Overview of Shipping and Navigation history

The first ship was probably nothing more than a log used to cross a stream. That journey may have taken place 15,000 or more years ago and it was to be repeated many times in the centuries that followed. At some stage, two or more logs were fastened together to form a raft. A log was hollowed out to form a boat and paddles and oars were invented to propel it.

Later, sails were introduced- the first illustrations of sailing ships are from Egypt, and go back to around 5,000 BC - and seafarers began to venture away from rivers into the sea. Probably the first ones to do so were fishermen, who had discovered that there were more fish in the sea than in any river.

Others went in search of new lands and different peoples with whom they could trade. At first they kept to the coastline, moving along it slowly and fearfully, for by then they would have learnt that the sea is dangerous and capricious and can turn from calm to storm within a few hours. According to one story, in 609 BC a Phoenician ship left Suez, intending to keep the coast to starboard, and four years later arrived back in Egypt, having sailed right round Africa. But eventually curiosity triumphed over timidity and at some point seafarers set out for the horizon and kept going until, behind them, the familiar coast had disappeared.

Despite the uncertainties and dangers involved, it soon became apparent that trading by sea had advantages over trading by land. Land traders had mountains ranges and deserts to contend with and had to go miles out of their way to avoid them: ships could go more or less in straight lines. And ships could carry more goods more cheaply than horses and camels.

Move forward a few thousand years, and ships and seafarers had made the world grow smaller and less mysterious. The Polynesians had explored the Pacific, Norsemen had taken advantage of a change in climate to cross the Atlantic and discover Greenland and Labrador. Later the Portuguese rounded the tip of Africa and found a new route to the Spice Islands of Asia and Christopher Columbus tried to do the same by going in the opposite direction and found America instead.

Yet the technology of the ships themselves evolved only slowly. One of Vasco da Gama's mariners in 1498 would have adapted very quickly to life on a clipper ship in the 1860s. Columbus and other explorers of the period used square-rigged ships, which experience showed to be the best arrangement for long ocean voyages. The large sailing ships built at the end of the 19th century, more than 500 years later, still used the same rig. The sailing ships still used in the Indian Ocean and Asia are built to designs established centuries ago and retained ever since, because they work.

Even the Industrial Revolution of the 18th and 19th centuries took a long time to affect shipping. By the end of the 19th century steel was being used instead of wood for some ships, but the change was gradual. Steam was used at sea for the first time in the early 19th century, but did not become widespread for several decades. Coal costs money, while the wind is free. And coal also took up space that could otherwise be used for cargo.

Other changes were equally slow. The sun and stars remained the keys to maritime navigation for thousands of years. The compass was first used in European ships in the 12th century and is still essential to navigation today. Nautical charts are still based on the projection developed by Gerard Mercator in 1569. It was not until the invention of radar that the shipping industry discovered a better way of detecting danger ahead than the human eye: it was a lookout, in the crow's nest on top of a mast who told Columbus that land was in sight - and another lookout on a mast who saw, too late, the iceberg that sank the **Titanic.**

Although shipping was slow to change, the changes brought about by shipping were enormous. By the end of the 19th century vast areas of the North American plains had been turned into wheat fields: ships could carry cargoes so cheaply that it was possible to take wheat from Saskatchewan or Nebraska to Europe and sell it for less than it cost the local farmers to grow it. In Australia and New Zealand sheep were reared and their meat and wool was shipped north. Phosphates and nitrates from the deserts of northern Chile found markets in Europe. Tea was supplied by China and India. South Wales exported coal. The need for kerosene to light the lamps of city dwellers led to the growth of a new trade in oil. And the cities of the world, which bought all these goods, paid for them in manufactured goods, the bulk of which were sent to their foreign buyers in ships.

By the beginning of the 20th century, the prosperity of millions of people - entire countries, in fact - depended on markets that lay thousands of miles away, often on the other side of the world. Their ability to supply these markets depended primarily on ships and the sea.

Shipping evolved slowly, but one factor has never changed at all - the danger. The first fishermen, the earliest seafarers, knew - or soon learned - that theirs was a dangerous occupation. The ocean was vast and its moods unpredictable. Storms could last for days, only to be followed by calms which left sailing ships unable to move at all. A seafarer setting off on a voyage to the other side of the world could expect to be away from home for years rather than months and during that time would have to contend not only with storm and tempest, fierce currents and uncharted reefs, but with diseases like scurvy, which claimed thousands of lives, because they were scarcely understood.

Danger was so much a part of life at sea that it became taken for granted. Anyone who went to sea, it was assumed, knew what to expect - and therefore could expect little sympathy when it happened. On the night of 25 October, 1859, a storm over the British Isles led to 195 ships being wrecked, with the loss of 685 lives, 459 of

them on the passenger ship **Royal Charter.** Before the storm finally subsided on 9 November a total of 325 ships had been destroyed and 748 people had died.

Not everyone was indifferent to safety. Insurance companies which were set up to insure ships and their cargoes naturally wanted to make sure that the ships were properly built and so classification societies were established, with their own rules and regulations. But their purpose was to cover the value of the ship and its contents, not to ensure the safety of the crew members, who risked their lives every time they went to sea.

By the late 19th century attitudes were changing. It was recognized that more needed to be done to improve safety (again the chief motive was financial rather than humanitarian) and thatinternational co-operation could be helpful in some cases. The first agreement on regulations to prevent collisions at sea was adopted by Britain and France in 1863 and later ratified by most other maritime nations of the day.

The plight of the seafarer was left to humanitarians (their fate was not regarded as a commercial matter) and attempts to improve conditions were often condemned as a gross intrusion into the rights of businessmen to operate their companies as they saw fit. The work of philanthropists such as Samuel Plimsoll in the United Kingdom helped to awaken public interest and led to political action to improve conditions at sea, but his crusade was national in scope rather than international. In most of the world, conditions remained as bad as ever.

The **Titanic** disaster probably had a bigger impact on maritime safety than any other event, partly because it involved the world's largest and newest passenger ship, partly because of the scale of disaster - more than 1,500 victims - and partly because so many of them were rich and famous. Inquiries soon established that the owners had deliberately reduced the planned number of lifeboats because they would have occupied deck space which the First Class passengers might have wanted to use for their morning stroll.

The disaster raised questions about the wisdom of allowing individual countries to set their own safety standards, for, as in the case of the **Titanic,** there was always the danger that safety would be sacrificed for commercial reasons. In 1914, responding to the international outcry that resulted from the disaster, the British Government convened a conference that adopted the first International Convention for the Safety of Life at Sea (SOLAS): the title is significant, because it was almost the first time in shipping that the protection of human life rather than property was made a priority.

The original SOLAS Convention was important not only for what it contained but for what it represented - an agreement by the shipping nations to meet and agree on measures to improve shipping safety at the international level. Although the treaty did not enter into force because of the outbreak of the First World War, a new version was adopted in 1929 and other important treaties followed, such as the Load Line Convention of 1931. This was the period of the League of Nations and there was some talk about setting up a permanent international body to regulate shipping. Treaties like SOLAS were important and generally welcomed, but they only came about if a government took the initiative and called a conference. Usually governments had other matters on their minds and by the late 1930s they were preoccupied with the growing inevitability of another world war.

When the Second World War came to an end in 1945, there was a general determination that such a tragedy should never happen again. One result was the creation of the United Nations. Apart from the General Assembly in New York, the UN system involved the creation of various specialized agencies dealing with specific subjects, such as food and agriculture, education, science and culture, health, civil aviation and other matters. In 1948 an agency was created to deal with shipping: the International Maritime Organization.

IMO was one of the last UN agencies to be created in the immediate post-war period and it took another ten years for the IMO Convention to receive enough acceptances to enter into force. The main reason was the suspicion of some Governments that the new Organization would interfere in commercial shipping activities to the detriment of their own shipping interests. The original mandate of IMO, as described in the articles of the IMO Convention, was indeed very wide, but in practice when the new Organization came into existence in 1959, it concentrated on purely technical issues, the most important of which was safety.

This has undoubtedly proved to be one of IMO's greatest strengths. By confining itself to technical issues, the Organization has been able to avoid disputes over commercial and economic issues which would undoubtedly have impinged on its work in the safety field and damaged its credibility as a forum for the maritime world as a whole. And, as experience was to prove, there was more than enough work for IMO to do, for the shipping industry, which had evolved only slowly for thousands of years, was already embarking on a period of radical change.

The changing world of shipping

In 1948, the year the IMO Convention was adopted, shipping was still recovering from the war. The world's biggest fleet was operated by the United States, but much of its tonnage was built specifically for wartime use and was already laid up. The British fleet, traditionally the world's biggest, was in second place and it seemed likely that it would soon resume its leading role.

The ships themselves consisted mainly of pre-war tonnage together with others built specially for the war, including thousands of Liberty ships built in the United States as part of the war effort. They were welded ships (most ships of that time were rivetted) built in sections in different places and then assembled at the shipyard. By means of this process, a ship could be constructed in a matter of days rather than weeks. The typical oil tanker of the period was the T2 design, another wartime production.

The availability of cheap ships and growing international trade resulted in numerous new shipping companies being formed. Trade was growing rapidly as the world recovered from the war. The fastest growing economy was that of Japan, leading to new trading patterns being established: Japan had few natural resources of its own and so had to import almost all its energy and raw materials. In return, it was soon exporting ever growing quantities of manufactured goods.

To meet this demand, shipowners were soon looking for new tonnage. To take advantage of economies of scale, ships became bigger. This applied particularly to ships such as tankers and bulk carriers. The value of their cargoes was low in relation to their density and so there was little incentive to get the cargo to its destination quickly, especially as that could only be done by adding greatly to the expense involved. The highest value cargo of all consisted of people, but by the late 1950s most of them were travelling between the continents by aircraft. There was little reason, therefore, for shipowners to construct new ocean liners to replace veterans like the **Queen Mary** and **Queen Elizabeth,** although these continued to operate on the North Atlantic until the 1960s.

Speed was, however, a bonus in some trades. On short-sea routes the ability to load and discharge cargoes quickly was as important as speed across the water and this led to the development of what became known as roll-on/roll-off ships, or ro-ros. Train-carrying ships had already been developed, and ro-ro design was also influenced by the landing craft built during the Second World War.

Another new idea was destined to revolutionize the carriage of cargoes on land as well as at sea. This was the freight container. The idea - which was first developed in the United States in the 1950s - was to pack cargoes into rectangular metal boxes which could be transported by road, rail or ship. Traditional cargoes took days to load and unload and loading was in itself a complex business: get it wrong and hours or days could be added to a ship's turn-round time. Get it even more wrong and the ship's stability could be jeopardized. But containers could be loaded and unloaded in hours. That meant that the ship could be on her way again much more quickly than before and could carry out more voyages during the course of a year. A bonus was that containers offered greater protection against theft, one of the great, seemingly insoluble problems of the shipping industry.

Containerized cargoes tended to be high in value and therefore it was economically worthwhile to transport them as quickly as possible. Container ships were designed with speed in mind, with long hulls and flared bows and some were fitted with gas turbine engines, which enabled higher speeds to be achieved than steam or diesel engines, but at a much higher cost in fuel. On short sea routes especially, new high-speed craft were being introduced, one of the most revolutionary being the air-cushioned craft, or hovercraft. Conventional displacement ships push their way through the water: hovercraft ride over it on a cushion of air, enabling them to travel at much faster speeds. The idea of keeping the ship's hull out of the water led to the development of hydrofoils and catamarans.

Developments in technology were not the only influences on shipping. Politics sometimes had an even greater impact, as in the late 1960s, when problems in the Middle East led to the closure of the Suez Canal. Until then, ships had usually been designed with the Canal in mind. It was not regarded as economic to build ships which could not pass through the Canal, because alternative routes, round the Cape of Good Hope, for example, added many days and additional costs to the journey. But when the Canal closed, these arguments no longer applied and shipowners were soon ordering far larger vessels than anything contemplated before. This applied especially to tankers, many of which operated between the oilfields of the Persian Gulf and the industrial markets of Europe and, increasingly, North America. In 1965 a tanker of 100,000 deadweight tons was considered to be a giant: ten years later ships of five times that size were in existence and million tonners were being talked of. Bulk carriers also increased steadily in size and the economic gains made in building ever-larger ships, such as VLCCs (or Very Large Crude Carriers, as the new giant tankers were called), still proved to be substantial, even when the Suez Canal re-opened.

The increasingly sophisticated demands of a rapidly evolving world led to numerous new ship designs being introduced. Booming demand for motor vehicles led to the construction of specialized car carriers. The manufacture and export of petroleum products led to the construction of specialized product tankers. Petroleum and natural gas had at first been regarded as a waste product of the oil industry. Technological advances enabled the gases to be converted into liquids (by freezing) and then transported in special ships.

To handle these new ships, new ports had to be constructed. Tankers, bulk carriers and even container ships were too large for the traditional, city-centre ports. New terminals had to be built, usually on greenfield sites miles down river from the city. The terminals themselves were spacious, highly technical and employed far fewer people than the traditional docks. One result was that some traditional ports lost business to new centres because they could not be adapted to the new technologies, or were too far from the new markets that were emerging.

The equipment on ships underwent equally radical changes. Perhaps the most important changes of all occurred in the communications field. In the early years of the 20th century the invention of radio helped to transform communications at sea. Early developments, such as the telegraph and telephone, were of no use to ships because they involved transmitting messages by means of wires and cables. But radio dispensed with these and was quickly adapted for use at sea. The Morse Code, first used to send a maritime distress message at the end of the last century, was still the basic means of communication at sea in the second half of the 20th century.

In the 1960s, however, the first space satellites were sent into orbit and their advantages to shipping were immediately recognized. Maritime radio at that time consisted of medium wave, which had a range of around 200 miles and used the Morse Code (it could not transmit the human voice) and high frequency, which enabled voice messages to be transmitted but over a much shorter range (up to 25 miles). This meant that a ship in distress in the middle of the ocean could only send out a distress message by Morse Code (which in turn could only be properly used by a trained operator) and hope that another ship would be near enough to hear it. The quality of the messages themselves could be affected by factors such as the weather.

Satellites enabled almost all of these problems to be solved. Messages could be sent from the ship to anywhere on land (or sea) via a satellite designed for the purpose. All the caller had to do was pick up a telephone on board the ship, dial a number, and ring any number in the world. When it came to sending out distress calls, just one push of a button was all that was required.

The technical innovations of the late 20th century meant that shipping changed more than at any time in history. Many of these developments offered great benefits to the industry, its employees and its customers. But, like most innovations, some involved risks. It was the task of the International Maritime Organization to reduce these risks and, where possible, to eliminate them, but without hindering the process of change itself.

IMO's role

IMO's role as primarily a technical organization was underlined by the fact that the first major task allocated to it was to adopt a new version of the SOLAS Convention. The Convention then in force was adopted in 1948, the same year as the IMO Convention itself, and it had always been intended that IMO would take over responsibility for it when the Organization came into being.By 1960, the 1948 Convention was badly out of date, and an IMO conference adopted a new version, which entered into force five years later.

IMO was also made responsible for dealing with a growing problem that was not even recognized in 1948 - marine pollution. Although no reference was made to pollution in the IMO Convention, by 1954 it was serious enough for the United Kingdom to call an international conference which adopted the International Convention for the Prevention of Pollution of the Sea by Oil, which became known as the OILPOL Convention. The conference agreed that IMO would assume responsibilities for the convention as soon as the IMO Convention entered into force.

In 1962, IMO arranged a conference which adopted a number of amendments to the OILPOL Convention. At that stage marine pollution from ships was seen as being limited to oil pollution - and that meant operational pollution. Tankers had to clean out their cargo tanks before taking on fresh cargo. This was done by washing the tank sides with water and then dumping the resulting slops into the sea. Bilge wastes from ships' engine rooms were disposed of in the same way. All that the 1962 amendments did was to make it illegal to dump oily wastes into the sea within 50 miles of land and to introduce special areas where stricter limits applied. No attempt was made to restrict the amount of wastes that could be dumped into the sea, because at that time no alternative technology existed. And accidental pollution was not considered at all, mainly because there had never been a major oil spill.

The Organization's mandate was broadened in other ways. In 1965, IMO adopted the Convention on Facilitation of International Maritime Traffic, a treaty designed to reduce the amount of red tape which made life so difficult for shipowners and masters. In 1969 IMO was called on to tackle what had always been regarded as an insoluble problem - the measurement of a ship's tonnage. As far as merchant shipping is concerned, tonnage has nothing to do with weight: it is a way of measuring the ship's cubic capacity (and hence cargo carrying ability).

Although existing systems could all be traced back to principles enunciated by George Moorsom of the British Board of Trade in 1854, by the 1960s these had been modified by different countries and even canal authorities to such an extent that there was no generally accepted way of measuring tonnage. Identical sister ships might have different tonnages simply because they flew different flags. This was important because the application of safety standards, canal and port charges, as well as taxes, were based on tonnage.

The creation of IMO and its success in adopting the 1960 SOLAS Convention meant that other existing agreements could be handed over to the new Organizations. This included the 1931 Simla Rules, a treaty designed to improve the safety of ships carrying religious pilgrims, mostly in the Indian Ocean and adjacent sea areas. In 1971, IMO adopted the Special Trade Passenger Ships Agreement, which superseded the Simla Rules.

Other measures adopted during this period included the International Maritime Dangerous Goods (IMDG) Code, a massive document listing thousands of goods which were carried by sea and could be regarded as dangerous for some reason or other. This document is so important (it has been estimated that up to 50% of the goods carried at sea can be described as dangerous) that it has been amended on no fewer than 29 occasions since being adopted.

Many of these measures could be regarded as fairly routine. But it was also shown during the 1960s that one of IMO's most useful and important functions was in tackling emergencies. In the middle of the decade there were a number of serious fires on board ships, one of them being on the passenger ship **Lakonia,** in which 128 people were killed. IMO was asked to amend SOLAS to improve fire protection on ships and this was done in 1966.

Another problem involved the carriage of grain at sea. One of the great dangers in carrying grain in bulk is that the cargo tends to settle during the course of the voyage, leaving voids at the top of the hold. As the ship pitches and rolls, these empty spaces allow the cargo to move and can ultimately result in the cargo shifting to one side, causing the ship to list. In very bad cases the list can cause the ship to capsize.

The 1960 rules were supposed to correct this problem, but experience gained after the Convention entered into force in 1965, showed that they had failed to do so. New rules were introduced, which did solve the problem, and the Convention was duly amended.

IMO's biggest challenge, however, came in 1967, when the 130,000 deadweight ton tanker **Torrey Canyon** ran aground off the coast of Cornwall in South West England and spilled her entire cargo of crude oil into the sea. It was the world's first major oil spill and the British Government soon found itself under immense pressure to take action. Its response was to turn to IMO.

Once again, the fact that IMO existed as a permanent forum, proved to be a major benefit. A plan of action was agreed upon and during the next few years was put into effect. Surprisingly, perhaps, much of IMO's work in the immediate post-**Torrey Canyon** period involved legal matters. The disaster had shown that there was no internationally-agreed means of responding to accidents that had environmental implications, nor for enabling compensation to be paid. IMO adopted a convention enabling a Government to take action if an accident in international waters threatened its coastline with pollution. IMO also developed a two-tier system for compensating victims of pollution.

The first stage would require the shipowner to pay compensation up to an agreed limit, which would depend upon the size of the ship involved. Once this limit was passed, further compensation would be provided by means of a Fund made up of contributions from oil importers. Significantly, the Legal Committee established to deal with these issues was kept in being after the crisis had passed and eventually became a permanent body, recognized by an amendment to the IMO Convention.

From this point onwards, the protection of the marine environment became a major objective for IMO, second only to its work in improving marine safety. But it was an indication of the state of technology at the time that the biggest change made to the OILPOL Convention after the accident was designed to minimize operational rather than accidental pollution. This legalized the use of what was known as "load on top", a way of reducing the amount of wastes resulting from tank cleaning operations.

The **Torrey Canyon** disaster occurred at a time when awareness of the environment as a whole was developing rapidly, an evolution that was to culminate in the 1972 Stockholmconference on the Environment, organized by the United Nations. In the same year the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the London Convention) was adopted at a conference called by the United Kingdom. It was designed to control and where possible to prevent the dumping into the sea of waste materials generated on land. Again, IMO was made responsible for the Convention when it entered into force in 1978.

The culmination of this period came in 1973 with the adoption of the International Convention for the Prevention of Pollution from Ships (MARPOL), an ambitious attempt to tackle not only oil pollution, but pollution from chemicals, substances carried in packaged form, sewage and garbage. Annex I of the Convention deals with oil pollution and contained measures designed to limit accidental as well as operational pollution. The sub-committee established to deal with these and other environmental issues eventually became the Marine Environment Protection Committee (MEPC).

Tacit acceptance

There was one problem that made it difficult for IMO to keep shipping regulations as topical as its Member States needed and this was the procedure used for amending conventions. Basically this required Parties to a convention to signify their acceptance of an amendment by submitting an appropriate legal instrument to the Organization. This usually involved some form of parliamentary procedure by the Government concerned, which could take years, depending upon the interest the Government had in maritime matters and its general order of priorities.

Amendments also entered into force (for the Governments which accepted them) only after being ratified by a specified number of Parties, usually two-thirds. This was not too difficult to achieve when a Convention had been accepted by a small number of countries. But by the early 1970s IMO's membership was beginning to grow quickly and the number of Parties to Conventions was also increasing. That meant that the two-thirds target was also rising all the time and it became clear that many amendments, including those to SOLAS, the most important treaty of all, would probably never enter into force. If they ever did do so, they would be out of date and more of a hindrance to maritime safety than a blessing.

This had serious implications not only for IMO but the shipping industry as a whole. The industry was changing so rapidly that it was essential that none of the changes made should jeopardize safety. The best way of ensuring this was at the international level. Global agreement, through IMO, would prevent national, often conflicting, standards from being introduced, a process which would ultimately lead to regulatory anarchy in the industry. But if IMO came to be seen as an Organization which could only adopt treaties that became out of date within a few years, the maritime nations would soon lose faith in it and start to look for alternative solutions. If they did so, then chaos seemed inevitable.

The solution was the introduction of what became known as "tacit acceptance". Instead of requiring Parties to signify their acceptance of an amendments by taking parliamentary action and submitting a formal treaty instrument to IMO, the new procedure assumed that any amendment adopted would enter into force on a specified date, unless it was rejected in the meantime by a fixed number of Parties (usually one-third). Tacit acceptance had great advantages not just for Governments but for the shipping industry as a whole.

One was that the date of entry into force of the amendment was known from the date it was adopted. This greatly aided planning by Governments and the industry. The new amendment procedure was incorporated into the Convention for the Prevention of Collisions at Sea, 1972 and most subsequent technical Conventions, including a new version of SOLAS in 1974. It was necessary to adopt a new Convention because it was clear that the amendments adopted to the 1960 version would never enter into force under positive acceptance. The 1974 Convention simply incorporated these and some other amendments and, of course, the tacit acceptance procedure.

The switch to tacit acceptance as a means of amending IMO's technical Conventions was made possible because of the way IMO had adapted to the changing political and economic climate within the shipping world. In 1959, when it met for the first time, IMO was sometimes referred to as a "rich man's club", dominated by a handful of wealthy

industrialized nations located in the northern hemisphere. The constitution of IMO seemed to confirm this accusation.

Although the Assembly, the main governing body, was open to all Member States, each of whom had only one vote, the Council, which exercised important budgetary and other functions, was elected. Of the 18 seats originally provided, six were reserved for Members with the largest interest in shipping, six for Members with the largest interest in maritime trade, and the remaining six for all the others (category c). Geographical distribution was supposed to be taken into account when they were elected, the aim being to ensure that all regions of the world were represented.

Even the Maritime Safety Committee, the Organization's technical arm, was elected and again the large shipowning and trading nations were given most seats. But this began to change. First, the MSC and its sub-committees (and all the committees created later) were opened to all Member States. Then the Membership of the Council was increased, with the biggest increases being made in category C. Membership currently stands at 32 and the latest amendments will increase the Council to 40.

Just as important as these legal changes was the tradition of consensus that soon developed within IMO. In practice, all major decisions are made unanimously. Votes are held only occasionally and then only as a last resort, the reason being that a vote, however overwhelming, always leaves a minority feeling dissatisfied. Consensus is possible within IMO because the Organization deals mainly with technical issues. There is little political or economic advantage to be gained, for example, in arguing about the length of a lifeboat.

The consensus system means that every IMO Member State has the opportunity to put forward its point of view, knowing that it will be listened too. If it has problems with a particular proposal, they will be discussed and eventually a solution will be found. In practice, no amendments adopted under the tacit acceptance procedure have ever been rejected and all have entered into force on the date agreed.

The effectiveness of this approach can be seen in the way the IMO Membership has grown. Only 36 countries attended the 1948 conference in Geneva (four of them as observers) and only 51 attended the first IMO Assembly in January 1959 (including 21 observers). But since then the Organization has expanded steadily and it now has 156 Member States. Perhaps evenmore significant, is the overwhelming support that has been given to IMO's technical measures. Treaties such as SOLAS have not only been adopted unanimously but have subsequently been ratified by well over 130 countries and now apply to more than 98% of world merchant shipping tonnage.

By adapting its procedures to meet changing conditions and the requirements of an evolving Membership, IMO was able to meet the technical challenges that began to emerge in the 1970s and later. One of the biggest of these was the growing threat of marine pollution, especially oil pollution. The boom in the oil trade in the early 1970s came to an abrupt end in the middle of the decade and for years afterwards, tanker supply remained higher than demand. The danger was that tanker owners, desperate for business, would seek to cut financial corners by economizing on safety.

Conferences organized by IMO helped to minimize this threat. Measures were introduced requiring tankers to separate their tanks into those used for cargo and those used only for water ballast. Since this reduced the amount of oily wastes produced, pollution was reduced. The fact that tankers would carry less oil was a benefit, since it meant that more tankers were required. IMO also introduced measures to minimize the effects of accidental pollution, by requiring that segregated ballast tanks be located in such a way as to give maximum protection to the cargo tanks in the event of a collision or grounding. Later amendments have made it necessary for tankers to be built with double hulls, or an alternative design approved by IMO.

The impact of IMO's measures is difficult to assess, since it is impossible to measure marine pollution on a global scale with any accuracy. But studies by the National Academy of Sciences in the United States indicate that oil pollution from ships has been reduced by as much as 60% during the last twenty-five years.

The 1972 Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter (the London Convention or LC) was the first global attempt to control the dumping of land-generated wastes into the sea. Over the years, attitudes to this practice changed radically. In the late 1970s, for example, some Governments believed that highly toxic wastes could be safely disposed of by being incinerated on purpose-built ships and the LC was amended accordingly.

Within a decade this solution was being called into question and a resolution adopted by Contracting Parties to the Convention effectively banned it in 1993. The use of the seas as a dump for some low-level radioactive waste materials was originally sanctioned by the Convention, but growing opposition to this practice brought it to an end in 1993. In 1996 the LC was completely re-written by means of a Protocol which adopted a much harder line than the 1972 Convention. Instead of merely controlling dumping, the 1996 version seeks to ban it completely, except in certain, carefully defined cases. The new version also contains what has been termed the "precautionary approach", which says that dumping should never take place until it can be proved conclusively that it is not harmful. In the past, the onus of proof had tended to lie on the opponents of dumping, who had to prove that it was dangerous.

The evolution of the LC demonstrates IMO's ability to cope with gradually changing attitudes. But the Organization was frequently called upon to respond to emergencies. The**Torrey Canyon** has already been referred to. But other accidents which have had a significant impact on IMO's work programme include the **Argo Merchant** (which led to a conference in 1978 that resulted in major changes being made to MARPOL and SOLAS), the **Amoco Cadiz** in 1978, the **Herald of Free Enterprise** in 1987, the **Exxon Valdez** in 1989, a spate of bulk carrier accidents in the early 1990s and the **Estonia** in 1994.

The way IMO has responded to these and other accidents has sometimes given the impression that IMO only acts when something goes wrong. This is not true, but there is no doubt that a disaster does provide an incentive for action (especially when Governments come under pressure as a result). However, this would happen whether IMO existed or not. The important point is that IMO's record proves that it can cope with emergencies quickly and effectively and the measures it adopts are applied globally rather than nationally or regionally.

Emergencies and the way IMO has responded have tended to attract more attention than the Organization's routine work, yet this has in many ways been more important to the shipping industry, because it has enabled change to be accommodated without creating divisions. And the changes that have taken place since IMO's first meeting in 1959 have been remarkable. They are reflected in the conventions, protocols and amendments adopted by IMO during that period but a simpler indication is given in the titles of some of the codes of practice that have been developed during the same period.

IMO has developed codes concerning the safety of fishermen and fishing vessels; the design construction and equipment of small fishing vessels, bulk chemicals; liquefied gases; offshore supply vessels; diving systems; dynamically supported craft; mobile offshore drilling units; special purpose ships; nuclear merchant ships; and high-speed craft. Many of these ship types did not exist when the IMO Convention was adopted in 1948.

Another major achievement by IMO concerned the revolution in maritime communications that followed the launch of the first space satellites. One of IMO's first initiatives resulted in the creation of the International Mobile Satellite Organization (Inmarsat) in 1976. IMO was interested in creating an organization that would provide free distress communications to shipping. Inmarsat pays for this service out of the profits it makes by providing other services to its users.

The establishment of Inmarsat was followed by the development of the Global Maritime Distress and Safety System (GMDSS), a service to shipping which was intended to combine established and new techniques and create a system that would ensure that a distress call from a ship would always be heard (on land, as well as by other ships) and that distress messages would be sent automatically, even if the ship was overwhelmed by a sudden disaster.

To improve the chances of survival following an accident at sea, IMO adopted the International Convention on Maritime Search and Rescue, 1979. This Convention divides theoceans into a number of search and rescue areas for which individual nations accept operational responsibility. The aim of the Convention is to ensure that the response to an emergency at sea will be the same no matter where it occurs. IMO had earlier developed manuals containing guidance in carrying out search and rescue operations. The Convention was revised in 1998 and a new manual adopted (the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual).

The SAR Convention and the GMDSS should be seen as complementary - each is essential to the other. They illustrate the way IMO's Member States have been able to use the Organization to make long-term arrangements, as well as responding to short-term crises. IMO began to consider the use of satellites for maritime communications in the late 1960s, yet the GMDSS will not become fully operational until 1 February 1999. The SAR Convention was adopted nearly two decades ago - yet the network of SAR plans required for the various regions of the world is only now on the verge of completion.

This was anticipated. It was never expected that the changes required could be introduced overnight, because they involved considerable investment and planning by Governments and the industry itself. But it was intended that eventually a system that was basically the same as the one that failed the victims of the **Titanic** disaster should be transformed into something that would take advantage of the huge technological advances that have been made in the intervening period. And because components of the SAR Convention and the GMDSS have already been implemented in many parts of the world, international shipping has already been gaining benefits from them and many hundreds of lives have been saved.

The future

Perhaps the greatest achievement of the international shipping community over the last half-century has been its ability to absorb the impact of change without compromising safety. An industry which had always been conservative and reluctant to embrace new ideas managed to cope with political and technical developments which could have led to different groups being formed, each with conflicting and even contradictory views about safety and environmental protection.

Thanks, at least in part, to the existence of IMO, this threat never materialized. The needs of both traditional and emerging shipping nations have been successfully taken into account and shipping can claim that, while individual countries and companies still compete vigorously with each other, they do so on a playing field which, from the technical point of view, is virtually level.

The mass of legislation which IMO has produced over the years shows how much effort has gone into achieving this. Yet many people now argue that legislation has its limitations. Accident rates vary enormously between different fleets. Since most maritime nations have ratified all of IMO's most important conventions, this can only be due to the way they are being implemented. The solution, it is argued, is not to adopt still more Conventions but to make sure that the existing ones are properly implemented.

IMO has been concentrating on this aspect for several years. The onus for implementing standards lies with the shipping companies and flag States (that is, the Governments that have ratified IMO conventions and, in the process, have agreed to implement them). IMO has established a special sub-committee to improve flag State

implementation and on 1 July this yearthe International Safety Management Code entered into force for many of the world's ships . The Code is regarded as one of the most important steps ever taken by IMO to improve safety, because it makes it mandatory for shipowners to develop a company safety plan, tailor-made for each ship in their fleet and to get the plan approved by the flag State authorities.

The Code, like other IMO standards, is subject to inspection by port States (i.e., the States which ships visit) and IMO has encouraged the creation of regional port State control systems around the world, all dedicated to inspecting ships on a planned basis, with special attention being paid to ships, companies and flags which have a particularly bad record. Next year attention is likely to switch to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978. This was amended (in effect, completely re-written) in 1995 and Parties were required to submit details of their administrative, training and examination procedures to IMO by August 1998.

These are currently being evaluated and those that meet STCW requirements will be placed on what has been called a "white list." It means that seafarers from those countries will be in possession of certificates that will be acceptable throughout the world as a guarantee of quality.

More effective implementation will greatly assist IMO's efforts to improve safety and prevent pollution, but even that is not the sole answer. In the immediate future IMO will be devoting more and more effort to the human factor. For years people have been claiming that up to 80% of accidents at sea are caused by human error. If that is the case, then IMO believes that it should concentrate its efforts on preventing avoidable mistakes.

The continuing importance of shipping

Shipping remains just as vital to world trade today as it did in 1948. This is partly due to the revolution in technology which has taken place and which has enabled ships to compete with other forms of transport.

Ships provide the safest, quickest, cheapest and most reliable way of moving bulk cargoes from continent to continent. Containerisation has given a new lease of life to the transport of general cargoes. Passenger shipping, which seemed to have been overtaken by aircraft in the 1960s has been revived through the development of ro-ro ferries, high-speed craft and the growing popularity of holiday cruising.

It is difficult to see how ships will ever be replaced in many trades. Instead, it is likely to become more and more attractive to cargo interests as quality improves and technology advances. The growing internationalisation of the industry will ensure that competition remains fierce, encouraging still further improvements as shipowners seek to gain an advantage over their rivals. But it is important that attention continues to be paid to improving safety standards, because past evidence suggests that the public, and Governments, are intolerant of failure.

A bad oil spill invariably results in criticism of the tanker industry as a whole. This criticism is often ill-informed and unfair and has sometimes resulted in actions being taken which many have considered to be unnecessary and even unrelated to the causes of the original accident. An accident to a passenger ferry can result in thousands of people switching to other forms of transport, while a fire on a cruise liner can convince thousands of others that, this year at least, it might be advisable to stay at home.

Despite its importance to the world economy, the general public knows little about shipping. Once, ships came to the centre of great cities, which grew up around their ports. Today the ports have moved down river, where land is cheaper. City dwellers, who used to see ships every day, nowadays hardly ever see them at all.

Shoppers expect to find meat, fish, fruits and vegetables from all over the world, out of season as well as in, whenever they decide to go to their local supermarket. They take it for granted that they will find what they require. But they are not interested in how it reaches them and few of them realize that much of it comes on a ship. Oil companies are criticised when a tanker pollutes the environment. But very few of those critics associate the tanker with the oil that heats their houses and powers their motor cars - nor, incidentally, that the motor car probably also got to them on board a ship. The increasing automation of shipping means that today far fewer people go to sea for a career than used to be the case, especially in the traditional maritime countries of the industrially developed world and seafarers today are more likely to come from south east Asia than north west Europe.

The general ignorance of shipping and its importance to modern life is to be regretted, because shipping has a great deal to be proud of. It has undergone enormous changes, and most of them have been for the better. Shipping is safer now than it has ever been and the way the industry has responded to environmental concerns has set an example which many other industries have yet to follow. In this 50th anniversary year, IMO is proud to have been able to contribute to this success and will continue its determined efforts to improve maritime safety and to protect the marine environment, for the benefit of the world maritime community.

Source: Background document for World Maritime Day 1998
http://www.imo.org/About/contents.asp?topic_id=320&doc_id=886&header=false