



THE PILOT

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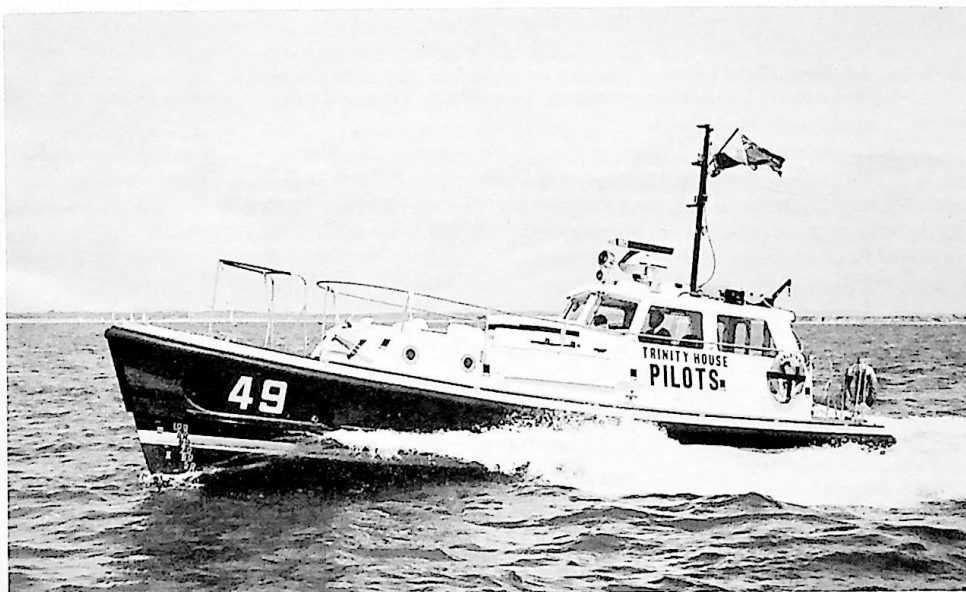
CENTENARY AHOY!

Harry Hignet, our unofficial archivist in Wallasey, makes a plea, on page 91, for historical papers and reminiscences as our centenary approaches. He has already sent some cuttings to the Editor from the *Liverpool Mercury* of nearly a century ago. They include reports on two UKPA Conferences, in as much detail as we would put in our own journal, and an equally full account of a deputation of pilots to the Board of Trade in 1888. This extensive coverage of pilotage matters in a newspaper contrasts with the "media's" assessment of the news-value of such affairs today. Harry also has an item (page 88) on the Parliamentary Select Committee on Pilotage of 1870 and the events leading to the formation of the UKPA in 1844.

A CORRECTION

On page 27 of the January issue, Mr Yates is quoted incorrectly, after referring to the retirement of Mr Pollock as Chairman of the PNCP, in saying Mr Pollock is continuing as a member for the East Coast of Scotland. It has been pointed out to the Editor that Gourrock is that well known watering place on the West coast.

Trinity House have ordered a second 40ft pilot launch like the *Valkyrie* below. Embodying their 16 year's experience of this size and type, she is fitted with transom steps, a special floodlit lifting davit to enable her crew to rescue people from the water and her hull is divided into six watertight compartments.



UNITED KINGDOM PILOTS' ASSOCIATION

20 Peel Street, London, W8 (01-727-1844)

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Conference on SHIP OPERATIONS AND SAFETY Southampton April 7 — 9 1981

The UK Pilots' Technical Committee was represented at the above Conference by John Tebay, Chairman, the writer of this report as well as other pilot representation, reflecting the importance of the Conference to the international maritime world. A total of twelve pilots attended, including four non-UK pilots. The total attendance was 167 and was truly international, including delegates from both sides of the iron curtain and most of the world's maritime nations.

Your representative found the mass of detailed information so overwhelming (the pre-print of some of the papers ran to 295 pages) that, in spite of days of sheer hard work, there seems no way in which much of the detail can be contained in this report. For this reason, it is intended that an attempt is made to reflect the general atmosphere of the Conference in a personal and perhaps emotive way and to accompany the report with an appendix listing the main papers presented and commenting only on those that have direct relevance to the pilotage scene.

Much play has been made over the years of the Master/Pilotage relationship with an implication that it is not satisfactory and, thereby, compromising safety. In my experience as a pilot (28 years) the Master/Pilot relationship on the bridge of a ship has been superb, but in my experience of Conferences (10 years of perhaps two conferences a year), the Master/Pilot/College lecturer/Manufacturer/Port Authority official/Company representative relationship has been a variable quantity. At this Conference it was at a fairly low ebb.

It is not for me to comment on the interaction of the interests of some of the other parties, except to say that in my opinion the cause of safety is in real danger of compromise, not because of any lack of professionalism or integrity on the part of any of the individuals but because a fundamental conflict exists between the will to make real progress on safety and the ability of the parties to achieve it in the present economic climate. The will is there, the wherewithal is not.

With regard to past performances, a glance at the accident figures will show that no real progress has been achieved. Why is this so? In my opinion the frustrations are showing. After years of serious concern and effort by individuals, colleges, companies, countries and international bodies, little progress has been made

It seems to me we have reached a watershed. Which way do we go? Do we follow the aircraft analogy? World traffic control — rigid certification procedures — triple redundancy — checklists — aborted voyages if any deficiency — controlled rest periods — and untold millions to pay for it. Do we do the opposite and leave everybody to their own devices and lose all the fruits of cooperation and modern technology? Inevitably a middle-road has to be the answer: not a weak "compromise on everything" approach but a careful analysis of where the well-tried historical methods work best and where the fruits of technology and sophisticated training methods can be best applied.

It was suggested at the Conference that the pilots had been vociferous and implied that this was not helpful. In my opinion, the pilots, though not always as reserved about the failings of the system as some may like, were alert, interested and vitally concerned about what all would desire, *ie* maximum safety and commercial success. I believe they were far more objective than they were given credit for and I would be delighted if others, particularly serving officers and masters, would contribute as much as the pilots to the discussion at any conference.

Pilots feel instinctively that certain activities can only be properly learned in real time and on a real ship. Perhaps the best example of this is shiphandling. Naturally, colleges do their best to provide facilities to help in this training but they must feel continually frustrated that their best efforts can only touch the fringes of the subject, not through lack of expertise but because at over £500 a week they are trying to achieve in days that

which takes years by historical methods. What is the answer? May I suggest we incorporate the short model courses in the very early pilot training and the simulator courses include a pilot in all bridge team training (although most bridge "teams" seem to consist of one tired overworked officer and the Captain trying to have his mass of paperwork ready for arrival).

The area in which there seems to be a real advantage in the use of simulators is in the field of emergency situation training. Firefighting, pollution control, equipment failure, stability control, can all be simulated and whereas it is a perfectly reasonable criticism for a master or pilot to say "I have done this piece of shiphandling a thousand times on a real ship what can you add with your machine?", it is fortunately rare for us to have to cope with the type of emergency that may occur, say, with an electrical failure on a gas carrier.

As this report is mainly addressed to UK pilots, I will not attempt to give the answers to some of the global problems that seem to be becoming more acute. What happens when a modern oil company's VLCC equipped with its compulsory Automatic Radar Plotting Aid and manned by a very sparse Korean crew and officers without the advantage of simulator training meets a 50 knot hydrofoil crossing the channel marked by the new IALA system (where the topmarks can't be indentified at more than two VLCC's lengths) and governed by a traffic separation scheme at the same time as a sail training vessel becomes becalmed in its path? If you think I'm exaggerating, look at some of the accident reports! It takes a long time to even look up the rules but somebody has to make a decision in seconds.

To sum up with what I believe the future path should be. We must learn to do the simple things well and consistently. We must not lose the traditional advantages of well-tryed methods. Direct on-board training is best for certain functions where a trainee operates under the direct control of a skilled and experienced senior. Technology should be welcomed but introduced only when reasonably foolproof and when the gap between the "haves" and "have nots" is not too wide or it will tend to increase rather than reduce risk. Education should concentrate on full understanding of the basics rather than a plethora of detail which cannot be retained. Simulator training should concentrate on emergency procedures and specialist training, eg chemical carriers, with a partial role in early general training and bridge team training. The work of the DoT and IMCO should be welcomed and supported with feedback from conferences such as this. A greater understanding and respect should be developed between sections of our industry, otherwise there is a real danger that these conferences will widen the divisions between the sectional interests rather than improve communications in a way so necessary in our increasingly complex and economically stressed environment.

LIST OF PAPERS, CONTENTS AND COMMENT

Opening Address: Mr D Byrne, Under Secretary, Dept of Trade

Mr Byrne stressed that the prime purpose of the DoT was safety of life. He said that the DoT now recognises that the human factor is the most important aspect of safety and that however good shore-based courses may be, only "on-board" training can properly reproduce any potential emergency and ensure correct reactions in a real environment. He stated that the DoT now sub-divides its function into four divisions: 1. Design and Construction; 2. Safety Equipment; 3. Training; and 4. Enforcement; and that in each of these categories they welcomed feedback from conferences such as this.

Comment — Sound, sensible and helpful.

Paper 1: *The Effectiveness of the 1972 Collision Regulations; Capt A N Cockroft, City of London Polytechnic, with short background Paper, The 1972 Collision Regulations in Practice by Capt W V Lusted, MBE, MNI.*

Principles of Regulations — 1972 Changes — Amendments — Current Work of IMCO — Impact of Traffic Separation — Illustrations of problems and possible future developments — alternative answers to certain anomalies, particularly Rule 10 (crossing traffic separation zones).

Comment — Reasonable, well argued papers. Even with the best answers, problems will remain, including major perceptual difficulties when trying to use what are basically clear-weather rules in poor visibility.

Paper 2: *Navigational Lights, Shapes and Marks — the Mariners Problem of Recognition; Mr D M Anderson and Miss Jane Price, Maritime Ergonomics Research Unit, UWIST.*

Historical background — perceptual problems — analysis proposals.

Comment — Early stages of work with very interesting results. Basically agreed that perception difficult at effective distance, both as regards ships' lights and IALA buoys and topmarks. No real proposals yet.

Paper 3: *The Impact of Compulsory Fitting of Automatic Radar Plotting Aids on Ship Operations; Capt Ian Bragshaw, College of Nautical Studies, Warash.*

Paper 4: *The Influence of Alternative Tracking Philosophies for ARPA; Capt Keith Jones, Liverpool Polytechnic.*

Comment — Both papers emphasized the need to recognise the limitations of ARPA and tried to establish a priority pattern for target acquisition. There seems to be a fear that the compulsory fitting is premature (ie ahead of the technology) and a danger that without careful and universal training they could be counter-productive.

Paper 5: *Training for Command; Written by Capt T B Gregor, BP Tanker Co. Presented by Julian Parker (Secretary, Nautical Institute)*

Comment — Constructive viewpoint on the management role of the Master.

Paper 6: *Bridge Management; Capt D R Salmon, Shell Tankers (UK) Ltd.*

Comment — Strong argument in favour of passage planning with pilot as part of team. Still inclined to ignore small vessel problems and concentrate on VLCC's.

Paper 7: *Master/Pilot Relationship; Capt Bavister, Esso Petroleum*

Esso Policy — increased frequency of incidents with pilot aboard — communications and passage planning problems.

Comment — Prior to the Conference pilots' reacted strongly to the very doubtful statistics previously reported. In the event, the statistics were played down but a major weakness was that no paper was available to delegates. No breakdown of figures was given and within the personal experience of the writer at least two accidents of the forty-four total were the direct result of machinery failure.

Having said that, it is a pity that what was essentially a constructive approach should have been partially discredited before presentation.

The new policy of Esso seems to be to regard the pilot as a semi-permanent member of the bridge team and to provide him with the best possible back-up from Master and officers. To this end, they feel Masters should have some ship-handling training. No pilot should disagree with that and any responsible pilot will welcome the degree of monitoring necessary to eliminate ergonomic error. The formally declared policy is safety first, speed and economy next. The emphasis is intended to be on elimination of one-man errors.

If Esso practice what they preach the Master/Pilot relationship will continue to be excellent but will also be seen to be good when viewed from a desk in a refinery.

Paper 8: *Bridge Manning, a Discipline — A Pilot's View; Capt R D Valentine, MNI, Panama Canal Pilot.*

Comment — Lively, interesting critical comment on ship design, well illustrated with slides.

MARCONI TEPIGEN SHIP SIMULATOR

On the 23rd July I was invited by Marconi to see the latest developments in their ship simulator at their Leicester factory. It will be recalled that the prototype of this simulator was reviewed in a TDC Report of August 1976 and part of the description and comment reads: "The background to the Tepigen technique is that it was developed by Marconi under contract to the RN for operator training and, because of its possible application for ship-handling simulators, has received some support from the Dept of Industry. The principle is highly technical in that it synthesises television pictures wholly from a computer (computer generated imagery — CGI)". "... The advantage is that the picture is three-dimensional in that headlands and ships (for example) can be 'steamed round' and alter their aspect accordingly. The picture is 'textured' and 'edge-smoothed' to give accurate outlines, colours and shading. Fog and poor visibility can be simulated, and the night scene can include an almost unlimited number of lights and headland and light loom". . . . "The quality of the picture was remarkably good considering what is attempted. However, the daytime close-up view could not be taken 'for real' — it still has a rather artificial look, rather like a sophisticated cartoon. The misty and night views were, on the other hand, quite convincing and could be taken for a living scene". The comment goes on to compare the Marconi with the Decca simulator and in recognising the greater potential of the former and the excellent bridge lay-out of the latter recommends that the two are combined. This is now being done and, as has previously been reported this year, will eventually be set-up at UWIST, Cardiff, for simulator courses.

The demonstration at Leicester this time indicated the advances that had been made in the intervening period prior to the equipment being transferred to Cardiff. There are now three TV colour projectors to give

Paper 9: *Developments in Shiphandling Training in the UK; Capt Longman and Lt Cdr Douglas, Warsash.*

Comment — Description of model training on lake. Pilots see use only for basic training. Disadvantages: scaled speed and wind effects. Advantages: basic principles quickly demonstrated.

Paper 10: *Operational Requirements for Anchoring Large Ships; Capt F Berry, Pilotage Operations Manager, Humber.*

Comment — Special emphasis on need for accurate instruments to determine speed and track of VLCCs. Speaker satisfied with actual anchor gear for port work. Future paper should perhaps look at effectiveness of anchoring systems for VLCCs in open sea conditions.

The rest of the papers presented were mainly outside the scope of a report to pilots. They included interesting papers on weather routing, management training, simulator design and a series of papers related to safety requirements for hazardous cargoes and firefighting. Each of these subjects is of interest to pilots in their capacity as a temporary member of the ship's complement. One can only suggest that somebody considers them important enough to finance the training of pilots in their role during an emergency.

One subject that is of more direct importance is the latest position regarding the validity of DoT certificates of competency. A paper by Capt Jestico, DoT, helped to clarify the future position.

When the SOLAS Convention comes into force in about two years time any certificate holder who has been ashore for more than five years will have his case individually considered if he wishes to return to sea. As a general guide before taking up a watch-keeping position, he will have to either: 1. spend three months at sea as a supernumerary; or 2. take appropriate Nautical College courses lasting six to eight weeks before returning to sea.

It is of some regret that even more detail cannot be effectively circulated to those pilots that we have the honour to represent, but the Technical Developments Sub-Committee will, of course, be pleased to answer any specific questions.

R Cashin, Member of UKPTC

an angle of view of 120°, but this can be increased to 200° by using five projectors. The particular exercise used was a simulation of approaching Southampton, starting just before daybreak. The view through the large wheelhouse window revealed a number of channel navigation lights against a background of shore lights and the dim outline of the ship's fore-deck and bows. Whilst not being a Southampton pilot, it did seem authentic to me as the ship made her way up the channel past the various marks and buoys — I suspect that the gentleman carrying out the exercise had done it a few times! Gradually dawn came, slowly revealing land and buoy outlines as they came nearer. Then, with the first light of day, fog set in reducing visibility to less than half-a-mile. Ships were picked out visually in an exceptionally realistic manner — first a darker blur and then painfully slowly resolving into an identifiable aspect, then slowly passing. Even the water alongside appears to be moving. Certainly the night and poor visibility portrayals are 'as for real', but I would still say the bright daylight views lack total credibility.

Apart from the visuals then, the bridge lay-out, nav-aids integration, communications, etc, will be as per Decca, as will the various ship-handling dynamics fed into the computer.

I voiced two criticisms at this stage. One was on the purposes to which the simulator might be put, *ie* either research, for which it was unsuited, or on a "teach-yourself-shiphandling-in-a-week" basis. Secondly, on the fact that although there were eight days of demonstration there seemed to have been only two practising mariners invited — a ship-master and myself. I suppose it depends on who are seen as the potential customers but I believe that the most useful critical comments come from those experienced mariners who are likely to be on the receiving end. Finally, one also has to be wary of the academics who may attempt to justify the purchase of expensive equipment by using it for purposes which may sound worthwhile but for which it is not designed or capable.

Nevertheless, if used properly, it should be a valuable teaching aid.

P J H Tebay, Chairman, UKPTC

BOOK REVIEW

"Practical Ship-Handling" by Malcolm C Armstrong. Published by Brown, Son & Ferguson at £7.50.

Captain Armstrong begins by describing the relationship of Pilot, Master and Officer of the Watch. He calls this relationship "delicate". In the great majority of pilotage acts I would not agree with him but there are occasions when this description is an understatement. The relationship cannot be helped by the IMCO directive which suggests that a junior officer of the watch can take over the handling of the ship from the Pilot.

When Captain Armstrong moves on to ship design, propulsion, steering and ship behaviour he starts from first principles. This will help junior and trainee pilots understand why ships behave or misbehave as they do; it may, also, give an insight to ships' masters and officers of the complexities of the pilot's job and as to why, sometimes, the planned manoeuvre has to be changed.

The chapters on anchors, tugs, berthing and unberthing describe basic ship handling concepts. These may well have to be modified to suit individual pilotage areas but this does not detract from their soundness.

One warning that is given loud and clear concerns ships with variable pitch propellers. On these ships many Masters, without instructions from the Pilot, adjust or fiddle with the pitch. I agree with Captain Armstrong that this is "a most dangerous practice" and it should be stopped wherever possible.

This is a useful book which is well worth a place in any Pilot Station library where "Old Hands" may or may not learn something from it, but trainee pilots certainly will.

R H

STANDARDS OF TRAINING AND WATCHKEEPING

Report of a Meeting of the IMCO Sub-Committee,
London, January 19th to 23rd, 1981.

The 14th Session of the IMCO sub-Committee on the Standards of Training and Watchkeeping was held at IMCO Headquarters, London, from January 19th to 23rd 1981 under the Chairmanship of Mr T R FUNDER (Denmark), and was attended by representatives of 32 governments and 14 specialised agencies, inter-governmental and non-governmental organisations.

In opening the session, the Secretary-General emphasised the importance of maritime training and the urgent need for the early implementation of the 1978 STCW Convention.

Under the Committee's Rules of Procedure the sub-Committee unanimously elected Mr T R FUNDER (Denmark) as Chairman and Mr J DE RANGO (France) as vice-Chairman for 1982.

The Agenda of the session was approved. The items included: 2. Actions taken by the Maritime Safety Committee; 3. Manning of Sea-Going Ships; 4. Training in the Use of Automatic Radar Plotting Aids (ARPA); 5. Training in Radar Observation and Plotting; 6. Training and Certification of Crews of Fishing Vessels; 7. Training, Qualification and Operational Procedures for Maritime Pilots; 8. Training and Qualifications of Crews Servicing on Mobile Off-shore Units; 9. Training and Qualifications of Officers and Ratings in the Handling of Hazardous or Noxious Dry Chemicals in Bulk; 10. Security of Certificates of Competency; 11. Mis-use of VHF at Sea; 12. Other Matters.

While items 3, 4, 5, 10 and 11 each had some matters of concern and interest to pilots, it was item 7 of the agenda, the *Training, Qualification and Operational Procedures for Maritime Pilots* which was the outstandingly major item.

In response to the strong recommendation from IMPA to member organisations, pilots had been successful in getting members attached to the government delegations of Italy (CAPTAIN S GALLEANO); Japan (CAPTAIN T HONGO); and the United Kingdom (CAPTAIN B I EVANS, UKPA). In addition IMPA was represented by CAPTAIN J A EDMONDSON; CAPTAIN P J NEELY, Jr President of the American Pilots' Association; CAPTAIN D E HUGHES, Columbia River Pilots and Mr E EDEN, Secretary-General. CAPTAIN D S GRANT, San Francisco Pilot and vice-President (Pilotage) of the Masters, Mates and Pilots AFL-CIO was attached to the delegation of the International Confederation of Free Trade Unions (ICFTU).

The Chairman, in opening the discussion on item 7 referred to the fact that this item had been before the sub-Committee on several occasions over a period of some years, had been allowed to drop and had been subsequently revived.

The President of IMPA, endorsing the remarks of the Chairman, reviewed the past history of the subject as far as the sub-Committee was concerned, and hoped that at this session the sub-Committee would again agree to drop it from the work programme and bury the matter for good.

He pointed out that as indicated in the IMPA paper on this subject submitted to the 7th Session of the sub-Committee in December 1975, while a case could be made for regulating the training and qualifications of deep sea pilots who operate in international waters, and that this had now been done on a regional basis, the matter of local, district or port pilotage was a very different affair. What might be of importance in one place might well be totally irrelevant in another, even between two ports within the same country. The nature of the trade, climatic conditions and the different requirements of pilotage in ports, harbours, rivers, lakes, canals and the open sea all made a standard training system impossible to achieve.

The President of IMPA referred to IMCO Assembly Resolution A.159 (ES IV) dated November 27th 1968 which "Recommends to governments that they should organise pilotage services in those areas where such services would contribute to the safety of navigation in a more effective way than other possible measures and should, where applicable, define the ships or classes of ships for which employment of a pilot would be mandatory", and stated that if this Resolution which was couched in very broad terms was not going to be adopted by any country there was no real hope that a much more comprehensive Resolution would be adopted by the countries at which it was being aimed.

Furthermore, any IMCO Resolution established only the minimum standards which would be internationally acceptable, and these would be very much lower than standards which exist already in very many nations of the world. There was a danger that some countries might seek to lower existing high standards while still complying with the lower standards that the sub-Committee might now establish and, indeed, evidence that this was happening already had been submitted to IMPA.

Italy (Captain Galleano) urged that the foreign-going master's certificate of competency (or its equivalent) should be the basic minimum qualification for entry into the pilot service, although in certain circumstances — such as a lack of suitably qualified people — a chief or first mate's certificate might be acceptable. He was also concerned about minimum age limits for entrants to a pilot service and thought that this should be 26. This would give an applicant time to acquire experience of ships and seafaring practices. Captain Galleano was of the opinion that pilots should undergo regular medical examinations, the frequency of which would depend on the pilot's age.

The Netherlands delegate supported the idea of going ahead with this subject and that document STW XIII/WP4 should form the basis of a working group's study.

The Federal Republic of Germany supported wholeheartedly the views which had been "so eloquently expressed" by the representative of IMPA, and wished to have the subject dropped for good from the sub-Committee's work programme.

The delegate of the USA (Mr P M Hammer) was equally firm in his view that the subject should not be dropped, or even deferred, and that every effort should be made at this session to have the matter completed in time for the XIIth Assembly, in November 1981.

The USSR Government was in favour of continuing to progress this subject and wished to see that high standards were established. Russia believed that pilots were divided into two classes — port, deep sea and maritime — and that minimum age limits for entry into a pilot service should be 21 and the maximum age for pilots should be 65.

The certificate of competency required to be held by a candidate for entry into a pilot service should be that of master or first mate, and the applicant should have had at least two years experience as mate.

The Chairman pointed out that although there was a firm suggestion that the subject should be dropped, this had not been supported by a majority of those who had spoken, and the twelfth session of the sub-Committee had agreed that the matter should proceed.

A working group would be set up to consider the draft resolution drawn up at the 13th Session of the sub-Committee and the various documents subsequently submitted on the draft. Five papers had been received by the Secretariat from, in order: IMPA, Italy, Netherlands, Federal Republic of Germany and the USA. A late paper prepared by the USSR would also be considered by the group.

The Working Group consisted of representatives of ten countries and three non-governmental organisations: Egypt (CAPTAIN ASSAAD, Principal Examiner for Masters and Mates, Arab Maritime Transport Academy, Alexandria); France (M B FONTENAY, Adjoint au chef du Bureau du Travail

Report of a meeting of the
**INTERNATIONAL ASSOCIATION OF
 LIGHTHOUSE AUTHORITIES**
 held in Japan, November 1980

The tenth Conference of the International Association of Lighthouse Authorities was held at the Tokyo Prince Hotel, Tokyo, from November 10th to 21st 1980, under the Presidency of Mr John BALLINGER, Director, Aids and Waterways, of the Canadian Coast Guard.

In the weeks preceding the Conference, delegates and guests to the Conference had been circulated with the conference papers — 198 technical papers covering all the aspects of the work of IALA since the last Conference in Ottawa in 1975, and plans for future research and development as well as interim reports on work in hand.

Maritime); Federal Republic of Germany (Dr M BLEY, First Secretary, Embassy of the FRG, London); Italy (CAPTAIN S GALLEANO, Genoa Harbour Pilot); Japan (CAPTAIN T HONGO, Inland Sea Pilot); Liberia (Mr A J KANDAKAI, Assistant Commissioner for Training and Labour and CAPTAIN A T THOMPSON, Gulf Oil Company, Philadelphia); Netherlands (Mr B ORT, Pilotage Directorate — Directorate General of Shipping and Maritime Affairs); USA (Mr P M HAMMER, Director of Marine Affairs, American Institute of Merchant Shipping and Mr J J HARTKE, Chief, Pilotage Branch, United States Coast Guard); United Kingdom (Mr G N LORD, Principal, Marine Division, Department of Trade and Mr BIEVANS, UKPA); USSR (Mr A KAZANKOV, Deputy Head, Personnel Department, Ministry of Merchant Marine); International Shipping Federation (Mr T MARKING, Assistant Manager and Mr J S WEBB); International Confederation of Free Trade Unions (CAPTAIN D S GRANT); International Maritime Pilots' Association (Mr J A EDMONDSON, CAPTAIN P J NEELY, Jnr, CAPTAIN D E HUGHES and Mr E EDEN); Secretary, Mr J THOMPSON, IMCO. The Working Group elected Mr G N LORD (United Kingdom) as Chairman.

The group spent three days, working into the evening on each day, dealing with document STW XIII/WP4 and considering each line, at the same time taking account of the subsequent documents submitted and of views expressed by members of the group, and a draft working paper was prepared for submission to the sub-Committee. A further half day was spent in checking and amending the draft which was then presented to the sub-Committee as document STW XIV/WP5.

The document consisted of a report with attached annexes and an appendix, and this was then discussed by the plenary session. A number of amendments were made to the working paper, and matters on which the working group were divided or on which there was doubt were also resolved by the sub-Committee.

Several last minute efforts were made by those delegates most concerned to make a number of additions and/or deletions to the text, some of which were successful.

The President of IMPA said that due to lack of time for a proper study of the draft working paper the appendix was an editorial hotch-potch and, if it was agreeable to the sub-Committee, he would prepare a corrected version for the Secretariat. This proposal was accepted.

The Chairman of the sub-Committee suggested that the sub-Committee might like to take the revised document home for further consideration in their respective countries, and that a final version would then be prepared at the sub-Committee's next session, but this suggestion was opposed by the Netherlands and the USA and the draft resolution with annexes and appendix was attached to the sub-Committee's report as annex 7 for submission to the Maritime Safety Committee.

J A Edmondson, President, IMPA

Forty-seven countries were represented at the Conference. England (represented by Trinity House), Ireland (Commissioners of Irish Lights) and Scotland (Northern Lighthouse Board) each attending in their own right as "A" members, while the United Kingdom was represented by the Department of Trade attending as a "B" member.

Official representatives were also present from a number of international bodies with which IALA has a close working relationship, including the Inter-Governmental Maritime Consultative Organisation (IMCO); International Association of Ports and Harbours (IAPH); International Maritime Pilots' Association (IMPA); Permanent International Association of Navigation Congresses (PIANC); International Hydrographic Association (IHO); Commission Internationale de L'Eclairage (CIE); Comité International Radio-Maritime (CIRM); International Association of the Institutes of Navigation (IAIN); Port Management Association of West and Central Africa (PMAWCA).

In addition, over forty companies were represented at the conference and at an industrial exhibition of aids to navigation and navigational aids.

After the official opening ceremony, two days were allocated to meetings of the general assembly and two days to consideration of the new international system of buoyage. The remaining days of the weeks (Monday to Friday) were devoted to technical sessions; two commissions functioning simultaneously to discuss selected papers on certain subjects from the great number of technical papers circulated.

The subjects discussed by the two commissions were: (1) Data, parameters and calculations for aids to navigation; (2) Lighthouses and fixed structures; (3) Floating aids to navigation; (4) Servicing craft and shore-based depots; (5) Energy sources; (6) Light and vision; (7) Sound and hearing; (8) Radio-navigation and surveillance; (9) Automation and remote control; (10) Coastal and harbour aids to navigation; (11) Organisation, operational and maintenance problems; (12) Marine traffic services.

Each section was chaired by a general reporter who had the assistance of a technical expert. The authors of the technical papers selected for presentation introduced their papers, after which there was an open session when the delegates were able to express views on the subject under discussion and put questions to the authors. After each session the general reporter summed up the main points raised in the papers and from the floor.

On the Saturday, an organised tour of Tokyo Bay was made aboard the *Cattleya Maru* giving delegates an opportunity to note the types of buoys for which the Maritime Safety Agency is responsible and also the Tokyo Bay Lighthouse, a platform structure in the bay.

On the Sunday, after visiting the Yokohama Marine Tower, delegates were taken to inspect the Kannonzaki Lighthouse and the Tokyo Wan traffic advisory centre.

Buoyage Conference. This meeting was convened at the request of IMCO, and representatives of IMCO and IHO were among those present. Mr O Gredal (Denmark) gave a brief account of the development of what had become known as System A, its implementation programme to date and for the future. Greece announced that it would be adopting System A and implementing the scheme in the period 1984/86. The USSR also announced that it was adopting System A throughout Russian waters and the timetable is: Baltic Sea 1981, Black Sea 1982/83, Pacific Russia 1983/84, Polar Sea 1984/85.

Mr N F Matthews then presented the report of the Technical System for System B, which was established after the Ottawa Conference (in 1975) to formulate a system of buoyage using the colour red and red lights to starboard but which would be compatible with System A. Problems arose over lack of provision for cardinal marks in System B and the fact that System A had been agreed and was already being implemented. However, after the system, as implemented in some countries in Europe, had been viewed, it was agreed that cardinal marks could be a part of System B, but that each country should be free to use them or not.

In some countries adopting System B there was provision for bifurcation buoys, but this provision did not exist in System A countries so it was decided to adopt lateral buoys for bifurcation use.

There was also a problem of isolated danger and safe water marks, particularly in Japan where long passages are marked by centre line buoys. There is a limitation with isophase buoys and buoys giving one long flash every 10 seconds, in addition to which buoys exhibiting these signals are very heavy consumers of energy.

The technical committee, in considering the racon code to mark new dangers, proposed it should be a 3-bit code commencing with a dash. Only three such codes are available — D, G and K and, subject to the approval of IMCO, it was agreed this should be D.

The two systems, henceforth to be known as "The IALA Maritime Buoyage System" will now broadly be the same except that in some countries the lateral buoys will be green to starboard and in others, red to starboard. The Countries adopting the former will be in Region A and those adopting the latter will be in Region B. Region B includes the whole of the American Continent and immediate offshore islands, Japan, the Republic of Korea and the Philippines. The rest of the world will be in Region A, apart from China which has not decided which region to opt for but stated it will probably opt for Region A, and French Polynesia which lies astride the line for demarcation between Regions A and B.

Admiral D C Kapoor (IHO) referred to the difficulties of charting authorities. There are still 30 systems of buoyage in existence. He pointed out that unless complete and accurate information is made available sufficiently in advance of implementation, the action by the Hydrographic Services becomes difficult or even impossible, and he suggested that implementation in Region B should not start until 1982.

Captain Wingate (Trinity House) suggested to the IHO that they should consider indicating on each new chart whether the area covered was in Region A or Region B, and Admiral Kapoor replied that he would certainly bring this useful suggestion to the IHO Chart Specification Committee.

Mr W de Goede (IMCO) recalled the role of IMCO over the years, and, following the reading of the Draft Resolution, made suggestions for slight amendments to the draft which was to be submitted to IMCO.

Of the subjects discussed by the Commissions, the papers on Maritime Traffic Services were the ones of most concern to pilots. The papers submitted dealt with the Scheldt Traffic Service; the Channel Information Service — the development of the United Kingdom operational centre; the Maritime Traffic Advisory Service of Tokyo Bay; French Maritime Services in the English Channel — existing and planned centres; Tasks and Operation of Coastal Navigation Surveillance Centres; MTS Systems existing in the USA.

In the course of the discussion following the presentation of papers, a number of points were highlighted:

- the conflict between "information", "advice" and "instruction";
- the qualification and expertise of the persons ashore;
- enforcement, and who accepts responsibility, for disaster resulting from carrying out orders given from ashore, disaster which may result in collision and/or stranding causing environmental pollution, loss of a ship or ships and, more important, loss of life afloat and/or ashore;
- port and pilotage authorities in many countries are not only independent of each other, but are also independent of the government, thus the allocation of responsibility and of financial liability may well prove to be inhibiting;

In presenting the USA paper, **Captain Garrett** (USCG) stated that control must remain in the ship and VTS should not assume control. Further points that emerged from the discussion:

- VTS can facilitate and, in bad weather, maintain the traffic flow and therefore be economically of great value;
- the avoidance of one accident of the *Amoco Cadiz/Torrey Canyon* magnitude may well justify an expensive VTS;
- good technology is available, but operational requirements and specifications must be studied before designing a system;
- pilots generally are not opposed to VTS;

Continued foot of next page

Observations on the International Symposium on the BEHAVIOUR OF DISABLED LARGE TANKERS

London 8 — 10 June

The Symposium was held at the Cunard International Hotel and was attended by 103 delegates from all over the world, representing a wide range of Maritime Interests from the highest Government level through to Marine Insurance Brokers. The Salvage and Towing Industry was well represented and Sullom Voe Pilots also sent a strong team. A list of participants is attached.

The Symposium was opened by Lord Trefgarne, Parliamentary Under Secretary of State for the Department of Trade who underlined the importance the Government gave the Symposium and outlined the progress made by Government on the control of oil pollution and shipping.

The first paper entitled *Responsibilities in a Marine Emergency* was divided into four parts and outlined the areas of responsibilities of (1) Government (2) Master and Shipowner (3) Insurers (4) the Salvors.

(1) This paper was presented by Admiral M Stacey CB, the Director of the Marine Pollution Control Unit. This Unit was set up in 1979 as a direct result of the *Amoco Cadiz* grounding. It is based in London and provides the Government with a command focal point. The Government recognises the inevitability of maritime casualties, although it is working hard in the international field to improve standards at sea. With 3,300 miles of coastline to protect there has to be a sensible judgement of this risk coupled with the cost involved and the imprecise art of recovering oil from the sea. With this in mind, two salvage stockpiles have been established and the coastal communication network of HM Coastguard is also being improved. The Government works closely with all countries bordering the North Sea. There is an especially developed relationship with the French covering the English Channel and this exists in 'Mancheplan'. The Irish Sea is also presently being discussed with the Irish Government. Ports of Refuge remain a problem, the Government having very limited jurisdiction over the powers held by Harbour Masters.

(2) The second paper was read by a Dutch director of Shell International Marine in the absence of Captain W Lawrence. The paper discusses the responsibilities of the Master and Shipowner in a Marine Emergency.

The Owner and Master should work closely together and understand each others procedures in an emergency. The Master must understand he has the Owner's full backing. The Master's first duty is towards

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- the problem of manning of VTS is very important. Operators must be carefully selected and trained, and it seems necessary to use pilots when assistance to navigation is requested, or at least to have pilot expertise available when navigational assistance is provided.

At the final session, the Assembly decided that personal members may join IALA.

Dr G Wiedemann (Federal Republic of Germany) and **Mr P Petry** (France) were elected to honorary personal membership.

Mr T Yamada (Japan) became the new **President** and **Captain M B Wingate** (Trinity House) became the new **Vice-President**.

The eleventh Conference will be held in Brighton, England in May, 1985.

J A Edmondson, President, IMPA

the life of his crew, the second is to protect property and the environment. With the new Lloyds Form (LOF1980) now in operation the Master can sign this agreement with confidence and without resorting to his owners.

One major problem to be resolved for both parties remains the port of refuge. He summed up the paper with the motto 'Be Prepared'.

(3) The Responsibilities of the Third Party and Pollution Insurers was read by Mr R Palmer. Mr Palmer is a partner in the firm acting as London Agents for the UK Protection and Indemnity Club.

About 95% of all tankers are entered in Protecting and Indemnity Associations. There are sixteen associations, one dealing exclusively in oil pollution liabilities.

The Clubs are non-profit-making and are run on a mutual basis. The overall policy of the clubs is decided by directors drawn from the insured shipowners. The day to day running is placed in the hands of a professional partnership of managers. The major feature of the club management is the handling of claims made against the shipowner by a third party — which in the case of oil pollution is of course, very extensive.

(4) The final paper of this session, on the responsibilities of the salvor, was presented by Mr A Wilbraham, President of the International Salvage Union and Chairman of United Towing.

This was an interesting paper and Mr Wilbraham put it to the Symposium that the professional salvor is no longer able and willing to commit himself immediately and without question in the event of an emergency because of the inadequate work and uncertain remuneration. The salvor is, however, still expected to provide an essential emergency service.

The new LLOYDS Form is the fairest form of salvage agreement but the present long out-dated basis of International Salvage Law, the Brussels Convention of 1910, needs to be changed urgently.

One of the Author's main concerns was a government's resolve to eliminate the threat of pollution, not by offering a port of refuge, but by banishing the Maritime Leper to the high seas thereby leaving the salvor with high costs and without the security of a salvaged value. The paper is worth reading in full, and one felt sympathy with their case. Both the shipowner and the salvor, incidentally, dismissed any suggestion of Government control in the salvage industry.

The morning session was concluded with a paper by Dr I Dand of the National Maritime Institute. It was entitled *Model Studies of Freely Drifting and Towed Disabled Tankers*.

The paper consisted of a series of model experiments conducted to investigate the drift of a tanker in wind and waves. These tests were conducted with variations in hull form, draft, heel, trim and rudder disability.

Further experiments were also included with the effect of how a towing vessel might be used to turn a disabled ship into the weather or, failing this, change its direction of drift. The conclusions of the whole series of experiments are summarised on page 16 of the pre-prints of papers.

Dr Lewison, also of the National Maritime Institute presented an extremely academic paper on the *Experimental Determination of Wind, Wave and Drift Forces on Large Tankers*. He reported the results of a series of experiments on models of a VLCC that were designed to investigate the forces influencing the drift of such a ship when disabled. This work was carried out, incidentally, for the Maritime Studies Unit of Liverpool Polytechnic. Here I should mention there have been two sponsored research teams working in this country in collaboration on tanker drift. They are the Liverpool Polytechnic/National Maritime Institute which was originally sponsored by Ocean Fleets Ltd and later by the Ship and Marine Technology Requirements Board of the Department of Industry on behalf of the Board of Trade. Furthermore, Oil Companies International Marine Forum (OCIMF) have contributed to the study to enable the theoretical work ashore to be collated with experience at sea.

In France the Institut de Recherches de la Construction Navale in Paris co-ordinated drift tests on five actual ships. Monsieur Nizery of this Institute next presented his paper on the results of these trials.

To really finish our day Mr Smeaton of Liverpool Polytechnic presented a mercifully short paper on a mathematical model of the drift of disabled large tankers. Basically the conclusion drawn was that, in a force 9, a ballasted VLCC will drift at 3.5 knots and, fully laden, at 2 knots. The drift can be derated linearly with wind speed. Something, I suggest, the assembled company could have deduced themselves.

The second day began with three papers devoted to operational and training implications from research on Disabled Large Tankers. Mr Holder, a lecturer at Liverpool Polytechnic, gave a brief account of the way in which the subject is covered in nautical colleges and in professional examinations. He also suggested methods of incorporating the research results in general nautical education.

Mr J Werkhoven, from the Oil Companies International Marine Forum, next spoke on the results of their questionnaire on drift observations to which 47 shipmasters replied. From these replies they hope to improve their company training and instruction manuals.

Finally, the subject was dealt with by Captain Williams from Ocean Fleets Ltd. He used an actual breakdown he experienced to demonstrate that his observations can provide valuable insight into the problems.

Mr Lawrie, an engineer from Exxon, presented his paper on the *Engineering of the Towing Connection*. The paper is a result of a study to prepare tankers for towing by rescue tugs and to standardise equipment and fittings.

From this study the strength requirements and positioning of towing brackets, chafing chains, towing pendant wire and emergency power sources have been developed.

A paper by Mr Fulkerson of Chevron Shipping and Mr Clements of Shell was next — it was entitled a *Review of Anchoring Requirements for Large Tankers*. The paper was prepared in two separate but related sections. The first considered the type of anchoring and then related the characteristics of these with the probable weather conditions in order to generate a set of requirements for routine anchoring. The second part of the paper considered the dynamic use of the anchoring system and braking system problems.

Finally, Mr Butt of Shell International read his paper on *Present Achievements and Future Plans*. It was, in effect, a review of the Symposium and demonstrated the depth of concern the tanker industry has to avoid accidents. Mr Butt concluded by saying there was a great need to ensure that knowledge and experience are passed on effectively to the 'man at sea'.

J P Crowder, Member of UKPTC

Obituary

It is with deep regret that we have to announce the death of three of our retired members. Our sympathies rest with their families.

From Southampton and IOW we have lost FRANK KIRK and STAN TOYNE. From the Clyde (retired to Dorset), HARRY ROGERS, who only a short while ago wrote to the Editor with some cartoons, two of which are printed in this issue. Many of his former colleagues will remember his admirable contributions to the *Kempock News*. It is hoped that biographical notes may be available for the next issue.

CONSAIL 80

Review by Captain Jim Varney — Marine Pilot, Auckland

The Symposium on Wind Propulsion of Commercial Ships which was organised by the Royal Institute of Naval Architects in association with the Institute of Marine Engineers, the Royal Institute of Navigation and the Nautical Institute, was opened by HRH Prince Philip at the Cunard International Hotel on 4th November 1980.

Unlike the previous one-day seminar held in June '79, which was limited to 100 invited members, this symposium was a truly international affair with 170 delegates, 60 of whom came from 20 different countries; an indication of the quickening interest in this subject.

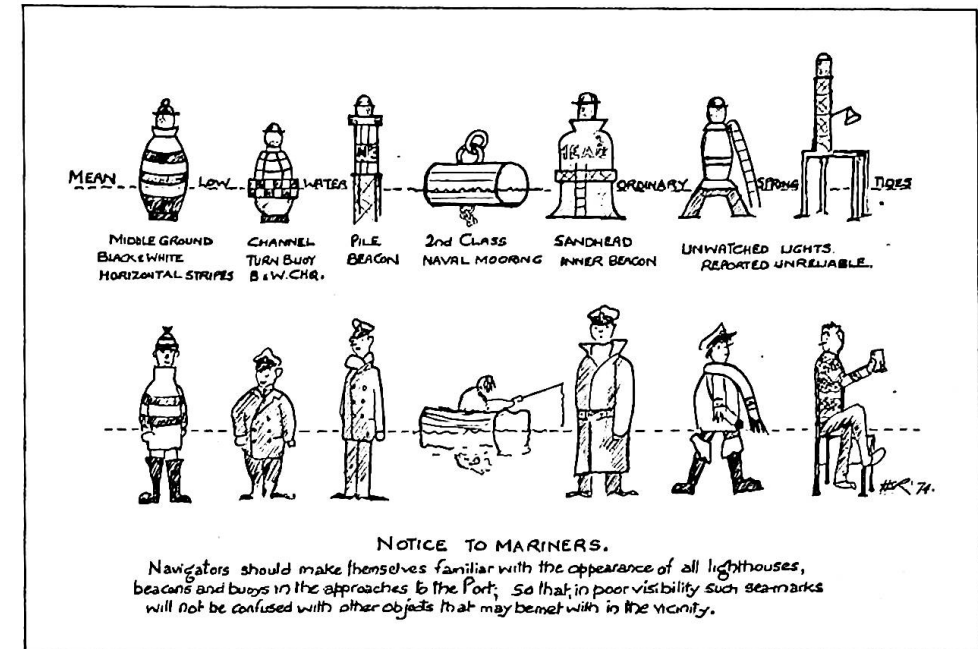
The 18 papers presented and the qualification of the authors served to indicate the range of disciplines that are involving far more than a group of sentimentalists longing for the re-birth of the graceful clippers of yesteryear.

Obviously most of the papers presented originated in the UK but Australia, USA, France and Germany also made their contributions, and Dr Olle Ljungstrom of the Aeronautical Research Institute of Sweden virtually presented a mini paper on developments in that country, during question time; such was the case with several other "questioners". In fact the enthusiasm generated caused problems for the very able team of chairmen, endeavouring to keep the various sessions to the timetable.

Before going on to note some of the subject matter, I must mention the obvious disappointment of delegates at the absence of any specific details of the experiments and trials conducted in Japan. Apart from a brief film clip shown by Air Commodore Nance (taken from a New Zealand Broadcasting video news tape) depicting the *Shino Toku Maru* at sea on trials, and a report by myself of talks with a Canadian engineer who had visited the NKK yard and had viewed the vessel, and also the 16mm film made of the lead up experiments and launching of the ship itself, very little technical data was known about it. I was told that the *Shino Toku Maru* had exceeded the builders expectations in making fuel savings in excess of the 10% aimed for. The sails, which are rigid sheets, fold around the mast which rotates. The engines and sail handling are computerised. The 1600 ton vessel travels at a speed of 12 knots with a 12 man crew, *ie* no extra crew are needed. It is expected that their next ship will be a 20,000 ton cargo ship with three masts and sails 120ft x 75ft. Thus, while Western experts were meeting and debating exotic schemes and rival theories, the Japanese, no doubt with full government backing, had been industriously pressing on with practical sea-going experiments on their test-bed vessel the *Daich*, and have now arrived at the point where teams of experts from the NKK yard were conducting sales talks in the USA.

If there was one theme that recurred during the conference it was the plea of delegates for the need of funds from governments to carry out the necessary practical research, which was one of the points mentioned in Prince Philip's speech at the '79 Symposium and bears repeating — "The successful development of wind driven ships or ships driven by other sources of power will depend on the support and encouragement made available to research projects in the future and in their control and evaluation".

Air Commodore Nance, who delivered the first paper, outlined developments over the last 17 months, saying that during this period a number of companies and individuals, and several governments, have sponsored data collection and study. Apart from the above the Japanese Marine Machinery Development Association and ship builders Nippon Kokan, have undertaken development trials at sea on an 83 ton model of a VLCC. The British Government has funded studies of the *Windrose* square rigged Barque and on a wind turbine system. The Russians are reported to have taken a decision at a symposium held in 1979 to prepare a design for a 60,000 DWT cargo carrier. The Australian Government, on behalf of the Government of Tuvalu, have financed a study (which reported adversely) on the desirability of replacing the supply ship *Mirvanga* with a wind driven ship. The Belgian Government has funded a study for a 30,000 DWT vessel now before the EEC for the possibility of funding further work, and the US Government in October 1979 placed a contract with the Wind Ship Corporation of Massachusetts for a follow up on the Michigan Study.



He then enumerated the six major categories of wind propulsion systems —

Square Rig Dynaship	Magnus Effect (Flettner Rotor)
Fore and Aft Rig	Wind Turbines
Aerofoil Rig	Airborne Sails

After outlining arguments for and against the various rigs he followed up with factors pertaining to size, speed, motor sailing and cargoes, giving as the central problem the matching to each individual requirement the most suitable type of sailing rig, appropriate ship size, the best wind/fuel engine power ratio and optimum service speed. He called this "a daunting task, for our lack of data on every category of rig is frightening". The Air Commodore then concluded with the plea — "those self same limits in our knowledge which justify caution in commissioning ship designs necessitate urgent action to make available the necessary finance to undertake this task. This is the field, and this is the time, for an investment which is vital to the future of any maritime nation". To emphasize his point he finished with the short film clip of the *Shino Toku Maru*.

Paper 2, submitted by Warwick J Hood of Sydney, was entitled *Using Wind Reliable Routes for Bulk Cargo Transport*. Mr Hood was detained in Korea on business and at short notice his paper was capably presented by Air Commodore Nance. A summary of this paper stated that some bulk cargoes exported from Australia have been shown to be suitable for transport in sailing ships along wind reliable routes. The author proposes using the traditionally reliable Southern Ocean route from Sydney, trans-shipping to an auxilliary sail or a pure motor vessel at Capetown to complete the trip to Europe. A great deal of research had gone into this paper proving that it is a perfectly viable proposition. The savings vary according to which method of transportation from Capetown is chosen.

In the conclusion it was stated "although more than 50% of the fuel otherwise consumed may be saved, the overall financial cost is greater. The size of vessel proposed to be used is much larger than any known previously. Various modern sailing ships up to about 45,000 DWT have been suggested to date, this limit of

size being, apparently, the largest although possible with the sail handling methods and the types of rigs recommended. Freed from the requirement to have reasonable windward sailing ability, a larger ship with a simple rig such as proposed is technically feasible."

Paper 3: *Commercial Sail — Present Operations and Future Prospects* was a joint paper by Professors Couper and King of the Dept of Maritime Studies, Cardiff. Summary:— The authors of this paper have observed that the arguments favouring the reintroduction of commercial sailing vessels are invariably presented with considerable vigour. But more often than not they are advanced without reference to the task which merchant shipping is required to carry out today and they ignore the problems which the shipping industry sees itself as facing. In their view this does the case for sailing vessels little good. Their paper was prepared in order to present some of the background against which future sailing ship operations might be required to take place. They conclude by arguing that there may be a role for sailing vessels but that it is likely to be in the operation of non-trading vessels and in developing inter-island services rather than in the main stream of international seaborne transportation. As might be expected this paper is a mass of statistics and graphs: some of them concerning the so-called under-developed areas were very revealing. In Indonesia there are around 10,000 Prahus of 20 to 100 tons or more still trading, and India still has more than 8,000 registered commercial sailing vessels carrying one million tons of cargo annually.

They mentioned the current revival of interest in coal firing. However, they did conclude that "the use of sails or some other device such as a rotor or wind turbine to achieve fuel savings whenever possible, looks technically feasible and has the advantage that the operation of such a ship can follow broadly the pattern of the mechanically propelled vessel." They also stated "... it remains, however, that even though it is possible to demonstrate that a 20,000 DWT vessel can be propelled by the wind, it is much more difficult to persuade people to believe that it will be, or even should be done." and concluded "... Many sailing vessels continue to provide useful service in various parts of the world. In many places where sailing tradition continues, substantial benefits to local communities might be gained by the application of modern wind propulsion technology".

After such a statement it was interesting to see that the last paper, No 18, dealt with this very subject, entitled *Improvement of Sailing Techniques in Tropical Countries* by E W H Gifford. It was a delightful choice of paper on which to end the conference. Mr Gifford supplied film and slides of just how his firm is achieving these objects, with practical results. One questioner noted that "the other under-developed country that had just held an election" (ref to USA) was in the process of building 56 sailing, fishing, vessels for one facet of its industry.

The only paper which appeared to be negative to wind propulsion was entitled *The Large Sailing Ship — Dinosaur or Development* by Mr George Mearns B Sc (Eng), C Eng, MRINA, employed by Marine Oil Services. Mr Mearns produced some rather convincing figures maintaining that there were a number of alternative strategies which will reduce fuel consumption more effectively than the application of wind assistance. These include:—

- (a) Larger units — doubling displacement only increases the power required by about 60%.
- (b) Reducing speed — a 10% reduction will save between 15 to 20% of fuel used.
- (c) Improve the waste heat recovery of existing installations.
- (d) Improve the operational practices of ships — eg better navigational techniques.
- (e) Improve new technologies.

Auto pilot systems save about 2½% of fuel used compared with steering a vessel under manual control (however most ships already have auto pilots) and as to his argument, that better track keeping systems (satellite) with their ability to improve "track made good" would possibly save a further 1½%, once again the majority of well found vessels today are rapidly being equipped with satellite navigation systems which I am told by ships' masters have the capability of paying for themselves in a "round the world voyage" on fuel savings, thus these two savings are already being made by modern well run vessels. Mr Mearns concluded — "The adherents of sail considered the steamship to be 'fiery, dangerously explosive and noxious'. May not some of us a century later be making a similar judgement of nuclear propulsion?"

To balance the book (for after all most of those attending were pro-wind!) the paper by E P Crowdy, VRD, MA, Chief Executive, Doxford Engines was an extremely well received one. After an exhaustive examination of costing various types of propulsion and with the aid of a graph showing "The Golden Triangle" of profitable operation, he had this to say of combined sail and power, "sails added as a retro-fit can only be justified if the fuel economy so achieved more than offsets the maintenance and amortization of extra equipment. This is a straight forward calculation which indicates in the present economic situation fuel cost savings alone can justify very substantial investment, the only feature open to conjecture being the ability to design and manufacture 'sails' of quantifiable performance within set perimeters". On coal he stated "... it is possible that satisfactory operation will be achieved with micro-slurries consisting of 50% coal, 20% oil and 30% water, but fuel preparation and plant maintenance costs must erode the apparent fuel cost advantages. However such techniques could well be adopted quite quickly on a sizeable scale if oil fuel prices are artificially inflated by political manoeuvres."

Nuclear; Mr Crowdy proposed 50-crew, nuclear powered, parent ships, towing 5-crew satellite ships (motor driven by power cable from parent ship). The nuclear reactor *per se* does not enter commercial harbours — possibly not even territorial waters. As an example he gave:— Mother ship with a 600 MW reactor would be capable of supplying herself and say six 250,000 tonne DWT tankers, each with 100,000 SHP, to give the convoy a speed of 24Kts. Diesel generators totalling 4,000 BHP would give a dispersal and assembly speed of 8Kts. Two mother ships and 24 daughter ships, operating over an 11,000 mile, high speed run, with 1,500 mile terminal runs, could deliver 30 million tons per year over a total distance of 15,000 miles with an annual oil consumption of 60,000 tons. This task would occupy fourteen conventional 16 knot, 0.5m tonne DWT., tankers, which would consume about 700,000 tons of oil per annum. At £100 per ton, this represents a saving of oil fuel worth £64 million. However, in his conclusion he states the case for all these methods — sail assisted power, coal, and nuclear and concludes — "The almost inevitable increase in the price of fossil fuels that will accompany diminishing reserves will enhance the attraction of nuclear propulsion — and less controversially the attraction of sail."

A paper on *Climatological Factors* affecting wind propulsion of ships was presented by J E Atkins and D J Painting of the Meteorological Office, Bracknell. This paper summarised the aids now available and the improvements which will be accruing from better and more accurate data that will become available with weather satellites. This was followed by a paper on *Sailing Ship Weather Routing* from James H Mays of the Wind Ship Development Corp, Massachusetts USA — The use of the "Monte Carlo Simulation" and computer technology might cause the practical mariner to think it is aptly named, for it's always a gamble where mother nature is concerned. In his conclusion Mr Mays stated "... Monte Carlo simulations of weather routed passages are given for the Dynaship for the months of January, April, July and October. For the economic objective function chosen it was determined that a floor speed of $S_{min} = 12$ knots was reasonable. The advantages of weather routing under assumptions given showed a 20% economic advantage for the weather-routed ships over the corresponding shortest distance sailed ships."

The Wind Turbine Ship by R C T Rainey, MA, MSc, DIC, MRINA, stated that the appeal of the wind turbine for ship propulsion is that it provides an efficient source of power for voyages in any direction to the wind and does not require a large crew. The paper brought together the various propulsion schemes, with and without a marine propeller, that have been suggested over the years, and presented a unified theory on the subject. The use of a wind turbine working with an auxiliary diesel is analysed with reference to the fuel saving that can accrue. Noise level and the psychological effects on ships crews of the whirling of giant rotors or blades be they horizontal or vertical was mentioned by Dr J Todd (USA), who also admitted that he was something of a windmill freak, and would be delighted to see more power generated by such means. Later an aeronautical engineer said that these problems were quite capable of being solved. (High noise level on the bridges of some present day vessels is a problem already being worked on, and both IMCO and IMPA members are taking an interest in the subject.)

It is worthy of note that a wind turbine to propel a ship was first patented in 1811. Other experiments were carried out by Lord Brabazon around about 1933, and Professor Alexander Klemin in the USA, while more recently Mr Jim Bates of New Zealand was mentioned as having developed a 26ft diameter windmill on a 31ft yacht which is capable of proceeding at 7 knots into the wind in a 12knot breeze.

The theoretical study carried out by a computer program 'AWASH' (Atkins Wind Assisted Ship) based on an actual ship the *St Helena*, and her regular run — UK/Cape Town and Cape Town/Ascension routes, gave encouraging results for future development of the scheme. Once again it is obvious that for any real progress to be made a vessel must be provided for actual sea trials.

Paper 9 which dealt with *Kite Sails* by Professor G W Schaefer and K Allsop was perhaps the most novel of any of those presented. In the six months that the professor and his team have been working on this project they have made very good progress. Originally the basic idea was to apply such a sail as a jury rig to enable tankers and other vessels to draw themselves clear of trouble in times of engine failure, but their research and experiments could lead to a much wider application. These were listed as:

- Higher Ship Speeds** — for cargo vessels and for racing craft. By deploying the sail at increasing altitudes, increasing wind speeds are encountered, at least in the lower several hundred metres. Sail traction forces are proportional to the square of the relative wind speed and therefore will increase rapidly with sail altitude, thus for the same sail area, substantially higher ship speed and traction powers can be achieved, of the order of 50% and 100% respectively. Other factors mentioned include —
- Improved performance in close hauled conditions** from vertical wind shear.
 - Large improvement of vessel stability and safety.**
 - Clear deck spaces** (as opposed to fitting of other means of sail assistance).
 - Lower turbulence levels** — ie no problems with luffing, as in general turbulence decreases rapidly with altitude.
 - Retro-fitting.** Once problems of designing suitable launching and retrieving equipment have been solved, it would become a relatively simple operation to fit existing vessels.

Problems of single line and radio control as well as stability have already been mastered during the brief period of the group's research, and work with displacement hulls of up to 10m has demonstrated that the theory can work in practice. From 10m to 200m or more is a mighty big step, but the Professor convinced most of those present of its viability.

Radio-controlled kites have already been used as fish spotters. As many readers of "Seaways" must be aware, American Tuna fishermen have used helicopters and small float planes for this function over the last three decades. I should imagine those operators will certainly be keeping a very close watch on kite development.

Following on the "exotic" theme, papers were presented on *Windmills Propulsion for Hydrofoil Trimaran* — N Bose, BSc, *An Investigation of Graduated Trim for an Aerofoil Rig* — W M S Bradbury, BA, MRINA, *Standardised Speed Prediction for Wind Propelled Ships* — Professor Schenzle, and Mr C C Herbert of Y-ARD Ltd, Glasgow in his paper *The Design Challenge of the Wind Powered Ship*, introduced us to the possibility of a catamaran containership. All of these papers were packed full with a wealth of mathematics, graphs and statistics with which the authors strove to prove their theories. When all the papers and proceedings of the symposium are bound and published in a few months time, no doubt the mathematically minded amongst the Seaways readers will have a field day, although I doubt if many of them will remember what old salts called a "field day".

Speaking of old salts and practical seamen, I'm pleased to say that this practical side was ably represented by the following papers; *The Development of Sailcloth for Commercial Vessels* — Austin Farrar, and *A Full Scale Experiment in Commercial Sail* — H F Morin Scott, who opened up in true sailorman style with a couple of well delivered salvos regarding statistics and it seemed at last we had a taste of ozone entering the debate.

Commander Morin Scott describes how the Coe Metcalf Shipping Co have agreed to make available their *M V Firethorn* for relatively straight-forward sail fitting adjustments, without a great deal of alteration to its present rig. The *Firethorn* of some 1310 DWT is 67.2m LOA, 11.15m breadth and has a loaded draft of

3.96m. Equipped with an engine of 1580 BHP, she has a service speed of 12 knots on 6 tons of gas oil per day. Like most coasters operating around the coast of England, she has an air draught limitation imposed by the Manchester Ship Canal of 70ft.

In the original experiment only 5 sails are proposed, all being set and furled by roller furling gear now common on yachts up to 130ft LCA. The strength of this gear may be increased to withstand commercial usage. Maximum sail area with wind abeam or forward of the beam will equal 5,000sq ft. With wind aft, 560sq ft. Sails 6 and 7 would require an extra mast and gear and although they would give another 2,400sq ft, a 50% increase, it is not though worth doing in the initial stages. In calm or conditions of head winds, obviously the vessel will proceed under power at her agreed service speed. The object is motor sailing and thus cutting down on the use of fuel.

An appropriate formula gives . . .

"5,000sq ft of sail in wind force 5 Beaufort (not contrary) produces 200 shaft horse power."

Firethorn owners calculated that she spends 4000 hours at sea per year (166½ days) and uses 5 tons per day running at reduced speed. At this speed the engine runs at 1000 BHP and annual fuel consumption should equal 833 tons. If a sail plan producing 100HP can save 10% of the fuel used (83 tons per annum) the savings are considerable. In June 1971, in US Dollars a metric ton of oil at Southampton was \$39.12, June 1980 \$334.00 and on Nov 6th as Commander Morin Scott was delivering his paper it was \$335.00 — In an aside he said "I believe in the Ivory Coast it is \$440.00!"

The author also touched on crew training and payment. "Consideration may also have to be given to some bonus scheme whereby the officers and crew are rewarded in proportion to the amount of fuel saved over a period to provide some sort of incentive to undertake sail — setting and furling during inclement weather and during what are now termed "unsocial hours". Commander Morin Scott argues that the use of a vessel such as *Firethorn* is the quickest method that can be used to obtain data that will enable us to see the benefits of auxiliary sail and to get it going once again in the fishing fleets, an industry mentioned by him and others as being one that could quickly benefit. Indeed it is still probably the most sensible way to commence.

A practical application is the paper by Merri A Jacquemin, *A Multi-purpose Tuna Fishing Boat With Combined Propulsion*. Work on this fine vessel has commenced and launching is planned for April 1981. She will be 19.3m LOA and 6.0m beam, maximum draft 3.2m and a loaded displacement of 95 tons, suitable for tow line, long lines, gill or tangle nets, and pot fishing. With a crew of five, including the skipper there will also be provision for two additional bunks for trainees.

The owners estimate to save 200,000 litres or 45,000 gals of diesel oil per annum against a totally motorised vessel. While this in itself is a major advantage the authors claim that "in addition, in so far as the forms of fishing best suited to the very concept of the vessel are more selective to the type and size of fish caught, less destructive in themselves and in no way less profitable for the crew, we believe that this is another advantage, perhaps of almost equal importance to the saving of fuel. The vessel should thereby ensure both the protection and better handling of existing fish resources."

To complete the papers on sailing, fishing vessels and trading craft still very much in use, Mr E W H Giffords' paper on the *Improvement of Sailing Techniques in Tropical Countries* proved to all present how much can be done on a comparatively limited budget to improve the lot of thousands of human beings.

Now to Captain R M Willoughbys' paper *Design Problems of a Commercial Sailing Ship*. Of any man alive today, and there are still a few Cape Horners in my own country who are not so very old, Mike Willoughby is without doubt the best qualified man to write on this subject. A formidable historian of sail and an experienced marine designer, he also has had long, practical experience before and after the war of sailing "tall ships". He supervised, commissioned and commanded for the first two years of her life *Sir Winston Churchill* the UK Sail Training Association schooner.

During the last four years, since starting his company, Windrose Ships Ltd, he has worked every living moment towards the time when his *Sailiner* slides down the stocks. A great deal has been written of this vessel and I, together with many hundreds of other kindred spirits, will be as delighted as Captain Willoughby to see this day dawn. I am sure it will prove a financial success if used, as he hopes, on the Australia/Europe run. Insurance will be no problem. Cargo, passengers and, last but not least, crew should always be on hand to sail in a vessel designed and built with the knowledge gained from past generations, yet incorporating the latest in modern technology. She will have no equal on the high seas. For many people the sight of a large square rigged vessel under sail is one of the most beautiful objects that man has created. This is proved by the worldwide interest shown when the Sail Training Association organise a gathering of these vessels.

"Operation Sail" in New York in 1976, right through to the latest "Sail 80" culminating in Amsterdam in August, brought thousands of people from around the world to witness the glorious sight of those magnificent, beautiful vessels under sail. However efficient the container vessels, bulk carriers, tankers and other purpose-built craft that now plough our sea lanes, few would use such adjectives to describe them.

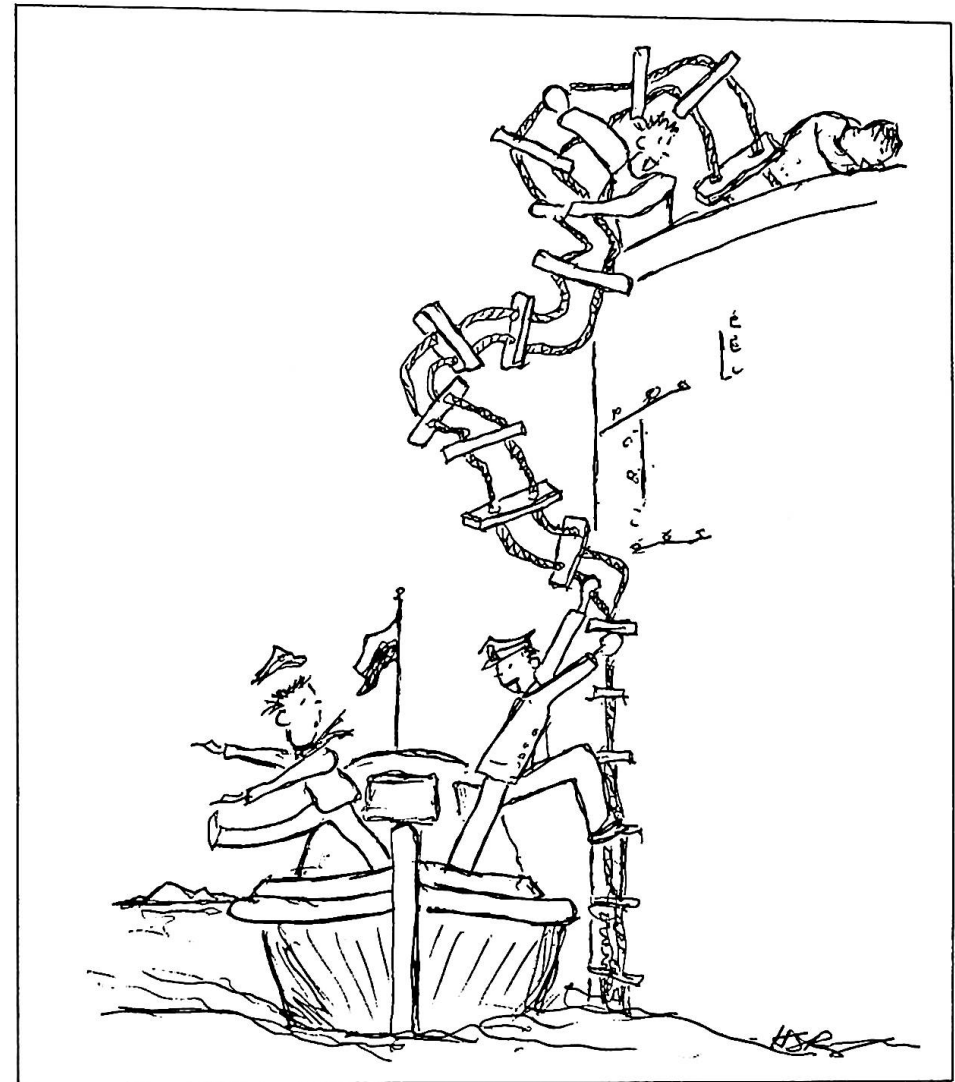
As for the ships' companies of these vessels, great responsibility remains. Each unit is worth many millions of pounds, and the damage that can result from mishandling, account for many more; but in many instances the challenge has gone out of seafaring. Take for instance the tedium of ploughing from one oil terminal to another almost on a set of railway lines, in a VLCC, a way of life that many would find hard to endure. The same could be said for many of today's ships in spite of better accommodation and wages. Thus there is no doubt in my mind that the *Sailiner* will therefore be a much sought after ship. However, I'm afraid I cannot see hundreds of such vessels following in her wake. Realistically, if regretfully, my money is on the Japanese version of motor sailing as being the next logical step in solving the problem of saving fuel and other associated costs connected with the transport of goods by sea.

I came away from "Comsail 80" with a strong impression that as far as "get up and go" was concerned, the industrious Japanese had shown the Western nations who were mainly represented at this symposium that they were, in sailors' parlance, still "in irons".

In summing up I would like to quote HRH Prince Philip, in his opening address, who spoke with authority as a sailor and whom I believe sounded the right note of warning to all present; for in the main there were few practical seamen or men who might be called upon to sail some of the vessels suggested in this particular gathering. When speaking of the three Institutes involved "... they have brought together the experts, pundits, and I think, the hopeful of the world. At least no one can complain they had no opportunity to advance their theories or to hear what others are doing." Towards the end of his address he continued "... of course the enthusiasm for wind propulsion takes many forms — mostly among people who are not directly involved in mercantile marine affairs. Some like to think of it as saving non-renewable, natural resources; others again feel that it is bringing seafaring back to a more natural way of doing things. Yet others feel it is a way of decreasing pollution and they have invented the ghastly word 'empirionic'. All of these arguments may have some faults, but I just want to inject a note of realism. It is easy enough to reduce the whole discussion to an elegant formulae of beautiful graphs, and pages of statistics, but seagoing is not quite as clinical as that. The elements also play a part in the matter, and they are unforgiving.

"It is worth remembering that sophisticated weather routing systems for wind propelled ships take them to areas where there is most wind, and therefore where there is the worst weather. Therefore the performance of the wind driven ship is still going to depend very much more on the strength and reliability of the rig, and the Captain and his crew making the best use of the equipment at their disposal." He then recommended that if anyone wants to get an idea of the conditions the old sailing ships had to contend with, they should view the documentary film "Ghosts of Cape Horn". Prince Philip concluded "There is, I think, just one consoling thought, if there are so many people willing to pay heavily for the privilege of going to sea for fun in wind-driven boats, in theory the shipowners should have rather less difficulty finding people in turn to pay, to operate the new generation of wind-driven vessel".

Finally I feel the three Institutes should be congratulated on the success of this symposium. The exchange of ideas that stemmed from the formal papers and the question and answer sessions, when published, will bear



this out. I only hope that the Governments, Industries and Research Institutes take heed of the need to channel more revenue into the research and experimentation that must go on, be it wind or solar that could eak out the world's supply of finite resources, for at least some of our major transport needs. If every nation that had a representative at this meeting were to divert just one half of one per cent of its defence budget into such research, the answers would quickly be found so that future generations would not be denied their share of irreplaceable resources.

J T Varney FNI, FIMH, Auckland, New Zealand.

WHY THE UKPA?

What did Mr Gladstone say in 1884?

The Parliamentary Select Committee on Pilotage 1870, was an attempt to dispense with the principle of compulsory pilotage. However, it turned into a major inquiry and its report amounts to an 'in-depth' description of pilotage in the 1860's.

With numbers of pilots' representatives attending the Inquiry, it is not unreasonable to assume that they discussed matters of mutual interest and possibly the need for a central body to represent pilots at national level. Indeed discussions took place between 1872 and 1874, but which proved fruitless. In 1882 the subject of compulsory pilotage again arose in Parliamentary circles. This time the seeds of a British pilots' association were germinated.

In 1879 two Cardiff pilots were ordered to take their ships to sea in weather so bad they refused point blank to do so. They were dismissed almost immediately without any hearing for their views. The remainder of the pilots refused to work under these pressures and their actions brought the situation to the notice of the country at large. It was found there was considerable sympathy for the pilots and after an inquiry in the House of Lords, the Cardiff Pilotage Board was reconstituted. Among other provisions, there were to be two Cardiff pilots on the Board.

There was unrest in other Bristol Channel pilotage districts and the several associations got together in 1882 and 1883 and managed to attract enough support to be able to approach a few influential persons for advice and assistance.

A conference was arranged in 1884 and a president, vice-president and secretary were selected for nomination. It took place at Bristol, 11th-13th June in the Atheneum Hall.

Captain George Cawley was the first President on the Association. He had been pilot-master at Cardiff and his address was given as Westbury-on-Trym, now a suburb of Bristol. In spite of what is printed elsewhere, he does not appear to have been a licensed pilot at any time. Indeed, he is quoted as being entirely against the principle of a licensed pilot as president of the UKPA. His first five speeches give no indication other than that he was a master mariner with a friendly attitude to pilots. He was called to give evidence on the behalf of the UKPA to the Parliamentary Inquiry into pilotage in 1888. His rank was given as Lieutenant RNR and he stated that all the UKPA officers were unpaid and that he himself was considerably out of pocket as a result.

Roger Moore was nominated and elected Vice-President: he was a member of the Bristol Pilotage Board and Hon Sec of the local Plimsoll Committee. He also gave evidence on behalf of the Bristol Pilots' Association in 1888 and then described himself as "Gentleman", which seems to prove he was never a pilot.

The secretary elected was Captain H Langdon who was, at the time, secretary of the Bristol Pilots' Association.

Also present was Captain Bedford Pim QC Counsel to the UKPA, who proposed at least one resolution. He was a distinguished Arctic explorer who left the Navy early and was called to the Bar, specialising in maritime law. He was well enough known to be asked to attend the first convention of the American Pilots' Association and provide counsel (also in 1884).

When Pim died in 1886, the UKPA organised and contributed to a memorial window which was set in the chapel of the Seamens' Institute at Bristol. Contributions came not only from the UK and USA, the pilots of Melbourne, Australia sent £5 towards the window.

Continued foot of next page

Coastlines

Brewery Museum

Nowadays pilots seldom have a duty call to go up river as far as Tower Bridge, London, but they might like to know of a recent addition to the tourist attractions around the old Pool of London, which might help to pass the time while the wife is on a spending spree on your next (?) trip to the metropolis. Admission is free!

The Courage brewery which has occupied its site near Tower Bridge since 1787 has allowed the building which formerly housed its medical centre to become London's first brewery museum, called "World of Brewing", devoted entirely to the history of all aspects of brewing in Britain, from its Egyptian origins in 5000 BC to the present day. Much of the reconstruction of work done by farriers and coopers and many other trades has been done with the help of pensioners as well as existing workers at the nearby brewery.

Parental Cautions

From advice on careers published in a magazine in 1919 –

– Parents should gently discourage the son who wants to be a pilot but dislikes school, such a lad may train into a mechanic.

– It is equally difficult to estimate the prospects of a professional pilot. It will unquestionably offer a very fascinating career to a chosen minority although it will be less remunerative to pilots than is generally supposed.

– Three kinds of trouble may assail the pilot and sooner or later all of them . . . the commonest is a change of weather, the most tiresome is engine trouble and the most humiliating getting lost.

To be fair, Gerald Coates spotted these in "The Way to Fly" by *Avion*, published by Pearsons in 1919.

Continued next page

The first resolution of the 1884 Conference at Bristol was proposed by Mr Richard Williams (Liverpool) – *That this Conference condemns the system now adopted by pilotage authorities of granting pilotage certificates to masters and captains of foreign-going vessels.* (Executive Committee 1981 please note!)

The resolution of Bedford Pim was – *That the coercive conduct of Trinity Authority in requiring from pilots licensed by them a waiver of right to compensation on the abolition of compulsory pilotage was condemned, as was also the system of selecting favoured pilots at certain ports.*

There was also a letter from Mr Gladstone. I wonder what he did say.

*H M HIGNETT
Port of Manchester*

Q Boats

I attended the launching ceremony for a Q Boats International type Q33 at Home Bros., Fishbourne, Isle of Wight, on 15th June, 1981. The actual launch vessel on display was an open-decked workboat, ideal for fishing or general workboat duties but with no pilotage application.

During sea trials this particular launch was found to be very fast and stable in the existing light winds and slight seas, and I was told that exhaustive trials in inclement weather had proved the offshore capability. My reservations were based on her light displacement, but with the very positive steering and adequate power available any waywardness should be easily corrected.



The various options available were interesting, and I was assured that completion as a pilot launch was one of them though not included in the brochure. Certainly Home Bros have vast experience in the construction of very rugged workboats of all types and have achieved worldwide sales, and I was very impressed with the high standard of fendering and protection on the demonstration boat.

My conclusions were that:

- (1) This is an unsophisticated, well-tried design at a competitive price.
- (2) It would be a cost-effective replacement for the present generation of launches, subject to seagoing assessment of the pilot launch version.

Sea trials are offered to any interested Authority.

Peter B Watson

Pilots' Golfing Society

The 6th Annual National Pilots Golf Society meeting took place this year at the Moor Allerton and Moortown Golf clubs (Leeds) on Tuesday 15th and Wednesday 16th September. This year pilots from the Firth of Forth, Tyne, Tees, Trent, Humber, Bristol, S. E. Wales, Liverpool and Manchester attended, making way for some keen competition for all cups.

The first day saw us at Moor Allerton where good scoring proved difficult due to the unnerving nature of the greens. But still, in the morning, playing for the Hawkstone Cup, Geof Carrigan (keeping it in the family, you may remember brother Terry won it last year) turned in a very creditable 32 points to take the spoils. In the afternoon an exceptional round (Better Ball 69) put together by Tom Purvis and Paul Lawrence gave them a run away victory for the Wilmslow Cup.

Wednesday saw us at Moortown playing for the Pilots Cup. Even though the course provided us with a tough test of golf, what with all the heather, gorse, streams, well placed bunkers, and interesting carries, good scores abounded. The first three places had to be decided on the back nine, with eventual winner Stan Lithgo shooting a fine gross 75 net 70.

This years winners:

"PILOTS CUP" (Medal) 1st S LITHGO (TEES), 2nd P LAWRENCE (HUMBER), 3rd B FREEMAN (HUMBER)

"WILMSLOW CUP" (Better Ball Medal) 1st P LAWRENCE (HUMBER) and T PURVIS (TYNE), 2nd J CAHILL (MANCHESTER) and E MAINLAND (TRENT), 3rd D BERNARD (MANCHESTER) and B DABNER (LIVERPOOL).

"HAWKSTONE CUP" (Stableford) 1st G CARRIGAN (TEES), 2nd B FAIRBURN (TEES), 3rd P LAWRENCE (HUMBER).

Next year I have arranged to play and stay at the Dalmahoy Country Club, Edinburgh from Monday 6th to Wednesday 8th September 1982. Golfers amongst you may recall the recent sudden death play off between Brian Barnes and Brian Waites in the Professional Players Tournament held at the club. Any pilot wishing to take part, then please contact me on HULL 814116: hopefully we will see more new faces next year.

Brian Freeman, Humber Pilot

Footnote: This year one of our golfers, Jim Myers, took ill during the tournament and had to go into hospital, because of the concern about him at the time, let me say that Jim is up and about, in fact back at work and playing golf, after what turned out to be a false alarm. He had been overdoing it a little bit.

Letters to the Editor

From Mr H M Hignett

UKPA Centenary

Dear Sir,

You will probably know that the UKPA is 100 years old in 3 years time and that it is possible that a centenary history of the Association may be published. To this end I have been doing a little research into the origins.

I have found a little about Cawley the first president. But in the last few days I find that a book, "George Cawley — the pilots' friend" was written and published by Sandford D Cole in about 1912/3. The book contains a picture of Cawley. Cole was solicitor and legal advisor to the UKPA from about 1886 to 1911, when he became a Pilotage Commissioner.

Would you be kind enough to insert a request in the PILOT, for any reader to let me know if he knows of any copy of the book and it's whereabouts.

I would be grateful also if any one has any material, papers or photographs relating to UKPA Conferences held during or before the First World War.

*Yours sincerely,
H M HIGNETT*

39 Mockbeggar Drive, Kings Park, Wallasey, Merseyside L45 3NN.

More News?

A member who prefers to remain anonymous has written to the Editor with a plea for more news in *The Pilot*, not only on what the various committees are doing but how districts are coping with their problems and news of old colleagues and of widows of pilots. The Editor takes the point that he should prod deeper and more often at committees but it does seem that in the busy life of a pilot it may pass unnoticed that a snippet of local information could be of wider interest — pilots have not always a fixed base and often wonder whatever happened to old such and such.

How about each District appointing an Honorary Correspondent? Wouldn't this be a happy task for one of their number who has recently retired?

JULY

The Editor apologises to those who were disappointed by the absence of a July issue. Insufficient material was available by press date.

Local Secretaries

Aberdeen	...	A. F. L. Esson	...	Aberdeen Harbour Pilots, North Pier, Aberdeen
Barrow-in-Furness	...	A. MacDonald	...	10 Infield Gardens, Barrow-in-Furness, Cumbria
Belfast	...	N. C. E. McKinney	...	8 Alt-Min Avenue, Belfast 8, N. Ireland
Byth	...	M. K. Purvis	...	4 St. Romans Drive, Seaton Sluice, Wighting Bay, Tyne and Wear
Brixham	...	R. J. Curtis	...	"Abrigo" 20 Furzeham Park, Brixham, Devon
Clyde	...	W. Brown	...	"Pentland" 66 Belmont Road, Kilmalcolm, Renfrewshire
Coleraine	...	W. Dalzell	...	Harbour Office, Coleraine, Co. Derry, N. Ireland
Dundee	...	G. Dobbie	...	16 Buddon Drive, Monifieth, Dundee, Tayside
Exeter	...	B. L. Rowsell	...	17 Camperdown Terrace, Exmouth, Devon
Falmouth	...	Mrs. V. W. Telling	...	14 Arwenack Street, Falmouth, Cornwall
Fleetwood	...	R. D. Pratt	...	16 Thirlmere Avenue, Fleetwood, Lancs.
Fowey	...	M. H. Randolph	...	Moorlands Farm, Treesmill, Tywardreath, Par, Cornwall
Gloucester	...	B. H. Richards	...	Southerly, 60 Combe Avenue, Portishead, Nr. Bristol, BS20 9J5
Goole	...	R. Shaw	...	54 Mill Beck Lane, Cottingham, North Humberside
Grangemouth	...	W. C. Gardner	...	6 Parkhead Road, Linlithgow, West Lothian
Hartlepool	...	B. G. Spaldin	...	24 Kesteven Road, Fens Estate, West Hartlepool
Hull	...	P. Church	...	58 Westminster Drive, Grimsby, South Humberside
Inverness	...	H. Patience	...	"Altmore" 2 Glenburn Drive, Inverness IV2 2ND
Ipswich	...	D. A. Ingham	...	Ipswich Pilotage Office, Dock Head, Ipswich, Suffolk IP3 0DP
Lancaster	...	H. Gardner	...	Greystones, 128 Morecambe Road, Lancaster
Leith	...	R. Hay	...	39 Christiemiller Avenue, Craigintinny, Edinburgh
London:				
Sea Pilots South	...	R. L. Mann	...	7 Springfield Road, Cliftonville, Margate, Kent
Sea Pilots West	...	M. J. G. McDonald	...	Turks Hill, Taylors Lane, Higham, Nr. Rochester, Kent
River	...	P. A. Carden	...	The Old Rectory, 91 Windmill St, Gravesend, Kent
Medway	...	T. G. Hannaford	...	175 Wards Hill Road, Minster, Sheppey, Kent
Sea Pilots North	...	R. McLaren	...	38 Gordon Way, Dovercourt, Harwich, Essex
Londonderry	...	C. J. McCann	...	Shrove, Greencastle, Co. Donegal, Ireland
Lowestoft	...	W. Craig	...	57 Royal Avenue, Lowestoft, Suffolk
Milford Haven	...	B. I. Evans	...	Rock Cottage, Wellington Gardens, Hakin, Milford Haven, Dyfed
Montrose	...	A. G. Brown	...	6 Panmarc Terrace, Montrose, Angus DD10 8HD
Neath	...	A. Boshier	...	24 Thorney Road, Baglan, Port Talbot, Glam.
Orkney	...	W. Cowie	...	7 Faraclett, Kirkwall, Orkney KW15 1XD
Peterhead	...	D. J. MacKinnon	...	1 Acacia Grove, Peterhead, Aberdeenshire
Plymouth	...	J. A. McLean	...	Pilot Office, 2 The Barbican, Plymouth, Devon
Poole	...	P. Colville	...	7 Gorse Road, Corfe Mullen, Nr. Wimbourne, Dorset
Port Talbot	...	J. Parry	...	6 Hazel Close, Dan-y-Graig, Porthcawl, Glam.
Portrush	...	T. Doherty	...	16 Crocnamack Square, Portrush, Co. Antrim, N. Ireland
Preston	...	M. Purvis	...	Pilotage Office, The Docks, Preston, Lancs.
Prestatyn	...	A. M. Hatton	...	The Orchard, 8 Stoneby Drive, Prestatyn, Clwyd LL19 9PE
Shetland	...	B. J. L. Cheevers	...	3 Burgadale, Brac, Shetland
Shoreham	...	E. Wray	...	Shoreham Pilotage Service, Watch House, Beach Road, Portslade, Brighton, Sussex
Southampton, Isle of Wight and Portsmouth	...	P. R. Carling	...	Pilot Office, Berth 37, Eastern Docks, Southampton, SO1 1AG
South East Wales	...	E. F. Williams	...	39 Arles Road, Ely, Cardiff, CF5 5AN
Sunderland	...	P. Lee	...	c/o Sunderland Pilot Office, Old North Pier, Roker, Sunderland, Co. Durham
Teignmouth	...	S. C. Hook	...	7 Ivy Lane, Teignmouth, Devon
Tees	...	D. T. Parker	...	"Stonchenge", The Green, Low Worsall, Yarm, Cleveland TS15 9PJ
Trent	...	C. J. Hunt	...	2 Spinney Walk, Anlaby Park, Hull, HU4 6XG
Tyne	...	J. R. Phillips	...	6 Mowbray Road, North Shields, Tyne and Wear
Watchet	...	N. P. Stokes	...	2 Cottiford, Bicknoller, Nr. Taunton, Somerset TA4 4LR
Weymouth	...	B. E. Caddy	...	15 Hope Street, Weymouth, Dorset, DT4 8TU
Wisbech	...	D. Locke	...	Adderley House, Burrett Road, Walsoken, Wisbech Cambs.
Workington	...	M. Ditchburn	...	68 Loop Road North, Whitehaven, Cumberland
Yarmouth	...	R. Wright	...	Pilot Station, Riverside Road, Gorleston-on-Sea, Norfolk NR31 6P2
Europilots	...	R. S. Butler	...	17 Langley Avenue, Brixham, Devon TQ5 9JF