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"Dido" Bradford aboard in Exmouth *(see p. 23)*

UNITED KINGDOM PILOTS' ASSOCIATION
20 Peel Street, London, W.8

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A SAFE AND HAPPY NEW YEAR

TO ALL OUR READERS

ELECTION OF EXECUTIVE COMMITTEE CHAIRMAN

At the meeting of the Executive Committee in December Mr. Frank Berry (Humber) was elected its chairman.

Members will recall that a biographical note appeared in our December issue. The enthusiasm shown by the November conference in electing Mr. Berry to the Office of vice-President reflects their appreciation of his efforts and work on behalf of the Association. Speaking for the membership, who well know that Frank Berry can be relied upon to further the progress of UKPA, he has our warm congratulations and best wishes.

Tribute must also be paid to the retiring chairman, Colin Rhodes (Medway) who has served for three years as Chairman and a longer period as vice-President of the Association, for the staunch support and personal devotion he has accorded the Association throughout this service. It is most reassuring to know that the benefit of his wide experience will still be fully available in consequence of his willingness to continue on the Executive Committtee to further the interests of the professional men the Association represents.

TECHNICAL COMMITTEE'S PAPERS

In this issue we are reproducing all four of the papers from the Technical Committee presented to the Annual Conference last November under the chairmanship of Mr. C. A. Rhodes, together with a resumé of the discussion which followed. As a measure of the general interest aroused, "Safety at Sea" has asked for, and been given, permission to publish three of these papers.

THE ROYAL INSTITUTE OF NAVIGATION

Her Majesty, the Queen, has been graciously pleased to command that the Institute of Navigation shall be known as the Royal Institute of Navigation. This distinction coincides with the 25th year of the Institutes' existence.

With the change in the title of the Institute, the Council has decided to change also the title of the Journal which, with the January 1972 issue, becomes The Journal of Navigation.

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the cutter's deck and the line parted. With some difficulty it was made good, but parted again, and much valuable ground was lost.

By now, with the cutter closer than ever to the lee shore, the wind at 50 to 60 knots, the swell increasing and without a towrope, it seemed that nothing could prevent her smashing across Saltscar Rocks.

The Pilots decided that it was time to join the lifeboat and were landed, rather chilled, at midnight.

B. O. Davies grounded at Redcar, having just missed the south tip of the rocks, and was driven high up the beach. She was badly damaged but was refloated on December 2nd with the help of three bulldozers which cut a considerable channel down to the sea as the photograph shows.

All concerned wish to acknowledge the prompt and efficient assistance rendered by the Hartlepool Pilots, *Delta Bay* and Teesmouth Lifeboat.

A DIRTY NIGHT AT SEA

At about 1800 on November 8th the Tees Pilot Cutter *B. O. Davies*, a 55′ 0″ M.F.V. type, was preparing to board Stanley Edge on the Swedish Ore Carrier *Arvidsjaur* when the engine suddenly stopped. Weather conditions were bad with a NNW gale, heavy sea and sleet and hail squalls. The engine was locked solid and the cutter was making water into the engine room so a Mayday signal was made on VHF and *RT. Arvidsjaur* was asked to keep clear.

The Hartlepool Pilot Cutter, Teesmouth Lifeboat, a Tees Tug and *Delta Bay* responded to this call. *Delta Bay* is a 14,000 DWT suction dredger presently deepening the River Tees but was hove-to in Tees Bay owing to stress of weather. She lay to windward making a lee for the cutter and rigged scrambling nets. The Hartlepool cutter and Teesmouth Lifeboat arrived and preparations were being made to take a tow when the tug reported that she had turned back owing to the bad weather.

The cutter was being driven towards a lee shore where heavy seas were breaking on rocks and the pilots on board, Stanley Edge, Tony Crompton and Garry Salter, decided to transfer the cutter's crew to the lifeboat. (Cutter Skipper Hudson was due to retire the next day.) Tony Crompton was able to reduce the inflow of water by closing off a fractured engine cooling pipe.

The lifeboat Cox agreed to try to tow the cutter to windward and into Hartlepool. The heaviest line was passed and towing proceeded until a pair of bits were torn from

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Stranding of Pilot Cutter "Alderman B O Davies" in Tees Bay

(by courtesy of the Evening Gazette, Middlesbrough)

"UP THE WALL!"

THE URGENT NEED FOR PILOT HOIST SAFETY RECOMMENDATIONS

W L D Bayley *(Isle of Wight)*

One evening in the almost forgotten days when we had a cruising cutter at the Nab Station, I was sitting alone in the pilots' saloon reading. There was a knock at the door; the Mate of the cutter was asking if he could have a chat with me.

He wanted to know what I thought of the Board of Trade's ideas for boarding and landing from large vessels with high freeboards—the accommodation plus pilot ladder rig. I have never liked this idea; there is an awful feeling of insecurity when transferring from accommodation ladder to pilot ladder, especially if the rigging of the gear has been, shall we say. uninspired by practical considerations like some pilots having rather short legs!

The Mate then produced a blueprint. He had been working with a friend on an idea for a pilot hoist, using the experience and knowledge gained while watching pilots actually boarding ships. The use of some form of hoist was not entirely new. Shell had used a platform lift in place of a conventional shore gangway, and they found that security was greatly increased. Convenience, unfortunately, varied inversely with security, and convenience won the day, so (if you will bear with the pun) the idea was shelved.

I think that I was the first pilot to be shown the drawings for what was to become the White-Major Pilot Hoist. My colleagues and I were consulted at many stages regarding small modifications, and I feel that, together, we brought into being equipment that met the requirements of pilots for a safe and reliable method of boarding and leaving ships.

At the same time, while Bev Major was getting an old-established Isle of Wight shipbuilding firm interested in producing and selling his hoist, a Southampton pilot was approaching the problem from a different angle. The late Alan Thomson looked at the Board of Trade method, and went on from there. He could see that the biggest problem was bowsing in the accommodation ladder to the ship's side. This problem would be aggravated in heavy weather, with the ship rolling beam on to the sea to make a lee. Alan produced a patent channel-and-stud system which solved this difficulty, and used a spar at the bottom of the accommodation ladder to pin the pilot ladder in to the ship's side. The ship-owner had a good, stout accommodation ladder for normal use, readily adaptable to the special requirements of pilots. Some members of Conference will remember the demonstration he gave here. Unfortunately, although he interested a firm in producing his gangway commercially, little interest was shown by the ship-owning community, and I have yet to see a Thomson ladder in use on board a ship.

J. Samuel White, on the other hand, soon had a vigorous promotion campaign going. A demonstration hoist was—and still is—set up on the hammerhead crane at their West Cowes yard, with a riveted shell-plating mock-up of a 40 ft. freeboard. Many interested persons rode up and down on that hoist, including most of my colleagues and not a few persons with similar ideas to Bev Major! Advertising space was taken in all the influential maritime journals and ship-owners began to buy. However, their present advertising campaign is not without fault. A pilot is not allowed by law "to give priority if you have a JSW-Major Pilot Hoist"!

Be that as it may; the White-Major was designed from the pilots' angle. Safety and ease of use, coupled with reliability and ease of maintenance were the markers of the development programme. White-Major hoists were soon at sea in large tankers and container ships. To the best of my knowledge, there has never been a failure of this hoist due to design or manufacture; any failures have been due to improper

installation by ship-builders especially failure to reeve the wire runners correctly on to the self-laying winch drums.

However, here was a band-waggon ripe for the boarding! Ships were getting, if not better, at least bigger and bigger, with an increasing number having to comply with the "thirty foot rule". There was an expanding market for pilot hoists, and, rather than buy a British product, many foreign shipyards installed variations on the White-Major hoist, developed and built in their own country. International patent law required that each type differed in some basic way from the White-Major hoist which, you will recall, was designed by seamen for seamen. I must stress that I have no connection whatsoever with the firm of J. Samuel White, but, in my opinion as a user, theirs is "the standard hoist", the safest in use today.

Forms of Construction

The specification is simple. A reliable, rugged air-driven motor—there is an electric version for non-tankers—is sited at the ship's side with the controls in a position where the operator can see the man on the hoist at all times. Two stainless steel wire runners, each with a breaking strain in excess of 2,000 Kgs, lead directly from individual-grooved, self-laying drums and are shackled on to a 9 ft. length of conventional pilot ladder, which complies fully with DoTI Rules on materials, scantlings and spreaders. It has the advantage of being familiar to the pilot, who feels at home on it. The motor and gearing are designed to give an optimum lifting speed of 60 feet per minute, and nylon wheels at each rung help to give a smooth ride. An automatic stop valve halts the hoist at the upper limit of its travel, and access to the deck is gained by a railed platform which is, in effect, an upper continuation of the ladder.

Some variants by other manufacturers will show why this Association and EMPA see a need for international recommendations to safeguard pilots' lives; recommendations are needed in a form similar to the highly-successful EMPA Pilot Ladder folder. Indeed, the Dutch pilots, who have suffered severe casualties whilst using hoists, have flatly refused to use *any* hoist until international standards are agreed. Our own DoTI skates round the subject and, whilst granting "approval" to certain types of hoist which, in my opinion are a positive invitation to disaster, refrain from laying down a recommended specification.

Let us look at some of these variants. A Japanese model with DoTI "approval" has a *single* stainless steel runner leading from a small winch to a block at a davit head. The runner is then led vertically down to a sheave on a traveller across the top of the wooden ladder section, where it changes to a horizontal direction leading to a sheave on the other side of the traveller. From there it rises vertically to a shackle on the other davit head. In other words, a two-times mechanical advantage is gained by using a single runner, meaning a lesser-powered hoist motor. A single failure in this stainless steel wire rope would enable a pilot on the hoist to prove for himself by practical experiment that g does equal 32 feet per second per second!

Some variants use metal rungs and spreaders for the ladder section, others provide a rigid, all metal "sledge", wider than a normal pilot ladder, on which the pilot stands as if crucified, holding on to fairly large diameter tubular metal uprights, which become very cold in wintry conditions. To gain this "sledge", he has negotiated three or four rubber rungs of normal ladder, and the "sledge" cants out alarmingly until he is safely settled on the actual rungs. Another type relies on chains to the ship's side rails to hold it in position —have you seen the conditions of some ship's side rails? Other ideas are good. One type has electro-magnets to hold it in to the ship's side and a railway signal type of shoulder rest for the pilot in transit. Some use guide wires from deck to light waterline to keep the latter in to the ship's side, although experiments and practical experience discount any hazard from the "pendulum effect' of rolling in a seaway. Some are fitted with communications between the pilot and the operator, others rely on a shout or a wave. One type has what is in effect a lift cage on the end of a hydraulically operated boom, complete with seat and all controls—truly a Rolls Royce of pilot hoists and, like Rolls Royces, very few in number. At the other extreme, reports have been made of cages being lowered to pilots from derrick heads, using a cargo runner and a cargo winch!

Universal Requirement

So there is obviously a need for an international standard, and that standard should come from the people who use the equipment. It looks as if, yet again, the UKPA will have to lead where the DoTI will belatedly and reluctantly follow. It is, therefore, most important that we get the thing right. The EMPA pilot ladder recommendations were criticised in some circles for circumscribing too rigidly the measurements of rungs and so on. No reasonable person should reject a ladder with rungs 15½ inches apart if the Rules state a maximum of 15 inches. However, the legislators do have to bear this sort of thing in mind, especially with international rules. There is an understandable fear that too rigid requirements by the UK could lead to foreign discrimination against our ships. We must, then, keep our recommendations fairly flexible, dwelling on the broader aspect of safety rather than on the nuts and bolts of construction.

Let us look again at the four design points I mentioned before: *Safety*, *Ease of use*, *Reliability*, *Ease of maintenance*. With these requirements in mind, the National Technical Committee of this Association has drawn up a First Draft of a Pilot Hoist Recommendation. Because of the urgency of the situation, unamended copies have been circulated by EMPA for European comment and additions. A copy of this First Draft is appended to this Paper. Please read it, discuss it and feed any ideas for improvement back to the National Technical Committee. In particular, we are looking for your views on single runner hoists, metal or wooden ladder sections, guide wires from deck to waterline, safety harness and communications. We should aim to produce a practical document, and there is a need to set a standard. One of my colleagues has used a pilot hoist three times, and on three occasions the hoist broke down! 100% failure rate is too high, even for one pilot!

Yet again, Gentlemen, your safety is in your own hands. Captain van Velthoven, the Secretary of EMPA, writing to me in April of this year, refers to "awakening one of the dreaming geniuses amongst our 5,000 colleagues". I trust that we can make a start as soon as we return to our Stations.

Discussion

Mr. Bayley introduced his paper by asking for information from the members. He quoted the case of a German container ship of some 26,000 tons and a freeboard of twelve metres presenting a normal wooden pilot ladder for the pilot to climb up. When the DoTI Surveyor in Southampton went on board, he found stowed away in the centre-castle a perfectly good White-Major Pilot Hoist, rode up and down the ship's side twice on it, and wondered what the pilots were complaining about. The pilot who took her to sea spoke to the Master about this: it appeared he had read a copy of the Rotterdam pilots' report on a dangerous hoist and, knowing that British pilots were members of EMPA, thought that the ban of the Rotterdam pilots on all hoists applied to every other member country and so he didn't bother to rig the gear. "We told him that there was no international standard as yet and that we would always be pleased to use a White-Major hoist".

The Technical Committee felt, he said, that the time had come to produce a pilot hoist supplement to the EMPA pamphlet, the production of which had owed much to the work of Bob Balmain. The need was to express in definitive terms what the actual pilots want: "we want to know whether you will accept steel construction at all, in part or whole of the ladder, whether you will accept single wire runners of the type I've mentioned, whether you like the sledge idea of some of the Norwegian types—we want you to tell the National Technical Committee what you think is a minimum safety standard. We don't want nuts and bolts, we want the general ideas".

Mr. Bayley added, "The EMPA document was criticised when it came out, especially by the Department of Trade and Industry, because we gave very rigid limits for the measurements. I'd like, if I may, to make a plea for the suggestions to come in writing so that we can collate them and keep a record. Again, gentlemen, it's your safety in your own hands. Thank you".

A delegate from Southampton referred to action by two governments. The Norwegians have banned hoists on their own ships following a near accident when the hoist ran up over the rails in the stopped

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APPENDIX
First Draft only

RECOMMENDATIONS FOR PILOT HOIST SAFETY

GENERAL: Vessels using pilot hoists or lifts shall:—

(a) indicate the embarking position to the pilot boat by means of a wide stripe of contrasting paint (e.g. white stripe on black hull) running from the hoist at deck level to the waterline:

(b) adequately illuminate the hoist at all stages of its travel:

(c) have a conventional pilot ladder at the hoist position in case of failure (or pilot's preference):

(d) ensure that the hoist is operated only by a responsible officer properly instructed in its use, who will also supervise the rigging of the equipment:

(e) ensure that all gear is properly maintained and tested before use:

(f) provide a lifebuoy with light at the boarding position and, if requested, a life-line and safety harness.

The hoist shall not be set in motion until the pilot indicates that he is ready.

In very cold weather, to avoid the danger of ice forming on the ladder treads, the ladder section shall not be fitted until use is imminent.

THE HOIST WINCH shall be powered by electricity or compressed air, and have a hand operation facility in case of power failure. Adequate power shall always be available and, in the case of compressed air drive, provision shall be made for the drying of the air in order to prevent ice plugs forming at the exhaust. The reduction gearing and drum sizes shall be so arranged that a hoisting rate of the order of 18 metres per minute is maintained. The control handle shall be of the spring-loaded type with automatic stop, and automatic braking applied when power is switched off. Clear, unambiguous indication of "Hoist", "Lower" and "Stop", visible by day or night, shall be presented to the operator. An upper limit stop valve shall be fitted to prevent over-run when hoisting.

Two separate stainless steel wire ropes winding on to grooved self-laying drums and each having an actual breaking strain in excess of 2,000 Kgs shall be fitted. The wires shall be long enough to reach the water at the greatest possible freeboard. The wires shall be attached to the ladder by shackles or spring-mouthed hooks

The winch shall be so sited at the ship's side that it does not rely on ship's side rails for stability, but is firmly secured to an integral, strong part of the vessel's construction, e.g., bolted to a special built-in platform welded to the deck.

THE LADDER shall be constructed of hard wood and rope *only*, and be approximately 2·75 metres in length. Any steel construction shall be forbidden, with the exception of upper ladder sections of hoists making use of electro-magnetic adhesion. Approved rubber steps may be used for the bottom three or four rungs. Each tread shall be provided with free-running nylon wheels on brackets to ensure a smooth lift. The dimensions of the manilla side ropes, treads and spreaders shall all be in accordance with the Merchant Shipping (Pilot Ladders) Rules 1965 as amended to date or ISO Recommendation R.799. A centre rope grip may be fitted between the top and bottom rungs and a clip-on safety belt may also be provided to pass under the pilot's arm-pits.

ACCESS TO THE DECK shall be gained directly by a platform securely guarded by handrails. The distance from the top step of the ladder section to the bottom rung of the fixed platform when the ladder is stopped at the top of its travel shall be consistent with the distance apart of the ladder rungs.

September 1971.

MONO-BUOY CRUDE OIL DISCHARGING FACILITY RIVER HUMBER-TETNEY

D Barrett *(Humber)*

Mono-buoys, or single point moorings as they are sometimes referred to, have been operating successfully all over the world for some years now, but generally in tropical or sub-tropical waters, the nearest facility of this type being Northern Italy. In January, 1971 the first buoy in Northern Europe became operational, at the mouth of the River Humber off Tetney Haven, for the purpose of supplying crude oil to the Conoco Refinery which is 15 miles away near Immingham. As this paper is being prepared, the first crude from the North Sea is being loaded from a similar buoy off the Norwegian coast, .

The Single Point Mooring (SPM) established in the Humber about two miles south of Spurn Point and ten miles within the recently extended Humber Pilotage District, is owned and operated by "Conoco" who, for some years before their refinery became operational, had storage and distribution facilities at Immingham. When their refinery first came on stream, Conoco received their crude through the new terminal at Immingham which can accommodate VLCCs loaded to a maximum of about 135,000 tons and with a draft limitation of about 46 feet. This terminal, built by The British Transport Docks Board, is leased to a consortium named "Humber Oil Terminals" of which Conoco is a member. The other two members, Total and Fina, apparently have not been inconvenienced by the limitations imposed, for the time being, probably because they have offloading points on the Continent. Conoco, however always intended to have their own crude importing facility, originally as a fixed platform, but later changed to the buoy.

Design

The Buoy was designed by "Single Point Moorings" of Switzerland under licence from Royal Dutch Shell. It was built in Holland from where it was transported across to Hull in 1970 and launched into the King George Dock from the deck of a vessel, the King George Dock at that time being the most suitable place for its reception. It was later towed to Grimsby for final fitting out. Weighing 124 tons and

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condition. The West Germans have banned the use of hoists until the necessary safety devices are fitted.

Another delegate emphasised the need to implement the stipulation that the ladder or mechanical contrivance be rigged and supervised by a responsible officer. He quoted a case where a pilot was about to be lowered 30 or 40 feet over the side on a hoist, when he discovered the operator had "never seen one before".

Mr. Batley affirmed the interest in the matter of both the shipowners and the manufacturers. "The design engineer of Sammy White has been over to Rotterdam to speak with the Rotterdam pilots, and he's come back from there with an assurance by them that they will accept the White-Major and the Welling hoists. They are also trying to bring in things that we have mentioned before such as a manual facility if the machinery breaks down. This at the moment is being held up by the DoTI who don't appreciate that if you use a worm gear it can't fall back if there is a weight on it; they want a brake incorporated, which is being rather difficult: but the designers are interested, the ship owners are interested. What we want is to crystallize or own ideas and get them into a working document to submit to EMPA".

Mr. Rhodes (from the Chair) emphasised the importance as a safety measure of an automatic stop to prevent the ladder going down unintentionally. He hoped members would endeavour to contribute their thoughts and ideas and send them to the Technical Committee as Mr. Bayley had asked.

divided into eight compartments, the buoy has a diameter of 42 feet to the fender skirt, and a height to the turntable deck of 15 feet. The turntable deck revolves, independently of the buoy hull, on bogies and a central roller bearing. The moorings and hose system are coupled to the turntable deck and so a tanker made fast can freely revolve to the elements, thus theoretically reducing the load on the ground moorings.

During 1970 the ground moorings were installed, consisting of eight lengths of 1,000 ft. $2\frac{3}{4}$" studded link chain, each length proof loaded under Lloyd's supervision to 263 tons. These chains are fast to eight piles let into the river bed in a star configuration, and to the buoy by means of adjustable stoppers. Very close tolerances are specified by the designers in the setting up of these chains in their relation to one another and in the angle from the sea bed to the SPM at a specific tidal height, presumably to ensure that an equal strain is always present and also to meet the possibility of a chain parting, when the lateral movement of the buoy should not be enough to rupture the underwater hose. Those tolerances at first required fairly frequent checks, and adjustments are made through the stoppers on the SPM and with the aid of the air winch and crane fitted on the turntable deck. Also fitted on the turntable deck is the safety equipment, i.e. lights, foghorn, radar reflector, etc. The SPM is laid in about 70 feet LWOST with a rise of tide of about 22 feet at springs, and is designed to take a tanker of up to about 51 feet draft loaded to about 115,000 tons deadweight.

The floating hose system is connected to the buoy pipework on the turntable deck, which pipework goes into a rotating seal so that the pipe on the turntable can rotate in the fixed centre pipe running down through the buoy to the underwater hose which remains fixed. The 560 feet length of 24" Dunlop pipe, made to stand a working pressure of 225 PSL, terminates at the ship's end in two 16" pipes to reduce handling weight for the ship's gear.

The mooring system is basically two mooring lines, each connected up to the SPM by 6 feet lengths of chain, the lines being made up as follows:—

(a) Two 150 feet lengths of 12" braided nylon which is wholly covered with heavy duty flotation material.

(b) Two lengths of 2" chain, 15 feet long, which will lie in the forecastle head fairleads as chafing pieces. These chains are independently buoyed with flotation material which lies just outside of the fairleads.

(c) Two triangular plates into one corner of which the chains in (b) are shackled.

(d) The port side line, which is 300 feet of 10" polypropylene, terminating at the ship's end in a soft eye and shackled at the other end into one of the triangular plates in (c).

(e) On the starboard side 150 feet of 10" polypropylene, of a different colour to the port rope, again ending in a soft eye and shackled into the other triangular plate in (c).

When the SPM is vacant these mooring lines are made fast to the pipe line, which is marked for navigational safety purposes by a series of small winker lights.

Operation

Berthing at the buoy has generally taken place at around high water but there have been some low water and half flood berthings. The practice is simply to approach the buoy from down stream where a mooring boat will be laid at the end of the port head line. A mooring line is passed down from the tanker and it is made fast to the soft eye of the port mooring. Once the soft eye is on board, the pilot knows he is about 300 feet from the moored position, this being the length of the polyprop mentioned in (d). Meanwhile, another attendant craft will be making fast the end of the floating pipeline and towing it clear of the approach to the buoy. When the chafing chain is in the fairlead, a slip wire is shackled into the triangular plate, made fast, and then the polyprop is turned up. The starboard line is a repeat of the port line procedure, and leaving the buoy is a reverse process, the lines being dropped and recovered by the maintenance craft and stowed on the pipeline. The buoy came into operation without any rehearsal and by mid-September 45 tankers had discharged about 2,100,000 tons of crude.

From the start of the operations, two pilots have been placed on all vessels over the locally agreed size, and one pilot has always remained in attendance. Conoco also place on board a berth operator who supervises the connection of the floating pipeline and maintains communications with the tank farm three miles away at Tetney Haven on the south side of the River Humber.

This buoy is moored about one mile south of the main channel and just south of the anchorage used by many vessels bound up river but waiting for a berth or water to proceed. Some reference has been made by the installers of the facility of the maximum weather conditions in which the buoy is operable, i.e. moderate gale and a wave height of 14/16 ft. The operations to date have been notable for the continuous good weather; the real test will come when a tanker has to vacate the buoy because of sudden deterioration in the weather coupled with darkness, spring tides and a crowded anchorage. When a vessel vacates the buoy under normal circumstances, the floating line is voided of crude to a point beyond the buoy on the river bed, with the remainder of the line to the tank farm in oil. If a tanker had to get off the buoy in a hurry, the possibility of spillage is very real unless each person can get on quickly with his own particular job. The floating hose has a content of about 400 tons of crude so, with the new legislation on pollution just in force, it would seem that nothing should be left to chance. The buoy operators to date have accepted that a licensed pilot should be in attendance on board at all times, but after the first few months of fine weather operations there was some resistance to this.

Future Pattern

It is perhaps significant that a major oil company is embarking on a crude oil discharging scheme off the west coat of Anglesey that will dwarf the Humber single point mooring facility, so it would appear that there is a pattern set for the future. The scheme at Anglesey is in the Liverpool Pilotage District and the Oil Company concerned have graciously agreed that the Liverpool pilots should be party to the operation, although through the doubtful process of choice pilotage. Oil companies are of necessity, through fierce competition, bound to look for ways and means of keeping ahead of their rivals, which in turn often means that through industry and research the public reap the benefits generally. Nevertheless, when consideration is given to the Humber SPM which is classed as a separate harbour within 1,500 feet radius of the buoy, the possibility of single-mindedness by the operators to the detriment of other river users should not be dismissed. If used with discretion, and regard to conditions in the locality, the system seems to have advantages over the conventional methods of crude discharge.

The real success of this type of operation will depend in the long term on the use of the steadying influence of the pilot, who has no vested interest but who can be held responsible to perform his work for the best interest of all.

Discussion

Mr. Barrett presented his paper, saying there were about sixty of these buoys in various parts of the world, especially Japan with around twenty, and that the cost of providing a jetty to take Very Large Crude Carriers was making the oil companies increasingly interested. There was a proposal, strongly resisted by the local inhabitants, to put a buoy complex on the coast of Anglesey with a possible throughput of 25,000,000 tons of crude a year. Whether such installations fell within any stated pilotage district, or within territorial waters, or even whether pilots were called to have anything to do with the operations for importing these huge amounts of cargo were open to surmise. The paper quoted the case where Shell specifically wanted the buoy to come within the three mile limit in ten fathoms of water and so it happened to come within the Liverpool Pilotage District. On the other hand, tankers were presently said to be loading in the Ekofisk area of the North Sea.

"In the Humber District, we are getting them discharged at our refinery through this type of mono-buoy and it bears thinking about; they might not ever build jetties again; it's a frighteningly simple method of putting a ship to a discharging berth

and there is little cost after the capital cost. The worry is, of course, that you get the empire builders after the planners. We've got them in the Humber. There is limited deviation around this buoy of 1,500 feet. We went along with them wholeheartedly when they set up this buoy and I think they owe a lot of their success to our representatives at that time, including Frank Berry. Once they got it off the ground then they passed it to the men in charge of it further down and these people are busy setting themselves up as experts now and want to do away with us. Unfortunately on this score, they've got the buoy in the pilotage district, otherwise I think the major part of our earnings could very easily have been excluded".

Mr. Rhodes (Chairman): "Before you sit down may I ask for clarification on one point? Although the Anglesey buoy is within the three mile limit, I understand from the oil industry that their difficulty is in providing sufficient pumping power aboard ships to cover a long pipeline transmission. Whilst they can load ships through single point moorings, because they have the powerful pumps ashore, there aren't many ships at the moment with sufficient pumping capacity to pump long distances under water. In the Humber, although you've said yours is 15 miles away near Immingham, how far is it before the line comes ashore where they have booster pumps, or are there any?"

Mr. Barrett: "From the buoy to the tank farm is about 2½-3 miles and there is a booster pump there. From the tank farm to the refinery is 15 miles and the pumping isn't very fast. The tank farm holds something like 120,000 tons and the biggest ship so far on the buoy has been a 100,000 tonner. Ships over that size would be an embarrassment and there have been occasions already when there hasn't been the ullage in the tank farm and the ship has had to stay at the buoy".

Mr. Rhodes: "Whilst there is a technological problem or perhaps a possibility for improvement of the power and efficiency of pumps, what I was wondering at the moment was how the buoys came to be positioned. Are the mono-buoys within the three mile limit, and therefore within the pilotage district, or in home waters, because of expediency or because there is a limitation on the ability to pump for any longer distances?".

Mr. Barrett: "It could be pumping but it could also be something to do with Customs and the entry of crude into this country. The pipeline itself has about 400 tons of dutiable crude in it. Customs come into this very much and this may be why the three mile limit is specifically mentioned in the case of Anglesey".

Two other questioners pointed out that keeping the oil pumpable was largely a matter of keeping it hot, although oils from different oilfields varied in their characteristics when cold, and this limited the distance from shore. So long as this thickening of the oil was a problem, it might be said the buoys are always going to be in a pilotage district.

Mr. Newman (London Channel): "As far as the Liverpool pilots are concerned, I understand it is a concession on the part of Shell Oil, but it isn't a compulsory pilotage area. It's in the local pilotage district, but pilotage isn't compulsory, and the pilots will only take the ship to and from the buoy and will not moor the ship to the buoy. This is the agreement".

Another delegate commented that Shell insisted on a choice pilot and the need for a Shell man to moor the ship. He said they came to UKPA very early for help and advice, which was freely given, and happily there is continuous communication between UKPA and the Marine Division about this common problem. Both parties had sent representatives to see the buoy techniques in operation, including Sir Elwyn Jones whom Shell have engaged to lend power to their attempts, through many problems, to make the scheme successful.

In answer to a question on who did the mooring at the Humber, **Mr. Barrett** replied, "we put two pilots on board, on the appropriate side of the ship, when we are just within the 1,500 feet radius. We insisted from the word go that, to keep hold of the operation, they must ask permission to put their mooring man on board. We grant them this permission, sometimes including shackles and this sort of thing, and then this man will go on the forecastle head and he is in communication with our second pilot (not the communications assistant—he's a second pilot as far as we are concerned) and we work together on

SOME ASPECTS OF RADAR TRAINING, AND ITS RELATIONSHIP TO THE NOVICE PILOT

D G B Smart *(Southampton)*

In producing this paper I must touch upon ground familiar to all of us, and hope that I may be forgiven for stating the obvious. There are, however, several points to be made upon matters which, while possibly lurking at the back of many a pilot's mind, rarely seem to surface and which must affect the quality of training we seek for ourselves. I have therefore attempted to make this work at least readable. Some of the conclusions reached may be debatable and some of the ideas even controversial, but if these can make us think along broader lines, then my object is achieved.

Pilotage work, in our own waters, falls into four main categories, These are (1) **Deep Sea** or **Channel** Pilotage, which, in many respects is very much like deep sea navigation, although the introduction of routeing and the advent of the large tankers is rapidly making this type of work more like estuarial work. (2) **Estuarial** Pilotage, where the freedom of manoeuvre is affected by shoal patches, and narrower channels, restricted areas and anchorages, and where queueing becomes a problem. (3) **Harbour** Pilotage, where navigation between two points becomes of secondary importance to the ability to maintain complete control of the ship at extremely low speeds, and with the magnification of set and drift which these low speeds produce, together with the external effects of tug power which influence the position of the turning centre of the ship. In this category judgement of speed and distance is critical, although in no type of pilotage can this be neglected. The fourth category of pilotage is the **Remote**, or **Shore Based** System, which requires a complete re-orientation of ideas, since one must be able to handle several ships simultaneously, yet without the advantage of having the direct use of shipboard equipment or having the "feel" of the ship.

(continued from page 12)

that score, trying at all costs to keep us on top of the operation; their man is merely a mooring man. They would see it otherwise, but we don't see it like that at all".

Relevance of Training

Those of us who have attended courses incorporating blind pilotage exercises, or have had practical experience of giving radar guidance from a shore base will know the different technique that is necessary and appreciate that, without special training in the co-ordination of radar and VHF radio to relevant ship echoes and movements, pilots will not be in a position to take charge in a shore guidance centre, nor even be able to offer quick, sound, professional help to a colleague afloat, except in the odd isolated case. Thanks to some absolutely first class equipment ashore with micro-linked displays from remote scanners and the ability to superimpose information of fixed objects, channel margins, etc., onto the displays either electronically or manually, some fine radar coverage is available in many ports. This can be a form of pilotage, and we should be actively involved in this aspect of our work, lest we become mere puppets!

Radar was a luxury in the late 1940s and even in the early 50s, but as more ships became fitted so Radar Observer Courses were instituted, and certificates granted. As "radar assisted collisions" became more common the Ministry of Transport required a Radar Observer Certificate to become an integral part of all certificates for Master or Mate. Thus, while many of the most senior pilots had little or no experience with radar at sea, and learned the business of pilotage the hard way, with courses and distance run, watched soundings, listened for fog signals

. . . and prayed . . . they accepted the use of radar as an enormous bonus. Not so the newcomers to a pilot service, who arrive fully conversant with the operation of the most sophisticated radars available today, and well versed in the arts of plotting, etc.; and who receive, as I did, a rude shock when the realisation of the different techniques required in pilotage finally sink in!

Reorientation

Even during the training period, the difference is not fully appreciated. One doubts if any pilot will forget his first "job", when he had no one to hold his hand. Even in clear weather this was an event, despite the many training "Trips" he had done, often virtually by himself. His ideas underwent a swift re-orientation. The same re-orientation applies to the use of radar. At sea, navigation was done largely by bearing and distance off a known point, with a chart to consult, and an enormous margin for error usually available. In pilotage the luxury of time is rarely present and, in consequence, the navigational technique is reduced to the instant appreciation of one's position, within very small tolerances, by the total radar picture presented, The outline of land masses often becomes irrelevant while the buoy pattern assumes great importance. Even in Channel pilotage, where deep-sea techniques are still valid, buoy patterns become of increasing importance. This swift appreciation of a ship's position by "total picture" is a vital part of a pilot's radar work, and one which emphasises the difference between an experienced pilot and a novice. The other main difference and one of possibly greater importance, is the need for a pilot, often, to head *into* trouble. At sea the radar experienced watchkeeper has, usually, a steady course to follow, ample time to search and plot, and adequate space in which to manoeuvre . . . three luxuries a pilot can seldom enjoy. This is particularly evident at junctions of channels and major course alteration buoys. While one may have time to search, the time for plotting is often scarce, and the margin for evasive action negligible —and plotting will be of little use when several alterations of course in as many minutes may be involved. Under these circumstances an assessment of the other vessel's probable destination may be of more value than knowledge of it's course, speed, aspect, and nearest approach, all of which will probably be changed within a few minutes. Here of course, VHF radio is a boon to pilots, and an aid of which the fullest use cannot be made at sea. Hence we have a situation where the novice pilot, far from being fully trained on arrival in a service, requires, in fact, a substantial measure of "untraining", allied to retraining in his special field of activity.

Simulation

The introduction of the radar simulator has done much to make radar courses more valuable. To the deck officer one of the major, and largely unappreciated benefits, has been to give him "control of the ship" with free use of engines and helm. We all know how few officers on watch have this freedom at sea, and often a simulator course is the first opportunity he will have to "handle the ship" in the fullest sense. To a pilot this is his meat, and any radar course not involving the use of a radar simulator must be a major waste of time. While not denying the value of short plotting exercises to refresh one's memory of the relative movement of echoes etc., or of the brief reminders of the limitations of the instrument, the value of a radar course to a pilot lies in the practical instrument, the value of a radar course to a pilot lies in the practical field, and, to be really useful, a field specifically geared to pilotage problems in one's own district.

The "standard" radar course augments the deep-sea man's experience, but, as I have attempted to show, is almost opposed to the needs of a pilot, and particularly to the needs of the novice who must, at all costs, get away from the watchkeeping viewpoint. How can we provide our own radar training? Firstly by a more conscious effort in this line *in the field.* In clear weather, when all marks and buoys are in sight, pilots rarely use the radar. Why should they: but this is the very time when a novice could receive the best possible instruction with opportunities to compare the radar picture presented with visual

observations, to match buoy patterns with real locations, and to note the buoys and marks that show clearly and those for which one must search. This is particularly important in the case of targets which "come and go with the tide", groynes, stakes, banks, flats, and the strong eddies which occur in most districts with changes in the tide and weather. It is only in the field too, that the novice will experience the masking of buoy patterns that can occur from becalmed yachts with radar reflectors and the habits of week-end fishermen of mooring near buoys, and realise that only a thorough familiarity with certain buoy patterns will rescue him. Certainly, experience on the bridge will produce that most important re-orientation from vertical, or plan, viewing to horizontal, or panoramic, viewing. Initially most novices will observe the radar screen as though projecting onto a chart and mentally mark their position as though on that chart, while an experienced pilot will look at the same screen and visualise what he would see around him if it were clear. In other words he is no longer an abstract series of circles and times, but a real object moving through a real environment and encountering—but not hitting—real dangers. With a wealth of genuine practice available surely no pilot, experienced or novice, needs a radar training course that is not exactly tailored to his requirements. It is rather like going to the butcher for beef and coming away with pork—it *will* provide a meal, but it's *not* beef and it's *not* the meal you wanted!

So we must be sure, first, that we are using to the full the facilities readily available to us before seeking additional, special, and probably expensive, help from the authorities possessing simulator equipment. This means that a pilot accompanying a novice must guide his pupil a little more closely than is the current fashion, but since this need happens rarely enough it should not form an unbearable burden. With the advent of smokeless fuels and the enforcement of smokeless zones the incidence of fog has dropped considerably, so that actual experience is—with luck—limited to four of five days a year, per pilot. This unfortunately works against the novice, who may, easily, have no real fog during his training period, and then must dive into it shortly after qualifying. The importance of thorough training is therefore emphasised, not diminished, by this fact, but one must always remember that radar is only an aid to the more efficient performance of pilotage work and at no time must it supplant the ordinary learning of the pilot. It is not *that* important, and a proper sense of proportion is imperative. With an enormous amount of detail in the normal field of work to be remembered, too much additional detail would bog down even the most photographic memory. Every district has its own locations and sets of circumstances that cause prime headaches. These should be analysed, producing up to a score of particular problems of that area, warranting close study. From each district's analysis of problems perhaps half a dozen choice exercises could be submitted for simulation development at the most convenient simulator centre for that area.

Greater Realism

It is heartening to know that research is being made with a view to improving the realism of radar simulator equipment. The big disadvantage of these exercises to date is the sterile atmosphere one experiences, but work is in progress to provide a measure of *on the bridge* feeling in the form of background noise, vibration, moving platform, VHF links, etc., all of which, while being diabolically expensive as "supplementary equipment" can only improve the spirit of the thing. On the technical side, research is proceeding to develop transverse thrust effect, twin screw ship effect, and to produce simultaneous variable strength and direction of current at different points on the display. so one can hope that within the next decade the equipment available will have reached a stage of sophistication not visualised at present. This will enable harbour work to be brought within the scope of the radar simulator, which at the moment deals entirely with the estuarial and deep-sea aspects of pilotage. With the profits from the quick turnaround ever in the shipowner's mind there is no use in bringing a ship close to port . . . she must go in, in all but impossible conditions. With this in mind, well simulated harbour situations

are essential and training in advanced equipment vital.

Local Templates

Individual pilotage districts are in a position therefore to provide the basic material of the simulator courses they may require. The number of simulator centres available, while never adequate, is sufficient to provide reasonably accessible facilities, with an ever improving quality of technical performance, for most major ports. The question of supervision or examination of a novice is open. This would not be so frequent as to be onerous, and it may well be that a member of the local committee might be able to take this as a turn, or that a number of pilots could take advantage of the occasion as part of a biennial refresher course. Certainly a certificate of attendance should accompany every novice's log-book. The applications of this type of course, specially geared for pilots, extend beyond the normal refresher course. Pilots who are having a prolonged spell off work, following sickness or injury, or the experienced pilot who has transferred to a new district, can gain much benefit.

If, as is fervently hoped by so many pilots, the exemption rules can be changed to apply not to the ship but to the personnel then certificates of attendance at the appropriate courses for the ships' regular trades should become an essential part of any application for exemption, as it should be for applicants for pilotage certificates. Haven't we all at some time or other wished the sea would swallow up some "Sunday Driver" in our way? Any evaluation of the courses, and updating of information, would present no problem since, with the current practice of regular refresher courses, pilots can keep in touch with the situation and suggest any changes necessary. Looking to the future it may well be that the UKPA might find use for a central library of simulator templates, since these can be duplicated fairly simply, to enable a given situation to be simulated in the event of a major investigation involving a member.

Costs

The economies of the type of course envisaged are not so complex as at first seems likely. All schools have to replace their templates periodically, and they are generally of areas interesting to us. It requires therefore, only an increased measure of care on the preparation of the new plate to include data supplied by local pilots to ensure accuracy of detail. The situations encountered can be varied electronically at will to suit the occasion and the customer. So, apart from special care, little additional expense has been incurred. Courses for individuals will be enormously expensive however and, since discussion is a vital element, would not be particularly useful, so the existing pattern of courses should be retained. In any event, the cost must be borne at least partially outside the pilotage services, by agreement *between net and gross* to be sure that *simple* pilotage areas are not penalised on a cost/effectiveness argument. In view of the *Torrey Canyon* disaster, and that of the *Texaco Caribbean*, to name but two, substantial support might be sought from the Chamber of Shipping, the Department of Trade and Industry, and the Ministry of the Environment.

Operating Facilities

Having dealt at some length with ways in which we might improve our training standards let me conclude with some ideas which might marginally improve the use of the equipment with which we deal on board. Facilities for dual viewing by Master and Pilot are not nearly common enough. All too often, discussion of a specific echo means two heads peering down one tube, with the result that neither viewer sees the situation properly. On larger ships, where accurate piloting is more critical and bridge space adequate, two sets side by side should be required and if they are slaves of one transceiver, so that range scales cannot be varied independently, then an additional set for search under the Officer on Watch should be fitted. Judges' summaries in a number of cases have criticised the ships involved in collision for not using the various range scales intelligently for searching but, from the pilot's viewpoint, if he is navigating within a poorly defined, or partly obscured busy pattern using a suitbly large scale for critical course alterations, the last thing he wants is to lose his pattern by scale changes for search.

There are two wavelengths commonly used in the transmission of radar pulses. These are, in the "S" band about 10 centimetres, and in the "X" band about 3 centimetres. The former, more often associated with the long pulse, is suitable for search and long range navigation, while the latter, when associated with the short pulse, can produce a fine textured and detailed picture quite suitable for most close pilotage work; but neither of these are *really* suitable for harbour work. Research was made into the "Q" band in which the wavelength was measured in millimetres, but unfortunately it was found that as the wavelength approached that of light so the radiated energy assumed some of the properties of light, among which was absorption by fog and increasing difficulty in penetration in poor visibility. The quality of the pictures produced however was superb in detail, virtually free from sidelobes, and capable of showing even the mooring lines leading from one's own forecastle. Sadly, the cut in range effectiveness was so drastic, sometimes down to 30% of that of a 3 cm. set, that after brief shipborne experiments the idea was shelved. For harbour work, and that is where time and money are made or lost, this is exactly the equipment we require.

In the field of harbour work, with the obvious need to use large scales, the *bridge aft* layout is now providing special problems with the ever increasing length. The resultant off-centre siting of the radar scanner often produces a false illusion of safety margins, particularly as the forecastle may be over 1,000 feet away from the centre spot. The use of a variable length heading marker set to the appropriate length, or, alternatively, a signal generator to provide a line of this length on the screen whenever a range scale was used where the ship's length was more than 20% of the radius of the screen, would be an advantage in close quarters manoeuvring.

An essential part of radar assisted pilotage is the use of VHF radio, but how few VHF microphones are sited to enable the viewer to speak while still looking at the radar? The provision of suitably wired jack sockets at the radar console should be standard practice.

Finally one wonders if there might be a use for modified, coded, *racons* of low power, on large vessels which nowadays can count themselves hampered even in the English Channel. This would allow smaller traders to spot the "bull in the china shop".

To any who have the patience to study this paper I offer apology if I was too long winded, thanks for their interest, and my hopes that there has been food for thought!

Discussion

Mr. Smart, in presenting the printed paper, remarked on the difficulty of writing on a subject with which everyone had some familiarity. He had tried to direct fresh thinking into an old subject and to emphasise the different aspects of radar assistance for navigation in open sea and for the instantaneous nature of inshore and harbour manoeuvring. In addition to the three categories of pilotage work described in the paper a fourth, Blind Pilotage, was of growing importance. It was essential for pilots to participate in the current discussions involving Harbour Estuary Authorities because of the singular requirements of pilotage in a technique of navigation by radar within normally visual range.

The need for radar training, particularly orientated to the needs of the pilot and to his own locality, was emphasised. Superlative training in the latest equipment and techniques available for use at sea are of practically no use to a pilot who works and thinks "in the entirely opposite way", said Mr. Smart. "You don't take bearings and distances, you have a look at the screen and get your position right, spot on right away, with very small tolerances. You haven't got time for bearings and distances and points, you do it by instant identification of where you are from a buoy pattern. This is training that people at sea do not have.

"We must have a radar course that is tailored to our needs, not take second-hand standard courses. We want to develop our

own courses and I am sure we can give a lot of help to the people who are organising these courses. You've seen at Cardiff how receptive Captain Berger has been to the development of radar courses down there, and I believe the Bristol pilots will agree that the radar training they receive is probably superior to that of almost every other district in Britain. A radar course without a simulator is of no use whatever to a pilot, and with one they are only useful if geared up to us. You have to have a course which deals with your area in detail and incorporates suggestions from the pilots in that area".

Mention was made of several cases on record where the pilot has been criticised for not searching properly on radar. During critical manoeuvres he would have been using a very large scale for short range work and unable to switch to a longer range for search. Nobody else would have been searching because it was the only set, or because both sets were so tied together that you could only get the same picture. The availability of a second set, with independent ranging facility, was to be recommended for this purpose as well as to facilitate discussion and dual viewing with the Master.

Mr. Smart recalled that about 1957 he was on a ship carrying one of only two known shipborne models of a Decca prototype "Q" band radar. Although bad weather made it useless at sea, the pilot only needed a range of two or three miles in port for which purpose it was admirably suited. He would like to know where the "Q" band radars had gone, for the picture they produced was superb.

Formation of the NAUTICAL INSTITUTE

With the support of a large number of members of the nautical profession, an Institute has at last been formed which will be able to represent authoritatively the professional interests of qualified mariners.

Although much work still remains to be done, The Nautical Institute was formed on January 1, 1972, with a foundation membership of over 1,500. The headquarters will be in London and there will be branches in Liverpool, Plymouth and on the North East coast.

A special Constitution and By-laws have been drafted by a committee under the chairmanship of Captain Sir George Barnard, Deputy Master of Trinity House. This committee will act as a nominated council until it is possible to hold a general meeting of members, at which the first officers and council will be elected.

The council particularly wish to co-opt additional seagoing members among their number.

Principal object of The Nautical Institute will be to bring together in a single body all qualified members of the nautical vocation who have common professional interests but who up to now have had no common ground on which to meet.

Not only have ships become more complex in their equipment and operation, but the men who man them are also changing, so that their education and training have to keep pace with rapidly advancing technology.

These changes can only be satisfactorily developed and co-ordinated by a single and authoritative Institute through which new ideas can be discussed and evaluated in the light of experience.

"We are confident", say the council in a report to foundation members, "that The Nautical Institute can now move ahead, and hope it will quickly establish a national reputation that will provide dignity and respect for our profession in future years".

Further information may be obtained from Captain C. W. Malins, Honorary Secretary, at the offices of the Nautical Institute, Hanway House, Clark's Place, London EC2N 4BH. The telephone number is 01-283 3687.

SHIP'S MANNING

—AND THE FUTURE

J M Farmer *(Gourock)*

The two factors of paramount importance in the course of an act of pilotage are:—

(a) the type of ship or craft to be handled.

(b) the efficiency of the crew.

It is to the latter that I wish to direct your attention in an endeavour to see what the future has to offer us with regard to the changes that will be taking place in crew manning in the future. Since the days of the sailing ship the alterations that have taken place in the titles and the numbers in the crews manning merchant ships has been most remarkable and the shipping industry, by which I mean the shipping federation, the training ships, and the navigation colleges, are to be congratulated on implementing these changes in such a manner that the efficiency of the British Merchant Service has remained at a very high level and certainly had little, if any, effect upon the duties of pilots.

However, during the last year or two I have been feeling more and more that the recent changes that have been taking place are in fact having an effect on the nature of our work. Aboard ship electronic ware is gradually replacing equipment previously operated manually and the result is that we find the Ship's Officer has become, and understandably so, more instrument conscious and less of a practical seaman—if you like—more of an indoor type, and this was brought home to me very forcibly recently when the 2nd Mate of a ship was showing me down to the pilot ladder during the middle watch. It was raining heavily and when we came to leave the shelter of the midships alleyway to move on to the fore-deck I noticed he had stayed behind and when I turned around to look at him I could understand his reluctance to follow me—he was wearing carpet slippers! I wonder if oilskins and seaboots are being relegated to the nautical museums. I hasten to add that I only use the story to illustrate the point I am trying to make and it is not something that has happened to me frequently.

And is it not the case that in recent times it has become more and more difficult to find a seaman who can steer properly in the narrow confines of a river, where a change of course may only amount to as little as two degrees which, when all's said and done, does require a high degree of skill? But—and I wish to make this quite clear—I do not blame the seamen—but the system. Automatic steering has achieved popularity solely because it is an economic proposition: to allow seamen the time on the wheel to develop and practise their steering ability would be to defeat the whole object of the exercise. How often have you been concerned in recent times, watching a seaman handling a wire spring? I am certain that one of these days I will have the misfortune to see someone injured and investigation will probably reveal the victim to be a general purpose rating who spends more time in the engine-room than on deck. I do not need to tell you that ropes and wires must be treated with respect and one only learns to handle them properly by working with them constantly—seeing them, touching them, and not just at a time when the ship is depending on them to prevent damage and they are being worked to the limit of their safe working capacity. Inexpert handling during these times can have serious consequences.

Technological Changes

I feel sure that the people responsible for the recruitment, training, and re-training, of sea-going personnel were somewhat overwhelmed by the chain of world events

during the last few years which led to the design of new types and sizes of ships. Mammoth tankers, sophisticated liquid carriers, fast container ships; all of which demanded the need for new skill and original manning structures, and this coupled with the difficulties encountered in attracting sufficient men of the right calibre to man these expensive machines. Multi-purpose and dual-capacity crews, general purpose ratings; these were new designations hurriedly thought up to cover the roles to be played by the men required to sail a new generation of sea-going craft. The pressures have indeed been great but in highlighting this matter I hope that we may be able to offer some answers to the problems that affect our particular branch of the service.

If everything was to remain as it is now there would be very little difficulty and we could surmount the problems I have illustrated. We could, for example, be accompanied by an experienced helmsman; tension winches are becoming increasingly popular and alleviate the need to man-handle mooring wires; and the odd carpet-slippered officer would soon change his habits after he had got his feet wet once or twice. But everything is not going to stand still and if we accept all that has been written and said on the subject of recruitment then there is going to be even greater difficulty in attracting men to the Merchant Service: it is estimated that within 10 years 20 per cent of the sea-going staff will be females. The first signs of this are already apparent with one company having engaged two female Cadets and a female Radio Officer, another company is reputed to have an uncertificated female Navigating Officer, and a well-known passenger company has recently recruited waitresses to serve in the passenger dining saloons. So far none of these changes will seriously affect us but if we take it to its logical conclusion then one day we can expect to step on to the bridge of a ship and have to say "How d'you do Ma'am". Will we heartily shake hands or adopt the heel-clicking style of the continentals and bend down to brush the proffered female hand with a kiss? And what happens if, through a slight error of judgement, we make contact with a dock wall and put a dent in the boat and then find that the Captain has dissolved into tears. The complete gentleman must offer his handkerchief but will our wives easily accept the explanation that the smell of strange perfume is to be attributed to us hitting a dock wall. There's a great deal to be considered.

Re-appraisal

It has been stated in some quarters that manning for the next generation of ships will be officers only and in fact one Japanese firm is preparing to produce a 200,000-ton vessel with a complement of only nine men. When you consider the strides that have been made in the development of unmanned engine-rooms, the ability to conduct global radio-telephone calls, and the growth of infra-red grills and pre-cooked deep-frozen foods, it can easily be seen where the reductions in the manning scales can be made. If highly trained astronauts are not averse to handling a spanner or preparing their own food then it could be equally expected of highly trained ship's officers and may be one factor in helping to eliminate some of the environmental problems to be met aboard large ships.

It is my contention that a reduction in crew members will mean an increase in our responsibilities and it will be necessary for us to develop new skills. For instance, in some cases, it may be possible for us to take direct control of the steering, provided of course, the act of pilotage does not involve a long river journey requiring continuous changes in heading. Ports with uncomplicated approaches could even be managed with the present day automatic helms and extension leads. You may remind me that a recent court ruling criticised a pilot for steering but the criticism was principally on the grounds that he (the pilot) did not have a clear view from behind the steering wheel. With a purpose-designed cockpit raised to give an all-round view it would be possible to handle the steering in addition to keeping control of all other events; tugs, moorings, anchors, etc., through modern communication systems.

That one day unmanned ships will sail the oceans is not a flight of fantasy but will become reality when economic and social pressures force the shipping world to finance the venture. The expensive computerised systems have already been developed. In the beginning public opinion may abhor the idea that these vessels be permitted to make the final approaches to the ports in an unmanned condition and it would be necessary for one or probably two pilots to be winched down from a helicopter to take over direct control of the vessel for the final stages of the voyage. It is anyone's guess when this will happen but at a recent conference in the U.S.A. the delegates were asked to discuss the form of international control required within 20 years when 100-knot nuclear-powered unmanned vessels were sailing the North Atlantic.

In case there is some doubt, I am not under any illusion that the changes I have written about will happen overnight and affect all sectors of the world's shipping—there are many areas where it could never take place in the foreseeable future. For years to come many ships will have manual steering, manilla mooring ropes, and crews of the present day size. The new generation of ships will be in addition to the ones we already know. Greater demands will be placed upon us and it will be up to us to demonstrate that we have the ability to overcome them because already I detect that there are certain bodies who recognise the increased responsibility that will be coming our way and feel it will be necessary for them to take us under their control. We must be ready to show them that we have the necessary skills within our own ranks and we will not require any assistance.

Discussion

Introducing his preprinted paper, **Mr. Farmer** said he had been prompted to write on this subject by a number of recent incidents which had occupied his mind: "It had been necessary for me to raise the matter of poor steering aboard a couple of ships; there had been a pilot ladder incident which could have had quite serious consequencies, and I had watched the antics of a seaman jumping on a wire trying to prevent it running out. So these incidents, coupled with the appearance of a carpet slippered officer one night, caused me to write something on manning".

Mr. Berry (Humber) said, "I thoroughly enjoyed reading this paper but I would like to put Mr. Farmer right on one small point: speaking from personal experience, the angular Russian women that I have encountered in charge of ships wouldn't have burst into tears, they would have given me a karate chop".

Mr. Rhodes (from the Chair), "Mr. Farmer's paper is particularly important in the two paragraphs where he forecasts the possibility of an un-manned ship and of large ships sailing with minimal crews. This is placing a very much greater strain and responsibility on the pilot who is taking over the ship for mooring, unmooring, navigating in confined waters and with a need to control the ship and her attendant tugs. These, I think, are the important points and to which we should be directing our attention in respect of how much responsibility and how much say we should have in determining or representing our point on the manning of these ships".

Mr. Sidley (London River): "I think, Mr Chairman, you've hit the nail on the head very much there. We have got to try to get a balance between what we consider is a safety matter and what is also an extra strain on our services as a pilot. I think whilst insisting there must be certain minimum standards, one must also make provision, due to the extra work and strain put upon the pilot, for bringing in a system of surcharge, say 50%, on any ship that doesn't come up to that standard. Perhaps this excellent paper on manning might lead the Executive to direct their thoughts along that line, and perhaps also assist the shipowners by pointing out the undermanning. Mainly, the undermanning occurs in the less safety-conscious companies, and countries of the world, rather than in the British companies, so perhaps the shipowner wouldn't be too strongly against charging his foreign competitor 50% extra if he didn't come up to a standard. I think we could take it on two points; firstly, directed at the safety side, which is important, and secondly, recompensing the pilots for the extra strain involved".

Coastlines

W L Dunn of Fowey

Too late for inclusion in our last issue comes a photograph of Mr. Dunn whose article on "Family Pilotage" plumbed the depths of living memory in the West Country. Since our last note on his retirement he seems to have started a new career as itinerant lecturer on pilotage, taking part in a BBC broadcast and giving talks to over sixty clubs, including Rotary and Women's Institutes. The vocal marathon does not end there for he has joined two male voice choirs, one of them being the Polperro Fisherman's Choir famed for their rendering of songs of the sea. Readers might like an article from him in due course on the techniques of successful retirement!

Berthing Record for Clyde

The Liberian oil tanker, *Universe Kuwait*, third largest ship in the world, came up the Clyde on Saturday, 15th January, to discharge part of her cargo at the deep water oil port of Finnart, Loch Long.

The Scottish port was chosen because it is one of only two ports in North West Europe deep enough to take a vessel of this size—1,132 feet long, 175 feet beam and, carrying 325,000 tons of oil, with a draught of 82 feet. Of 326,000 tons deadweight, she is claimed to be the largest fully laden ship to enter a British port and Finnart the only terminal in Europe linked to a refinery which could take this vessel when fully laden. As the Scottish Daily Express pointed out, it takes 12 miles to come to a halt from full ahead and is three times the length of Ibrox Park.

Three Pilots were involved in the operation; J. W. Terris from sea to anchorage, I. C.Laing for berthing and R. M. McCrone unberthing and the outward passage. After unloading 100,000 tons, an operation taking about eight hours, the *Universe Kuwait* sailed to Ireland to unload the rest of her cargo in Bantry Bay.

Ships' Manning (*continued*)

Mr. Rhodes: "The purpose, of course, of these papers, that have been undertaken by members of the Technical Committee, is to bring to the membership's notice the problems in which pilots should be involved and to highlight ways in which we hope to be able to play our part in a wider concept of pilotage and handling of ships from A to B. As an example of what this particular manning problem is, we are, or should be, very greatly concerned perhaps in the design of tug equipment, the size and the position of winches, bits and ropes. How many of us can tell stories of the time it has taken for a few struggling men to haul large hawsers up the side of large ships and, if they reduce the crews any further, how are we going to make tugs fast? If it needs a new design or new ancillary equipment, perhaps a greater use of thrusters and less use or dependence upon tugs, then these are problems which should involve us in discussion with the designers of ships, the owners of fleets and the managers of tugs. These papers are designed to have a wider market circulation than just this membership: they will be published in *The Pilot* and so the ideas of this Association can be broadcast to outside bodies. Thank you Mr. Farmer for your paper which will, I am sure, be widely read".

Coastlines (*continued*)

Harold J Bradford Makes News at his Retirement

Two spontaneous local tributes on his retirement from the Trinity House pilot service were full of surprises for "Dido" Bradford. On his 68th birthday, after 31 years in the Trinity House service, he was invited to a little celebration party at the Beach Hotel near the entrance to Exmouth Docks, which has been his "local" for fifty years. This proved to be the scene of a great gathering of customers, friends and crew members of some visiting cargo vessels who had contributed to give him an electric tea maker. Further gifts were handed to Mr. and Mrs. Bradford by the licensee and his wife who, having originated the idea, received a "terrific response".

Meanwhile, a more lasting form of recognition was being arranged in complex secrecy at the town's Pilot Inn. A few weeks later, "Dido" was asked, appropriately enough, to unveil a newly painted sign for the inn. It was a complete surprise to him to find that he was unveiling his own portrait which had been painted by John Cook from a photograph, personal observation and one sitting. Our front page illustration shows the admirable result. Readers may also be interested to know that the other side of the sign carries the Trinity House coat of arms and that this is the first time that permission has been given for the insignia to be represented on a public house sign.

The happy ceremony contained two more surprises. The Chairman of Whitbread Devon Ltd, Mr. Frank Twiselton, who is also a Trinity House sub-Commissioner for the Port of Exeter which includes Exmouth, presided over the occasion. He introduced "Dido" as the Senior Trinity House Pilot at Exmouth and presented him with a silver tankard and a miniature replica of a scroll which now hangs in the lounge of the inn, recording his history as a pilot and lifeboatman as well as the history of Trinity House.

In hiding until the appropriate moment, Mr. Basil d'Oliveira, the Test and Worcestershire player, presented a bouquet to Mrs. Bradford. The famous cricketer had long been known to be an idol of Mr. Bradford, but it was "Dido" who was asked to sign the autograph book, that of d'Oliveira junior aged eleven.

Formerly a boatman who ferried visitors from Exmouth Warren by boat, and a fisherman, Mr. Harold Bradford joined the pilot service in 1940 after three years' apprenticeship. He has become well known all over the continent by the crews of coasters and cargo vessels which go into Exmouth harbour. During the war he continued service as a pilot, being called upon to work anywhere along the south coast.

His son is not following his father or uncle into the pilot service but the family connections have been lengthy: the Chief Pilot before Harold was his brother Percy who completed 41 years with Trinity House before retiring. When Percy joined, his father-in-law, Mr. Bruce Pym, was Chief Pilot. The Pyms, formerly river pilots between Exmouth and Topsham, had a long family tradition in the pilot service but the earliest records of the Bradfords were lost during the Great Fire of London.

For six years Harold was also former Coxswain of the Exmouth lifeboat and, in 1954, received the Royal National Lifeboat Institution's bronze medal from Princess Marina, Duchess of Kent, for his part in the hazardous rescue of five people from a cabin cruiser *Nicky* which drifted onto the Maer Rocks. Having served with the lifeboat since 1925, he was withdrawn along with other pilots in 1957. This followed from a tragedy on Christmas Day, 1956, at Exmouth, at which Trinity House was concerned that three of its local pilots were on service calls as well as being together in the same lifeboat.

"Dido" is fortunate in having so many friends who have rallied to make his retirement such a memorable occasion. We wish him a long and happy tour of duty ashore held in esteem among his many friends.

For this account of the "goings on" in Exmouth we are indebted to the local press who provided much of the information and the photograph.

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