



THE PILOT

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COLLISION AVOIDANCE

The picture illustrates the use, on board the Dover-Dunkirk Ferry *Vortigen*, of one of the new display units in which, instead of a conventional radar picture, there is presented a continuous survey of 200 moving targets. Calculated courses are portrayed for the forty closest targets within a 17-mile radius. The user can select a time, say six minutes ahead, for which the future position of "own ship" will be given relative to the other vessels. This and similar computer-assisted collision-warning instruments are the subject of a current study by the National Technical Committee and on which an article will appear shortly.



Photo: W. L. D. Bayley, Ryde.

'THIRTY DAYS HATH DEFENDER'

Members may have noticed in the press recently a number of unfortunate incidents in none of which did the pilots concerned take immediate action to inform their insurance company. The importance to individual pilots cannot be stressed too strongly that their insurance company must be notified of any incident, however trivial, within thirty days.

UNITED KINGDOM PILOTS' ASSOCIATION

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DANGEROUS CHEMICAL FREIGHT

J P Munro

Chairman, National Technical Committee

Nature of the Risk

The transportation of chemicals in bulk by sea is a complicated subject and a pilot's awareness of the hazards involved may be limited to the odd occasion when he inquires of a chemical tanker's master, the nature of his cargo. The answer is frequently a jumble of "ISO-DECAPROPANOLBENSELENE GLYOXIDE" which conveys very little but invites one to ask how dangerous they are. The reply can make the pilot's heart rate double with the knowledge that, a whiff of it causes death within minutes or really "the stuff" is quite safe, you only suffer from dizziness and vomiting. Such knowledge must surely make pilots concerned about their personal safety, and this I think is the strongest argument we have and possibly the only way of convincing the DTI, the port authorities and chemical companies that additional safety precautions are required. The danger arises because into the world of chemical handling expertise is introduced a pilot, a complete novice who boards a chemical tanker just the same as if it were a vessel carrying iron ore. However, the situation when alongside, discharging or loading, is even more alarming because here, in addition to pilots, customs officers, agents, boatmen and ship chandlers innocently walk into a completely alien environment.

On the Tees we have considerable working knowledge of chemical tankers, their cargoes and the berths they use. They form quite a large percentage of the port's trade; in 1972 one ICI jetty alone handled five hundred and seventy eight cargoes. One important development a few years ago was the formation of the River Tees Oil and Chemicals Safety Committee which has representatives from Tees and Hartlepool Port Authority, Teesside Constabulary, Teesside Fire Brigade, ICI, Monsanto, Moore Barrett and Red-

wood Limited, Philips-Imperial, Shell and Tees Storage Limited. The Tees Pilotage Authority has not yet sought representation as a good liaison with the Harbour Master has proved adequate. One of the Committee's first tasks was to implement the cargo information card system, already in operation in America and similar to ICI 'TREM' cards (Transport Emergency) which was a private system but is now compulsory for all road chemical tankers.

Be Prepared

The cards, one for each of approximately fifty oil and chemical products, covers all those handled on the Tees and also the majority of the UK. Measuring 8 by 12 inches, the card shows such details as the name of the chemical or oil product, its characteristics, the nature of the hazards, protective clothing, a warning concerning lights, smoking, pumping rates and pressures and a section giving information of the action to be taken in the event of fire, spillage or contact. The cargo information card system, which envisaged one being put aboard the vessel and one on the jetty for that particular cargo being handled was left to each individual company to implement. Unfortunately, in my opinion, this is where this very good idea has fallen down because, on most jetties, the cards were positioned actually in the danger zone. In fact a pilot, wishing to find out if it was wise to board a tanker, has to walk onto the jetty, past the pipelines, through what looks like a cloud of steam, alongside the fitters disconnecting, to acquire the information. I find great difficulty in convincing the experienced chemical plant or berth managers that these cargo information cards should be outside the danger area, at the head of the jetty, at the compound gate-house and placed in a prominent position. The point, they contend, is that the risk of pipeline, hose or connecting joint fractures is a million to one, which to

me is not a convincing argument, because on that rare occasion when one does burst I want to see that all reasonable precautions have been taken to prevent a pilot being involved. In the event of an accident, the ship's crew and the jetty operatives know what precautions to take but what about the "innocent" pilot or boatmen; do they run like hell, dive in the river, get under the ammonia shower, stand still, and where are the respirators anyway?

Another breakdown in the cargo information card system is caused by the passage of time and the human element involved, the danger of familiarity which does breed contempt. I often find that the glass fronted boxes provided for the cards are simply not there, empty, or the card has not been changed since the last cargo.

Although the commercial operation of chemical tankers is very intense, one simple precaution would be to ensure that pilots left the vessel and were not ordered whilst loading or discharging, and that the agents included cargo information with the order. In the case of ACRYLONITRILE, one of the most dangerous chemicals transported in bulk on the Tees, this procedure is adhered to.

The situation at the sea station when a chemical tanker arrives is slightly different although at the Tees we do have a complete set of cargo information cards to which a pilot can refer, the decision to enter the river is, in practice, the pilot's. What risk is involved to introduce this loaded chemical carrier into close quarters situation with other vessels, often another tanker, in reduced visibility or narrow channels? The pilotage under such conditions is not always difficult because these are generally modern, well equipped and efficiently manned vessels.

The experts in the chemical industry would rather not contemplate the consequences of a major collision between two chemical tankers. It is an accepted fact that under particular weather conditions an ammonia cloud could have disastrous effects on the population of a riverside town. An incident at ICI Wilton, when a small amount of ethylene gas found a source of ignition causing an explosion and deaths, makes one hope that the two, four

hundred ton, ethylene carriers which trade regularly to the Tees continue to have incident free passages. In fact, since April of this year, the Tees and Hartlepool Port Authority has instituted a modified traffic control on all loaded ethylene and ammonia ships which must have a clear river passage, not passing any other vessel, and must have a pilot on board or, officially, an accredited master. Is it going to be left to the ports to introduce similar precautionary measures or do we need a chemical "Torrey Canyon" before the DTI or the Department of the Environment acknowledge that some legislation is required?

It is of interest to note that since an emergency caused by the escape of dangerous chemicals from a tanker on the New Waterway, the City of Rotterdam, through their police system has been able to assume a certain amount of control over the movements of chemical tankers and to take preventative measures for minimising the risk to its population.

Design and Safety Codes

A significant step was the introduction of the IMCO Code for the Design and Construction of Chemical Tankers, with which all new vessels after August 1972 must comply. (The first two British purpose-built ships, the *Astraman* and *Polarisman* are now in service.) However, there are practical limits to which such safety designs can go, otherwise we will finish up with chemical tankers with four-inch armour-plated hulls.

The International Chamber of Shipping recognised the need to provide chemical tanker crews with the most comprehensive data available when, in 1971, it published its Tanker Safety Guide (Chemicals). Volumes Two and Three contain information sheets for 230 of the 250 chemicals moved in bulk by sea at that time. I understand that the first sheet for each chemical was designed in order that they could be used for the same purpose as "The River Tees" cargo information cards. Here surely is the means and the opportunity to introduce a uniform information system on all oil and chemical installations throughout the United Kingdom which

would ensure that pilots and other port services were provided with the adequate safety measures.

One important question is, how much knowledge of chemicals does a pilot need? It must be the duty of every service and its Authority to ensure that in this age of an ever increasing bulk chemical trade, with

vessels over 10,000 tons, that trainee pilots are acquainted with the hazards and safety precautions involved. Amongst pilots at the Tees there are various opinions on this subject, but surely I have illustrated situations where a chemical appreciation course would be of benefit even if only, literally, to preserve the pilot's own skin.

Appendices: *Cargo Information Card, sample and foreword; ICS Sample Data Sheet.*

CARGO INFORMATION CARDS

Foreword:

The handling of chemicals, some of them hazardous, at installations in the River Tees, continues to increase. In the belief that a contribution can be made to the safety of all concerned in this handling by wider dissemination of available knowledge, the River Tees Oil and Chemicals Safety Committee undertook the production of this Manual and its associated cards. It contains specimens of Cargo Information Cards covering most of the products handled on the River Tees and it is the intention to display one card at the access point to a vessel which is loading or discharging bulk liquid cargo, and to give a further card to the Chief Officer of the vessel.

The cards follow closely the lines laid down for the production of similar documents covering road transport emergencies (Tremcards) and acknowledgement is made to the following for the basic principles studied:—

- The Chemical Industries Association
- The Department of Trade & Industry, Marine Division, Dangerous Goods Section
- The Manufacturing Chemists' Association of America
- The International Chamber of Shipping
- The United Kingdom Chamber of Shipping

The exact design of these cards may be modified in the course of time, and when a United Kingdom system is produced as a sequel to the publication of the IMCO Regulations for Ships Carrying Hazardous Cargoes. Chapter V of these Regulations will probably consist of a guide produced by co-operation between the two Chambers of Shipping mentioned above, and will contain Data Sheets on a large number of chemicals.

The River Tees Oil and Chemicals Safety Committee believes that it should, because of the large volume of traffic, anticipate a national plan in order to enhance the safety of all concerned on the River Tees, at the earliest possible moment.

The information and recommendations contained in this Cargo Information Manual have been compiled from sources representing the best opinion on the subject at this time. However, no warranty guarantee or representation is made by the River Tees Oil and Chemical Safety Committee or the members thereof as to the correctness of adequacy of any information or recommendation herein, and it cannot be assumed that all necessary warnings and precautionary measures may not be required because of particular, or exceptional, conditions or circumstances. Use of the cards is not a substitute for information required to be displayed or presented by Statute or local regulations.

SAMPLE CARGO INFORMATION CARD

Cargo **PHENOL** (Carbolic Acid)

Hot colourless liquid with characteristic odour—cools to a white, crystalline solid. Partially miscible with water.

Nature of hazard

The substance is highly poisonous and is flammable.

The substance can cause severe damage to the eyes and the skin through which it is rapidly absorbed into the system.

Poisoning by inhalation and by absorption through the skin.

Personal Protective devices

P.V.C. gloves and suit.

P.V.C. hat with visor and cape.

Rubber boots.

Standard breathing apparatus.

WARNING

Naked lights should be avoided.

Agreed pumping rates and pressures must not be exceeded.

IN CASE OF

DO THIS

Fire Extinguish a fire preferably with dry chemical, carbon dioxide or water spray.

Spillage Keep upwind.
Avoid contact with the liquid.
Absorb in earth or sand and remove to a safe place. Flush the area with water.
All spillages into river must be notified to harbour authorities.

Contact FIRST AID MUST BE IMMEDIATE TO BE EFFECTIVE. MEDICAL HELP MUST BE OBTAINED AS SOON AS POSSIBLE.

Eyes: Splashes of concentrated vapour. Immediately wash out with plenty of water for at least 15 minutes.

Skin: Splashes or concentrated vapour.
1 Promptly remove all contaminated clothing taking care not to increase the area of contamination.
2 Rub all contaminated skin with swabs soaked in glycerol, polyethylene glycol (PEG) or a 70:30 PEG/methylated spirit mixture for at least 10 minutes.
3 Where the above solvents are not available, rub the affected area with swabs soaked in water. This treatment should be followed as soon as possible by rubbing with swabs soaked in one of the recommended solvents.
4 Seek medical advice (unless contamination is trivial).

Inhalation: Treat as for shock, i.e. remove patient to fresh air, keep warm, give hot sweet tea and apply artificial respiration if necessary.

ICS TANKER SAFETY GUIDE (CHEMICALS)

SAMPLE DATA SHEET

No. 1

ACETALDEHYDE

acetic aldehyde
aldehyde
ethanal
ethyl aldehyde

APPEARANCE	Colourless fuming liquid
ODOUR	Pungent, fruity and suffocating

THE MAIN HAZARDS
Fire. Corrosive reactive liquid, gaseous at ambient temperatures.

EMERGENCY PROCEDURE

IF THIS HAPPENS

DO THIS

FIRE	Shut off supply of gas then use dry powder, CO ₂ , or alcohol foam (if conditions permit). Cool tank with water spray. WARNING. If water enters the cargo tank there may be a rise in temperature. See also note (i) on page 4.
LIQUID IN EYE	DO NOT DELAY: Flood eye gently with clean sea or clean fresh water, forcing eye open if necessary. Continue washing for at least 15 minutes.
LIQUID ON SKIN	DO NOT DELAY: Flood affected area with water and remove contaminated clothing. Continue washing for at least 15 minutes.
VAPOUR INHALED	Remove victim to fresh air. If breathing has stopped, or is weak or irregular, give mouth to mouth or mouth to nose resuscitation.
SPILLAGE	Avoid contact with liquid. Extinguish sources of ignition. Wear full protective clothing and goggles. Breathing apparatus may be necessary. Flood with copious amounts of water. Inform Port Authorities if a major spillage occurs.

PILOTS - HUMAN FACTOR STUDY

Some two years ago Dr M Harrington of the TUC Centenary Institute of Occupational Health undertook a mortality study of pilots in certain major British ports. The results showed that there seems to be a high incidence of coronaries amongst pilots aged 35-50, particularly since 1962.

Further study of the problem, including an investigation of German pilots on the river Elbe, and another major British port, seems to indicate that the incidence of heart disease in pilots between the ages of 35-50 approximates to three times the national average. It is perhaps not unfair to assume that this abnormality may well be evident amongst pilots throughout Europe operating in comparable conditions. Whilst the underlying causes of this phenomena are not quite clear, its significance is emphasised when it is considered that all British pilots up to becoming licensed at about 30 years of age, have in the course of their career to pass satisfactorily at least three stringent medical examinations and doubtless similar stipulations apply to pilots of other nationalities. It could be concluded then, that the health standard of pilots entering service is above the national average. We must not, therefore, accept that heart disease is an unavoidable and inevitable occupational hazard of a pilot's life.

Transportation vehicles for whatever media—road, rail, air or sea—are steadily being developed to an optimum in size and operational speed, consistent with present-day viability, and perhaps the greatest strides of all have been made in sea transportation, where ships of hitherto unconceived dimensions are entering and leaving ports with minimum physical tolerance and in almost all circumstances of weather. It is likely, therefore, insofar as pilotage is concerned, that the work load on certain pilots is already under some circumstances beyond what should be reasonably tolerated.

The many and varied aspects of a pilot's life, such as stress, strain, anxiety and uncertainty, could have been exceeded beyond the norm for detrimental effects upon his life, and when coupled with the irregular hours, mostly night work, disrupted social activities, *etc*, it seems the core of the problem will most likely emanate from a detailed and specialised human factor study of maritime pilots at least as comprehensive as has been undertaken for civil airline pilots.

Under the auspices of the Research Division of the National Ports Council, representatives from Birkbeck College, London School of Hygiene and Tropical Medicine, the UKPA, T & GWU, Trinity House and the NPC met in March to consider the practicalities of a research proposal project for Human Factor Study on Maritime Pilots submitted by Pat Shipley, Lecturer in Engineering Psychology, Birkbeck College.

A Human Factor Study is still very much in its formative stage, and its success will need the full co-operation and support of pilots generally, especially as conclusive results are only likely if a system of random selection is applied in the investigation.

At the above meeting the aims of the project were agreed in principle, without commitment to the project on the part of any attending the meeting, the two main aims of the project being:

- (1) To assess pilotage activities for workload and stress problems, identifying the circumstances in which these may impair the safe judgment of the pilot;
- (2) To give guide lines and recommendations for the alleviation of such problems as are found to exist.

If indeed it is accepted that a problem does exist, and the preliminary medical investigation seems to point in this direction, an analysis of pilots' activities, selected at random, will be needed to quantify the matter more accurately.

At this stage it must be emphasised that if more detailed investigation is to be undertaken, which can only be achieved with the full co-operation of pilots, medical information relating to individuals would remain strictly confidential between the researchers and the pilots concerned, and in the case of the study such pilots would be subject to certain instrumentation. Therefore further progress in this matter depends upon the views of the National Ports Council's Standing Committee on Research and of the pilots from the districts concerned. Should favour be expressed in proceeding, it is envisaged that a Steering Group will be formulated to monitor the

project and provide the necessary forum for discussion between interested parties.

As this matter is of such fundamental concern to all pilots, the Executive Committee wish to gauge the reaction of the membership generally in anticipation of the Conference to be held 28th-29th November.

Research on the comprehensive lines envisaged will of course, require funding, and in this respect both the National Ports Council and the Pilotage Authorities could perhaps be prevailed upon to finance the project.

F Berry (Hull)

16th August, 1973.

Obituary

IAN MORGAN MACFARLANE

On 2nd July, while watching a golf tournament, the death occurred suddenly of Ian Morgan Macfarlane, Clyde pilot, and member of the executive of the Association for the past four years. Aged 49, Mr Macfarlane sailed with the City and Donaldson Lines before joining the pilotage service in 1957. While serving on the Gourock staff he was Choice Pilot for the Clan Line and lately, while serving on the outward staff of pilots, he was Choice Pilot for Hapag-Lloyd.

He took a very active part in local pilotage committees besides his work on the executive.

Mr Macfarlane was very keen on all sports and was a member of the curling club and also the local bowling clubs.

He leaves a wife and three sons to whom we extend our sympathy and recognition of his unstinting work for the profession. The premature loss of one of our most active members will long be felt in UKPA.

INTERNATIONAL MARITIME PILOTS' ASSOCIATION

The Founder-President of IMPA, Captain Henry Petersen (West Germany), resigned from the Presidency of IMPA on his retirement as an active pilot on 30th June, 1973.

Vigorous attempts were made by the members of the Executive Committee to persuade Captain Petersen to continue in office until the next General Meeting, and the Senior vice-President in particular made strong representations to Captain Petersen to continue for one more year.

The President, however, was adamant in his decision, and consequently the Executive

accepted with real regret Captain Petersen's resignation.

The Executive paid tribute to Captain Petersen for the tremendous work he had done in the founding of the International Association, and thanked him for the way he had fulfilled the office of First President of IMPA.

Captain E A Clothier, as Senior vice-President, was elected as President until the next General Meeting in 1974. We extend our warmest congratulations to Captain Clothier in his new appointment.

THE PROFESSION OF MARINE PILOT IN TODAY'S ENVIRONMENT

Up to a few years ago in Britain a boy looked forward with pride to a sea-going career. But the sea heritage bequeathed to future generations is in danger of being inglorious, an ironical situation for a culture whose folk heroes included many ancient mariners.

There is a growing concern in Britain about the quality of working life and the impact of industrialisation and technology on people. Change seems to happen these days faster than our capacity to evaluate its effects. Technological change is not an unmixed blessing; there are distinct disadvantages if the means used for these developments are not the best, and modern systems which operate without adequate control impose long-range penalties outweighing the benefits conferred, in some cases. But the adequate control of technology is impossible in the absence of relevant information about the environment. In particular, those sciences dealing with living things lack knowledge of environmental effects. The technological and engineering sciences seem better off; for obvious reasons.

On land and sea and in the air we always seem to want to go faster, to go more often, and in bigger vehicles. When the situation gets out of control a costly accident can happen. There have been many recent collisions in the English Channel brought to public notice and we are all familiar with the annual slaughter on our roads. In the air an airbus accident in 10 years' time could bring a death toll of 1000 victims. In 1949 the maximum fatalities from a single aircraft accident would be nearer 50 victims. The "Torrey Canyon" disaster of 1967 first jolted the British public out of apathy and ignorance into awareness of the scale of pollution problems at sea. The rules still used in the air and at sea belong to the era of the wind-blown sailing ship. One statistical source indicates there

is a greater chance of larger vessels (over 10,000 tons dwt) being involved in an accident. Supertankers are commonly 250,000 tons dwt, and tankers twice the size are being built. It is a powerful economic argument to show that carriage costs reduce as the ship size increases. The material costs of accidents must be colossal; the non-material costs, such as human suffering, are incalculable. One source reports that over half of the world's collisions occur in pilotage waters.

There are less overt and tangible signs than accidents of trouble at sea; these are more challenging to the human scientist if less plausible to the businessman. Critical errors by skilled people operating complex machinery are comparatively rare; accidents are often averted by reason of dedication, skill and effort. The actual accidents themselves can be seen as the tip of the iceberg; submerged lie the strains and tensions to which people are exposed daily. What is not known is the size and gravity of these hidden human costs; the consequences of putting high standards of professional efficiency and safety under adverse conditions at the top of the priority list. Man is subject to many stresses both at work and away from it, and even the strongest has a breaking point. There may be malfunctioning before disease becomes clinically diagnosable. The marine pilot has a responsible and exacting job when guiding large (and sometimes strange) vessels round obstacles through narrow waters. He has to cope with varying conditions and equipment, and masters and crew of other nationalities.

Until recently little was known about the newly emerging class of diseases of modern civilisation and we were congratulating ourselves in the conquest of old enemies like malnutrition and infection. But a new type of *stress-related* disease is appearing, to do with adapting to environmental change.

The environmental contribution has been ignored or underestimated for too long. According to the World Health Organisation, in England and Wales there has been a 12% increase in fatal coronary heart disease. Those aged between 35 and 44 years are particularly susceptible. A recent study done in Britain at the instigation of Trinity House Pilotage Authority has indicated that Channel pilots in their 30's and 40's have a higher than normal death rate from heart disease.

It would indeed be tragic if no heed were taken of such warning signals when so much we know can be done to prevent or alleviate problems like the following:

- irregular hours and long duty periods causing fatigue and an unsatisfactory social life;
- breakdown of control skill under stress generated by slow speed dynamics (large ships create perceptomotor difficulties at the borders of unaided human skill);
- uncertainty about the ship's conditions and sub-standard equipment;
- lack of experience with new, sophisticated equipment;
- the frustration of long bouts of waiting;
- physical straining from boarding difficulties;
- language barriers and other communication problems.

Many of these factors are amenable to correction, bearing on efficiency and well-being. The British Government report on Shipping in general (Rochdale 1970) outlined some suitable measures. We should enlist more of the benefits of advanced technology such as equipment aids, to augment the skills of the professional mariner. Pilots may also be helped in their work by formal training schemes and

rationalised rostering patterns, based on scientific evidence. Money for improvements and research may be forthcoming where accident rates and turn-round times can be predicted to be better. There would be short term and long term solutions. To maintain a flexible human link in the system with suitable back-up aids (such as a portable pilotage equipment package) could prove to be for many years ahead an economical proposition (as in Air Traffic Control). No computer can weigh up the many alternative probabilities for action as well as he.

But effective changes can only be made on a firm and reliable base of information obtained from systematic scientific investigation. Uncertain data can be misleading, perhaps reducing the flexibility of operation without doing anything to improve health and safety. Workable techniques exist for a study of this kind and a team of scientists are ready in London to launch an attack with support from many UK pilots and the National Ports Council. But to secure resources to further the research some authorities are sceptical and say that only flimsy evidence is available. They need to be convinced by those with experience that there is a pressing need for such an objective study. In the UK pilots do not enjoy Government protection. The team comprises medical people and psychologists with experience of similar work in the aviation environment, where the problems are remarkably similar, and they are searching for support from pilots from all European countries who are prepared to discuss their views and experiences. Help us to count the cost in human terms.

Pat Shipley

*Lecturer in Engineering Psychology
Birkbeck College (University of London)*

14th August 1973.

FILM

World's First Super Automated Ship with Computer System

Several Districts have already taken the opportunity of showing the film about a Japanese automated ship and her computer, constructed as the forerunner of a 300,000-ton tanker which will be automated to the

extent that it can be manned by a captain and a crew of only eight.

Should any other Station wish to show the film, it is still available on request from the UKPA offices.

Letter to the Editor

'... AS OTHERS SEE US'

Dear Sir,

*I'm truly sorry man's dominion,
Has broken natures social union,
And justifies that ill opinion,
Which makes thee startle,
At me, thy poor earth born companion,
And fellow mortal.*

R BURNS

An anonymous attack which appeared in the Post Bag feature of the MMSA Reporter for March 1973, which contains extracts from General Correspondence, and was reprinted in the July 1973 issue of The Pilot under the heading 'As others see us' betrays lack of knowledge of pilots and the maritime world. That attack cannot be described as constructive unless perhaps it was deliberately intended to provoke reaction. We are accused of 'denigrating shipmasters', of seeking 'absolute control', of having 'unknown talents'—as to the description of the use of Doppler devices, this can only be described as fatuous. Clearly this man did not attend the same meetings as I did or perhaps he suffers from some sad personal bitterness towards pilots.

All seamen know that Trinity House Pilots are themselves master mariners, are of the same cloth, of the same kind with the same minds and the same hearts as the captains of the ships they serve. Would we denigrate ourselves? Would you have us different?

It is true that pilots were forced to seek publicity, for this was the only defensive weapon available to them against many pressures. Pressure for example to pilot ships of 48 feet draught with only 18 inches under the keel. Pressure to limit the number of tugs when berthing heavy ships—to use ship's gear instead of tug's gear (and even excellent ship's gear inspires no confidence

in the wise tug captain). Pressure applied to the pilot handling great tankers when the cost of tug's gear was £4.50 each tug! Happily some pilots fought that one—and happily the charge for tug's gear is now included in the overall cost in my district.

Pilots had to fight for safe pilots' ladders, but only after they had suffered loss of life. We go on board ships loaded with dangerous cargoes, chemicals, LNG, naphtha, even cyanide in bulk, and find navigation gear that does not work—request an Aldis lamp and you are met with a blank stare—and yet at night such a light is a great safety factor—as all seamen know. We find ships undermanned and at the same time hear responsible shipowners cry for *MORE* undermanning, truthfully alleging that they cannot compete with other owners who blandly ignore regulations or place their ships under flags of convenience to 'legalize' the dangers they create.

'Two pilots on VLCCs'—of course we need two pilots on such ships, a fact recognized by sensible western nations—which does not include the United Kingdom. On the Elbe a master of such a ship, refusing a second pilot when offered is liable to find the pilot put aboard by police launch and informed that his ship will be arrested should he refuse to accept him. This is not an attack on captains—it is an attack on irresponsible shipowners who argue that safety is subject to economics. The answer to that is that if it is 'un-economic' to handle a cargo *safely*—that cargo should *not be handled*. But why do we need two pilots? We need them because of the physical size of these great ships, because of their great beam and draught and because we are obliged to pilot them for greater distances than hitherto. Thus the Black Deep Approach adds thirty miles of pilotage to the seventy previously existing. Pilots, working with eighteen

inches or two feet under the keel, are dealing not only with captains and ship owners but also with Port Authorities who insist on these tiny margins in order to limit dredging costs. One major port is on record as saying that 500,000 ton vessels are 'navigable with one metre under the keel'. That pilots fight for a 'second man' on such ships is because they obtain no support from others and they fight in advance of the disaster and massive pollution which will, by public demand, make this 'second man' mandatory. This is because pilots have found that the best way of handling the bedlam of VHF information on a ship with 150 foot beam is a non-electronic device called a fellow pilot, a device designed and trained to filter and convey, without fault—for there is neither room nor time for fault—the relevant information. Most of the VHF cacophony is local information—and only someone with local knowledge is fit to cope with it. Obviously too, the result of a coronary could be disastrous not only to the victim but to a deep ship in shallow narrow dangerous waters unless there is present someone *immediately* prepared to continue safe navigation. That someone can only be a pilot—on such a ship.

As seamen we have all, captains and pilots alike, lived through a period of great and swift changes. Old established firms have vanished like snow off a dyke, simply because they were under economic pressure to form large capital groupings that they might survive in another form. Many responsible firms prematurely retired whole fleets of ships and captains—while the less responsible simply threw them out. What we have seen pass away was a whole maritime and social structure—what we are now trying to do is adapt—and in this we shall succeed, I am sure. Notwithstanding that pious hope it is true that confidence has been rudely shaken—and it will not return if we fight amongst ourselves.

Do not imagine that pilots did not suffer also, how do you imagine I felt when I boarded a normally exempt German ship in response to a demand, only to be informed by the master that he had asked for a pilot 'Because I am in dispute with my owners over the Pilotage Money!'

In short he was taking a pilot to force his owners to up the captain's share of my

livelihood. This does not mean that I believe all masters are like that one—although in truth I feel the financial 'exempt' loss—however, as a British subject, I am old fashioned enough to believe it is irresponsible to 'licence' or 'exempt' foreign masters on ships. You cannot do it on the Rhine, on the Elbe or on the Scheldt—for one day such men might just deliver something more lethal than innocuous containers. Of course the 'Go Continental' crowd will laugh that one off but the fact remains that exempt—and particularly foreign exempt ships are to be found navigating in pilotage waters in dense fog on full sea speed. So far, on the Thames, they have only succeeded in sinking each other.

As to pilots 'denigrating' shipmasters, let me quote the opening sentence of a pilot's official report to Trinity House on a grounding:

'THE ACCIDENT WAS DUE TO AN ERROR ON MY PART' and later—

'THE ACCIDENT HAPPENED SO QUICKLY THAT IT COULD NOT HAVE BEEN AVOIDED BY ANY ACTION OF THE MASTER'.

The ship was refloated, undamaged, and proceeded. As far as is known no action was taken against the master. The pilot on the other hand got the full treatment—and his record marked for life. If that is denigrating masters—then I'm a Dutchman. I reckon it's defending a master.

Of one thing you may be sure, for just so long as you require a pilot—we will provide a pilot—in fog—mist—falling snow—heavy rainstorms or in gales of wind whether by day or night regardless of risk to life and limb. That service is available to all who seek it, even to those who malign us—indeed especially to them.

In conclusion I would say that these opinions are my own, delivered without fear, in a free land—I have no brief to speak for my fellows—but this I know—they will lay down their lives for you—and think nothing of it—if it is in, or even out of, the line of duty. Look for yourselves. I call you to witness.

John Bain
Master Mariner
The Bield,
Conifer Avenue,
Hartley, Kent.

Coastlines

Maritime Offspring

Many and varied are the misdirected letters that arrive at Peel Street and a review copy of *To the Ends of the Air* from HM Stationery Office was probably intended for a well known journal on light aircraft. Nevertheless, in the belief that some of our members find time for reading, a fascinating personal narrative of the pioneering days of the Royal Naval Air Service and early ventures with flying boats might, for some, be an attractive alternative to a laborious legal essay on radar assisted collisions.

The simple fact that the author, who has an engagingly frank style of writing, was himself involved, first as an officer in the Royal Navy, moving through its RNAS and into the Royal Air Force on its formation, adds realism and feeling to the evolution of what for many critical years became known as Coastal Command. He helped to demonstrate that the several early craft, notably the *Southampton* metal skinned flying boats, were capable of long distance sorties, paving the way for both civil aviation and the military surveillance of shipping lanes.

Suffice it to say that what began as the Editor's idle curiosity became an interest sufficiently insistent to last from cover to cover of this small (204 pp) paperback. *To the Ends of the Air* by Group Captain G E Livock, DFC, AFC, contains many nostalgic photographs skilfully taken by the author. It costs 70p, or 76½p by post from HMSO, Atlantic House, Holborn Viaduct, London, EC1P 1BN.

"Safety on Small Craft"

This is the title of another HMSO publication this year, in which the author, Guy Cole, gives sound advice to yachtsmen in a chapter on safety, covering basic equipment and personal life saving aids. It is to be hoped that for 75 pence it will achieve a wide readership amongst weekend sailors.

Barnett M Copland

From Murdoch Mackenzie, retired Clyde Pilot, we are glad to receive a correction to the historical note in the obituary for Barney Copland which appeared in our last issue. Murdoch writes

"The notice stated 'After the *Athenia* had been abandoned, it was thought that voices could be heard from the ship. Although she was on the point of sinking, Barney returned to the ship but nobody could be found.'

"In fact, Barney did find a passenger—a lady—in the ship's hospital, and he rescued her.

"You may know that the retired pilots have formed an association and that they have all rejoined the UKPA as 'retired members'. They therefore receive the *Pilot* magazine. Mrs Copland received the copy containing Barney's obituary and, as I was the nearest (semi-) active retired pilot, she phoned me to point out the inaccuracy. So I am writing to you."

A fitting tribute to a brave man.

How Safe are LNGCs?

Less than ten years ago, the world fleet of Liquid Natural Gas Carriers consisted of two British pioneer ventures, the *Methane Princess* and the *Methane Progress*. Now some twenty are in service or building and the estimate for 1985 is 200 or more.

Malcolm Billings, in a recent BBC World Service interview with Brian Singleton, Editor of *Shipbuilding and Shipping Record*, sought his views, which we summarise here, on the safety aspects of these costly and increasingly important energy carriers. When it is appreciated that the latest ones are equivalent in size to a conventional tanker of a quarter of a million tons it is only reasonable to enquire if the liquefied gas carrier represents a greater or a lesser risk than the comparable crude oil carrier.

Referring to tests recently carried out by

Shell in the Bay of Biscay to assess the effects of a major spillage of LNG, the view was expressed that when the results became known they would probably show LNG to be a great deal safer than ordinary petroleum products. Indeed, the safety record for LNGCs so far has been very good but, if a major collision were to occur in close waters or even a harbour, what would be the effect of a huge cloud of vapour which, it was said, might stratify quite close to the surface of the water? It is a lighter gas than air, unlike petroleum gas, and, being lighter, it disperses very quickly. Tests which were conducted in America off Staten Island indicated that a spillage of a whole tank, typically about 24,000 cubic metres, would create a gas plume about seven to twelve miles high from the point of collision but that this would disperse within minutes.

The ignition point of LNG was said to be very much less dangerous than that of petroleum gas. Tests that have been made and the analysis of the published literature indicate that the risk of explosion is generally much less than for petroleum gases. The US Coast Guard were anxious to see if, as had been postulated, a flameless explosion phenomenon could be induced in a big spillage at sea, but in three large tests they failed to achieve such an explosion. The term flameless explosion describes a massive vaporisation accompanied by ignition.

Some anxiety had been expressed that the hull of the ship might become brittle because of the extremely cold temperature maintained within the tanks. Tests have not shown this to be so and, indeed, it would require that the sea itself were brought down to these dangerously low temperatures before brittle fracture of the outside hull of the ship might take place.

Regarding the danger of cargo-tank rupture in the event of a collision, it was pointed out that in some ways these ships are like a vacuum flask in that there is an outside container and an actual vacuum flask within it. Thus, in a collision, not only would the conventional outer hull of the ship have to be pierced but, after traversing a void, a second barrier would have to be pierced before endangering the tank itself. The opinion was expressed that, in terms of a major disaster, there was considerably less risk than if two ordinary VLCCs collided.

Flood Forecast can help VLCCs

The British Association for the Advancement of Science, meeting at Canterbury, had a paper with a significant bearing on matters of pilotage. Dr R A Flather and Dr A M Davies, of the Institute of Coastal Oceanography and Tides, Birkenhead, described the use of a powerful computer fed with sufficient details of the condition of the North Sea which could, in about two minutes, compute surges and tide levels affecting navigable channels and estuaries on the North Sea.

The mass movement of water northwards or southwards in the North Sea due to winds, which may change rapidly, can impose level changes or surges of as much as plus or minus eighteen inches and the forecast of such special conditions can take many hours to produce.

Primarily, the paper was concerned with forecasting storm surges such as the one which caused the disastrous floods of 1953, but pilots will appreciate the value of any improvement in the forecasting service when faced with navigating a channel with barely a couple of feet under the keel.

EUROPEAN MARITIME PILOTS' ASSOCIATION

In 1974 the United Kingdom will be host to the European Maritime Pilots' Association for their Annual General Meeting.

It has been decided that the meeting will be held at the new Tower Hotel, London on 8th and 9th May, 1974.

Members will be advised in due course regarding the arrangements and details of the meeting.

Local Secretaries

Aberdeen	H. McKilligan	Aberdeen Harbour, North Pier, Aberdeen
Ardrossan	A. Caldwell	13 Chapelhill Mount, Ardrossan, Ayrshire
Barrow-in-Furness	R. Moore	Windswept, 35 Roa Island, Barrow-in-Furness, Lancs. LA13 0QL
Barry	J. Bennett	Brent Knoll 92 Port Road East, Barry, Glam.
Belfast	W. J. Kirkpatrick	15 Downshire Gardens, Carrickfergus, Co. Antrim, N. Ireland
Bridgwater	C. Muller	124 Worston Road, Highbridge, Somerset TA9 3JX
Brixham	R. J. Curtis	Abri, 31 Gillard Road, Brixham, Devon TQ5 9EG
Cardiff	C. D. Morgan	54 St. Angela Road, Heath, Cardiff, Glam.
Clyde:		
Glasgow		
Gourock	J. M. Farmer	239 Eldon Street, Greenock, Renfrewshire
Colchester	P. Hills	26 Regent Road, Brightlingsea, Essex
Coleraine	W. Dalzell	Harbour Office, Coleraine, Co. Derry, N. Ireland
Exeter	B. L. Rowsell	17 Camperdown Terrace, Exmouth, Devon
Falmouth:		
Sea	R. T. Williams	14 Arwenack Street, Falmouth, Cornwall
River	J. Timmins	1 Ponsharden Cottage, Ponsharden, Falmouth, Cornwall
Fowey	M. H. Randolph	Elm Cottage, East Street, Polruan-by-Fowey, Cornwall
Gloucester	B. H. Richards	Southerly, 60 Combe Avenue, Portishead, Nr. Bristol, BS20 9J5
Goole	A. R. Wild	31 Airmyn Road, Goole, Yorks.
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Hartlepool	B. G. Spaldin	24 Kesteven Road, Fens Estate, West Hartlepool
Hull	R. B. Campbell	25 Taylors Avenue, Cleethorpes, Lincs.
Inverness	T. H. MacDonald	Nyhavn, 14 Leys Park, Inverness
Ipswich	J. Wright	"Rosapenna" 9 Cliff Lane, Ipswich, Suffolk
Isle of Wight	A. T. Tulloch	Fairways, Palmer's Road, Wootton, Isle of Wight.
Lancaster	H. Gardner	Greystones, 128 Morecambe Road, Lancaster
Leith	L. M. Smith	64 Trinity Road, Edinburgh, 5
London:		
Cinque Ports	J. A. Cresswell	361 London Road, Deal, Kent
Gravesend Channel	P. A. E. Roberts	Utne, Conifer Avenue, Hartley, Dartford, Kent
River	D. W. J. Hobday	Pentlands, Stock Lane, Wilmington, Dartford, DA2 7BY
Medway	T. G. Hannaford	175 Wards Hill Road, Minster, Sheppey, Kent
North Channel	N. Walker	Wild Acres, Steam Mill Road, Bradfield, Manningtree, Essex
Londonderry	C. M. O'Donnell	3 Oakfield Drive, Londonderry, N. Ireland
Lowestoft	J. E. Johnson	Westing Down, 44 Gunton Church Lane, Lowestoft, Suffolk
Middlesbrough	W. E. Guy	25 Wheatley Close, Acklam, Middlesbrough
Milford Haven	M. A. Haigh	Gannet's Lodge, Church Hill, Llanstad Well, Pemb.
Neath	A. Boshier	24 Thorney Road, Baglan, Port Talbot, Glam.
Par	R. F. Dunn	Hillmere, 7 Polmear Road, Par, Cornwall
Plymouth	E. Rogers	Pilot Office, 2 The Barbican, Plymouth, Devon
Poole	E. S. Haines	Pilot Office, Town Quay, Poole, Dorset
Portsmouth	M. Sparkes	Trinity House Pilotage Service, Victoria Pier, Portsmouth
Port Talbot	J. Parry	6 Hazel Close, Dan-y-Graig, Porthcawl, Glam.
Preston	H. Halsall	Pilotage Office, The Docks, Preston, Lancs.
Prestatyn	A. M. Hatton	39 Grosvenor Road, Prestatyn, Flints.
St. Ives	J. W. A. Dew	92 St. Johns Street, Hayle, Cornwall
Shoreham	T. N. H. Dalton	5 Willow Close, Lancing, Sussex
Southampton	K. E. Powell	Pilot Office, Berth 37, Eastern Docks, Southampton, SO1 1AG
South Shields	T. A. Purvis	2 Parkside Crescent, Tynemouth, Northumberland
Sunderland	J. Patterson	c/o Sunderland Pilot Office, Old North Pier, Roker, Sunderland, Co. Durham
Taw and Torridge	V. W. Harris	Fernlea, Pitts Hill, Applodre, N. Devon
Teignmouth	A. C. Broom	6 Marine Terrace, Teignmouth, Devon
Trent	W. L. Smedley	257 Beverley Road, Kirkella, Nr. Hull, E. Yorks.
Wisbech	T. Harris	3 Baxter Close, Wisbech, Cambs.
Workington	M. Ditchburn	68 Loop Road North, Whitehaven, Cumberland
Yarmouth	G. M. Logie	71 Marine Parade, Gorleston-on-Sea, Norfolk