

## Operation Pluto

### Chapter 7. Trials and training.

Always throughout the war one of the major difficulties was to provide sufficient suitable training for the various bodies to fit them for the operations which they would be called upon to perform. Planners and operational commanders were always hoping for some form of armament or equipment which was literally foolproof or, better still, only needed the very minimum of manpower. By the end, of course, this military Aladdin's lamp, as it were, duly appeared in the form of the atom bomb. Since then no doubt, the same people and many others have decided that they could well do without it.

In the case of Force Pluto, training was very much a case of trial - and trials of both sorts there were many - and error. As nobody had done the job before it was an example of the blind leading the blind. Since that time a number of people have suggested that there was nothing new about Pluto, as cable laying techniques were well tried and established. But, apart from the fact that both consisted of laying a line on the ocean bed, there was not a great deal in common between Pluto and previous deep sea cable laying. The Hamel mild steel pipe bore only a superficial resemblance to a deep sea cable and only within very narrow limits behaved like one; and the Hais cable, although in appearance not unlike a huge submarine cable of the sort used for communications, was very different in its handling characteristics because of the great weight and the fact that it was hollow and had to be kept filled with water under pressure while being laid.

The remarkably strange thing about Pluto is that, apart

(2)

*Commander*  
from ~~Captain~~ Treby Heale, who made the first full scale trial lay from Swansea to Watermouth, there do not appear to have been any other officers ~~or men~~ in the force who had had cable laying experience. <sup>\*</sup> For an operation considered by some <sup>but</sup> (and by no means all) of those vitally concerned with the supplies of P.O.L., it seems a strange omission. Possibly it was thought that the two techniques were so completely different that cable-laying experience would be of little value, but this is rather unlikely. Another possibility is that experienced personnel were in short supply and considered to be more valuable manning the ordinary cable ships which were kept busy throughout the war and among which there had been some major casualties. Whatever the reason, Force Pluto was manned by mixed crews of Royal Navy and Merchant Navy personnel, the Merchant Navy men on what was known as T124X, or cable ship articles.

A basis for training was provided by the original experiments and trials carried out under the instructions of the Chief of Combined Operations and through his Director of Experimental and Operation Requirements, Captain Thomas Hussey, R.N. All this work had been carefully documented, but it is highly probable that very little use was made of this information or the experience gained in the initial steps. Even in wartime, when time and manpower are at a premium, people always seemed to want to find out for themselves and <sup>rarely</sup> ~~merely~~ made use of another's work and reports. The records of the actual trials and training carried out by Force Pluto tend to show that a completely fresh start was made, rather than beginning where Combined Operations work left off. At this time it seems strange also that the officers on Captain Hussey's staff responsible for the Pluto work were not

*(where marked as an aside)* \* A number of officers <sup>and men</sup> had had experience of laying cable loops for various purposes but this was a very different proposition from Pluto requirements.



seconded to Force Pluto where their experience must have been of value and saved time - if anyone had been prepared to listen to them. However, this attitude is not uncommon as anyone who has acted as technical adviser for film and T.V. shows will know.

An example of the gap between ideas and fulfillment was the floating pipeline designed to be used with Tombola. The original idea came from one of Captain Hussey's staff who suggested it to Mr. E.G. Cartwright, Chief Engineer of the Asiatic Petroleum Company, but at that time on the staff of the Petroleum Warfare Division of the Ministry of Fuel and Power (P.W.D.). E.G. Cartwright was impressed and arranged for a trial 1000 ft. length of 10 inch pipeline to be welded up at Ferryside in Carmarthenshire. The principle was that the pipe should have the minimum of positive buoyancy to allow it to be floated into position but would sink to the bottom when filled with petrol. This, if it proved satisfactory, would overcome many of the difficulties, both of hauling out the 6 inch Tombola pipes along the sea bed and also simplify joining up the flexible hose for the *tanker* at the seaward end. In fact, although pipelines were constructed on this principle and ready for use, they were never brought into operation, the reason given being that they were difficult to handle. These 1000 ft. lengths of 10 inch pipeline were so flexible that they could be - and were, - experimentally - tied in a knot and could be towed with remarkable ease ~~so~~ they might well have overcome some of the difficulties experienced in the operation. Decisions may have been influenced by the fact that the Tombola pipelines from shore to ship were the responsibility of the Royal Engineers, with some

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2 help from the navy for hauling them out to the tanker moorings. The floating pipeline was almost entirely a naval commitment and a little service jealousy possibly crept in. Another explanation was that the long pipelines under tow could cause havoc in the crowded swept channels.

The original experiments and trials of Tombola were held on Westward Ho! beach at Appledore, as has been mentioned. Once the initial problems had been overcome, it was clear that there should be no major difficulties in getting the 6 inch pipeline out to the tanker moorings. But this was on a nice flat, sandy beach, whereas the spot chosen for Tombola in the invasion had rocky outcrops and was really not suitable for hauling pipes out. That there may not have been much choice has also been suggested but had Tombola proved to be as essential as the planners thought possible, the difficulties of the sites might have proved disastrous. All, or nearly all the Tombola training of Force Pluto was also carried out on flat sandy beaches in Christchurch Bay, and at Ryde in the Isle of Wight.

Opinions recently expressed on the difficulties experienced during Tombola training have tended to differ and it is more than likely that time has had a softening effect. At a distance of more than thirty years disasters may lose some of their impact and even successes may not appear to have the brilliance accorded them at the time. It seems possible that Captain Hutchings felt Tombola was very much a poor relation to Pluto, although his own reports of the operations do go into details of the training and the operations at Port en Bessin.

of 1 Training in the laying and general handling of both the Hais and the Hamel lines was very much restricted by



(5)

the need to conserve material. As it was, it became clear that as far as Hais cable was concerned, the manufacturing capabilities in Britain were not going to be able to produce a sufficient length of cable to supply the amount of fuel which the planners deemed would be necessary as the armies advanced. This was to some extent overcome by making use of productive capacity in America, but in the event, what might have been considered a foreseeable error rendered most of this very expensive material useless.

Training in the laying and handling of the Hamel line was simplified by the fact that H.M.S. Persephone, the converted hopper used for experiments and trials, was available and this vessel, under the command of Lt. Cdr. J. Lee, laid a number of lines from Stone Point on the Hampshire shore to Gurnard Bay on the Isle of Wight. This exercise was extremely valuable, as it brought to light a number of unexpected characteristics of this very unusual 'cable'.

Details of the origin and construction of Hopper Barge W24, subsequently elevated to the title of H.M.S. Persephone, thus maintaining the underworld tradition, have already been given. This rather humble vessel was in fact a most valuable piece of equipment and in company with H.M.S. Holdfast, also of humble origin, was responsible for a great deal of the essential experience gained in the experimental and training stages of Pluto.

*in Persephone* One of the first defects discovered was that the weight of the drum transmitted through the trunnions,

(6)

had caused the deck to sag. This allowed the wires driving the drum to slip so that the drum itself tended to rock backwards, making the winding on of the pipe impossible. With the deck shored up and suitably supported the winding gear and the drum worked perfectly and there was no further difficulty of that kind. Lt. Alan Pook, personal assistant to Capt. Hutchings, recalled that at this stage they had to put up with a lot of scepticism and indeed ribaldry at the suggestion that an apparently rigid and inflexible steel pipe could be wound round a drum and subsequently unreeled like a deep sea cable and laid on the sea bed.

major x The first trial lay by Persephone from Stone Point on the Hampshire shore to Gurnard in the Isle of Wight went off without any major hitch, except the one which was to exercise the minds of all concerned for many months - that of dealing with the end on the far shore. (A) below.

Another interesting suggestion came from one of the big thinkers who insisted that the huge drum rotating briskly would have a gyroscopic effect and that, when the vessel altered course through 180° at the end of her run, she would maintain the turning list and come home decidedly lop-sided.

At the start of a lay the end of the pipe was secured to the sea bed with an anchor attached to a hawser and, as soon as Persephone went ahead, the drum revolved freely of its own accord, paying out the pipe smoothly and maintaining an even tension on it.

Marking the end on the far shore was found to be difficult and eventually this was overcome by attaching

(\*) ~~in fact~~ An initial 12 miles of pipe had been laid in a loop off Lee on Solent to test the gear.



(7)

a special buoy to the end of the pipe by a length of wire. The buoy was known as a 'blowing buoy' as it first sank to the bottom with the pipe, allowing Persephone to get clear. Shortly afterwards a soluble plug dissolved, releasing a mechanism which in turn punctured a container of compressed air, blowing the buoy to the surface. This system was also used later with the Conundrums.

It was principally at the shore ends that the different characteristics of the Hais and Hamel lines were most evident. To a large extent the Hais line behaved like a large and very heavy deep sea cable. It was quite flexible and comparatively easy to lift from the sea bed to make a joint. The Hamel line could easily be dented or crushed and, although flexible enough for straight-forward laying, it resented any attempt to move it out of the line of the lay. It was normal to lay the far end parallel to the shore in order that the laying vessel could keep within sufficient depth of water and leave enough pipe to reach ashore ~~to~~ to above low-water mark.

After a fairly considerable period of trial and error, the method finally adopted with the Hamel pipe was to recover the 'blowing buoy', lift the end of the pipe and run a heavy hawser to the beach.

The problem of what to use to haul the rope, and eventually the Hamel pipe itself ashore, exercised the mind of Capt. Hutchings for some time. Suddenly he remembered that as a boy he had been fascinated by watching two <sup>a</sup>stem ploughing engines at work. These

machines, similar to a traction engine but with powerful winches, hauled a gang of ploughs across a field, back and forth, while firmly anchored to the ground. Their hauling capacity was tremendous and it seemed to Hutchings that this was just what was required to haul the Hamel lines ashore. He had, as rather frequently happened, a great deal of difficulty in persuading the authorities that these rather old-fashioned engines were going to solve a major present day problem, but eventually they gave in - as they usually found necessary as Hutchings never gave up - and a number of ploughing engines were supplied by James Penfold Ltd. of Arundel, Sussex, and apparently did the job very well. There will be further mention of what happened to them, or at least of one in particular, when Pluto reached the coast of France.

There was never any question of Persephone being used in the actual landings, as the capacity of the drum in the hopper barge was very limited and would not carry enough 3" Hamel pipe for the Dungeness - Boulogne crossing. Nevertheless this odd little vessel amply justified her existence both in training and laying pipelines connecting the mainland supplies to the Isle of Wight.

Training in the laying and general working of the Hais cable was a different matter. Commander Treby Heale had demonstrated the fact that it could be laid quickly and comparatively easily but that, as with the Hamel line, the bogey appeared at the far shore, producing all sorts of difficulties in landing the end dropped by the laying



vessel. Training in the technique of handling the shore end was able to proceed unhindered as the amount of cable required for this was very small. It was in the handling of the major cable laying vessels, Sancroft Latimer and Algerian, that shortage of Hais cable created training problems. Five miles of Hais cable was allocated for this purpose and H.M.S. Latimer, commanded by Treby Heale, proceeded to the River Clyde to carry on as much training as the material would allow. The officers and leading hands of Sancroft were accommodated in Latimer, so that both crews were able to get some practical instruction in the use of the cable machinery - which was nearly identical in both vessels - and the handling of the Hais cable. Unfortunately, few details of this training appear to have survived and it must be inferred that at least Captain Hutchings was satisfied that the men and ships were capable of making the full scale lay under operational conditions. Since <sup>had</sup> the men involved had ~~no~~ cable ship experience and, with the exception of Treby Heale, the commanding officers were learning as they went along, it must have needed a certain amount of determined optimism and cool nerves to accept the fact. Lfw of

On completion of the necessary modification and fitting of cable handling gear, Latimer moored at Henley's Cable works at Gravesend in February 1944 and loaded 72 miles of Hais cable and an additional 5 miles for training purposes. Lt. Cdr. J. Lee had been transferred from H.M.S. Persephone, promoted to Commander and appointed to command Sancroft. He also joined Latimer for the trials and training in the Clyde. It will be appreciated that

this was barely four months before the landings took place.

Working from Lamlash in the Isle of Arran, Latimer carried out various cable ship operations in the deep water of the Clyde. The five mile length of cable was paid out over the stern, then grappled and the end picked up and coiled in two tanks. It was then relaid over the bows to demonstrate the method of changing tanks while laying. Every possible type of operation which might have to be carried out when the work was done in earnest was demonstrated by Cdr. Treby Heale. He remarked that this experience was of great value to Cdr. Lee who subsequently made some of the most successful lays across the Channel. One cannot help feeling that the ability of the inexperienced and briefly trained officers and men of the Pluto force must have astonished the experts. It is perhaps surprising that more decorations were not awarded within the force in recognition of the dedication and determination of this somewhat generally neglected band of men. On the other hand, it may not surprise those who have experienced the uneven distribution of favours in both peace and war.

In an account of the operation given by Treby Heale, he remarked that by the middle of May 1944 the whole of Force Pluto was ready for action. It may be thought that this contention must have erred on the side of optimism and could have been followed by the rider "and not a moment too soon!".

More than one member of Force Pluto has commented on the fact that in Jock Hutchings they had an inspired leader who had an unshaken belief in the eventual triumph of the Pluto project and of the absolute necessity for



this if the invasion was to succeed. He simply could not understand how anyone could disagree with this belief and he was apt to make outspoken and sometimes scathing remarks about senior officers who expressed even minor doubts. This can hardly have endeared him to those in authority, but it is unlikely that anybody doubted his burning sincerity, with the result that he usually got his way in the end, sometimes ~~quite~~ <sup>almost certainly</sup> ~~definitely~~ against the better judgement of his superiors, *it would seem.*

During the training period Hutchings was in close personal contact with all the various parties. Across the Solent from the Hampshire coast to the Isle of Wight both Hamel and Hais lines were being laid by Persephone and Holdfast. These lines were for the transfer of fuel to the pumping stations being erected at Sandown and served as valuable experience and training. In Christchurch Bay by Hengistbury Head, Tombola training was carried out by Captain Eagles and experience in handling the shore ends was being gained by crews in the barge Britannic specially fitted for this purpose. Royal Engineers constructed and handled the pipelines on shore.

Captain Hutchings was literally here, there and everywhere, ordering, advising and encouraging: and occasionally taking the most active part, not always to the liking of subordinate officers who had their own ideas as to how things should be done.

The fact that the ships and craft of Force Pluto were manned by a mixed batch of naval (presumably hostilities only) ratings and merchant seamen did not

help matters as there was a substantial difference in rates of pay, but in general what must have appeared to Captain Hutchings as a rather motley crew carried out some extremely complex and at times dangerous seamanship operations with commendable determination and goodwill. There can be no doubt that the time available for training was far too short and the need to conserve materials, together with security problems, tended to emphasise the possibility of failure, so that a certain scepticism in high places was perhaps not so short-sighted as Captain Hutchings insisted.

Although Operation Pluto was in essence a naval responsibility, the army's share in the work involved was very considerable and indeed vital to the success of the undertaking.

From the early experimental days, provision was made for the training of special units to handle the shore ends of both the Hais and Hamel pipelines and the Tombola lines. Men were specially chosen for this work, possibly volunteers plus a little persuasion, and anyone with even slight experience of the oil industry was welcomed, as indeed were garage mechanics and men with some practical engineering knowledge.

Batches of from fifty to sixty men at a time formed classes at the Llandarcy works of the National Oil Refinery where they were given a crash course in pipework and operating storage facilities. At the end of each course teams competed against one another in connecting up pipes in the dark. Finally, a quiz session was held at which



a panel of four experts from Llandarcy answered all sorts of questions - some not entirely relevant! Training of troops was also carried out at Kempshot, near Basingstoke in Hampshire and at Ryde in the Isle of Wight.

The provision and working of the land pipelines on the continent, which were planned to follow up the advancing armies and feed storage tanks from which jerricans were to be refilled, involved large numbers of men in intensive training and, of course, enormous quantities of material. In all some ~~70~~ miles of 6" <sup>L 1125</sup> pipeline were laid across the assault areas ~~across~~ <sup>through</sup> Europe to, and over, the Rhine.

ADD to Ch 7 New Ch.

(19) (Bennett paper) Training line at Ryde hit by bomb (the only hit!)

h2. Hermal line left. Gurnard  
hauled in co-ordinates a  
valve gear hauled into work  
(PMG as Banks watching?)

Also note operation orders for  
Bunkers & Ammunition attached to

(19)

Ch 7 (2)  
Read & corrected  
19-2-78