THE CRUISE OF THE "ALLIANCE"

by

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The Tropical Snort Cruise carried out by H.M. Submarine *Alliance* lasted for thirty days, from 0833 9th October, to 0900 8th November, 1947. During this trial a distance of 3,193 miles was covered, the route taken being approximately as follows—south-east from the Canary Islands to Cape Verde, then due south, due east along the Equator, altering north-east to Cape Palmas, thence northwards up the African coast to Freetown.

The cruise was made entirely with the use of Snort, with the exception of three nights when *Alliance* went deep to take bathythermograph records, and to work the battery. The object of the cruise was to obtain information concerning the living conditions onboard a submarine on an extended snort patrol in tropical climates.

Alliance left Portsmouth with a complement of 7 officers and 65 ratings, on 1st October, 1947, and after calling at Gibraltar for fuel and water, dived in a position south-west of the Canary Islands to commence the Snort Cruise.

A New Routine

The rapidity with which everybody settled down to the new routine of life was noticeable, and it was not long before everybody had lost the initial feeling of strangeness, and began to " feel their feet."

The most important personal enemy to overcome was boredom, especially among the ratings. Fortunately it had been possible before leaving Portsmouth, to obtain on loan a cinematograph projector and about a dozen films, and also numerous records and a number of B.B.C. recorded programmes. Film showings were held nightly in the for'd torpedo stowage compartment during the dog watches, and, in spite of the complete outfit of torpedoes carried, it was possible to accommodate about a third of the ship's complement at each performance. This turned out to be a greater success than originally anticipated since its ancillary effect was to reduce greatly the numbers occupying the messes at this time, a fact which was appreciated nearly as much as the films themselves. Unfortunately for the last week of the cruise a defect developed in the sound circuit, and the scrambled speech left all but the viewing to the imagination !

Distiller Defects

A Class submarines are fitted with two electric distillers of the thermo-compression type, each with a rated output of 4 gallons an hour. Unfortunately owing to trouble with the heating elements the output for the first ten days was greatly reduced. A salt water leak developed in one distiller which could not be remedied on board, and as there were no heating elements to run it anyway, this unit had to remain idle for the rest of the trip.

Even had these defects not occurred the fresh water consumption began at an unacceptably high figure, and several unsuccessful attempts at rationing were made before the use of fresh water for washing purposes had to be forbidden altogether, if *Alliance* was to remain at sea for the intended period. The only alternative was to utilise the air-conditioning plant condensate, of which about a ton a day was being drained into the bilge of the air-conditioning compartment. A semi-rotary pump was rigged, and a rubber hose led up the

radar mast well into the control room. Anyone wanting a wash badly enough had to entrust his bucket to the panel watchkeeper, and disappear below to earn the privilege of such a luxury. The amount of energy required to produce a gallon of water being directly proportional to the number of buckets waiting hopefully in concealed corners of the control room !

The air-conditioning plants which yielded this musty but highly valued asset performed admirably throughout the whole cruise, requiring only very minor maintenance. During the first two weeks only one of the plants was used for the whole ship, but for the remaining time both plants were in use continuously.*

Trial without Air-conditioning plant

For one extremely unpleasant 24 hours the air-conditioning plants were shut down, and the snort flap valve changed over to the ship's ventilation trunking, so that the warm, humid (horribly fresh !) air was drawn down through the snort mast, and through the ventilation system. The effect was immediate sweating of men and machinery. One awoke in the morning, if indeed one had managed to get to sleep, soaked in sweat and feeling " perfectly lousy." It was a day which no one would care to repeat. If it had continued for a few more days, there would have been many more discomforts in the form of prickly heat, of which, in fact, only one mild case was reported during the whole cruise. All these things had their object, however, as it did produce some very sticky temperatures for " Doc's " magnificent assortment of thermometers, and it did impress on those who take things for granted, the value of air-conditioning plants.

General condition in the Boat

The conditions usually prevailing in the boat as a whole were such that shirts and shorts could be worn without discomfort (barring any strenuous exertions), in fact, life was fairly tolerable, though cramped. This latter point was aggravated by the extra hands borne for watchkeeping duties. The most uncomfortable watchkeeping position in the ship was on the distillers in the auxiliary machinery compartment where there was very little air movement, very high humidity, and temperatures up to 114°F.

The main engines behaved very well throughout the cruise. One major defect occurred to the port supercharger drive which has since been found to have been aggravated by a manufacturing error in the cushion drive wheel.

The Snort

The snort exhaust valves, as expected, were a bone of contention. They proved unreliable from a water-tight viewpoint owing to distortion, and also required constant attention to keep the operating and grinding gear from seizing up. Consequently, on more than one occasion water found its way into the cylinders when stopping the engines. Owing to this inherent defect, every effort was made to avoid shutting off both engines together in cases of emergency. The practice adhered to if the snort head dipped for a considerable period, was to shut down one engine just before 6 inches of depression was reached and to take out the engine clutch to make that motor available to regain trim. Meanwhile the exhaust valve was ground in. This ensured that one engine was dry, and available to start, in case the second engine became flooded in the event of that also having to be stopped.

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* On the Medical Director-General's advice the use of condensate from the air-conditioning plant is not favoured, and in any case should never be used for drinking.
Modifications are being made to the electric heating elements to give longer life and the design of a distilling plant of greater output is well advanced.

It should be pointed out here that the exhaust from both engines marry before entering the snort mast, so that no flooding back can occur so long as one engine is running at medium speed.

The maximum depression reached during the cruise was about 8 inches of mercury, but *Alliance* was fortunate in having fair weather all the way, so that there was very little continuous " pumping " of the atmosphere, which can, if it goes on long enough become very demoralising. This condition is caused by successive heavy swells passing over the snort head, or more acutely by repeated loss of depth control due to bad weather.

This " pumping " did however occur for short periods, the effect of which was to lower the dew-point sufficiently to produce fogging in various parts of the boat, notably one which persisted in descending from the gun tower into the ward-room.

The tinned foods carried onboard reacted noisily to the varying states of atmospheric depression (no record is held of any reaction to mental depression !) strangely enough, not always to the detriment of their contents. The coxswain's stores on occasions sounded rather like a hard pressed machine gun post as the ends of the cans buckled under the fluctuating pressure.

No insurmountable difficulties were experienced during night snorting. The chief difficulties were those of visibility, especially on moonless nights. A slightly shallower depth of 35 feet was maintained at night for this reason.

Some very impressive sights were produced by phosphorescence. On some nights the whole outline of the bow and jumping wire could be viewed through the periscope.

Depth keeping Trials

Depth keeping trials were carried out at intervals, using the after hydroplanes only. The success achieved in these early trials was such that the last seven and a half days was done entirely on after hydroplane control, including one dive to 340 feet for bathythermograph records. The success of this method of control was largely attributed to the halving of the human error by only having one hydroplane operator. This, however, did not pass off without its moments of interest, as when error did creep in it did so with a vengeance. Twice during the last week the " bubble " was chased off the inclinometer, fortunately forward, until *Alliance* was ploughing herself steadily along with the fore-end depth gauge reading 5 feet, and the after end one 50 feet !

Father Neptune leaves his Mark

Father Neptune arrived onboard at the equator according to schedule, and after making a few cynical remarks about chaps trying to smuggle ships through his police cordon unseen, said that he would call again to collect his homage and perform initiation rites later on, when *Alliance* was behaving more normally like most other ships that dared to enter his realm. Meanwhile he condescended to distribute a number of his more odious orders among the less deserving members of the crew.

Apparently he really did take exception to this unorthodox mode of travel through his seas as, on leaving, with a sweep of his trident, he covered the hull with hordes of some of the lowest animal life that his domain could muster within striking range. This fact was discovered by the navigating officer, who, after emerging air-locked through the conning tower to take a sight did in fact get one that he hadn't bargained for, and returned with fabulous tales of divisions of slug-like creatures standing on their tails manning the bridge rail, sticking out their tongues at him at regular intervals.

Specimens were procured as proof of sobriety but these creatures made up for their low station in life by the tenacity with which they clung on to the ship. Consequently there was rather a high mortality rate before a few were effectively dislodged, and even these had a 20% wastage in the vicinity of their " big ends " and did not survive the rigours of snorting for very long. In spite of Neptune having thus fined us the best part of a knot for surreptitious entry, *Alliance* completed the thousandth league well before the end of the trial.

On the surface again

At 0900 on Saturday, 8th November, 1947, *Alliance* surfaced and both conning tower hatches were opened together for the first time in thirty days. The stench of marine life drawn down into the boat was at least a change, if unpleasant.

Later that forenoon *Alliance* closed on a native fishing boat from French Guinea, the occupants of which offered to sell some snapper (a most delectable fish) at $10 a piece. Fortunately, a more appropriate form of currency was found, which resulted in the most delicious dish of fish and chips imaginable.

After Neptune had appeared once more to award the balance of his punishments, which he did to no mean tune, *Alliance* headed for Freetown, arriving alongside King Tom Jetty at 0800 on Sunday, 9th November, 1947—but Freetown is another story !