

## Caroline Chojecki, née Rowett

*Bletchley Park 1942 - 1946. Civilian in Naval Section, intelligence research on U-boats.*

*In July 1992 Caroline Chojecki gave a talk to her colleagues at the Soviet Studies Research Centre at Sandhurst on her wartime service at Bletchley Park. The text of this talk appears here by kind permission of her son, Jan Chojecki.*

Warning: these notes are based on my recollections of happenings and experiences of 50 years ago. I have on purpose not consulted any of the many books on Bletchley and its work which are now appearing, so you must excuse inaccuracies in my impressions of places and events.

As you will already know if you have seen the advance publicity which Michael Orr kindly concocted for this talk, I did my war service as a civil servant working for the Foreign Office at GCCS, the Government Code and Cypher School which had moved to Bletchley Park just before the outbreak of war. I was there from June 1942 till sometime after the end of the war in Europe, and afterwards worked for a few months in London.

I don't propose to attempt an overview of the breaking of Enigma, but rather to talk very informally about what it was like to work at Bletchley Park (BP) in that long gone summer, and then on through the years to the end of hostilities.

Actually, I had expected to serve with the ATS, the women's Auxiliary Territorial Service to which I had been drafted on graduation from Cambridge, but very unexpectedly I was called for an interview with [Frank Birch](#), of the Foreign Office. Within a week I found myself at the gates of BP.

I count myself extremely lucky to have been sent to the Naval Section, working in Hut 4, at a time when the unit was still small and to have had the opportunity to take part in the developments which followed.

I was, I found, amongst the first of the many who were being recruited or drafted to GCCS as a result of the fact that even as early as 1940, as the war intensified, the authorities had realised that neither GCCS, nor the services' own intelligence systems could alone cope with the task of solving all the problems of operational research and analysis and the support of the decryption effort. Civilians working at Bletchley, whether career Foreign Office employees or those recruited for the war effort, had proved the value of academic continuity and linguistic expertise but the services could contribute a different, and equally essential approach, one based on operational experience and technical knowledge of enemy potential. A

policy for integration of all intelligence effort was adopted, closer cooperation was essential and all three services set about selecting personnel to serve on the Bletchley station. By the end of the war I think there were over 11 thousand people working there.

When it gets known that one was at BP, people frequently seem to assume that one was either an expert linguist, and spent one's days translating German signals, or a brilliant mathematician and beavered away on cryptography. In fact, I was neither. My job was with naval intelligence, more specifically U-boat intelligence.

The tasks of Hut 4 were primarily to support the efforts of the cryptographers in Hut 8 and to liaise with Admiralty and the SIS (Secret Intelligence Service, always referred to simply as 'Broadway'). This work involved not only the recording and evaluation of every naval signal of whatever type received but also the painstaking integration of all available information from other sources. I shall be telling you later on what some of these other sources were.

I reported for duty about the third week in June. After signing on and swearing the required oath, I and several other new arrivals were transported in a bone-shaking bus with slatted wooden seats to various billets scattered around in the neighbouring towns and villages. To our mutual dismay another girl and I found that we were to share an extremely narrow double bed in an extremely small room in New Bradwell (an area of rather dismal terraced housing which is now part of Milton Keynes, but which was developed originally for workers in the railway carriage workshops at Wolverton). The arrangement might have worked if we had been on opposite shifts (like the old tale of Box and Cox who shared a lodging unbeknownst to each other). But of course initially we weren't on different shifts, in fact neither of us was 'on shifts' at all as we both worked 'permanent days' for some weeks. We didn't much like each other, each accusing the other of snoring, but consoled ourselves that conditions were probably a lot worse in the services. I'm sure they were in many places but I must say that the ATS and WRNS who eventually arrived in droves did rather well, being lodged in splendid places like Woburn Abbey. The discomforts of New Bradwell did however prompt us to make haste to seek other accommodation. Just as well perhaps as by that autumn more and more people were flooding into the district and rented places were getting increasingly hard to come by. I myself took a couple of rooms and a share of the archaic facilities with two other sets of tenants in a house on the village green in Stony Stratford. (Needless to say, 'shop' talk was absolutely taboo. Conditions in the house, a rather charming former coaching inn on the Horsefair Green, were pretty basic, but there was remarkably little friction, particularly after we had learned to use hay-boxes for cooking, to reduce competition for the use of the old gas cooker, and worked out systems for defending precious rations from each other's inadvertent use or from the depredations of mice and ants. I remained there for the rest of my time with

the FO. Incidentally I also made a haybox for the office, to keep an enormous pot of tea warm for the benefit of the boss of the Hut 4 analysts team, [Edgar Jackson](#), who was a tea-addict.

Travel to and from work from Stony Stratford was easy as there was a nearby pick-up point for the official 'utility' bus (the slat-seated boneshakers did sterling service collecting and delivering shifts in all weathers over a large area, often along tortuous country roads, and at night, in deepest blackout, driving on sidelights only or at best on dimmed and half-screened headlights). I can't remember the official transport ever failing to turn up, though I can recall once missing the thing, embarrassingly because I had set my alarm wrong when summer time came in.

Missing transports inwards was severely frowned upon however, quite understandably. Very few people except some of the original staff of GCCS owned means of travel other than a pushbike. So missing a transport could also mean missing a shift, thus forcing some unfortunate colleague to work on. The work had to be covered.

Bletchley Park main building was a medium sized Victorian mansion built of red brick with ornate cream-coloured sandstone decoration. It was an extraordinary agglomeration of pilasters, balconies, porches and gables and differing styles of window. Inside, it seemed gloomy and unattractive, but this may have been due to blackout paint on the windows and civil service decor. It housed the admin offices, a reference library and a dining-hall-cum-assembly-room. The old stables were also used as offices.

Hut 4 was one of a number of large wooden single-storey shanties clustered around the main building; there were others scattered further away over the site. Both inside and out they were not unlike the SSRC White Hut (formerly the Communications Hut) on D-Site at Sandhurst, though they were a good deal larger. I seem to remember that all were painted a mottled greyish-white. Hut 4 already seemed rather decrepit and smelled of damp wood even in the summer of 1942. There was an old iron stove for heating in winter. It actually did quite a good job and one was certainly warmer at work than one was at home. Even so, nearly everybody had chilblains and many wore mitts.

Internally the hut was divided up into a series of large rooms and several smaller offices. The main rooms were the scene of the following activities: the Registry, the Watch, the Linguists and the Analysts. There were also typists and teleprinter operators in separate rooms.

One of the smaller rooms had Frank Birch's name on the door though he was rarely there. He may have been around more in the early days of the war. Hut 4 was still occasionally referred to as 'Frank Birch's Section' and the girls who worked in the REGISTRY were still sometimes nicknamed 'Frank Birch's

Young Ladies' after the then famous Cochran's Young Ladies. They were all pretty, mostly from famous families, and belonged to London high society. Theirs must have been an extremely tedious job but they toiled away with inky fingers keeping the most meticulous records possible of every naval signal received by the section. In due course, signals texts were archived with the relevant translation attached, if there was one.

The signals were registered by type and time of origin, length of text and so on, and then passed speedily to The WATCH. As the name suggests, this section kept watch round the clock and bore the responsibility of sorting and identifying the raw traffic for priority treatment, looking for items or groups of items which might produce something to give a lead to the cryptographers. The Watch also had overall responsibility for distributing work around the hut and ensuring that the output was speedily and efficiently disseminated. They conducted liaison with other huts and also with the Admiralty and Broadway. They in fact orchestrated the intelligence effort. [F. H. Hinsley](#), 'Harry', was the leader of this team. He was quite outstanding and everybody recognised that even then.

Some naval cyphers were broken regularly, whereupon the decodes were passed to the LANGUAGE SECTION for translation. The linguists were all of the highest calibre and endlessly helpful. There was never any need to query the accuracy of a translation, however obscure the message, but even the linguists were sometimes stumped by 'corrupt text', the original transmission having been either misheard or faded out.

Translated material was then sent to the ANALYSTS for detailed evaluation. All three areas, Watch, Languages and Analysts, worked closely together, and also sometimes individually with representatives from Hut 8.

Hut 8 housed the cryptographers proper. They had to tackle the technical problems posed by the German Enigma encoding machines and the appalling complexities of decryption. Hut 4 housed the teams engaged in all other aspects of naval intelligence.

Hut 3, the air equivalent of Hut 4, worked in conjunction with Hut 6 cryptographers. I believe their organization was very similar to ours.

In Hut 4 there were no individual desks; people worked at long wooden benches with trays on racking before them and jobs were carried on at the work station rather than in a particular personal corner. If you wanted to discuss something with the Watch or the Linguists you probably found yourself sitting on the opposite side of one of these long benches, peering at your colleague through or round a tower of in and out trays.

My introduction to my job consisted of a tour round the building to show me the layout and to meet the inmates, together with a short explanation of

what each group did. Then followed a briefing on the history of the U-boat war to date.

I was told how in the early days of the war Polish intelligence had given over to the British their expertise, which was considerable, on German cyphers, and had actually also handed over an early version of the Enigma encoding machine which was used by all German secure communications at that time. I had a rather sketchy lesson on the principles of these machines. The Enigma encoding mechanism was based on a set of three wheels which moved through a variable progression, pre-arranged on a 24 hour basis by a manual setting for which instructions were contained in a daily order book carried by all U-boats. There were added technical sophistications which I don't feel qualified to explain, but I am sure that by now you can read all about it somewhere! I was told that the work on the possible permutations produced by using these machines was carried out in Hut 8 and that a piece of equipment nick-named 'the Bombe', had been developed to perform the astronomic calculations required in decryption.

The story of the sinking of U 110 in May 1941, with the capture of her Enigma machine before she went down, was much easier to understand. Her commander, Lemp, drowned as he tried to return to her when he realised what was happening.

I had arrived at an appalling time in the battle of the Atlantic. A separate cypher for U-boats, Triton, superseding the all-Navy Hydra, had been introduced in the preceding February, and Bletchley cryptographers had not been able to break it. To make matters worse, the U-boats' method of operation had changed, new tactics were being developed, and vast numbers of enemy submarines were prowling the convoy routes. This was partly due to the fact that our improved coastal defences and allied Air Force anti-submarine action had compelled them to withdraw from inshore activities. The penetration of Prien's U-boat into Scapa Flow and the Royal Oak catastrophe in October 1939 had ensured that effective defence systems were established urgently around our coasts. By 1942 ever more new and larger German submarines with the capability to stay at sea for long periods were entering the Atlantic. America's entry into the war led to a vast increase in the transatlantic movement of shipping. There were rich pickings for German surface raiders and the so-called 'wolf-pack' operations of U-boats. The convoy system was providing some protection to merchant vessels but ships were under constant attack from packs of elusive submarines. The convoys of fuel tankers from Aruba in the West Indies had to face nearly 4,000 miles of enemy-infested waters from the Caribbean to the UK; it is just on 2 and a half thousand miles for the shortest N Atlantic crossing, and merchant shipping is notoriously slow. The losses to the lumbering merchant shipping were terrible, any stragglers from convoys were an easy prey. After the entry of the United States into the war their troopships also faced desperate risks.

The most immediately striking feature of the analysts' room in Hut 4 where I was to work was the large cork wall-drawing which covered one end of it. This represented a chart of the Atlantic and the Northern areas. Across this wall there appeared to crawl coloured caterpillars, with labels attached. There was also a scattering of labelled pins of a variety of colours. I was soon to learn that the caterpillars represented convoys, and their positions, course and speeds were all plotted currently as information was received. Some coloured pins showed the reported locations of convoy stragglers, damaged or sinking vessels. Different coloured pins were used to show estimated presence of a U-boat. The whole scene was constantly kept up to date, and everybody in the team took a hand in repositioning pins, plotting from shipping reports, or any other relevant information. Own navy positions were NOT recorded on this chart. That was the business of Operations Room at Admiralty. It was the job of Hut 4 to form opinions and offer assessments and forecasts of enemy activity to assist the decision-makers there.

My arrival in Hut 4 coincided with the reports of the PQ 17 tragedy, when a convoy on the Murmansk run was decimated by attacks from U-boats and surface vessels. The convoy route was subject to constant attack from enemy naval units based on the occupied Norwegian ports. 27 out of 33 escorted vessels were lost. The gloom in Hut 4 was indescribable.

I have spoken mostly about the U-boat situation, because that was what was to become my speciality. But in June 1942 all Hut 4 analysts, for all types of naval craft, worked in the one room, and it was a very small team indeed. The research team consisted of:

Edgar Jackson, previously an architect. He was the leader.

[Hilary Curtis](#), a remarkable young woman who was a professional accountant. She specialised in U-boats and had been at Bletchley for some time.

[Hugh Russell](#), a cheerful young man who owned a sock manufacturing business in Leicester, dealt with small craft and coastal information. He knew the Baltic and Scandinavian coasts like the back of his hand.

[Herbert Matthews](#), affectionately known as HM, a retired schoolmaster, covered large surface vessels and was beginning to develop an index on Japanese submarines. Incidentally, HM and the Head of Languages were the only greyheads in the Hut. (That's not accurate either, the head of languages, [Walter Ettinghausen](#), had a shock of white hair.) Most people were young and many, including Harry Hinsley, only in their twenties.

Last but not least was [Mary Ormsby](#), our cartographer, one of the most interesting characters I have ever been privileged to meet. She had been the first woman taxi-driver in London and at the beginning of the war had been running a coal-carrying canal barge, with her sister.

Unfortunately, just after I arrived, Mary damaged her ankle somehow and went off sick, leaving me to finish a job she had begun. Presumably I got stuck with this because somewhere in my CV it showed that I had a Scottish Higher leaving certificate in Art and my hobbies included boats...

Anyway I was set to completing a chart of the progress of the break-out from Brest in February 1942 of the German cruisers *Scharnhorst*, *Gneisenau* and *Prinz Eugen*. This was to be exhibited during a visit to the section of a group of senior naval officers. For what purpose, I was never told. It may have been some sort of post-mortem, or perhaps a demonstration of how much would have been gained if intelligence sharing had been better at the time. Obviously I as a junior and a newcomer didn't need to know and 'need to know' or rather 'doesn't need to know' was very much the order of the day at Bletchley and probably one of the main reasons why the secrets of the place were so well kept. Most people had very little idea of what went on in other huts. Very few indeed knew the whole picture. Although our section was so closely involved with the cryptographers of Hut 8 I never actually saw the 'Bombe'. Nor did I get to see Colossus even after the war ended. Colossus was the first real digital computer and was developed at Bletchley to cope with the eventuality of even more sophisticated encryption machines being introduced by the enemy.

There was constant activity in the analysts room even though the U-boat decodes were not available. There were other important sources of information which had to be dealt with more or less currently; these included:

**Radio Direction Finding** reports, RDF, or more frequently simply called DF, reports, sent in from receiving stations which attempted to pick up signals and take bearings on the location of the transmitter. Signals were often very difficult to pick up and DF bearings were often scanty, but what came in had to be dealt with promptly. This was done by sorting the DF report slips into chronological order if they came several together, but in any case handling them immediately they came in, even singly. What you did was this. Standing on one side of the room not far from the wall chart was a small and rather ramshackle looking table on the surface of which was a projection of the same area as that on the wall chart. Round the edge were cuts calibrated to represent degrees and hanging round from the edge were strings to which were attached plumb weights at either end. Everybody took a hand at 'laying off' these reports which you did by hauling on an appropriate string and lodging it in the opposite appropriate edging slot, repeating the process for as many bearings as the transmission in hand had engendered.

Ideally you needed at least three bearings to arrive at what was known as 'a fix', an area on the chart which was cross-hatched by the strings and within which your signal originator might lurk. All too often in the early days only two bearings would be forthcoming. Another problem was that many transmissions were too brief or too weak to enable an accurate bearing to be taken.

Later, as reception and DF technology improved, and also as more receiving stations were set up, more and more precise fixes became possible, two of the most useful were those at Freetown in the West Indies and Simonstown down by the Cape of Good Hope. One was always thankful to see reports from them. The DF table remained a constant tool right to the end of hostilities.

Assessments of positions and their timings were plotted on the wall display and a note of the position sent to the registry to be included with the original record of the signal transmission.

Reports of possible sightings, sometimes sightings of patches of oil which might be suspected of emanating from a damaged or sunken sub.

**Agents' reports.** These were difficult to deal with. One always had a feeling that one should attach to them a value appropriate to the cost of their acquisition, but sadly they often came in too late to be of current use and also, and this was confirmed after the Ultra signals became available again, they could not be relied on as accurate. The trouble was it was suspected, and the suspicion eventually proved right, that even if the correct total numbers of submarines were reported as having been spotted in port, or leaving port, the accuracy of U-serial numbers reported could not be relied upon. These reports came most frequently from the Norwegian ports of Trondheim, Narvik and Bergen and the French ports of Lorient, St Nazaire and La Rochelle. Their main use was to confirm that these ports were in use as U-boat bases. We deeply appreciated them, and were saddened when, as sometimes happened, the source dried up altogether.

Aerial photographs of U-boat pens were very occasionally received. They always had an aerial photography specialist report attached. Very late in the war I was shown a picture of the yards at Peenemuende. It had already been guessed by others that something unusual was being constructed there. It was in fact the cradle of the V-rockets.

Since the analysts for all sorts of naval craft all worked in one room at this time it was quite easy for bits of information such as the noting of extra activity of small craft around a U-boat base to be passed over to the U-boat specialists for their consideration. Close liaison was always maintained with the other specialist research groups.

Not long after I arrived we were assembled in the old main building to be addressed by the Chief of GCCS, Commander [Denniston](#) (Denniston left shortly after this to be replaced by [Edward Travis](#)), so this was the only time I heard him speak. He was accompanied by several senior staff officers. We were told of the expansion ahead as the full integration with the services' intelligence came into being. We were impressed with the magnitude of the tasks to come and the responsibilities that were ours. The success or failure of the fighting forces might well depend on our efforts. We were told that total dedication, total security and an ever-present SENSE OF URGENCY were called for. If you remember what a desperate time the summer of 1942 was, you may imagine what an effect these appeals had on us. It was both terrifying and uplifting. The slogan 'a sense of urgency' became a catchphrase, sometimes used ironically I must admit. But the idea that we were depended upon by the Forces gave us all the motivation we needed.

Soon after that address the first of the naval personnel arrived in Hut 4 in the shape of a 3rd Officer WRNS who had come to establish a WTI (Wireless Telegraphy Intelligence) group. She was joined by two WRNS ratings. They spent a few days learning their way round the Hut 4 set-up and talking to various specialists, then moved off to another office. Next came a survivor from one of the Murmansk runs an RNVR officer who joined Hugh Russell and also took an interest in submarines in the Mediterranean. He had some knowledge of the Balkans, spoke Serbo-Croat and was convinced that there would be a bloody revolution in Britain after the war.

Then, horror of horrors, we learned that Edgar Jackson, the U-boat expert, was to leave, taking his irreplaceable expertise with him. All too soon, he was gone. I was delighted to hear only recently that he is still alive and well and living in Cheltenham, having retired there after a career with GCHQ. But his departure was a tremendous blow to those of us who remained. There were hardly any written research analyses archived at that time. The somewhat sporadic decodes from the early years of the war, those originating during the 'Hydra' period before February 1942 when the U-boat cypher was changed and traffic became unreadable, were there to read, but reading them 'cold' so to speak was no substitute for having worked through them. I can remember reading through the old signals as part of my training and feeling completely bamboozled. Incidentally, most those old decodes were stamped (in red, I seem to remember) 'Most secret', not 'Top Secret', the latter I understand is an Americanism, adopted by the allies. The Ultra designation simply implies the highest security category, even higher than Top Secret.

Though the nature of the Atlantic battle was by now much changed the loss of an analyst of such long experience as Edgar was deeply felt. His replacement arrived in September, I think. He was [Ray Goodman](#), RNVR, in civilian life a statistician and economist who of course did not have Edgar's

long expertise but who had academic training, spoke German and had some sea-going experience. He contributed much to the organization of the work of the section, and produced most illuminating graphs and tables based on data produced by day-to-day analysis of the Atlantic situation. Hilary Curtis took the lead in day-to-day U-boat research, reports and suggestions for the cryptographers.

Meanwhile, in an attempt to steer myself through the maze of information, since Edgar was missing now, who could have answered most questions off the top of his head, I started a card index on which I could gather any scraps of information about each and every U-boat listed in Janes Fighting Ships, built, or as being built, or otherwise mentioned in any other available source. Any really firm items were written in ink, others in pencil. The card index was the bane of my existence because it would be useless unless kept up to date, but it proved invaluable later on.

All this time, construction work was in progress all over the site. A purpose-built dining hall went up though the food got, if anything, worse. An assembly-hall for dances and film-shows was built. Hostels went up to house newly-arrived staff pending their making arrangements outside for themselves. In fact one or two people managed to stay there permanently I remember, including a newcomer to our team, but the accommodation was little better than a very small cubicle per person and pretty Spartan at that.

The parking area was now enlarged to take the increasing number of staff transport vehicles. And new blocks to accommodate the increased staffs of the original huts were very rapidly appearing on the far side of the dingy little lake which lay to the front of the mansion.

By late September Block B, which was to receive the denizens of Hut 4, was ready. Guess what! - Mary Ormsby left to get married and so it fell to me to go over there even before the benches and the shelving were fitted and before the paint was dry in many places, to replicate but in an expanded version on a wall of our future office the cork-based chart with which I was already so familiar. My last effort at cartography had been a dire experience but was nothing to this. At last it was done and soon we were all moving in.

It was a big change from the old days of Hut 4. Inside, the dear old shack had been quite bright when the shutters were not up. Block B was dim even when it was sunny outside. The U-boat room was lucky however in having a door (Probably a fire escape) which gave directly onto a grassy patch beyond which was the lake. During the day in good weather this door mostly stood open. This facility was particularly welcome to begin with in view of the fact that with there was an overpowering smell of new concrete. The old smell of damp wood was almost preferable. Later on I suppose having the door open must have helped to dispel some of the clouds of tobacco smoke

which we generated. Nearly everybody smoked, nobody objected. Nobody knew or cared about passive smoking. It was a thoroughly friendly and social thing to do.

As a matter of fact, while on the subject of health, I can't recall there ever having been a serious epidemic at Bletchley. Some people complained of sinus problems due to concrete dust, very many people had nasty chilblains, and there was an embarrassing outbreak of lice. Due, it was eventually discovered, to the introduction of a couple of rather shabby plush upholstered buses. We and they were duly de-loused, but I never liked travelling in them thereafter.

The room patterns of naval section changed with the move to the new block, but in all essentials the work structure remained the same. U-boats had a room of their own and became known as NID5 (Naval Intelligence Department 5). Goodman had an office next door and a desk! There were several other offices along the corridor which came to be occupied as the workload increased and more personnel arrived. Some large rooms became subdivided into a honeycomb of smaller ones.

The Watch, Languages Section and Registry were sited further along the passage on the ground floor, still further on was a teleprinter room staffed by WRNS. Round another corner was the office which was being prepared to receive the US Liaison officers. The surface vessels and all their works went upstairs to a range of offices on the upper floor, with a spiral staircase for easy access between us and them. The constant consultations that had characterised the work of Hut 4 continued in Block B.

By mid-November, I and the other analysts were set to maintain a three-shift system. Excitement was in the wind. There seemed to be a growing hope that the U-boat Enigma traffic might soon be broken. More and more naval personnel were arriving (and of course Army and Air Force personnel to other parts of the Park. More civilians also appeared. The U-boat research team grew to six and we acquired our own clerk-typist.

The American liaison group arrived and settled in with their coffee machine and, Glory be!, a huge bag of sugar. They were wonderful colleagues and good and generous friends. The old haybox with the teapot under the bench fell into disuse.

Being on night shift never suited me. By 4 am I was at a low ebb. But the DF fixes and the convoy reports continued to roll in and had to be dealt with. The Navy cocoa and the fluid described as tea which were brought around on a trolley in the small hours failed to revive me. Even the coffee courtesy of Uncle Sam did little to help. I used to feel that I was only marginally efficient. It was a great relief when towards the end of 1943 I was finally released from night shift and reverted to the two-shift mode.

But in the autumn of 1942 in anticipation of the arrival of the Long-awaited and desperately needed break in the all-important Enigma code one would have been prepared to stay at work round the clock if required.

As always a large part of the work was directed towards identifying suitable signals in code, which might present the possibility of an 'informed guess' as to their content. I will try to explain briefly how this worked. The thing was to identify a signal that might contain a certain string of characters to suggest what that string of characters would have been in the original text of the message before encoding. Such a string would be termed a 'crib' and would be discussed with the cryptographers as a basis for matching against the coded text of the relevant signal. The matching of these two strings constituted the creation of what was called a 'menu'. This would be a starting point for decryption. Only a starting point, of course, because the function of the Enigma machines in encoding was to increase astronomically the possible permutations in text to be resolved before a decode could be obtained.

But during the autumn of 1942 success was still eluding us. In the absence of a break in the U-boat code, we still had to cog together assessments from any and every scrap of information available. But preparations for a break were approaching completion. A part of the Watch was now specifically designated the Z watch to deal with the signals in U-boat code. There were often more than a hundred U-boats at sea at any one time and traffic could be heavy.

Naval section acquired a Lt Commander RNR in charge of office accommodation. He had a passion for do-it-yourself carpentry and raw onions. He would go around with an onion in one hand and a saw in the other, parking the former when he had to use the latter. One of his efforts was to cut a hatch in the partition wall between the corner of the U-boat room, where I mostly now sat, and Ray Goodman's office. The hatch door ran on ball bearings and made a terrific crash as it was drawn back, which it frequently was. Sometimes Ray's face was framed in the aperture, sometimes it would be the faces of cryptographers from Hut 8 which peered through while Ray's fist holding a pipe rested on the sill, ready to draw the contraption to when the conversation ended. They would be seeking a suitable 'crib'. In the daily discussions which we had on the subject of cribs, it was usually [Alan Turing's](#) associate [Hugh Alexander](#), later a well-known chess correspondent, for the Times I think, and [Shaun Wylie](#), another brilliant mathematician, who came over to our section from Hut 8. They almost always came together, and were unfailingly cheerful and unflappable.

So the excitement built up to the moment when word went round that at last the U-boat Enigma 'cipher had been broken. It was a grey day in December 1942. Ten months since the last breaks, Enigma decodes were on their way.

There was no time for celebration, but I think there were many secret prayers of thanksgiving. Suddenly, the lights went out just as the first decoded signals arrived. Aladdin lamps were rushed in and hastily lit. It was the only time that I can recall a lighting failure, but the effect was dramatic and the atmosphere unforgettable.

Nobody could feel confident of course that the breaks would be continuous, or current. There was that daily change of setting of the Enigma machine by the Germans in accordance with a prearranged formula to contend with and if the right cribs couldn't be found the situation could be disastrous. In fact, the breaks were not always consecutive and some days were not broken at all. There were delays.

There was always the chance that the Germans could change the U-boat cypher again as they had done in February of 1942 when Hydra was replaced by Triton. But the main thing was that the decryption methods and the equipment devised had proved themselves. The system worked.

Alan Turing and his team were the heroes of the Ultra battle. I remember Alan vaguely, though I don't recall ever seeing him in Hut 4. He was a remote figure who had an awesome reputation for brains. As I have already mentioned, it was his colleagues Alexander and Wylie who usually liaised with us.

As we handled the signals, so we learned more and more about the wiles and stratagems of the U-boats. We began to get a deep knowledge of the sort of things that would be transmitted by the Naval High Command, the sort of things that would be reported by B-Bar, a form of short signal used by U-boats for a wide range of standard reports. We learned the names of many of the ace commanders who were at sea. Hilary Curtis started an index of commander personalities, cross-referenced with my index of U-boats.

The enthusiasm throughout the block was terrific. About this time too, to everybody's delight, Hilary from U-boats married Lt [Evelyn Talbot-Ponsonby](#) RNVR, who was by then in charge of the Surface Vessels Department, upstairs. Soon the winter would be over and we were getting better at our jobs and the convoy casualties were not so consistently bad, though sometimes still depressing. With the insights provided by Ultra the efforts to divert convoys away from the threatening packs of U-boats were proving more successful. We believed the losses to the U-boat fleet were increasing.

Then, in March, we lost it. It is to the everlasting credit of Hut 8 that they speedily diagnosed what must have happened. The Germans had added a fourth wheel to the encoding mechanism of the Enigma machines. The possible permutations in the encoding of a message were rendered astronomic by the addition of yet another wheel to the three already installed in the Enigma machines.

It took the system just ten days to crack the problem.

Now the work really took off. Liaison with Admiralty became ever closer as the war wore on. The U-boat room had always had a 'hot line', which could be scrambled, to the Naval Operations room in London, but it rang more frequently now. The teleprinters clacked constantly behind the closed doors further down the passage. I believe that in the early days of the war material had been passed to the Admiralty by messenger bag. The teleprinters had surely been a great enhancement to the communications system.

New routines came into being such as the maintenance and circulation of lists of call-signs, 3-letter groups which identified the originator of each transmission, and also had a significance in decryption.

Other lists were issued, linking the information which was piling up in the two index files, 'Commanders' and 'U-boats'. These were in demand for several reasons. Signals might be addressed from German Naval High Command to 'so-and-so's U-boat' or be transmitted from 'so-and-so' with no mention of the U-number of the boat. The Germans were very much into the 'ace' system of elite performers. As they were with the much more publicised air pilots, Admiral Doenitz, the commander of the U-boat fleet, had his favourites, and would congratulate them by name. It was obvious that commanders who had distinguished themselves on one cruise might well emerge on the next trip in command of a prestigious new boat, possibly of a new series or likely to be tasked with a special mission, and therefore perhaps presenting some hitherto unsuspected threat, able to stay at sea longer, operate in more distant areas, and so on. By now I had charge of both of these files as they were complementary, but again all members of the U-boat team took some hand in any and every job. Even though the team had been augmented we remained few in number and it was important that each member thoroughly understood all tasks.

Late in 1943 the Admiralty asked to have copies of the indexes maintained in London. This entailed somebody, mostly me, sometimes a colleague, sometimes two of us, travelling to town and doing the job manually. It was a good chance for discussions, was a fascinating insight into the workings of our associates at Admiralty and a welcome outing from the somewhat claustrophobic precincts of BP. We went by staff car and sometimes Frank Birch was a fellow passenger. It was seldom that I saw him otherwise. Later on, as we took these journeys down the Watling Street and on into London I can remember how we noted the way the doodlebugs had a tendency to land on the higher ground north of the River. Each week there would be a few more damaged roofs or missing buildings along the route.

At the end of the year Hilary left to start a family and I took her place in charge of the team which now numbered six, not counting Ray, providing

the daily analyses of the U-boat situation. Things were hectic but we felt we knew what we were doing.

The DF fixes continued to be laid off as soon as they came to hand but as the decodes rolled in it was a struggle not to lag being with the processing of material. But there was really nothing that could be described as 'automation'... Failing some sort of computerised data base to marry together all the information which might be called for, a good memory became essential. There was hardly ever time to go along to archives to check back on some half-remembered signal which might be relevant. There was little time to pore over charts or the German Naval short-signal code book which came into our hands at the end of 1943 or early 1944, I can't recall exactly. It was a marvellous acquisition which had been captured in the attack on a German weather ship in spring 1941.

When Enigma was finally broken into, it was realised by the Watch who studied all grades of transmission, some of the short transmissions from U-boats contained weather reports which were repeated by weather ships verbatim in a lower grade code but that both used the short signal code book of four-letter groups for standard reports.

The B-bars assumed tremendous importance. When combined with a good DF fix and a clearly-received transmission, with a knowledge of the layout of the German Naval grid and a good 'hunch' about the content of the message, it would be possible to have a shot at selecting the equivalent four-letter groups from the code-book from the vast range of groups on offer. The more of the groups one knew by heart and the more one knew of the most commonly used messages, and the more of the code groups for commonly reported latitudes and longitudes in grid square references that one could recall accurately, the better the chance we had of providing a quick crib, and time was always of the essence. It was a challenge. Sometimes just when we thought we were NOT going to be called upon to produce a crib that day, the hatch would be ripped open and faces would appear 'Hey, think of a group with a T in it 3rd letter!' I like to think that we often came up with a helpful suggestion.

In the days of DF fixes without benefit of decoded signals, that is before Enigma was being broken, it had already been noted that by far the most fixes were obtained in the area 60 - 65 degrees North. Once Ultra came along it became apparent that far too many U-boats for their own good celebrated their safe passage into the Atlantic by signalling something on the lines of 'have passed 60 degrees North. Southbound. Will maintain WT silence'. Another fairly routine message on the return journey was 'passed 65 degrees N.'. There was a wide range of other routine transmissions, such as requests for refuelling, suggested RV etc., reports of damage, returns to base, and requests for escort. Most alarming of all were reports of sightings. I can still remember the group for 'have sighted a corvette'.

There were some curious lapses in German signal security. It was our job to work out, or sometimes simply guess, at what was being said and which U-boat might be saying it, but these lapses were a help.

We were aware of the preparations for Overlord and held our breath. The surface craft and coastal experts were much to the fore. Anxiety was high that something might occur which would cause the Germans to introduce some new and radical change to their codes. As I have already said we were always conscious of the possibility of Triton being replaced or another enhancement to the Enigma machines introduced. Strangely enough, the Germans do not appear ever to have seriously thought that their most secret code was being broken.

A good example of the working together of civilian and naval expertise occurred sometime in mid-1944, I seem to remember. It illustrates the point about integration of all types of intelligence, including technical know-how. Decodes from U-boat Enigma had brought to notice some strange goings-on in the Baltic in the area off Bornholm which was allocated for submarine trials. The word *Schnorchel* occurred constantly in the signals. Eventually combined effort, Services and civilians, Bletchley Park and Admiralty, correctly diagnosed that a new device, some sort of breathing tube, was being tried out which would enable submarines to remain beneath the surface but not deeply submerged for long periods. The effects of the advent of this equipment were very serious and U-boats equipped with it caused serious damage in the Atlantic at the end of that year and in the early months of 1945, despite the loss of the French bases which had been liberated.

Strangely enough, U-boats also reverted to the tactic of operating closer inshore to Britain, as they had done in the early part of the war. They achieved considerable success.

And now I have to confess that unfortunately I missed out on a couple of months in early 1945. One afternoon in mid-January I was clambering up the spiral staircase to the offices of our friends the 'surface vessels', carrying a volume of Jane's and a copy of Cassell's World Atlas (I'd been looking at the possible ranges of larger subs, some of which were due for commissioning, and researching some references to South America, when I keeled over. Actually, safely onto the upper floor. Nevertheless it must have been quite dramatic. Jane's and Cassell's fell down the spiral but fortunately were not seriously damaged, I was sent to the doctor who diagnosed exhaustion and prescribed two month's leave. It was thoroughly unwelcome and I have never been so frustrated in my life. When I got back things were very nearly over bar the shouting.

Then came the last signals. Peace in Europe. Drinks in the Naval Mess. Goodbyes to colleagues. The move with Harry, Goodman, and some others

to South Kensington to write things up. But it was to be a long wait before BP became history.

You may know that a Bletchley Park Trust was formed recently. It aims to preserve the site and set up some sort of museum and conference centre there. To my astonishment I have learned that Hut 4 is one of the survivors. If anybody is interested in the project of preservation, I have here a few brochures. They are quite nicely done, I think.