

# THE FINNS HAVE A WORD FOR IT

BY

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In recent exercises in the North Sea, the Home Fleet carried out a 'closing down trial' to practise steaming under conditions of nuclear attack. Part of the exercise involved shutting down engine room ventilation, and it was intended that this conditions should obtain for as near two hours as possible. It became in fact largely an endurance test.

The challenge was well accepted and the results were of some interest. Only a few ships managed to complete the full two hours without any change of watchkeepers, some ships eventually having to change the watch every few minutes. In the particular ship I visited for the trial the P.M.O., who was employing a modified form of whirling hygrometer to assess the relative humidity, considered that by all the good books the endurance limits had, in theory, been reached two minutes after the trial commenced! To give him his due, he continued to take valuable records for the next one and a half hours, by which time even the hardened Red Sea and China birds were beginning to wilt somewhat visibly. The temperature on the plates rose to about 118 degrees F., with 10 or more degrees increase in the hot pockets at the after end of the engine room, and a similar decrease near the bilges. Other ships were somewhat similar.

## **The Sauna Bath**

Not long afterwards *Maidstone* and *Ocean* went to Helsinki. One of the 'things you *must* do' in Finland is to have a Sauna Bath. For those who know only the Japanese variety, which also has its attractions, it must be explained that the Sauna is a variety of Turkish Bath. The essential is a small dark room, fitted with wooden benches, scant ventilation, and a stove in the corner. The stove is usually a brick affair, stoked up with logs, the heat being used to heat up a pile of stones to something infernally hot. At intervals, one of the perspiring occupants may throw on a pannikin of water, the resulting steam giving an impression of being very close to the Realms of Darkness. After a quarter of an hour or so you gasp for the door thankful to be still alive, have a shower, and relax pleasantly with a glass of milk. Then the fun starts all over again, cook, shower and relax. The second cooking does not seem so fearsome and with a nonchalant air you probably imitate the habituées and lightly beat yourself with a brush of wet birch-leaves. After two or three cookings you can then lie on a sort of butcher's block and be scrubbed. Certainly no Nannie ever scrubbed so hard, and the old cronies who specialize in this art have forearms like an ox. Finally, after the last cooking you dash straight out into an ice cold lake, or in winter roll in the snow, or even jump into a hole in the ice.

Just to record this unusual experience, for a small sum you get a handsome certificate—of which you become quite proud. It reads as follows :—

### The Order of the Bath Sauna-Suera

Know ye all ye Engineers of Hot Water  
and Devilish Devices

This is to Certify  
to all of volcanic origin  
that in the flames, steam and glowing atmosphere  
of Arctic Finland, our clean living friend

.....

naked and unashamed, has been approved as a  
KNIGHT OF THE SAUNA  
at Waskiniemi by the frozen shores of Helsinki  
having observed the Ritual of Ordeal  
by STEAM and duly been boiled alive  
in all modesty and honour

Witnessed in corpore toto

Washed in all thoroughness

.....  
President

.....  
Lady of the Bath

So what ?

The point of my story is this. The temperature to which the 'cooking room' is heated is 120 degrees Centigrade—repeat Centigrade ! The significance of this astonishing fact only dawns slowly. Does your blood really boil ? It is most noticeable that you burn your fingers if you run them through your hair, and needless to say it is a wise precaution to place a towel on the bench before sitting down ! But the inconvenience of existing at this temperature is not completely intolerable, though doubtless it would be if you tried to do anything other than just sit and sweat. The secret, of course, is that the atmosphere is extremely dry. It is only when the habituée wants to 'turn on the heat' by throwing a pannikin of water on the stove that you feel real inconvenience, and quite instantaneously.

Why do the Finns, and I believe the North Russians too, use this peculiar form of self torture ? It is largely traditional. Every cottage has its Sauna, so do even the most modern flats. Saturday's communal bath night assumes a sort of mysticism, the family sitting round in silent contemplation. In a country which freezes for a greater part of the year it is not surprising that piped water presents its difficulties, and the Sauna provides a sensible alternative. Its value has been proved by the performance of Finnish athletes, and by the astounding endurance of the Finnish soldiers during the 'Winter War' against the Russians.

#### Feeling Hot ?

Literature on 'how to be happy though hot' is apparently scanty. The latest official publication I could find is B.R.1472—*Environmental Warmth and*

*its Measurement*—of 1946, though doubtless much research has since been done in the cause of habitability and endurable humidity. The ordinary Pussers wet and dry bulb thermometer is rather crude and inaccurate, the expert preferring the whirling hygrometer, closely resembling a policeman's rattle. The relative humidity so deduced is defined as the actual water vapour pressure expressed as a percentage of the vapour pressure of the air saturated at the dry bulb temperature. All sorts of other ingenious toys are occasionally used to take account also of radiation and air movement—but the conclusion is reached, somewhat tentatively, that the *wet* bulb temperature is the greatest factor deciding human limitations. I much regret I did not sit in the Sauna waving a whirling hygrometer, and that the unfortunates who perished in the Black Hole of Calcutta left no records.

### Closing Down Trials

Haldane considered, forty years ago, that 'when resting and stripped to the waist, the endurable limit was a wet bulb temperature of 88 degrees F. in calm air and 93 degrees F. in an air current of 150 ft/min'. He would have had a rude shock in other recent trials (October-November, 1957) in the Fleet, when the following were recorded in the engine rooms in closing down trials :—

	<i>Wet</i> (degrees F.)	<i>Dry</i> (degrees F.)	<i>Rel. Humidity</i> (percentage)
<i>Cavendish</i>	108	120	67
<i>Contest</i>	107	114	79
<i>Comet</i>	—	120	—
<i>Sheffield</i> Ford. E.R.	99	127	39
Aft. E.R.	99	122	38

The upper deck temperature was 50–55 degrees F. In each case 35–45 minutes was as much as most of the engineering personnel could take. Agreeable Sauna conditions have been stated as 30 per cent humidity with 170 degrees F. dry bulb temperature.

(It is interesting that the B.R. notes a clear relationship between accident rates and temperature. 'Compared with the rate at temperature of 65–69 degrees, the accident rate was 40 per cent greater when the temperature rose above 75 degrees F. and 35 per cent greater when below 55 degrees F.' Alarming figures for an H.M. Ship!).

The 'closing down' procedure accentuates the old habitability problems in the engine rooms. 'Wild heat' has always been appreciated—if you can't lag it, blow the heat out with adequate ventilation. But with ventilation shut off it is obvious that not only does good lagging assume a greater importance, but it is vital to reduce the humidity. Heaven forbid we should watchkeep at Sauna Bath temperatures, but it certainly does appear that we might be able to endure far higher 'engine room (dry bulb) temperatures' if the humidity could be brought down. Both the visible and the invisible steam leaks are therefore vital, and gland evacuation systems are not just another luxury with attendant maintenance problems.

Then there is another problem. All the cold surfaces such as parts of condensers, cooling water pipes, etc., are all busy condensing away the moisture in the surrounding air. In single skin small ships, the ships' sides are always running in water, and this combined with the inevitable leaks from water

glands and joints gives us water in the bilges to a greater or lesser extent. To what extent does this free bilge water re-evaporate and help to increase humidity? Is there any noticeable difference in humidity if bilge water is drained into sumps as in double-skinned ships? Short of perfect leak-free systems the only real solution would appear to be a completely air conditioned engine room, condensing out all steam leaks as they occur! Neither the Naval Staff nor the Treasury would appreciate this much.

I suggest there is a great opportunity for not only practical experiment but for bright ideas, of the Lott Trust sort, in this field. It has already been realized that circulating the cold air from between the condensers to the starting platform by means of a D.B. fan affords great relief. I gather that the late E.O. of H.M.S. *Glasgow* tried an ingenious device to cool his watchkeepers in the tropics. Overall suits were fitted with a vent pipe at the back and a length of air hose which was connected to an L.P. air supply. This unethical and Satyr-like arrangement, though unlikely to be approved by the doctors, allowed a welcome stream of cool air to circulate inside the overalls, and could readily be unplugged if the watchkeeper wished to move beyond the length of his tether. The Home Fleet has been invited to try out this idea during the West Indies cruise.

It is easy to be frivolous. The problem is a real one, and a serious one if we are to be ready to meet the threat of nuclear attack. Watchkeepers may well be already exhausted, but until remote control is fully implemented means must be found to enable them to undertake their full duties below if necessary. Any means so found would almost certainly be of direct benefit even if not fully closed down.

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