Aberdour's Part in the War at Sea

From early in 1915 to the cessation of hostilities HawkCraig Admiralty Experimental Establishment was one of Britain's key centres (there were 31 in total), first of research and later of training in the use of submarine detection equipment to combat the growing German U-boat threat.

At the start of World War I the submarine was still a rather primitive and novel form of warship, widely regarded in the Royal Navy as an ungentlemanly way of waging war at sea - "underwater and underhand" - sneakily hiding beneath the waves, leaping out of ambush to sink an unsuspecting victim before disappearing once more. Nonetheless it rapidly proved to be an increasingly effective weapon, against which there existed neither detection technology nor counter-measure. The war was barely a month old when the light cruiser "HMS Pathfinder" was sunk off the mouth of the Forth, to be followed less than three weeks later by three more cruisers - "HMS Hogue", "HMS Aboukir" and "HMS Cressy". Despite having its strategy turned upside down, the Navy displayed a resolutely lofty attitude towards science and particularly towards the civilian scientists who might have been able to find the answers, and this was to prove a serious and continuing impediment to the search for a way of dealing with the submarine threat. However, the Navy cannot be accused of being entirely closed-minded. At one time point they made attempts to train seagulls to locate and follow submarines, and later experimented with sea lions, first in an open-air swimming pool in Glasgow and subsequently in a Welsh lake, with animals from a circus act. Though the sea lions had no trouble locating underwater sound, they proved more interested in chasing fish!

These ideas may seem bizarre, but they must be seen against the desperate need to find some way of detecting and destroying the underwater enemy. In July 1915 the Board of Invention and Research (known by Admiralty reactionaries as the "Board of Intrigue and Revenge") was set up under the chairmanship of Lord Fisher. Its work was divided into six sections, of which Section II - Submarines and Wireless Telegraphy was the one given the task of acoustic research. The importance attached to underwater technology is reflected in the fact that it was awarded by far the lion’s share of funding - between July 1915 and August 1917 expenditure was £17,048 compared to £554 on telegraphy. Prior to 1915, there had been a variety of disparate tinkering related to sub-sea warfare, but the damage being inflicted on British commercial shipping by Germany’s U-Boats made it crucial that all these efforts should be brought together in a systematic research programme. This was the task entrusted to the HawkCraig Admiralty Experimental Station under the command of Commander (later Captain) C P Ryan RN.

Ryan’s early career was less than distinguished. Having served as a midshipman in the Mediterranean, he returned in 1894 at the age of 18 to take the Greenwich College examinations which included pilotage and gunnery, all of which he failed. At the second attempt he scraped a third class certificate, but did distinguish himself on the torpedo course. Progress to the rank of Lieutenant was something of a struggle, but a report of 1902 describes him as having “a great turn for making mechanical instruments”, and he was beginning to make a name for himself in the new technology of wireless telegraphy.
Designs he submitted in 1903 for “the improvement of Wireless Telegraphy for Destroyers” won him the “appreciation of their Lordships” (a rare commendation from the Admiralty), and, two years later, he was granted a year to concentrate on completing his work, at the end of which he was promoted to Commander and given command of a destroyer flotilla. His performance in this role was so bad that in 1909 he came close to being relieved of his command, and two years later he left the Navy and joined the Marconi Company to pursue his interest in wireless telegraphy.

At the start of the war he returned to active service and began his work on U-boat detection, first at Inchkeith, then at Granton where the drifter “Tarlair” was commissioned for hydrophone trials. In December 1915 the work moved across the Forth to Aberdour, where Ryan took up residence at Hawkcraig Cottage, and the Hawkcraig Admiralty Experimental Station and hydrophone training establishment was set up, manned mainly by RNVR officers.

Hawkcraig was an inspired choice as the site for underwater acoustic research. Water depths vary from 5 to 21 fathoms in the main channel, tidal flows range from a half to four knots and at that time there was plenty of shipping of all kinds, including Admiral Beatty’s Battle Squadron. In addition to “Tarlair”, the Station was assigned several other vessels from time to time, including HM Submarine B3, HMS “Hiedra” and a small yacht “Nyker”, which was used for experiments in radio control - hence the name, which stood for “No Yachting Knowledge Required”. At its peak the Station’s Naval personnel totalled 100 officers and 600 ratings, augmented by a number of civilian scientists, including A B Wood and H Gerrard, both of whom had been working before the war on underwater acoustics at Manchester University with Sir Ernest Rutherford, the atomic physicist and a member of the BIR’s central committee. There was immediate friction between Ryan and the scientists. Wood thought Ryan’s approach to research was unsound, while for his part Ryan regarded the methods of the scientists as too academic and their presence to be an unnecessary imposition. The fact that he had never heard of Rutherford, seems neatly to sum up the Navy’s prevailing attitude to science. For his part, Wood felt (with some justification) that Ryan was being deliberately uncooperative, and by March of 1916 he was complaining to Rutherford that Ryan was only permitting use of the ships “when he considers it convenient which occasions from our previous experience will be rare”.

In that same month the Duke of Buccleuch, who headed BIR’s Section II, wrote to the Admiralty stating his view that his sub-committee would serve no useful purpose unless there were “some immediate improvement in conditions”. Rutherford joined the fray, attacking the view of “certain parties” in the Admiralty that research into underwater listening apparatus was useless and irrelevant. To its credit, the Admiralty took the complaints to heart, and a meeting of all parties at the end of March 1916 led, among other things, to the appointment of a Resident Director of civilian scientists at Hawkcraig. The man chosen for the job was W H (later Sir William) Bragg, who the previous summer had, jointly with his son, won the Nobel Prize for physics. The secretary of the BIR reported that the “conference had resulted in making it clearly known that the BIR is a Department of the Admiralty and not an alien body”.
Unfortunately, no-one seems to have told Ryan, who continued to behave in the same autocratic manner. Typical of his attitude was the occasion when the skipper of the “Hiedra” carried out a manoeuvre on the orders of Bragg. Ryan regarded this as disobedience of his own orders and confined the skipper to barracks for 14 days. Bragg apologised for unwittingly having asked the “Hiedra’s” skipper to do something against Ryan’s wishes, but the punishment stood. Frustration mounted for the scientists and Bragg wrote to Rutherford saying he felt “as if we were playing in a Gilbert and Sullivan opera instead of trying to win the war!” No doubt Ryan was also showering his superiors with complaints about the civilians - there were accusations (totally without foundation) that the scientists were trying to steal Ryan’s ideas to make money from them - and taking every opportunity to plead his case to Beatty at the Admiral’s frequent soirees. By the end of 1916, it had become clear that friction between the two parties had reached a point where it was rapidly becoming a serious stumbling block to progress, and the scientists left Hawcraig for other research establishments in England, shortly to be followed by the “Hiedra”.

Even with the scientists hundreds of miles away Ryan continued to be obstructive and resistant to any ideas which did not emanate from his own Naval personnel. When officials of the US Office of Naval Intelligence visited Hawcraig in July 1917 they found him to be “a most clever wireless man”, though “quite aggressive”, and reported their unease at the “various bickerings and jealousies” which they felt were inhibiting the Admiralty’s researches. Ryan’s attitude was not unique, and the Navy maintained its prejudice towards civilian scientists throughout the war, defying even Lord Fisher’s efforts to achieve anything like a co-operative effort. Never a man to mince words, his Lordship vented his frustration in a memorandum of January 1918 in which he explodes “we were doomed to exasperation and failure by not being able to overcome the pigheadedness of Departmental Idiots”.

It might all have been very different had the scientists been given wartime Naval commissions. Ryan was more than happy to have the assistance of RNVR Lieutenants Harty (later Sir Hamilton Harty, conductor of the Halle Orchestra) and G H Brett, a gifted violinist, whose musical talents contributed to experiments involving tone and pitch. On occasion they would be joined in Aberdour by the impresario, Lieutenant H C Rose, and together they often organised concerts in the village hall. Whether that simple act would have led to happier and more co-operative atmosphere at Hawcraig, and to rapid and more significant progress in the search for reliable anti-submarine technology must for ever remain in a realms of conjecture. Despite all the internally generated conflict Hawk craig (and Ryan) did make a significant contribution to Britain’s war at sea. It remained the country’s most important hydrophone research and training station throughout the war. It developed, manufactured and installed hydrophones on warships and at shore listening stations for both offensive and defensive purposes, while its instructors trained a total of 1,090 officers and 2,731 ratings in the operation of these new devices. By the end of the war there was a total of twenty-one shore hydrophone stations ringing the British Isles, and all came under direct supervision from Hawkcraig. One of these formed part of the boom defence system stretching between Elie on the Fife shore to Fidra near North Berwick.
However, it has to be admitted that results in terms of “kills” were disappointing. When the Kaiser’s fleet surrendered, only four U-boat sinkings could definitely be attributed to hydrophone contact. The first recorded sinking did not take place until 25 October 1918, when a Hawkcraig-trained telegraphist named Geoffrey Clough on watch on the Navy submarine G2 picked up underwater transmissions from U78; he was able to guide his Commanding Officer, Lt. Henry Lake DSC, into a position from which he torpedoed the German vessel as she lay on the surface.

The Admiralty publication “Enemy Submarine Losses Returns” records that by 1918 patrol vessels had reported 255 encounters with U-boats, in only 54 of which did hydrophones play a part. There are, however, two other factors which must be taken into account in any assessment of the value of the work carried out at Hawkcraig. First, hydrophonics gave the Royal Navy the ability to harass and deter the Kaiser’s submarines, whose crews were all too well aware that their enemy had a new weapon to use against them. They did not know, however, how effective it was, and this played a significant role in forcing U-Boat captains to be more cautious in their tactics, thus to some extent limiting the impact of submarine warfare on allied shipping. Nevertheless, when hostilities ceased U-boats had sunk 5,000 allied ships totalling some 12,000,000 tons. Second, the huge advances in the knowledge of underwater acoustics which were made at Hawkcraig laid the foundations for the future development of the sonar and asdic equipment which was vital in frustrating the even more serious threat to Britain’s survival of the U-boat in World War II.

While Ryan and the scientists struggled with each other and the problems of underwater detection, another, much smaller naval unit quietly got on with their own pioneering job just around the corner from HMS “Tarlair”. These were the men who from 1913 to 1917 flew and maintained two tiny float planes (one was a Sopwith Baby) from the rocky beach on the east side of the hotel. Photographs show a wood and canvas hangar and a rudimentary slipway of parallel planks.

Aberdour was to have one more connection with underwater warfare, when, in June 1939, the Flag Officer Submarines took up residence at Corriemar House. The Admiralty had formed the view that war was inevitable as early as June 1938, and F/O Submarines realised that his Portsmouth HQ was too vulnerable and too far away from the anticipated scene of operations. He proposed to move his HQ to Rosyth, where it was intended to base the Home Fleet, so as to be alongside the Commanders in Chief of both the Home Fleet and RAF Coastal Command. Unfortunately, Rosyth had no accommodation available, and approval was given for him to establish his base at Corriemar. With him came a small operational staff, who were billeted in Seaside Place, and made their way to and from work through the adjoining gardens. In addition to his overall command, he had direct operational control over the 2nd and 6th Submarine flotillas, based at Blyth and Dundee respectively. The HQ of F/O Submarines remained at Corriemar until March 1940 when it was transferred to London, where it remained for the rest of the war.