

THE ROYAL NAVAL HYDROGRAPHIC SERVICE 1795-1995

by Rear Admiral R.O. MORRIS, C.B.¹

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Abstract

Two hundred years ago, on 12 August 1795, King GEORGE III signed the Order in Council setting up the Royal Navy's Hydrographic Office. This paper traces its growth from a handful of civilians sorting through a collection of surveys in the Admiralty attics to the surveying and charting organisation of today. It shows how chart folios, sailing directions and notices to mariners were introduced, how a corps of dedicated seaman surveyors was established, and how they and the cartographers have served Britain and the world through 200 years of peace and war.

Throughout the wars of the eighteenth century the Royal Navy lost more ships by wreck or stranding than from enemy action. Though naval officers were sent on hydrographic missions from time to time, there was no organisation for publishing the results of their work officially, and for the most part their manuscript charts gathered dust in cupboards in the attics of the Admiralty. After many petitions and much discussion it was decided to form a Hydrographic Office, and on 12 August 1795 King GEORGE III signed the Order in Council bringing the Office into being. The next day Alexander DALRYMPLE was appointed Hydrographer to the Admiralty.

DALRYMPLE was already Hydrographer to the Honourable East India Company, an experienced cartographer and surveyor. He was not enamoured of the Navy or naval officers, having been passed over in favour of COOK for command of the joint RN/Royal Society expedition to Tahiti in 1769 and retaining a large chip on his shoulder in consequence. His first task was to sort through the cupboards and see just what he had in the way of original surveys from which to compile printed charts. This took him some time, and the first Admiralty chart, of an anchorage of Isle Houat in Quiberon Bay, was not published until November 1800. Thereafter the

¹Personal address: Orchard House, Quantock Lydeard, Taunton, Somerset, U.K.



FIG. 1.- Alexander DALRYMPLE,
first Hydrographer of the Navy, 1795-1808.

rate picked up, but DALRYMPLE was meticulous in his insistence on accuracy and clarity of presentation, and production was always more of a trickle than a stream.

By 1807 Their Lordships were getting impatient, and instructed DALRYMPLE to purchase a complete set of all charts published in England, and to make a selection from them of those best suited for the use of the Fleet. DALRYMPLE duly made the purchases, over a thousand charts in all, but pleaded that he was not qualified to choose between them. He suggested that a committee of experienced officers be set up to make the selection.

Three officers, Captain COLUMBINE, HURD and Sir HOME POPHAM were appointed. They found the Hydrographer uncooperative, fiercely resisting change and being slow in producing evidence they asked for. He complained that they were going into far more than their remit required. They reported in March 1808, recommending not simply which charts were to be provided but the whole organisation by which the ships of the Fleet should be kept supplied with navigational information. In May, DALRYMPLE was dismissed. He was deeply wounded, and died three weeks later.

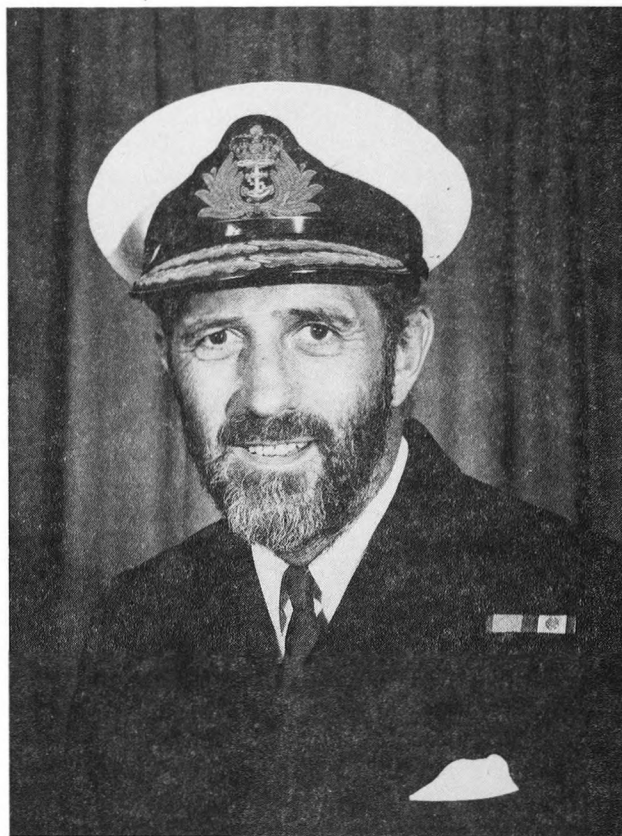


FIG. 2.- Rear Admiral Nigel ESSENHIGH
24th and present Hydrographer of the Navy.

Before his removal from office he had set the criteria which have characterised the Admiralty chart from his time to the present - meticulous accuracy combined with clear and attractive presentation.

His successor was Captain Thomas HURD. He had not only been a member of the Committee whose work had resulted in his predecessor's dismissal. He had practical experience of surveying, having worked both in Bermuda and in the Bay of Brest, and of the Office, to which he had been attached while preparing his Bermuda surveys for engraving. He immediately set about implementing the Chart Committee's recommendations. Sets of charts were made up for each station on which H.M. Ships were employed, and issued to them in pre-packed boxes, the forerunners of the modern chart folios. Spare boxes were to be held by the commissioners at the main dockyard ports, the germ of the future chart depots. And HURD obtained Admiralty approval for his charts to be sold to the general maritime public, though the first sales were not actually brought to account until after his death in 1823.

When the Office was set up it was simply to provide charts, with no thought of ordering surveys of places for which information was lacking. DALRYMPLE had been a civilian with no naval authority, and any attempt by him to give orders to ships would have been resented. HURD, as a serving naval officer, was in a much stronger position, and almost at once began to take advantage of it. In June 1809, he was asking for a suitable vessel 'to lay down, or fix in their true position, the numerous dangers along the east coast of England'. His request was granted, and William CHAPMAN sent in the gun-brig SORLINGS to carry out the work that summer. He was the first of many.

When the SORLINGS' successor, the INVESTIGATOR, was being commissioned in 1811 under George THOMAS, her master asked who was in command, and was told to 'obey Mr. THOMAS in all things', thus setting the precedent for surveying officers in command of their own ships.

With the release of large numbers of ships and men following the end of the Napoleonic Wars, HURD seized the opportunity to embark on the world-wide surveying activity which continued for most of the next century and laid the foundation of the Admiralty chart series. By the time of his death, nine H.M. Ships and two hired vessels were engaged in surveying in home waters and round the world from the Canadian Lakes to Australia.

Realising that such a programme could only be carried out by a dedicated corps of experienced seaman surveyors, HURD proposed that such a corps be set up. Their Lordships approved, and in a Board minute of 7 January 1817, established special pay rates for officers in the surveying service. At twenty shillings for a commander and fifteen shillings for lieutenants and masters in addition to the pay for their ranks, the rates were higher in real terms than they have been at any time since.

When HURD died in May 1823, Captain W.E. PARRY was appointed his successor. PARRY's overriding interest was Arctic exploration. He was in the Arctic when selected, and only accepted on condition that he could go back to the north on another expedition in 1824. In all he was absent for more than two of the six years he held the post. Despite this he found time to develop the services provided by the Office, and to carry on a running battle with the Secretary of the Admiralty, J.W. CROKER, surely the archetypal centralising bureaucrat.

Bound volumes of Sailing Directions, Light Lists, and the first catalogues of charts were all introduced in PARRY's time. He replaced the boxes in which sets of charts were supplied with waxed cloth covers, almost identical to the folios in use today.

On the surveying side PARRY introduced detailed Hydrographic Instructions and standard scales for surveys, and for the first time required surveyors to render reports on their work with their fair charts.

Under him the expansion of surveying activity continued. Though it started before him, OWEN's great African survey was mostly carried out in PARRY's time. The work of KING in the ADVENTURE and first PRINGLE STOKES and then FITZROY in the BEAGLE in South American waters was a product of his

instructions. In 1829, there were six surveying vessels and one party with hired boats working abroad, with five ships and three boat parties in home waters.

PARRY was a technical innovator, and it was in 1828 that steam was first used in surveying, by Richard OWEN in the *AFRICAN* on the Gambia river. A few years after he had resigned as Hydrographer he became comptroller of steam machinery at the Admiralty, instrumental in allocating more steam-propelled ships to his successor.



FIG. 3.- The *BEAGLE* in the Beagle Channel, south of Tierra del Fuego drawn by one of her officers during her South American surveys 1827-1835 now in the National Maritime Museum's collection, photograph negative No. B9126.

The fourth Hydrographer, Francis BEAUFORT, was the longest serving of all to date. He took over from PARRY in May 1829, and held office for the next twenty five years. He had experience of surveying in the Mediterranean in the frigate *FREDERIKSTEEN*, during which he not only produced immaculate hydrographic surveys but also recorded and sketched much archaeological detail along the south coast of Turkey. He brought to the post of Hydrographer the same meticulous attention to detail that DALRYMPLE had shown. No chart or other document was allowed to be published before he had personally examined it and in many cases demanded revision or correction. The result was that when he finally retired a mass of material was awaiting approval and publication.. While his greatness cannot be denied, it could be argued that one of his less admirable legacies was that devotion to minutiae which takes no account of urgency or of the need to make the results of surveys promptly available to the mariner.

These delays in publishing new charts were to some extent ameliorated by BEAUFORT's introduction, first in the *Nautical Magazine* which he founded in 1832 and later printed separately as *Notices to Mariners*, of information from which mariners could correct their existing charts.

For his surveyors BEAUFORT issued the first edition of the *General Instructions for Hydrographic Surveyors*, a publication which in successive editions has guided generations of Naval surveyors and formed the basis for many a civilian contract specification. Apart from this and the formal Hydrographic Instructions, BEAUFORT'S letter books are full of correspondence with surveying captains. Warmly sympathetic for their troubles, encouraging when they report difficulties, giving praise for work well done, they paint a picture of a most attractive personality who cared for his people.

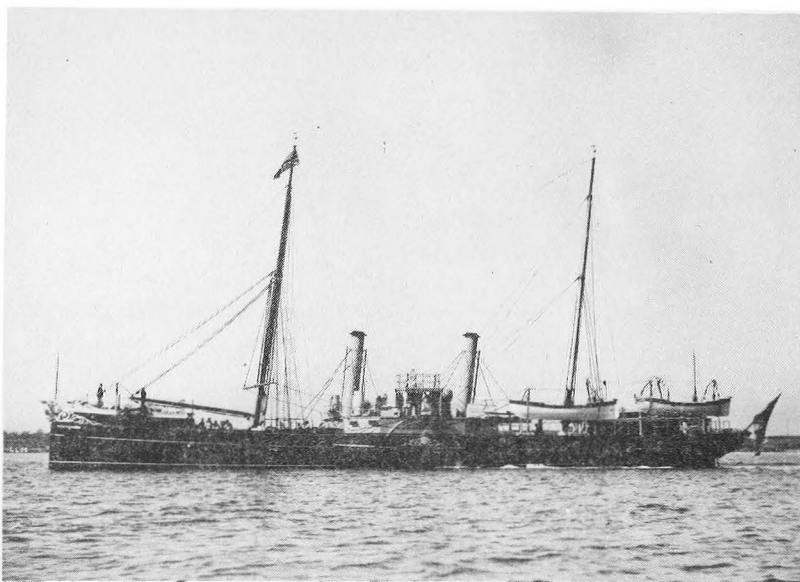


FIG. 4.- The RESEARCH, the last of the paddle surveying ships, built at Chatham in 1888 and only paid off at the outbreak of the First World War. Imperial War Museum photograph negative No. Q39963.

With PARRY in charge of steam machinery at the Admiralty a succession of small paddle steamers was made available for hydrographic surveys, and in 1841 no less than six were employed round the British Isles. Though the paddlers were diverted to famine relief in 1848, by 1853 there were twelve surveys in hand in home waters. These small paddlers were found to be most suitable for survey work, and the last, the RESEARCH, was built as late as 1888. She and an earlier near sister, TRITON, remained in service up to the outbreak of the First World War.

Though he was unequalled in his management of men, once he had them under his authority, he did make some strange mistakes in selection of his captains. He followed PARRY in maintaining the British activity in the Arctic, and in particular, in promoting the search for the North West Passage. In 1845, it was intended to send a new expedition north in the EREBUS and TERROR, fresh from their Antarctic triumphs under ROSS but now fitted with engines and screw propellers. When ROSS declined the appointment to the leadership BEAUFORT championed, and procured the appointment of Sir John FRANKLIN. Though FRANKLIN had done great things in the north in his youth, he was now in his sixtieth year, and moreover his Arctic

experience was all either in land travel or coasting in small boats, not in ice navigation in larger ships. Whether another expedition leader would have avoided the fate of the whole FRANKLIN expedition is arguable, but in the years after it perished BEAUFORT must surely have wished that he had chosen a younger man to command it.

Another of BEAUFORT's proteges was Edward BELCHER, and here the term of protegee is literally apt. BELCHER was a fine professional surveyor, but he was a bombastic, opinionated martinet with a persecution complex who made life in any ship he commanded a hell for his officers. He obtained his first surveying command, the converted bomb-vessel AETNA, in 1830, working on the west coast of Africa. In just over three years he had court-martialled most of his officers and was court-martialled himself. Though he was acquitted the case was such that it was not intended to give him any further employment at sea.

BEAUFORT persuaded Their Lordships to relent, and after a short spell without disaster in the LIGHTNING in the Irish Sea he went first to the SULPHUR and then to the SAMARANG, both in the Far East. Here he did good work, though for BEAUFORT's taste he became too much involved in politics, making treaties with several of the rulers of minor states in the East Indian archipelago. He also wrote and published a book on surveying notable principally for never advocating a simple method of carrying out a task if his inventive mind could work out a more complicated one! Much can be forgiven him, though, for his sterling work in the Pearl River during the assault on Canton in 1840-41, foreshadowing much work by surveyors in the next century in the forefront of any action in restricted waters.

After FRANKLIN and his expedition disappeared in the Northern Archipelago, BEAUFORT co-ordinated a series of parties to search for the missing ships and men. It is paradoxical that much of the mapping and charting of the Canadian Arctic in the second half of the 19th century was undertaken in the search for FRANKLIN. The thread running through the whole of Polar exploration is the need, if disaster is to be avoided, for the utmost care to maintain the morale and fitness of the men involved, from the captains down to the ordinary seamen and stockers. With BELCHER's record it is extraordinary that BEAUFORT selected him in 1852 for the command of a five-ship expedition to the Arctic.

The expedition was not the disaster that those knowing BELCHER might have predicted, instead, it was a farce. BELCHER returned to Britain in September 1854, having abandoned four of his five vessels in the ice. The cream of the jest was to follow. A year after BELCHER's return, his ship, the RESOLUTE, was found drifting in the Davis Strait by a U.S. whaler, boarded, and brought back to New London. She was bought by the U.S. Government, fully refurbished, and delivered to Portsmouth to be presented to Queen Victoria. The story has a happy ending in that when RESOLUTE was broken up in 1880, a large desk was made from her timbers and presented to the President of the United States by the Queen. It was later used by President KENNEDY for his daily work in the White House, and is once again in the Oval Office under President CLINTON.

Naval co-operation with the scientific world had been a feature of the surveyor's way of life even before COOK and BANKS, dating back to Edmond HALLEY and the beginning of the 18th century. BEAUFORT fostered this. His own

interest in meteorology spread to the infant sciences of oceanography and marine biology. DARWIN is perhaps the best-known of the scientists borne in surveying ships, though his investigations were mostly in terrestrial biology. It is less well known that the great biologist T.H. HUXLEY was diverted from medicine to science by his experience as a young assistant surgeon in the RATTLESNAKE in New Guinea under Owen STANLEY in the late 1840s.

Weak, deaf and going blind, BEAUFORT requested retirement in his eightieth year in 1854. However, with the outbreak of the Russian War, the Admiralty would not let so experienced a servant go out to grass, and he was kept in post for a further nine months.

Both in the Baltic and in the Black Sea surveying ships were in the forefront of the action, though in both theatres they had to prove their worth before they were accepted. SULIVAN in the little old paddler LIGHTNING sounded the approaches and then left the fleet first into Bomarsund, the fortified anchorage in the Aland Islands, then to Sveaborg. He was planning the investment of Kronstadt when the war ended. The Hydrographic Office at Taunton still has a series of views of these fortresses drawn by SULIVAN which are as attractive as works of art as they were useful as intelligence - the forerunners of today's spy satellite photographs.

In the Black Sea, Thomas SPRATT in the SPITFIRE played a similar role. First finding a coal mine on the Turkish coast to provide fuel for the fleet, now mainly steam-propelled; surveying the port of Balaklava to provide a landing place to support the army before Sevastopol; and then surveying the entrance to the Sea of Azov and the Putrid Sea for operations to interdict the Russian supply lines into the Crimea, the surveyors were literally the eyes of the fleet. At the end of the war in the Black Sea it was said that SPRATT was the mainspring of the operations. He gained the CB and promotion to captain.

The sixth Hydrographer, RICHARDS, can with some justification claim to be the midwife of the infant science of oceanography. Before the new trans-oceanic telegraph cables could be successfully laid, it was necessary not simply to know the depth of water along the routes, but also the nature of the seabed and the currents likely to disturb the laying process. The obtaining of this information sparked a more general interest by the scientific world in all aspects of the oceans, both their beds and the superincumbent waters.

A series of remarkable oceanographic cruises were made by surveying ships under RICHARDS' auspices. The first was that of the LIGHTNING in the summer of 1868 in the waters between the Hebrides, Shetlands and the Faroe Islands. The naturalists Charles Wyville THOMSON and William CARPENTER were embarked, and the cruises were repeated the following year in the PORCUPINE, a newer ship built for surveying. CARPENTER also took part in investigations by the screw sloop SHEARWATER into the complex water circulation in the Strait of Gibraltar.

All this led directly to the proposal by the Royal Society, of which RICHARDS was a Fellow, to mount an oceanographic expedition to circumnavigate the globe and make observations of oceanographic phenomena in all the oceans. The Admiralty approved, RICHARDS was directed to provide and equip a vessel and to appoint the officers to work with the scientists nominated by the Royal Society.

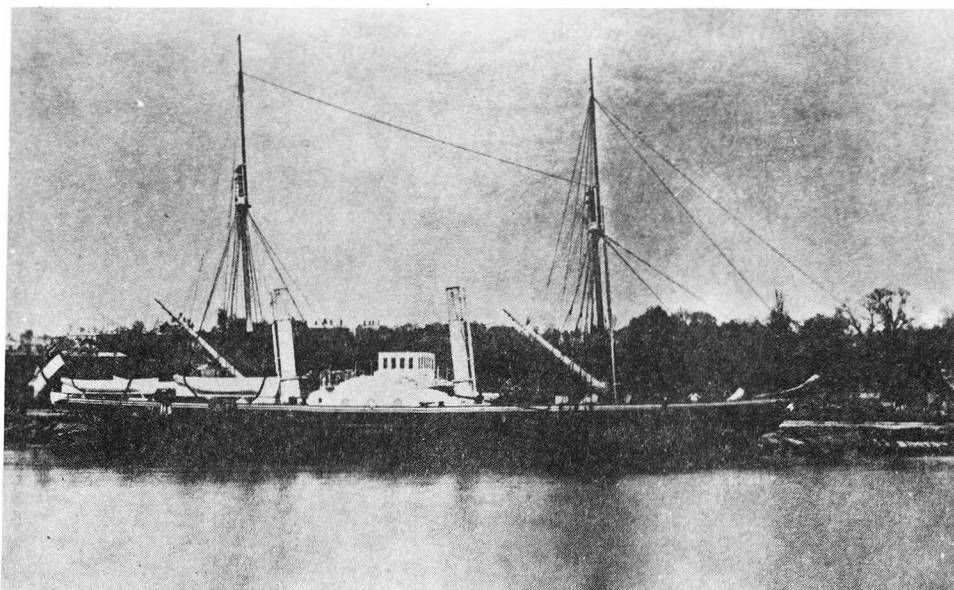


FIG. 5.- The Paddle Surveying Sloop PORCUPINE, the first of these small but efficient ships built specially for surveying in 1844.

The steam screw corvette *CHALLENGER* was selected, to be commanded by Captain George NARES. The scientists were led by Wyville THOMSON, with the young John MURRAY as his personal assistant. *CHALLENGER* sailed from Portsmouth in December 1872, and returned in May 1876, with a vast collection of notes, data and specimens. It was over twenty years before all the results were worked up and published, but when the last of the *CHALLENGER Reports* appeared the foundations of the science of oceanography had been well and truly laid.

The eighth Hydrographer WHARTON, is chiefly remembered for having published a manual which replaced BELCHER's self-important complications with a straightforward handbook on how to go about every aspect of the hydrographic surveyor's work. *Hydrographic Surveying* more familiarly known as WHARTON's Manual, ran into four editions, the last in 1920, and was not superseded until the appearance of the *Admiralty Manual of Hydrographic Surveying* in 1938. WHARTON himself served as Hydrographer from 1884 to 1904, the longest term of office after BEAUFORT.

An amusing antidote to the seriousness of WHARTON's work came out in 1887. *The Bogus Surveyor* was published privately by one Lieutenant C.H.A. GLEIG, who had done one surveying commission in the *RAMBLER* under VEREKER, but had found the long hours and hard work distasteful. 'WHITEWASH', the pseudonym GLEIG used, views the whole activity of the surveyor cynically, but the tract gives a faithful if jaundiced picture of life in a foreign-going survey ship of the period, warts and all.

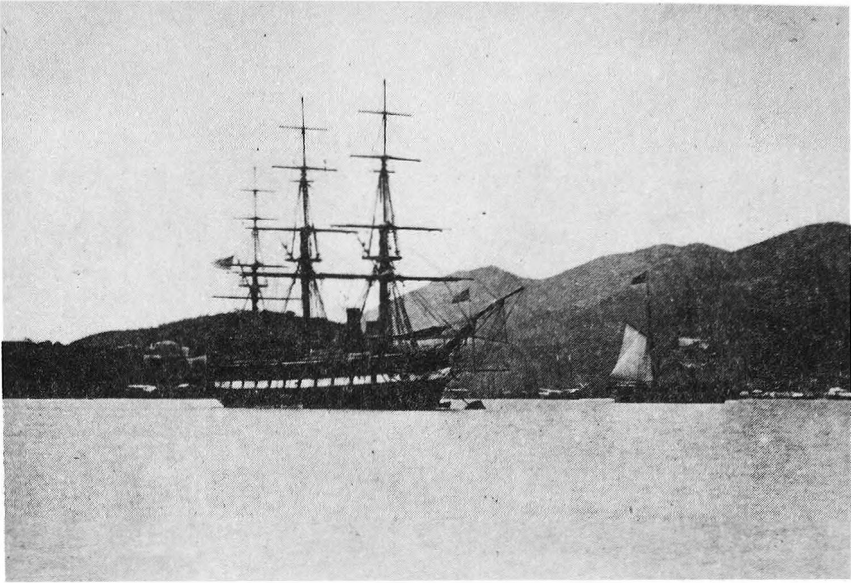


FIG. 6.- The CHALLENGER at St. Thomas in the Virgin Islands in 1873 on the first leg of her world oceanographic voyage.

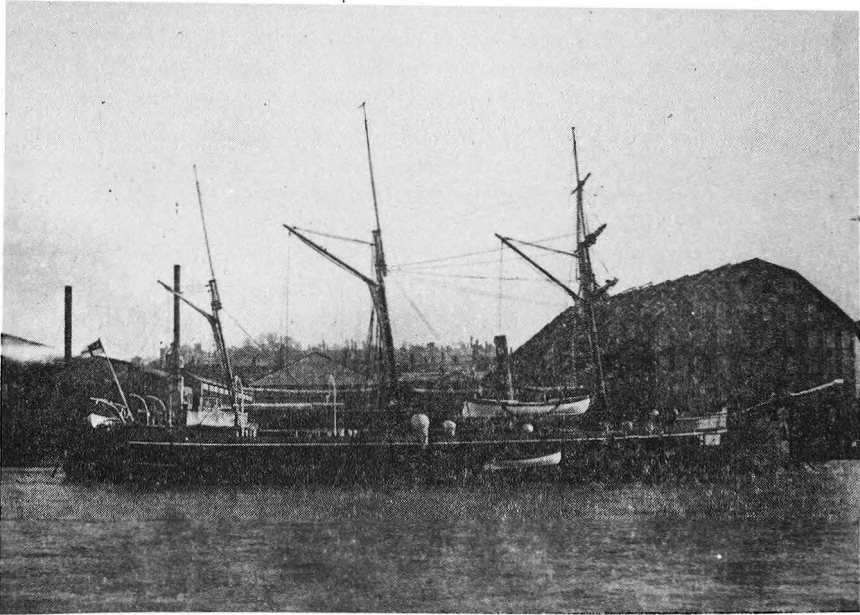


FIG. 7.- The stinking STORK, a converted gunboat used for surveying on the East African coast in the 1890s, when her bilges were so foul that she was made to anchor to leeward of the flagship so as not to offend the Commander in Chief's nostrils with her stench. Imperial War Museum photograph negative No. Q42639.

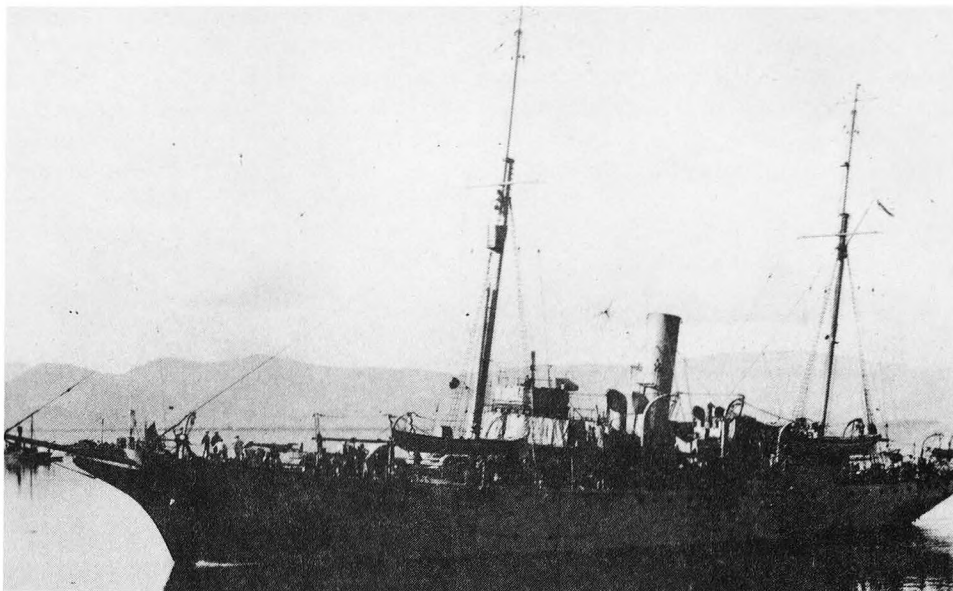


FIG. 8.- The yacht-like ENDEAVOUR, built at Fairfields on the Clyde in 1912. In the Kaiser War she was sent to the Mediterranean under EDGELL with a full chart production outfit. Seen here at Mudros in 1915 supporting the Dardanelles operations.

WHITEWASH's cynicism was at least in part justified by the succession of clapped-out old gunboats and sloops in which the Navy's surveyors had to carry out their work through the 19th century (and well beyond, as some still at work may remember). In the 1890s, for instance, the gunboat STORK, launched in 1882, of composite construction (iron or steel frames and wooden planking) and obsolete when built, was employed on the East African coast. Anchoring to windward of the flagship off Zanzibar she was made to shift berth because she stank worse than a slave dhow.

Only the occasional small paddle steamer, herself of an obsolete design but well fitted for her work, was built specially for surveying in coastal waters at home. In the Pacific and on the Australian coast small sailing schooners continued in use until the LARK paid off in 1887.

After the turn of the century, with the arms race and the threat of war in Europe, there was a surge of effort to survey the North Sea and the northern isles. A former salvage tug, the HEARTY, was converted for the task, and in 1910 a series of old cruisers provided to act as floating beacons for her work in the centre of the North Sea. In 1912, two trawlers, DAISY and ESTHER, were bought on the slips and converted to assist, and later in the same year the first ship since the RESEARCH was built specially for surveying. The yacht-like ENDEAVOUR served with distinction through both World Wars, and was the first surveying ship to be equipped with printing presses and chart production facilities which she christened in the Dardanelles operations.

Throughout the Kaiser War the Hydrographer was J.F. PARRY, grandson of PARRY of the Arctic, the third Hydrographer. The problem in both World Wars for the Office was to get out to Allied war and merchant ships all the information they needed for safe navigation (including data on minefields, wrecks and so on) without giving away to the enemy anything which could help him to move freely at sea. This was achieved partly through a plethora of series of Notices to Mariners of varying classification and partly through keeping the shipping authorities fully informed and letting them filter essential data to ships as they needed it. Close liaison was also maintained with the Naval Staff to ensure that the Office had advanced information of intended operations so that the necessary special charts could be produced in time.

As the war was drawing to an end the international hydrographic community began to look towards the future. All had a great backlog of information which the priority afforded to warlike operations had prevented from being put onto charts. It was obvious that co-operation was the only way to reduce this backlog. An International Hydrographic Conference was called in London in 1919 under PARRY's chairmanship. As a result the IHB was set up in 1921 with PARRY, Captain I.M. PFAFF of the Royal Netherlands Navy and Captain S.H. MULLER of the Royal Norwegian Navy as the first triumvirate of directors. It was based in rented accommodation in Monaco. As readers will know, the organisation has gone from strength to strength apart from a period of suspended animation in the Hitler War, and now has a membership of over 50.

After the war two classes of surveying ships, one of converted small minesweepers for home waters (BEAUFORT, FITZROY, FLINDERS and KELLETT), and one of converted larger sloops for foreign-going (HERALD, IROQUOIS and ORMONDE) worked with the ENDEAVOUR, the only one of the pre-war ships to survive for any length of time. Canada has its own independent surveying service from the middle of the last century, as had India. In the 1920's the Royal Australian Navy set up its own service, at first with the GERANIUM and then with one of the same class as the RN foreign-going ships, the MORESBY.

Experiments with echo-sounders had started before the end of the war, and came to practical fruition in the late 1920s. By 1927, DOUGLAS, Hydrographer from 1924 to 1932, assured the surveying fleet that there was no reason not to use the echo-sounder for surveys, though soundings obtained by this new method were to be inked in on fair sheets in burnt sienna to distinguish them from lead-line soundings. This requirement was removed in 1932.

John EDGELL took office as Hydrographer in 1932 and remained for the next 13 years, a period only exceeded by BEAUFORT and WHARTON. He prepared the Department for the challenges of the Second World War, and then led it to meet them for the whole of the war, with marked success.

In 1938, rotary offset printing from zinc enamel plates was introduced to replace flatbed printing from copper plates or lithographic stones. This allowed much faster printing. By the middle of 1939 all charts were being printed by the new process and without it there is no way that the requirements of the war years could have been met.

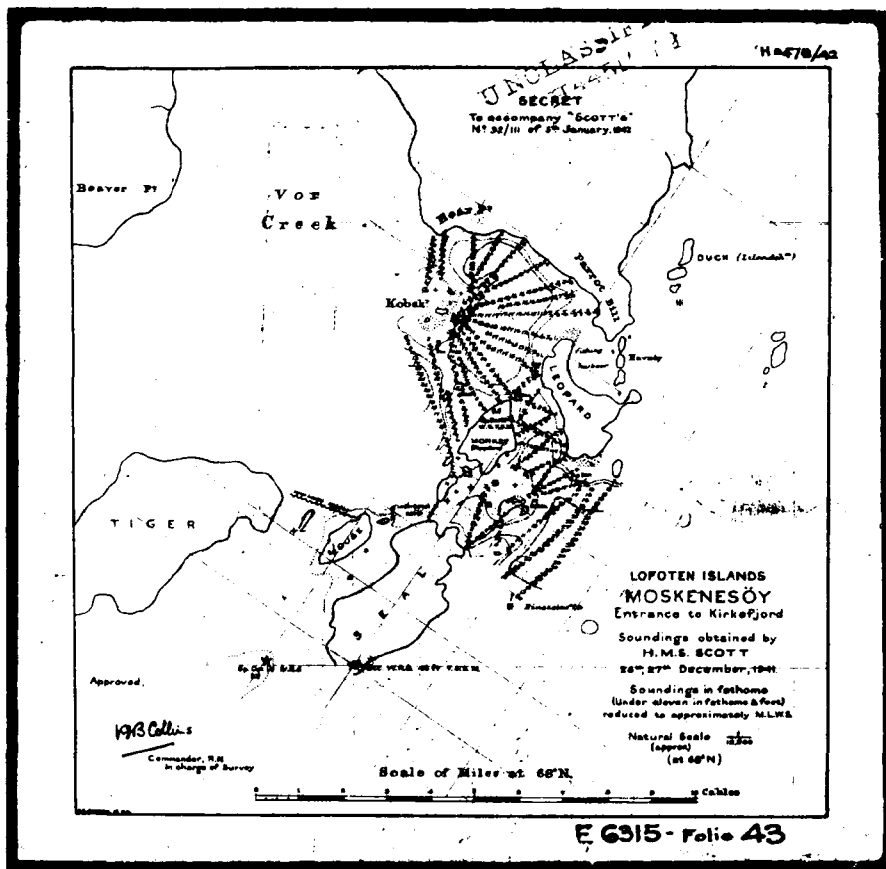


FIG. 9.- SCOTT was part of Operation ANKLET, an attempt to occupy part of the Lofoten Islands in the winter of 1941. On arrival she carried out a survey of the entrance to Kirkefjord for the task force to use as an anchorage. This is the sounding tracing of the results.

The war years brought new employment for the surveying ships as well. One, and sometimes two, were constantly at work with the minelayers of the Northern Barrage, and the SCOTT only missed the BISMARCK in the Denmark Strait by a week while surveying in advance of minelaying operations. HERALD was lost to the Japanese at Singapore, and was later taken into service by them and sunk under the Rising Sun in 1944. ENDEAVOUR escaped from Singapore, where she had been laid up at the outbreak of war, with a scratch crew of survivors from the REPULSE and PRINCE OF WALES and was steamed to the Red Sea, where she was employed on surveys of possible ports for use if the Canal Zone had to be evacuated.

When the tide of war turned and Allied armies advanced first through Italy and later in northern Europe, surveyors were among the first to enter each newly recaptured port to survey the berths and approach channels before shipping could use them. To start surveying Antwerp before the lower Schelde had been cleared either of mines or of German soldiers along its banks, Egg IRVING, then commanding

the FRANKLIN, sent surveying boats through the Belgian canals from Ghent to Terneuzen. Thanking him and FRANKLIN's ships company when visiting them after Antwerp had been opened, MONTGOMERY ordered 'Splice the Mainbrace', which caused much fluttering in the Naval Victualling Store dovecotes when the rum was brought to account.

After the war, surveying at home and abroad started up again, with four converted Bay class frigates, four converted Halcyon class minesweepers, and a new purpose-built ship, the VIDAL. The advent of first Decca, then in succession Two-Range Decca, Lambda and HiFix, revolutionised position fixing. The output of the ships greatly increased, as neither rain nor low visibility stopped surveying as it had in the days of visual fixing. Co-operation with the civilian oceanographic community was close in the early days, but its increasing independence in an age when to academics 'defence' was a dirty word, coupled with the increasing sensitivity of military oceanography in the age of the fast deep-diving submarine led to an estrangement which is even now not wholly reconciled.

With the increasing complication of information to be shown on the charts caused by the proliferation of traffic separation schemes, restricted areas, cables, and so on, they were becoming increasingly cluttered and difficult to read. Schemes for revising the presentation of the Admiralty chart were under review when the WILSON government in 1967 announced that Britain was to 'go metric'. Steve RITCHIE, the Hydrographer, seized the opportunity and not only changed the specification of the Admiralty chart but at the same time changed the units from feet and fathoms to metres. It is taking a long time to complete the transition, but the fact that all charts in the new style, with buff land tint and shallow water blue washes have depths in metres, and all in the old black and white style are still in fathoms or feet makes the delay acceptable. Again a change in printing technique, to four-colour presses, made the new, colourful style possible.

By the middle 1960s the post-war surveying fleet was feeling its age, the Polaris submarines were being built, and a new, purpose-built survey fleet was ordered. The HECLA and BULLDOG classes were like nothing which the naval surveyors had ever had before. Built to 'best commercial standards' (it took us some time to realise that this translated into 'the cheapest and nastiest that the shipbuilders could get away with' and to find ways of ensuring that they did not get away with too much), they had little in the way of naval fittings, but were well suited for their tasks. The HECLAS worked mainly on oceanic surveys, while the BULLDOGS covered the coasts of the United Kingdom and made forays abroad to the Gulf and the West Indies.

In the 1970s the advent of side-scan sonar was as great an advance over the pure echo-sounder survey as that itself was in its time over the leadline. For the first time the surveyor could with confidence see between the lines of his soundings and be sure that no obstructions had been missed. It came at a time when the operators of very deep draught merchant ships, mainly tankers and bulk ore-carriers, were wanting to pass their ships closer and ever closer to the seabed in the pursuit of profit and cost-cutting.

Automation also made its contributions both to the logging and plotting of data at sea and to the chart production process in the office. Automatic plotting on

board ships removes the drudgery from ship sounding, while in the Office practically all the work of producing reproduction quality graphics from the cartographer's compilation drawing is now done digitally. There is also now a demand for chart data to be supplied to the user in digital form. At present this is being met by the Admiralty Raster Chart Service - raster-scanning of the printed charts with a raster up-dating service. This is some way from fully equivalent digital charts, but this will take time to develop.

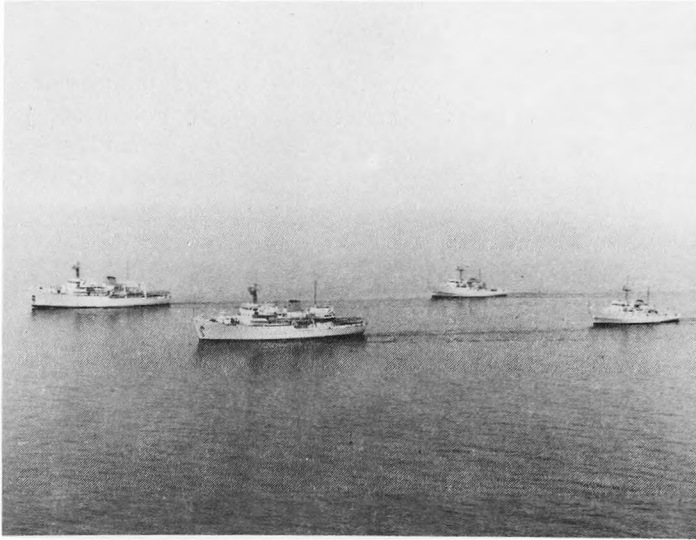


FIG. 10.- Ships of the HECLA and BULLDOG classes in the Persian Gulf in 1979.
From left to right HERALD, HYDRA, FAWN and FOX.

With the diminishing size of the Navy afloat there has been much talk of privatizing the Surveying Flotilla, and today only two each of the HECLA and BULLDOG classes survive. They have, though, been joined by the newer coastal survey vessel ROEBUCK, and only this year an order has been placed for a new large ocean survey ship. Meanwhile work is both being undertaken by RN parties in hired vessels (as it was for much of the last century), and some is being put out to contract to commercial survey firms. The future, if not exactly bright, at least looks more secure than it has at some times in the last twenty years for the Surveying Service. For the Office ashore Defence Support Agency status has not proved the solution to all its ills hoped for, perhaps over optimistically, when it was introduced in 1990, though some freedom has been gained to manage its affairs.

Both branches of the Royal Navy's Hydrographic Service enter its third century in good heart, sure that their products, in what ever form they may need to be produced, will be in demand for the foreseeable future.