The New Buoyage System

Rear Admiral D. W. Haslam, O.B.E.
(*Hydrographer of the Navy*)

1. INTRODUCTION. Between April and about September 1977 almost all the present buoys in the southern North Sea, Dover Strait and eastern part of the English Channel will be changed and a completely new system introduced in an area much used by international shipping of all types. Why has this come about and how can the new system be recognized on charts and in the water? What are the most significant changes and where will the system be applicable? The answers to these questions are given in the Hydrographic Department's new publication *NP 735, IALA Maritime Buoyage System A, Edition 1, 1976*, which is now available from Admiralty chart agents. It should be studied carefully by all who go to sea or are concerned with marine operations in north-west European waters.

The object of this article is to try to bring home to all navigators and sailors the need to familiarize themselves thoroughly with the details of the IALA buoyage in order to react instinctively to the new system when it is encountered.

2. BACKGROUND. Although buoys have been used for many centuries, there had been no attempt to standardize their shapes, colours, top-marks or lights until the end of the nineteenth century. In 1889, a few maritime countries agreed to adopt some standardization based on the passage of a ship when travelling in the general direction of the main flood stream. Thus, when entering a harbour with the flood-tide, buoys which had to be left on the port side were marked with black, can buoys whilst those to be left on the starboard side were marked with red, conical buoys. This, however, conflicted with the accepted principle for the colours of shore lights which was that red lights would denote the fixed shore lights on the port side of a harbour. When, therefore, technology made it possible for lights to be fitted to floating buoys, some European countries fitted red lights to the black, port-hand buoys so as to conform with the shore lights, whilst, throughout North America, red lights were placed on the red, starboard-hand buoys.

To add to the confusion, this system, known as the Lateral system, depended on a knowledge of the direction of the main flood stream. This was simple enough when entering an estuary through a channel with clearly defined land features on either side, but when passing through channels in offshore areas, nodal points were often encountered where the flood streams met and the direction of buoyage had to be reversed in mid-channel.

Fortunately, the majority of mariners in those days were highly

professional seamen and navigators, who knew that buoys were liable to be washed away and that their positions could not therefore be entirely relied upon, despite the best endeavours of even the most highly qualified buoyage authorities. Navigators then used the buoys more as a guide and navigation was based on fixes on the chart using permanent, shore objects.

Nevertheless, various attempts were made to establish a single, world-wide buoyage system. All failed, including the one considered the most likely to succeed which was drawn up in 1936 under the auspices of the League of Nations. This used a Lateral system, still based on the not always obvious direction of the main flood tide, but with the port-hand buoys now painted red (with red or an even-number of white light flashes) and the starboard-hand buoys painted black (with an odd number of white light flashes). There was also a Cardinal system, which was to be used along coasts which were fringed with reefs or isolated dangers which would be marked by buoys and topmarks according to the quadrant of the true compass in which they were situated in relation to the danger which they marked; thus a buoy bearing from 315° (true) to 045° (true); through north, from an isolated danger would be known as a North buoy and would be a conical or a spar buoy, painted in black and white horizontal stripes, with a topmark in the form of a cone point upwards and showing a white light with an odd-number of flashes. A mariner could expect navigable water northwards of a North Cardinal buoy. The 1936 system allowed both the Lateral and Cardinal systems to be used in conjunction, but with special conical buoys (painted in either red and white or black and white diagonal stripes) to mark the position of change from one system to another. Unfortunately, World War II intervened before sufficient countries had ratified the 1936 system and after 1945 when buoyage systems were re-established in North-West Europe, there were wide differences in interpretation. Thus, today, a vessel proceeding from the Atlantic to the Baltic might encounter up to nine different systems and, world-wide, there are numerous different schemes in use. Moreover, the level of expertise displayed by watch-keeping seamen officers has been sadly reduced in some cases.

At present therefore there remain the following major discrepancies and dangers:

(a) The American continent and North-West Europe employ completely different systems with a red buoy left to starboard in America and to port in Europe.
(b) Even within areas accepting 'red to port', there are completely opposite meanings to certain basic topmarks and other symbols.
(c) In the Lateral system, the direction of the main flood stream is not always obvious and frequently changes in mid-channel, for example, near Dover, north of the Isle of Wight, and in the Menai Strait.

(d) Although the Lateral and Cardinal systems can be used in conjunction, the two systems are not always distinctive enough.

Perhaps even more important than any of these disadvantages, however, is the doubt and confusion relating to newly created or discovered dangers which have not yet been promulgated by Notice to Mariners and are not therefore shown on the charts. Although all the various systems are fully described in publications such as Sailing Directions, the Hydrographer's publication NP 100, *The Mariner's Handbook* and the International Hydrographic Office publications, the fact that the existing systems of buoyage are not always sufficiently understood was illustrated by the tragic series of disasters in the Dover Strait in early 1971.

Despite being marked by Trinity House under the existing system widely prescribed as the British system, the new wreckage of the large tanker *Texaco Caribbean* was quickly struck by the *Brandenburg*, which sank close to the boundary between the north-going flood stream in the Channel and the south-going flood stream in the southern North Sea and also close to the boundary between the British and French sectors of accepted buoyage responsibilities. A few weeks later, in spite of being marked by two manned light vessels and 14 green wreck buoys (whose position had been widely promulgated by radio and printed navigational warnings) the joint wreckage was narrowly avoided by several vessels which failed to understand (or ignored) the wreck markings and warning signals flashed by the light-vessels. Such vessels included a foreign major warship and eventually a ship, the *Niki*, ploughed into the wreckage before it could be dispersed and was herself sunk. A total of 51 lives was lost.

The only consolations from this sad series of events were that the system of promulgating radio navigation warnings was even further improved and, in June 1973, new terms of reference were given to the Technical Committee of the International Association of Lighthouse Authorities which had been studying various projects—including buoyage—for the previous eight years.

Although it can be argued that what was required was only a universally agreed system for marking 'new dangers' and firmer enforcement of regulations governing the competence of bridge personnel, the IALA Buoyage Committee under its chairman Captain John E. Bury, a senior Elder Brother of Trinity House, very sensibly and firmly decided that this was perhaps the last opportunity to get international agreement on standardization of buoyage. Frequent meetings were held by the Buoyage Committee and great pressure was brought to bear to try to achieve a single system. However, there are many thousands of buoys involved and the enormous expense and complications of change had to be taken fully into consideration.

A trial system of buoyage was laid in the Thames Estuary by Trinity House in 1974 to test the theory that a combined Cardinal and Lateral System was possible providing that white lights were eliminated from the

Lateral which would rely solely upon the colours red and green. More than 400 representatives of marine interests were taken to sea to inspect the system and invited to comment. Eighteen months later a further trial was carried out in the Baltic for the IALA Committee by the Federal Republic of Germany to test the chosen cardinal characters under service conditions.

During the Committee's discussions, it became clear that, whilst it seemed unlikely that countries using the red-to-starboard system would be able to change for at least the time being, there was very real support amongst the remaining countries for acceptance of the Buoyage Committee's System *A* or the red-to-port system.

3. THE NEW SYSTEM. In order to understand the basic principles of the new System *A*, one must study the diagrams and notes given in *NP 735* and as published by IALA, Trinity House and others including the booklet *Seaway Code*:—*A Guide for Small Boat Users* (2nd edition), issued by the Department of Trade, 1976. The following main changes should however be stressed.

As its full name implies, System *A* is a combination of the old Lateral and Cardinal systems but, in the case of the Lateral system, the connection with the direction of the main flood tide has been removed in offshore areas. Instead, a principle of a 'General Direction of Buoyage' has been adopted for a whole area; this is taken as following a clockwise direction around the major continental land masses. For North-West Europe, the direction of buoyage therefore follows the track taken by an inward bound vessel from the Mediterranean to the Baltic or North Cape. The direction will be described in Sailing Directions and, where doubt exists, it will be shown on relevant charts by a large arrow printed in magenta.

Around the United Kingdom and the Republic of Ireland, the new General Direction of Buoyage will be as shown in Fig. 1. It will be noted that the former direction of buoyage will be altered in certain areas, including the East coasts of England, Scotland, the Orkneys and the Shetlands. Confusion in the southern North Sea will therefore be avoided.

The local direction of buoyage will still be used in estuarine waters and continues to be the direction taken by a mariner when approaching a harbour, river estuary or other waterway from seaward. There will inevitably be areas, such as the line from North Foreland to Orfordness, where the general direction of buoyage gives way to the local direction.

System *A* applies to all fixed and floating marks except lighthouses, sector and leading lights, lightships and lighthouse (or very large navigation) buoys i.e., it includes most lighted and unlighted beacons (except leading marks) which will have the same shaped and coloured topmarks as buoys. Minor fixed shore lights, such as those used to mark ends of jetties, will be red or green depending on which side of the estuary or waterway they are situated. In British waters, in order to avoid confusion with the navigation lights of ships, such minor lights will, if fixed, usually be

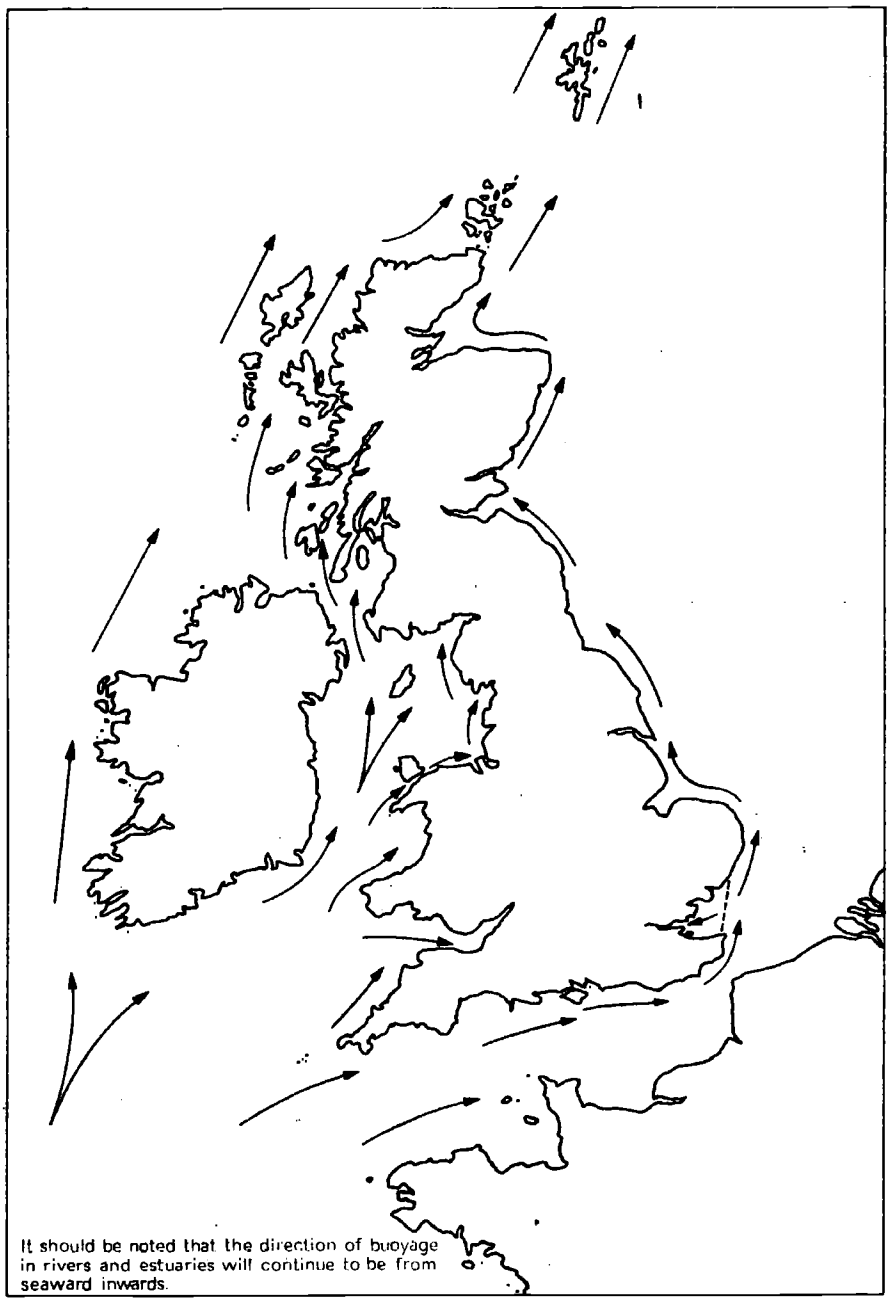

FIG. 1. Conventional buoyage direction

shown in pairs, disposed vertically; flashing or occulting, red or green, lights may also be used as appropriate to the side of the estuary or waterway.

The system of buoyage provides five types of marks which may be used in any combination:

(i) *Lateral marks*: to indicate the port and starboard hand of well defined channels.
(ii) *Cardinal marks*: to indicate that deeper water lies to the indicated direction relative to the mark i.e. N/E/S/W.
(iii) *Isolated danger marks*: to indicate isolated dangers of limited extent with navigable water all around them.
(iv) *Safe water marks*: to indicate that there is navigable water all around and under that position e.g. a mid-channel buoy.
(v) *Special marks*: to indicate special features referred to on charts or nautical documents e.g. spoil grounds, cable and exercise areas, prohibited anchorages &c.

Thus, there will no longer be special Wreck buoys nor will it always be possible to distinguish (without reference to charts or other documents) between spoil grounds, cable areas, military exercise areas, prohibited or other anchorage areas &c.—although some special marks may have letters to indicate their purpose.

By day, the significance of any mark depends on its colour, shape and topmark; by night, its light's colour and rhythm are significant. The relative simplicity of System *A* is one of its main assets. It is to be hoped, therefore, that the buoyage authorities of all nations concerned will rigorously exclude local variations on the essential features of the system, despite what may seem to be pressing reasons for unorthodox interpretation of the rules.

Lateral marks will now be:

(i) Port hand: Red (without stripes or bands). Can for either the buoy body or topmark, or both.
(ii) Starboard hand: Green (without stripes or bands) or, exceptionally, black. Conical for either the buoy body or topmark (point upwards) or both.

Where port or starboard hand Lateral marks do not rely on can or conical buoy shapes respectively for identification, i.e. if pillar or spar buoys are used, they should, wherever practicable, carry the appropriate topmarks.

Apart from the alteration from black to green for the starboard hand Lateral marks, perhaps the most important change in this part of System *A* is in the lights. The trials proved that the use of red and green coloured lights was now perfectly acceptable and so, by night, a port hand, Lateral mark will be identifiable by its red light and a starboard hand, Lateral mark by its green light. Any rhythm (i.e. quick flashing, flashing, long

flashing, group flashing, occulting, group occulting, isophase &c.) may be used since it is the colours red and green only which are significant and peculiar to Lateral marks.

Cardinal marks will all now be pillar or spar buoys, in combinations of black and yellow colours, with important black double-cone topmarks which are to be used whenever practicable and be as large as possible, with a clear separation between the cones. The four quadrants will be marked as shown in Fig. 2.

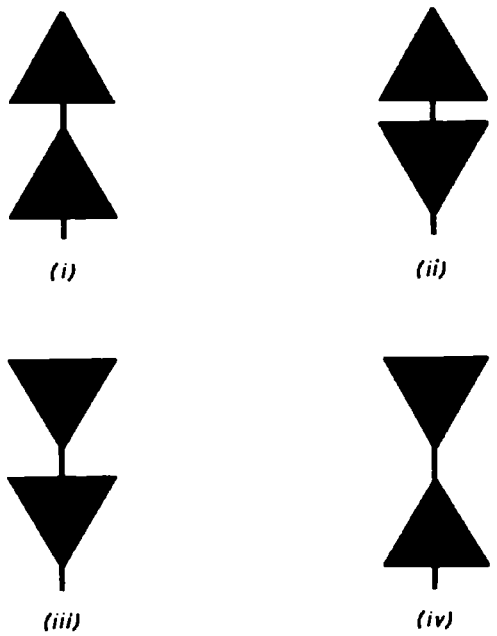

FIG. 2. Cardinal marks

(i) *North Cardinal mark* (i.e. a mariner should pass to the north of it). Black above yellow with two black cones, one over the other, point upwards (i.e. pointing northwards on charts).

(ii) *East Cardinal mark* (i.e. a mariner should pass to the east of it). Black with a single broad horizontal yellow band, with two black cones, base to base, one over the other.

(iii) *South Cardinal mark* (i.e. a mariner should pass to the south of it). Yellow above black (i.e. the opposite of a North mark) with two black cones, one above the other, point downwards (i.e. pointing to the south on charts).

(iv) *West Cardinal mark* (i.e. a mariner should pass to the west of it). Yellow with a single, broad, horizontal black band (i.e. the opposite of an East mark) with two black cones, one above the other, point to point.

It will be realized that these new characteristics represent a major

change from the old 1936 system and, by comparison with the Lateral marks, constitute a larger challenge both to those responsible for their maintenance and to those who will use them in navigation. Since they will be appearing for the first time in British waters, mariners accustomed only to the Lateral marks must memorize the colours of the Cardinal marks and the significance of their topmarks so that reaction to them is instinctive especially as these may be the marks most commonly used for New Dangers such as those which caused the whole new system to be adopted. Apart from the notes above about the topmarks, it should be noted that on the North, and South marks, the position of the black band indicates the cardinal point concerned i.e. it is at the top on the North mark and at the bottom on the South mark.

It is, however, when lighted that the most ingenious aspect of System *A* emerges. All Cardinal marks show a white light whose characteristics are based on a group of very quick or quick flashes which distinguish it first as a Cardinal mark and then indicate its quadrant. The distinguishing very quick or quick flashes are:

North: Uninterrupted
East: 3 flashes in a group (3 o'clock or E on a clockface)
South: 6 flashes in a group (6 o'clock or S on a clockface) followed by a long flash (at least 2 seconds duration), to avoid confusion with the 3 or 9 flashes of an East or West mark.
West: 9 flashes in a group (9 o'clock or W on a clockface).

The periods of the East, South and West mark rhythms are respectively 5, 10 and 10 seconds if very quick flashing and 10, 15 and 15 seconds if quick flashing. A quick flashing light flashes either 50 or 60 flashes per minute whereas a very quick flashing light flashes at a rate of either 100 or 120 flashes per minute. The choice of quick or very quick flashing lights enables two similar buoys, adjacent to each other, to be identified.

Isolated danger mark. The most important feature of this mark is its topmark which carries two black spheres, as large as possible, one above the other and clearly separated. The shape of the mark is not significant but, in the case of a buoy, this will be pillar or spar, painted black with one or more broad horizontal red bands. When lighted, a white light showing a group of two flashes will be used.

Although this could presumably be used to denote a wreck or New Danger which had navigable water all round it, the need to erect or moor the mark immediately on or above the danger makes this unlikely. It should be noted that, for the same reason, the charted position of such a mark cannot exactly denote the true position of the danger where this is shown by a sounding or symbol on the chart.

Safe Water Mark. To indicate that there is navigable water all round (and under) the mark, it will always be painted in red and white vertical stripes and consist of a spherical buoy, or a pillar or spar buoy with a single red sphere topmark. When lighted, it will exhibit a white light

either occulting or isophase or showing a single long flash (i.e. at least 2 seconds) every 10 seconds, so in contrast to flashing lights marking dangers, a relatively long period of light is associated with safe water.

Special Marks. Although not primarily intended to assist navigation, these marks may well be important since their usage includes traffic separation marks (where the use of conventional channel marking might cause confusion); a channel within a channel e.g. a channel for deep-draught vessels in a wide channel, itself marked by Lateral marks may be marked by yellow buoys of the appropriate shape; cable or outfall marks; spoil ground marks; military exercise zone marks; quarantine, prohibited or other anchorage area limits; Ocean Data Acquisition Systems (ODAS) i.e. buoys carrying oceanographic or meteorological data collecting systems.

Special Marks will always be yellow, sometimes with a single yellow X shape topmark and, when lighted, will show a yellow light. To avoid any possibility of confusion the character of the yellow light may not be the same as any character used for a white light. In practice this means that few yellow characters are available and the most commonly used ones will be the single flash and group flash (4). The shape of the mark is optional but must not conflict with marks of navigational importance e.g. an outfall buoy on the port side of a channel can be can-shaped but not conical since the latter might be mistaken for a starboard hand lateral mark.

Apart from the need to refer to the chart or other nautical documents in order to find out the significance of a Special Mark, System *A* introduces a yellow light for the first time in U.K. waters. Where a Special Mark is used by the responsible authority to meet exceptional circumstances, the purpose must be promulgated as soon as possible.

New Dangers. This term is used to describe any newly discovered hazard not yet indicated in navigational documents. This could be a natural feature, such as a new found rocky pinnacle or a shifting sandbank &c. or a man-made one such as a wreck. Such a hazard will be marked in accordance with the System *A* rules i.e. by either a Lateral or Cardinal mark. If it is considered especially critical, at least one of the marks used will be duplicated as soon as possible; in this case, the duplicated mark will be identical to its partner but may carry a Racon, coded W(·––), showing a signal length of 1 nautical mile on radar displays.

If lighted, New Danger marks will be as for the appropriate Lateral mark (i.e. red or green) or Cardinal mark (i.e. very quick flashing or quick flashing, white lights).

4. IMPLEMENTATION. After putting so much into devising and achieving agreement on such a comprehensive system, the IALA buoyage committee was naturally very keen to have System *A* adopted as quickly as possible. All who studied the scheme agreed on its lack of ambiguity when completely adopted throughout an area such as North-West Europe. It is obvious that there will be some problems during the actual transitional

phase, which should therefore be kept as short as possible. However, the IALA buoyage committee, as well as the main IALA Committee and the Imco Maritime Safety Committee agreed that, before starting the change, it was vital to allow sufficient time, not only for the education of all those who would encounter the new system but also for inclusion of the new details in nautical publications. Several meetings with representatives of international hydrographic offices took place and it was agreed that the introduction of Scheme *A* into North-West Europe should be carried out in 5 phases consisting of the April to August period of each year from 1977 to 1981.

Within each phase, the area in which all the marks are to be altered will be subdivided into sections and the relevant buoyage authorities will combine to complete the phase in sections, with advance notification being issued to mariners by radio navigational warnings which will list the sections completed and the sections being worked on at the time of the warning. At the time of writing, it is not known which system would be used within the phase 1 area should New Dangers arise during the transitional period. It will be vital that mariners are left in no doubt whatsoever well before any such event might occur.

The first phase will be from 18 April to September 1977 and will include the Dover Strait, southern North Sea and eastern English Channel as shown on Fig. 3. For Trinity House, this involves alterations to some 275 buoys, which will be changed at the rate of about 20 per day. At the same time, French, Belgian and Dutch light authorities and local port authorities will carry out their changes in a co-ordinated programme. Phase 1 involves some 2640 charted buoy symbols as well as some charted shore marks which will have to be changed.

In 1978, System *A* will be extended northwards in the North Sea to 57°N. and, by 1981, it is hoped that the whole of North-West Europe from the French/Spanish border to the north of U.S.S.R. will have been converted, with the possible exception of Finnish waters. Work is still progressing on System *B* which would apply to American waters where the Red to Starboard rule is still planned at present. This presents problems for a country such as U.S.S.R. which would not want to have one system for its Atlantic/Baltic coast and another for its Pacific coasts.

5. PROMULGATION BY HYDROGRAPHIC OFFICES. The decision to harmonize the many national buoyage schemes was greeted with mixed feelings by various hydrographic offices. Such a good standardization of buoyage systems would have presented an excellent opportunity to standardize the charting symbols and abbreviations internationally but, to get international agreement in the time available between acceptance by IALA of the final scheme (in April 1976) and the introduction of Phase 1 (in April 1977) was not practicable since Phase 1 alone involves the British Hydrographic Department, for example, in the preparation of 35 new editions plus 40 associated latticed charts in addition to its normal capacity to publish about 120 new editions world wide. This

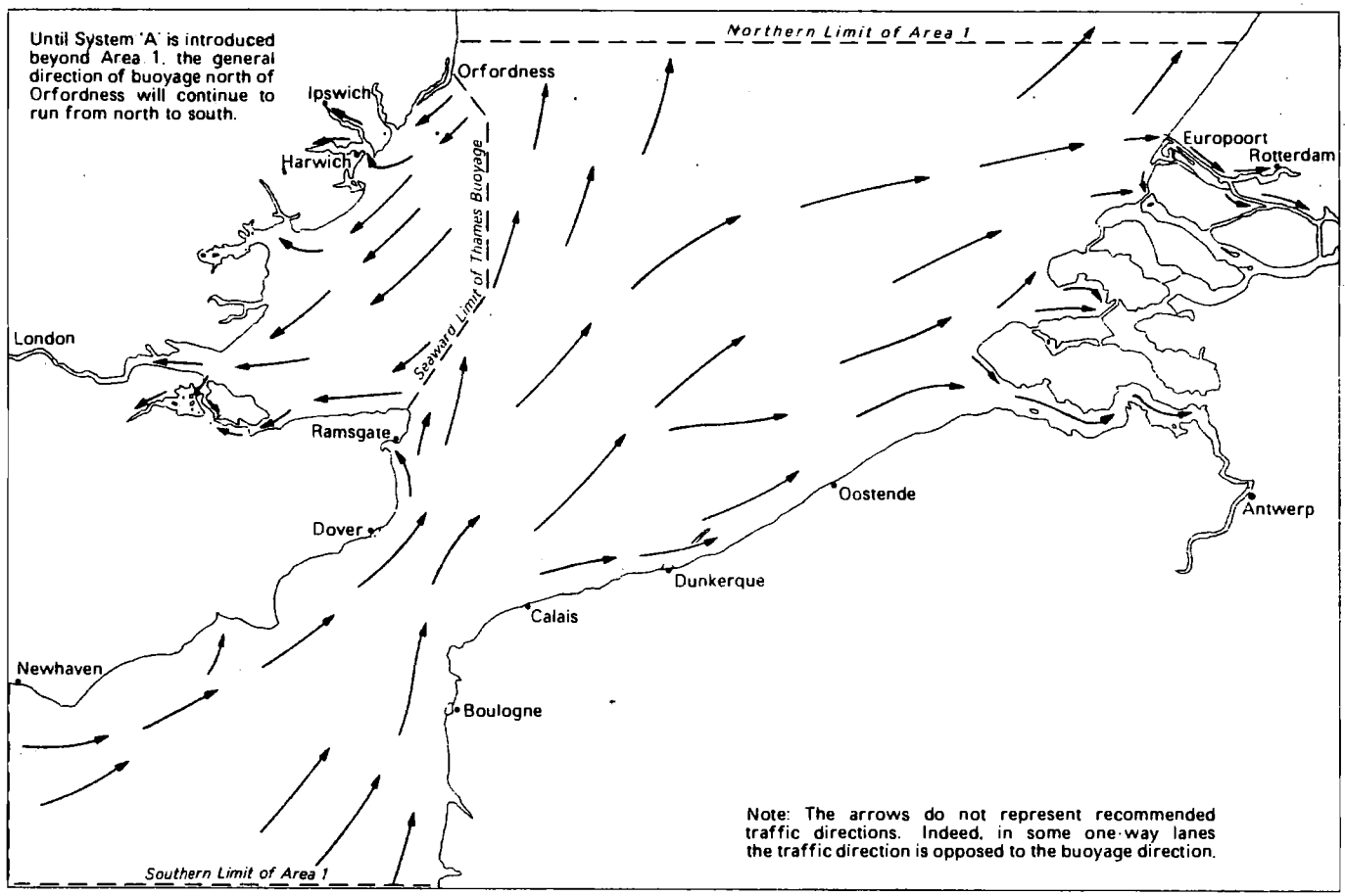

FIG. 3. Conventional direction of lateral buoyage Area 1

additional work load could only just be achieved if compilation work started as soon as the IALA detailed proposals were available.

Again, had only Phase 1 been involved, delay of other, lesser important world-wide work might have been accepted for a year but in Phases 1 to 5 in North-West Europe 722 British Admiralty charts will be affected, plus the associated latticed charts and there is a possibility that other regions of the world will adopt System *A* on completion of the North-West Europe phases. Other world-wide work could not be so long delayed but it is hoped that additional staff recruitments will be trained in order to make progressively faster adoption schemes possible.

As has been described, System *A* introduces several quite new features such as the General Direction of Buoyage, new light rhythms, new topmarks &c. Although international agreement could not be reached in the time available, informal discussions have taken place with those countries immediately affected and, as announced in *NM 1276/76*, a block correction to Chart 5011 has been issued both as new page L70 and as a separately available chartlet 5044 which gives details of System *A* as it will be shown on British Admiralty charts. It is hoped that several other hydrographic offices will agree to use the same symbols and treatment as the British plans described below.

In order to indicate to mariners that a lighted mark conforms to System *A* and not to an older system, the magenta light flares will be inserted with their points adjacent to the position circles at the *base* of buoy symbols and not from the *top* as hitherto; this will avoid the light flares obscuring the topmark symbols and, it is hoped, warn mariners in the same way as the use of buff land tint indicates a British metric chart. As this practice had been recommended earlier by the IHO, the distinction will not apply to charts published by those other hydrographic offices which had previously adopted the IHO recommendation.

Chart 5044 also shows that:

(i) The shading inside buoy symbols (to indicate the colour of buoys) will be discontinued. Black and green buoys and all spar buoys will be shown in solid black; an open symbol will be used for all other colours with the abbreviated description of the colour, or colours, inserted (as before) below the buoy symbol.

(ii) Topmarks will be charted more boldly.

(iii) New abbreviations were required for the new rhythms introduced for Cardinal marks. To save space, 'seconds' will be shown as 's' and not as 'sec'.

(iv) Radar reflector 'eyebrow' symbols will be discontinued although the use of radar reflectors is not affected by the new scheme. Most major buoys now have radar reflectors and the charted symbol tended to clutter the chart and obscure the topmark symbol.

(v) Light star symbols, especially when appearing on pillar buoys with double topmarks, make the whole buoy symbol too tall.

FIG. 3. Conventional direction of lateral buoyage Area 1

Moreover they can easily be confused with the cross topmark devised for Special Marks in the new system. The light stars will therefore be discontinued.

The transition period—when familiar seamarks are altered and charts are undergoing extensive amendments—will call for the utmost vigilance on the part of all mariners. As has been stated, work in each phase will be co-ordinated so that each section is converted systematically. For Phase 1, the British Hydrographic Department will shortly issue two new charts D.1406 and D.2451. These will be special charts based on 1406 'Dover and Calais to Orfordness and Scheveningen' and 2451 'Newhaven to Calais' and will show, in green, in addition to the present markings, the anticipated System *A* markings and the limits of the Sections in which co-ordinated changes will be made.

Amendments to all the individual charts affected will be promulgated through normal channels as appropriate i.e. by New Editions (where many changes are involved) or by Notice to Mariners block correction or Notice to Mariners (where only a limited amount of change is needed). Already, many Notice to Mariners have been issued in order to put Cautions on all the charts affected by Phase 1. In December 1976, a full list of all the new buoys to be established in Phase 1 will be published as an annex to a Preliminary Notice to Mariners so that, should circumstances require it, mariners will be in a position to hand-correct existing charts.

However, as far as possible, the New Editions of affected charts will be published (showing only System *A* markings) in time for those to be distributed world-wide before the change takes place. This will present a unique problem to mariners since, normally, a New Edition automatically cancels an existing chart. In this case, however, it will usually anticipate the changes and, until all the changes in Phase 1 affecting any chart have actually taken place, mariners will have to retain the old chart for reference to buoyage. There will invariably be periods when markings in many chart areas will be a combination of the old and the new systems and all mariners will have to exercise even greater caution than ever when navigating the difficult waters involved. They must ensure fullest use of the Radio Navigational Warning system which will be extensively used to advise on the latest state of the change over.

Sailing Directions and other publications such as NP 100 *The Mariner's Handbook* will be amended by supplements issued in due course but it will not be possible to give the details of all individual buoys.

6. CAUTION. It must also be constantly borne in mind that, for economic and other reasons, some authorities may have to make do with some existing marking equipment—including light-floats. Variations of the basic shapes may therefore be fairly common but, by day, the colours and topmarks should prevent ambiguity. In some areas, action anticipating the changes has already taken place in British waters. For example, green flashing lights (previously reserved for Wrecks) have been introduced on

some starboard hand Lateral buoys where the conventional direction of buoyage is not altered and some minor shore lights have been changed to two green, vertically disposed, fixed or green flashing lights instead of red lights. In a small but significant proportion of cases the buoyage authorities intend to move the buoys at the same time as changing their characteristics. Navigators who tend to rely too much on buoys to confirm position will have to be very alert to the possibility of a change in both the features of a buoy and its position. As Richard Hooker (quoted by Dr. Johnson in the preface to his *Dictionary of the English Language*) has said, 'Change is not made without inconvenience, even from worse to better'.

7. SUMMARY. System *A* combines the best features of the Lateral system with those of the more widely used Cardinal system, with very significant changes to both. Anybody who has travelled outside his own national system area will appreciate the ingenuity and relative simplicity of System *A* and the confusion regarding New Danger marks will be eliminated by an internationally standardized system or—at least—a reduction in the multiplicity of systems in use. But, if the change-over is not to cause a significant increase in New Dangers, everybody concerned will have to get to know all the details of System *A* in the comparatively short time available so that their instinctive reactions are to the new system and not their inbred instincts. It is also important that the new System *A* should not be allowed to follow the example of the 1936 standardization as a result of national and local buoyage authorities introducing local variations of interpretation of the rules however pressing economic or other reasons may be. The Hydrographic Department is doing its utmost to cater for the needs of mariners but all mariners are strongly recommended to obtain full details well in advance and to ensure that the charts which they use are the best available. It is hoped that other areas of the British world-wide cover will not suffer as a result of this unprogrammed but very heavy additional load.

Finally, whilst the above summary is thought to be correct at the time of writing, official instructions as to the implementation of IALA System *A* must be through the normal channels i.e. via IALA, Imco, Trinity House and other local and national buoyage authorities and as promulgated in nautical publications and warnings. The author is greatly indebted (as will be all mariners) to the invaluable work of two members of his staff in particular, Mr. F. A. Pielou and Mr. H. R. W. Halliwell, not only for assisting with the article but also for their protracted efforts to ensure the best possible chance of success of the new System *A* from the hydrographic aspect.