes the pilot can, in an emergency, eject himself and his seat from the plane and descend by parachute.

Attached to the undersurface of the seat are rations and equipment for survival.

There has been much study of the most suitable type of emergency ration for these purposes.

Castaways are usually rescued, if at all, within a period of 14 days. It is not generally considered practical to plan for any longer period of survival. Rescue equipment must provide many other things besides food. Food, in fact, receives a very low priority: for no healthy man will die of starvation in 14 days, nor will he suffer any permanent adverse effect from the experience, although his physical efficiency will be somewhat reduced at the time. However, within 14 days he can readily die of lack of water or from exposure to extremes of heat or cold. Protection against the environment and water have, therefore, priority over food,

as also has radio equipment which enables the survivor to get in touch with rescue parties. Nevertheless all emergency equipment contains some food which will, in part, prevent the physical deterioration consequent upon total fasting and, perhaps more important, sustain the morale of the survivors.

## BACKGROUND

A man at rest in an equable climate loses at least 800ml. of water daily by evaporation from the skin and lungs.

This may be increased fourfold or more by the necessity to do hard physical work or in a hot environment. The same has occurred to the soldiers of the Royal Hungarian Army in Russia in August 1942. (Personnel experience of Pfannl T, survey officer of the III. Army Corps of the 2nd Royal Hungarian Army).

The minimum amount of water that his kidneys must pass is a little less than 400ml. daily.

To prevent a loss of body water, the minimum daily intake must be 1 l., but much more is needed if physical work is undertaken or the weather is hot.

It is rarely possible to provide emergency water which would be sufficient

The body of a healthy man contains about 40l. of water.

A loss of 2 l. or more will usually cause discomfort and inefficiency, a loss of 4 l. will be disabling and a loss of 8l.

will rapidly lead to death. Thus even with everything else in their favour, few men would survive 10 days without water.

It is rarely possible to provide emergency water which would be sufficient to cover the losses that might arise under very hot conditions. Small solar stills have been designed which can meet in part the extra needs of castaways on a tropical sea.

In such conditions it is essential to attempt to minimize water losses by the provision of tents or other material which will give shade, survivors must be warned of the adverse effects of unnecessary physical activity. In great heat, sea water can be used to keep the body cool.

Sea water has a concentration of sodium ions of 420 m Eq./l. The corresponding concentrations in the blood plasma are about 142 and 104. Sea water is thus much more concentrated than the body fluids. Moreover the human kidney is not normally able to concentrate either sodium or chloride to high a level as in the sea. Critchley, however studied carefully the records of castaways during the Second World War and showed that the drinking off large amounts of sea water was always fatal. It is probably wise to forbid

the drinking of any sea water.

### **DISCUSSION**

The salt intake should be as low as possible, for the necessity to excrete salt will increase the need for water. Johnson and Sargent carried out on a large scale realistic field trials of various emergency rations in different climates for periods of 14 days. In many of these trials the daily water intake was limited to 900ml. Whatever the nature of the ration, it is essential that it be provided in a compact form, that requires no cooking or other preparation and that it does not

deteriorate on storage even under adverse condition. Various forms of boiled sweets, candies, toffees and meat bars can be used for this purpose.

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