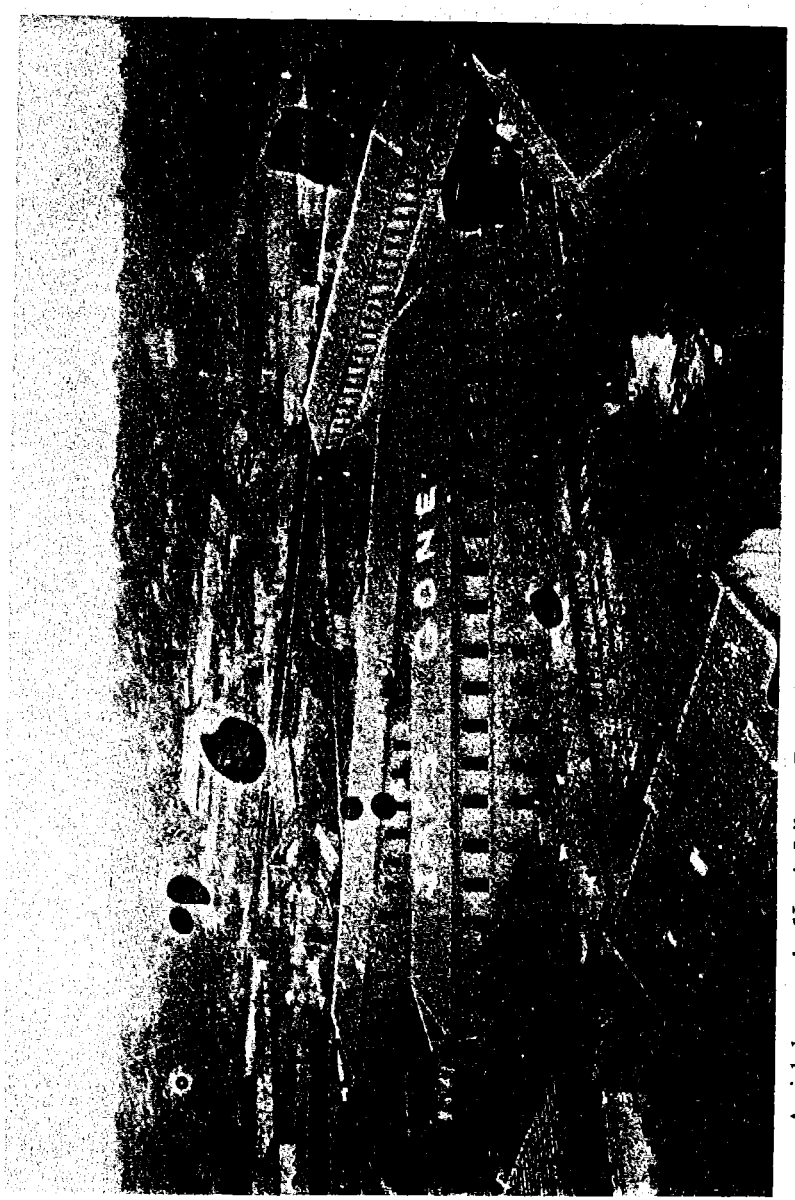

Aerial photograph of Insein Jail, near Rangoon, taken on 1 May 1945 by Wing-Commander A. E. Saunders, CO of 110 Squadron, flying a Mosquito VI

CODEBREAKER IN THE FAR EAST

ALAN STRIPP

With an Introduction by
CHRISTOPHER ANDREW

FRANK CASS

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wars India was part of an imperial signals intelligence network which stretched from Britain to the Far East. Colonel John Tiltman, who played an important part in expanding the Japanese section at Bletchley Park and to whose 'brilliant pioneering work' on Japanese codes and ciphers Mr Stripp pays tribute, began his career as a cryptanalyst in India. Alan Stripp's book is the first to describe the remarkable achievements of the signals intelligence units stationed in India during the Second World War.

Codebreaker in the Far East also has its lighter side. The wartime recruitment of Japanese cryptanalysts provides an entertaining study in last-minute British improvisation. Alan Stripp himself was recruited in 1943 as a first-year undergraduate on the strength of a classics scholarship to Cambridge, an ear for music and a talent for crossword puzzles. The crash-course on Japanese which prepared him for his work as a cryptanalyst was devised and run by Oswald Tuck, a retired naval captain who had left school at fifteen and taught himself Japanese while serving on the China station before the First World War, but had no experience of teaching others. The School of Oriental and African Studies at London University, then the only British university department teaching Japanese, when approached by Tiltman, claimed that no worthwhile course could be completed in less than two or three years. Tuck said he could do it in six months. After only five months in an improvised classroom in the Bedford gas showrooms, he was able in the summer of 1942 to send some of his students (most of them Oxbridge classicists like Alan Stripp, who was recruited a year later) to translate the recently captured Japanese Air Force code.

Despite its failings, the achievements of British intelligence during the Second World War were probably the most remarkable in the history of warfare. One of the keys to Britain's success was the willingness to employ the unconventional talents of what Whitehall called 'professor types'. Alan Turing of King's College, Cambridge, and Bletchley Park, perhaps the ablest codebreaker of the war, kept his mug chained to a radiator to prevent theft, cycled to work in a gas-mask when the pollen-count was high, buried his life savings in the Bletchley Woods and failed to recover them when the war was over. It is difficult to imagine him fitting easily into the German or Japanese intelligence services. It is equally difficult to imagine the enemy intelligence services putting the youthful talents of Alan Stripp and other classicists fresh from school or first-year university courses to such remarkable wartime use.

Christopher Andrew

PART ONE

TOURS OF DUTY

1

Cambridge, Bedford and Yorkshire

How do people become codebreakers?

The turning-point for me came at Cambridge in the spring of 1943. My college Tutor, Kitson Clark, had sent round a note about an officer who was coming to interview people at the Appointments Board, now less confusingly called the University Careers Service; it might have something to do with languages. Was I interested?

I was. I had been studying Classics, having arrived at Cambridge by a roundabout route. My father had been at London University but thought I should try for Oxbridge. Our Boat Race loyalties had favoured Oxford – I think purely from colour prejudice – but in any case many schools encouraged their pupils to back both horses; if unlucky at the first, regard it as a trial run for the second. I spent several interesting days at Exeter College, Oxford, in 1942, and am still waiting to hear if they have a place for me. Some months later Trinity College, Cambridge, offered me a place and a scholarship. That settled it.

I knew that when the course ended that summer I should be called up. Few of us had any clear idea what we would be doing. The RAF beckoned, especially after the film *First of the Few*, but it seemed that the Army needed far more men, and the Navy practically none. At wartime universities everyone except the scientists and refugees had to do some form of military training. Even they were in Fire and First Aid parties, dizzily trailing their cumbersome hoses and stretchers over the medieval roofs – an authorised version of the traditional night-climbers. On Thursday nights I was one of the fire-watchers that Trinity provided as observers from the top of St John's chapel tower, which looked out over both colleges. We slept in a tiny wooden hut perched on top of the tower, and hoped all three telephones would not ring at once.

In the so-called Senior Training Corps we had been spending many mornings in khaki: drilling ('square-bashing'), violently exercising, learning to fire rifle, Bren gun and Sten gun, or more

often Naming Parts: 'This 'ere is the barrel locking-nut retainer-plunger'. There were tactical exercises across the fields towards Madingley by day, or about the Fens near Quy by night, usually defending an unspecified object against an unseen enemy. Anything was more attractive than prolonging this repetitious and often time-wasting routine.

The interview was friendly but searching. There was none of the expected emphasis on proficiency at sport, or on grit, gristle and leadership. What had I done at school? What languages had I studied? Latin, Greek, French, a little German. With what result? What were my motives? Then odder questions: did I play chess? Yes, with my father, not very well. Crossword puzzles?

Here I had a trump card. My father, a mathematics teacher, not only solved difficult ones in the weekly reviews but actually set some himself in the notoriously hard *Listener* series under the pseudonym Neon. These were impressive affairs of which I remember only one, made up of triple anagrams such as ADROITLY, DILATORY and IDOLATRY. He also solved and compiled stiffish competition problems, one of which, 'Robinson's Rendezvous', had won him £30, a small fortune in the 1930s.

The interviewer pricked up his ears. What about music? Here too I had my parents to thank. I grew up in an atmosphere of broadcast and sometimes live symphony concerts, and a favourite family pastime was to challenge one another either to identify a few hummed bars ('Brahms 2, third movement; easy') or, much harder, to hum a specified fragment. My mother played the piano quite well; my father extemporised, none too well, but he had recently learned to play the cello. He had even written a Mass ('Nothing more advanced than Gounod', he claimed) in his enthusiasm for the high Anglican services at All Saints, Margaret Street, where he sang in the choir. I had played the tuba in the school orchestra, and at Trinity was in the chapel choir and a madrigal group. Could I read an orchestral score? Yes, if not too complicated.

These activities seemed to be high on the interviewer's shopping-list – though not higher, I hoped, than languages. I had no wish to be conscripted into a military band, even one that played chess off duty, for the duration. All was well. I cannot be sure how the question was put, whether I wanted to be considered for a Japanese language course, but there was never any doubt about my answer. Nothing was said about the ultimate purpose of the course.

Two months later I received a letter telling me that I had been selected for the next six-month course, starting at Bedford at the end

of August. This was run by the 'Y' Service, and I should be found lodgings and paid £5 a week as a civilian.

The course was held in a large room in a detached house in De Parys Avenue, a tree-lined road not far from the town centre. There were about 35 on the course, including two girls, all of us aged about 18 or 19, and most from university Classics courses. We eyed each other sheepishly. We realised later how sensible the intelligence service had been in choosing classicists and a few other dead-language students – for example embryonic theologians working in Aramaic – for these courses in written Japanese, and modern linguists, more accustomed to spoken languages, for spoken Japanese. If the legends are true of chefs being retrained as electricians for the Army, while electricians were turned into chefs, this was no mean achievement.

We had two instructors. The first was Oswald Tuck, a retired naval captain in his sixties, who had been persuaded to teach the first course, starting in February 1942. A bearded, spectacled, quiet and benevolent man, he had taught himself Japanese nearly forty years before, and was now in his element teaching it to others. The other was Eric Ceadel, another classicist and a student on that first course; quick, cool, lucid and methodical. Inevitably he became known as 'Chūi', the Japanese for lieutenant. Later they were helped by David Hawkes.

We worked every weekday, with just enough time at coffee and lunch breaks to prevent our going stale. Most evenings and weekends were needed to learn the language and above all to memorise the characters. Japanese is so completely different from almost every other language that I have tried to give a detailed description in Chapter Thirteen both of the language and of the language courses.

Given the size of the group, the atmosphere was fairly informal, and we were encouraged to ask questions and discuss difficulties. Sometimes we worked separately or in smaller groups; teaching became supervised learning, and we were given individual translation jobs. The vocabulary was specialised but not stiflingly narrow. Our material was Japanese war communiqués or press releases, or sometimes diplomatic telegrams, which often carried not only the expected messages but personal appeals: 'Please send pearl buttons ("*kai-botan*") for shirts to wear with evening dress'. I suppose we must have asked ourselves what all this was for and how the texts of these telegrams were obtained, yet I cannot recall considering or

discussing the implications. We were, after all, conditioned to sixth-form and university study in which the examination is the goal and the yardstick, and the ultimate destination is not meant to weigh too heavily.

I shared digs in Stanley Street with an older man who was studying Arabic on one of the parallel courses run from Albany Road, Bedford. He was an English Mohammedan, and during the fast of Ramadhan our landlady had to bake him 'night pies' to eat after sunset and sometimes well into the night.

Many of us were music-lovers; I learned much later that chess, crossword puzzles and music had long been considered pointers to a possible proficiency in codebreaking. Several played instruments, and I believe Michael Herzig was the accomplished horn-player whose arpeggios from the Mozart concerto finales often formed fanfares for the start of our classes. We were lucky in having the BBC Symphony Orchestra and the BBC Singers evacuated to Bedford and we could often get passes for the orchestral rehearsals; I remember sitting in while Henry Holst was the soloist in the Walton violin concerto, and realising for the first time that if you can sit behind the orchestra you can learn much more than from in front. One evening we persuaded Sir Adrian Boult to give an informal talk about conducting. A more modest venture was Bedford School's performance of Bach's Christmas Oratorio for which we were recruited as tenors and basses – both scarce in wartime. This was sung in English and apparently conducted by a sports enthusiast: there was more of the rugby scrum than the concert platform in his encouragement to 'Fall on it'.

One weekend, on my way to the railway station, I was hailed 'Hello, young man' by Arthur Wadsworth, who taught French at the same London school, now evacuated to Godalming, as my father. With him was his daughter Mary, whom I already knew a little from the various school events to which the staff brought their families. She was now undergoing teacher-training at the Froebel Training College in Bedford. We arranged to meet, we liked each other, we continued to meet, we went to concerts together, and eventually we became unofficially engaged. Formal engagements were rarer in the uncertain days of wartime, and it was not until 1949, more than five years later, that we were married – and then in Portugal.

I understand from John Prentice, who was on the next course (February – July 1944) that by then 'we had a very good cricket team which terrorised the neighbourhood. Its captain was Francis Dashwood, now Sir Francis Dashwood, Premier Baronet of Great

Britain, and he was by then the only civilian member of the course'. I doubt if we had any talent to match that, except that Denise Newman was a champion swimmer. Generally we formed friendships in twos and threes. I got to know Barry Smallman and Hugh Melinsky, who were billeted on the far side of Bedford, and I recall a furious and embarrassing scene when all three of us were invited to sit in on an ouija-board demonstration by their landlady and her daughter. We were sure that we could see her pushing the planchette – or possibly it was a tumbler – and were tactless enough to say so when asked what we thought of her supernatural powers.

I also remember running across the town to tell them the news, which I had just heard on a BBC bulletin, that Italy had capitulated; that fixes the date as 8 September 1943, since the armistice was kept secret for some days. Most of us believed that the Allies would rapidly occupy Italy and that the war in Europe would soon be over, releasing much-needed troops for the war against Japan, and perhaps even meaning that we should not be sent to the Far East – a possibility we viewed with mixed feelings. We need not have worried.

A colleague reminds me that we met as usual on Christmas Day 1943 but were considerately given only one short piece of translation. It contained Christmas greetings from, in strict hierarchical order:

'Taku kaigun taisa kideru rikugun chui hokusu si'
(Tuck Navy Captain, Ceadel Army Lieutenant, Hawkes Mr)

Many of the messages we were translating were communiqués on recent fighting in Burma. The first press release jubilantly announced the fall of Rangoon and 'the destruction of the main enemy forces'. There were allegations of an Allied air attack on a clearly-marked hospital ship, and stirring messages of confidence in approaching victory despite the American island-hopping in the Pacific. All this material had been well graded, and it grew steadily harder. It had started in romanised form, with an increasing number of texts in characters; we also had to use our ingenuity to fill gaps or correct errors in the texts. Now we graduated to a Japanese text-book, entirely in characters, on the principles of flight, with umpteen technical terms: lift, drag, aerofoil section, gliding angle, stalling speed and dihedral. Increasingly we worked on our own, each with a small pile of messages and always able to consult Tuck or Ceadel when we were baffled.

Ceadel was above all a man of logic and pattern. It was said that the two elderly sisters on whom he was billeted were addicted

to Fair Isle knitting, which he conceived and improvised for them, and that in the manner of chess masters playing several matches simultaneously he would close his eyes, meditate and then dictate to each in turn the colours and arrangement of stitches needed for the next row of each garment. He now unveiled his masterpice, a code-breaking exercise.

We felt fairly safe in assuming that the hidden text would be similar to those of the communiqués already familiar to us, many of which started with the date of some military success. For example 'On February 15 Imperial land, sea and air forces occupied Singapore', or 'On September 27 our bombers raided enemy air-fields near Calcutta'. The Japanese language made a neat pattern of this by calling January 'No 1 month', February 'No 2 month' and so on, and since they put the month before the day it was likely that the hidden message began 'Number X month, number Y day', or in Japanese 'X gatsu, Y hi...'. Moreover the numbers themselves form patterns, as there can be no more than twelve months or 31 days, so that we could begin to build up a speculative picture of the opening phrase of the coded message.

Ceadel had been kind to us, as befitted a group facing this task for the first time. Although any reputable codebook assigns its code groups to words or phrases in random order, he had classified all his under their first syllable, in the order of the kana syllabary, which I describe in Chapter Thirteen. The code was in groups of three digits, making a thousand groups from 000 to 999, and as there are fifty kana syllables it was easy to guess that 000–019 stood for words beginning with the syllable 'a', 020–039 those beginning 'i' and so on, in the traditional order of the syllables. I forget how final 'n' was fitted in.

How long did they allow us? How well did we do? I think everyone succeeded in breaking most of the message and some of us worked it all out; nobody was disgraced. It was also self-evident what we should be doing when the course finished. We had heard of the existence of Bletchley Park, the Government Communications Headquarters (GCHQ), because we knew slightly older contemporaries who had been on earlier Bedford courses and gone on there. The implication, without any breach of security, was straightforward. Early in 1944 rumours began to circulate. Some of us were to go to a naval unit in Ceylon, some to Australia, some to Bletchley Park, one or two to Berkeley Street. With the rumours came speculation: who looked most nautical, military or diplomatic?

Fifth Japanese language course at Bedford, 31 August 1943 – 18 February 1944.

Martin Parfitt McLaren Sumner Booth — Chalmers — Mitchell
Herzig Wolfe McKean Goldberg Collingwood Skinner — Turner
Stripp Fletcher Warmington Smallman Polack Eddolls Smart James Newman
Fenn Webster Bellingham Hawkes Tuck Ceadel Hall Melinsky

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In February 1944 thirteen of us were called up into the Army Intelligence Corps, whose badge has been irreverently described as 'a pansy resting on its laurels'. (Why has it never become 'Royal', when vets, caterers, paymasters and dentists, among others, have?) We collected uniform, equipment, vaccinations and inoculations at the nearby Kempston Barracks, along with our Army numbers. Mine was 14429743, which my father helpfully suggested I could memorise because it was the product of two large numbers, *each of them prime* unless my memory deceives me. I found it simpler to learn it parrot-wise. Our last night in Bedford was spent blancoing equipment, polishing cap-badges and burnishing our boots to mirror-like perfection. We were due to report to the Intelligence Corps Depot and the rumour was that discipline there was rigid and the instructing staff thugs. That proved to be an understatement.

The Depot was at Wentworth Woodhouse, a grandiose mansion in spacious grounds near Rotherham in south Yorkshire. Officers lived in the house itself; we, as mere private soldiers, were quartered in the stables or in huts nearby. Very early each morning a distant bugle would sound reveille, and soon afterwards boots would clump outside, our hut door would be flung open and we would be ordered up and out. For washing and shaving there was only icy water and hardly any time; moving at the double we paraded for breakfast, each carrying knife, fork, spoon and mug, and then began drilling and weapons instruction. We had done it all before and would have needed at most an hour's reminder. That was of no account: what mattered was to keep us on the move with no idle moments; 'idle' was one of the principal terms of abuse. 'Twenty-four hours a day, seven days a week, fifty-two weeks a year. That's your duty. Leave is a privilege, not a right; time off for meals is an act of grace, and don't you forget it.' The other Supreme Principle around which all life revolved was that well-known maxim 'If it moves, salute it; if it doesn't, whitewash it'.

At Cambridge our Training Corps instructors had been tough, efficient but recognisably human. Here the specialists were passable but the rest were bully-boys. When the Intelligence Corps was re-estabished – having disappeared between the wars – nearly a year after the second world war began, it had no instructing staff of its own and non-commissioned instructors had been sought from any unit that could spare them. This lot could obviously be spared. The Guards, not very choosy themselves over the quality of their NCOs, had flushed out their most disposable corporals and

sergeants and despatched them to the I. Corps Depot with a sigh of relief. They were not so much skilled at instructing as at catching people out. They would bellow or scream an unintelligible order and at once countermand it with 'As you were' before anyone had moved more than an eyebrow. If, in answer to a catch-question, anyone volunteered an answer, he was ridiculed. If none of us did, we were sworn at.

One of our group was put on a charge for appearing with 'dirty cap-buttons on parade' after an all-night exercise in which all our highly-polished buttons had had to be dulled so as not to reflect light to 'the enemy'. He was marched in before the Adjutant, one Captain Rankin, widely known as 'The Blonde Brute'. As he was marched out again, sentenced to several days' 'confined to barracks', he could just be heard muttering 'Rankinjustice'.

Why it is thought necessary to cross the border-line from firm control to brutishness in order to achieve proper discipline, nobody has ever explained. Recruits do not expect to be feather-bedded, but anyone who treats them as less than human demeans himself and forfeits the respect and efficiency which he might otherwise expect. The Army, and not least the Guards, have yet to rid themselves of the 'breaking-in' and 'breaking-down' attitudes which the worst types of NCO still embody.

While we were there we had two outings which stood out in happy contrast. One was a cross-country run in full uniform and boots, which Barry Smallman and I, to our surprise, led for most of the way. Another was a much-needed trip to the Elsecar Colliery pithead baths. Less pleasant was a route march, with full equipment, across the snow-covered waste north-west of Sheffield: Wharncliffe Crags. The ground was strewn with small rocks, but the snow covered all natural features so that alternate steps could either jolt your boot on a rock just below the surface, or wrench your ankle when the crust gave way into a hidden hollow of bracken a foot deep. But at least these were natural hazards, and the march could have had some point.

Most of the others undergoing training were in the Field Security branch, which made up a major part of I. Corps duties: somewhere between Military Police and Special Branch. They were on their way to the course at Matlock. We were the odd ones out; we conformed to no pattern – almost always a dangerous condition in an organisation which looks for all-round conformity.

One thing which helped our morale was the discovery that on our occasional free evenings we should be welcome at the nearby

vicarage. The vicar, his wife and their two daughters gave us coffee, played us records and offered us comfortable chairs to relax in. They reminded us that there was intelligent life beyond Wentworth Woodhouse. Another reminder followed.

We were told that twelve of our thirteen would shortly be promoted to Warrant Officers, Class 2 (Company Sergeant-Majors) and would leave by air for Brisbane the day afterwards. The instructor-corporal's face, as he contemplated the awfulness of having us, of all men, leapfrog his hard-won two stripes at the whim of higher authority, was a picture. I forget when I learnt that I, as the youngest and possibly the least efficient, would be the reserve.

Our status rose by several notches, and each of us took turns in drilling the other twelve. The toughest test was to project your voice across the enormous parade-ground, competing with nearby motor-cycle exercises, so that the words of command could be heard at the far side. The corporal clearly doubted if we could cope. But our group loyalty paid dividends. For once, the commands were not going to be delivered in a barely-comprehensible scream at a moment chosen to catch us out; nor were any of the squad anxious to disgrace either themselves or their colleague who was temporarily in charge. The standard of drilling was admirable, and far above what the corporal had achieved.

Eventually the thirteen were mustered to be inspected before departure by, it was said, the DDMI (Deputy Director of Military Intelligence). I remember the red tabs and, to my surprise, the strong glasses – which would have earned a string of abuse if one of us had needed them: 'You there, you 'orrible little man with the big glasses. Pick yer feet up.'

The next morning the twelve were gone, and I was given a rail warrant to GCHQ, Bletchley Park. I must say something about the background of this remarkable place before resuming my personal account.

2

Bletchley Park

After the First World War the British government reviewed the lessons learnt in breaking German codes. It decided to establish a new unit called the Government Code and Cypher School (GC&CS), ostensibly 'to advise as to the security of codes and cyphers used by all Government departments and to assist in their provision' but also, in a secret clause, 'to study the methods of cypher communications used by foreign powers': in other words to break and read their signals traffic. GC&CS, an inter-service unit, was to operate under the overall control of the Admiralty in the person of its Director of Naval Intelligence, Commodore (later Admiral) Hugh Sinclair, nicknamed 'Quex'.

The connection with the Royal Navy was no accident; their Room 40 had been notably successful in breaking German naval codes in the 1914–18 war and was anxious not to lose its expertise in peacetime. The operational head was to be Alistair Denniston, a former member of Room 40, with Edward Travis as deputy and a team which included William Clarke, Dillwyn Knox, Oliver Strachey and the Russian and Japanese experts Felix Fetterlein and Ernest Hobart-Hampden. It also contained Leslie Lambert, better known as the short-story writer A.J. Alan. The establishment was twenty-five, with forty-six assistants.

In 1923 Sinclair was appointed head of the Secret Intelligence Service (MI6) and Director of GC&CS, though Denniston stayed in charge. By then its overall control had passed to the Foreign Office, and the appointment of an Admiral went some way towards meeting the grievances of the armed services at what they believed to be the stifling grip of the FO. GC&CS worked in various buildings in London, moving from the interestingly-named Watergate House to Queen's Gate and finally to Broadway Buildings, which also housed SIS.

Bletchley was bought in 1938 on Sinclair's initiative, since it was widely expected that if war came London would be heavily bombed.

It consisted of a gross and unlovely Victorian twenty-roomed mansion, red-brick with timbered mock-Tudor gables. There had been wide lawns, a lake with swans, a croquet pitch and the traditional ha-ha to keep cattle out without spoiling the view. During the Munich crisis of September 1938 GC&CS was evacuated down there and acommodated in the house, in small buildings in and around the stableyard, and in wooden huts hurriedly erected in the grounds. I cannot better Peter Calvocoressi's description in *Top Secret Ultra* of the impression the place made on new arrivals:

'The house had been built ... in a style which, up to a few years ago' (he is writing in 1980) 'has been adjudged ridiculous ... inside it was dreadful. I remember a lot of heavy wooden panelling enlivened here and there by Alhambresque (Leicester Square, not Granada, Andalusia) decorative fancies ... In a pond in front of the house a few ducks had survived the transfer of the property to government ownership.'[1] Teleprinter links were set up to link it to the main intercept stations, and inevitably the young women who tended them were called teleprincesses. By 1 August most of the regular staff were installed there and ready to receive the new-comers, who arrived in the guise of 'Captain Ridley's hunting party'. Captain Ridley was in charge of administration, and this apparently inappropriate cover-name was chosen because the contractor who built the huts, Captain Faulkner, was an enthusiastic rider and would often come over to supervise wearing jodhpurs.

In November 1939 Sinclair died and Menzies succeeded to his throne as 'C', head of SIS. Denniston was now Director with Travis as Deputy Director, virtually as in 1919; Travis also ran the Communications Security Section, responsible for advising on the security of British codes and ciphers. In 1942 he took over the direction of Bletchley Park while Denniston was relegated to running the small diplomatic section in Berkeley Street.

The administrative offices were in the mansion itself, which also housed Nigel de Grey, one of the team which had solved the Zimmermann telegram of January 1917, and at one stage Colonel John Tiltman worked there too; he had already done brilliant pioneering work on Japanese and other military codes and played an important role in expanding and recruiting for the Japanese section. At first most of the rapidly expanding staff worked in the huts, in fairly Spartan conditions, with trestle tables and folding wooden chairs. More and more huts were built until they sprawled over most of the grounds, whether singly, in pairs or grouped in T or

H patterns. They were urgently needed, because the number of staff was growing out of all recognition. In 1939 the official budget had provided for Head, Assistant Head, three Chief, 14 Senior and 16 Junior Assistants, together with clerks, typists, telegraphists and others making some 150 in all, plus a handful of ancillary staff. Very probably there were some extra staff whose salaries were borne on the budgets of other departments. By late 1942 the total had risen to about 3,500, and by early 1945 to over 10,000.

Recruitment was directed particularly at the universities and the professionals. 'During the summer vacation of 1939 Denniston wrote to the heads of about ten Cambridge and Oxford Colleges, asking to interview half a dozen of the ablest men in each for war work.'[2] The work was said to be associated with the Foreign Office, which was true so far as financial accountability went, but shed no light on what duties to expect. This contingency list included able undergraduates as well as 'professor types': linguists, historians, an art historian, a lawyer and even, despite earlier prejudices, two mathematicians: Alan Turing and Gordon Welchman. The 'professorial type' salary was £600 a year.

Cambridge far outnumbered Oxford in its representation at Bletchley Park, perhaps through the accident that there had been more from Cambridge several decades before. Sir James Ewing, a Fellow of King's and Professor of Mathematics and Applied Mechanics, had worked in Room 40 in the 1914–18 war and had recruited three other King's men then: Frank Birch and Frank Adcock as well as Dillwyn Knox. After the war Birch took to the stage but returned to Bletchley in 1939, canvassing several others to join him. Adcock, by then a Fellow of King's and Professor of Ancient History, was urged by Denniston to sound suitable people before the war. In Denniston's words, 'It was naturally at that time impossible to give details of the work, nor was it always advisable to insist too much on the imminence of war. At certain universities, however, there were men now in senior positions who had worked in our ranks during 1914–18. These men knew the type required.'[3]

Adcock was an enthusiast, and of the first sixteen 'professor types' eleven came from Cambridge, two from London and three from The Other Place. It is not surprising that this should happen, given the success of Ewing's original trawling operation and the emphasis placed on recruitment by personal contact and recommendation. Not only that: so many Kingsmen arrived that in 1941 Bletchley was more than once called 'Little King's'. A little later the sister of one of the early members of Bletchley was able to

recommend some bright undergraduates from Newnham, and the same thing happened at Oxford, with 'a massive exodus from Lady Margaret Hall to Bletchley'.

As well as Turing and Welchman, recruits from Cambridge included Jack Good, Max Newman, Noel (now Lord) Annan, a future Provost of King's College; Shaun Wylie, who in Lewin's words was already 'an international hockey player, winner of the unarmed combat competition in the local Home Guard, and President of the Bletchley Dramatic Club';[4] and Dennis Babbage, a descendant of the Charles Babbage whose Analytical Engine, conceived in the 1830s, had been the first step towards the creation of a machine which could tackle *any* mathematical operation, and that not in any narrow arithmetical sense. Harry Hinsley was one of the first of the 'able undergraduates' to be sounded a few months before the war began, and a Cambridge figure who made an indirect contribution was Wynn-Williams of the Telecommunications Research Establishment, whose pre-war work in electronics was valuable in the development of the Bombe and the Robinson family of machines in use at Bletchley.

There was no shortage of figures who were colourful as well as distinguished. Josh Cooper, head of the Air Section, short-sighted, absent-minded and cordial, was said to have been called in to help with the interrogation of the first captured German pilot. No organisation had yet been set up for this purpose, and Cooper, with his rational and enquiring attitude towards the discovering of intelligence, seemed an excellent choice. The pilot was marched in and proudly gave the Nazi salute and a loud 'Heil Hitler'. Not to be outdone in politeness, Cooper instinctively rose and did the same, immediately recognised his error, sat down in haste, missing the chair which he had pushed back, and slid foot-first under the table.[5] On his visit to Buckingham Palace to receive a decoration he was asked what his work was. He pondered at length, scratched the back of his head – a favourite gesture – and at last replied, 'I really don't know, Ma'am'.

The head of the Army section, John Tiltman, was just as unconventional, and was celebrated for his unusual mixture of Army and civilian dress. On one occasion he was strolling across the grounds clad in a nondescript jacket and a perfectly proper but strikingly coloured pair of trews, the narrow tartan trousers of his regiment. Two Free French officers goggled at this apparition; one clutched the arm of the other and asked 'Ce pantalon-là, c'est de rigueur ou de fantaisie?'[6]

Turing suffered from hay-fever and was known to cycle to work in his gas-mask when the pollen-count was high. He would chain his mug to any fixed object like a chair or a radiator to prevent its being stolen. He converted his life savings into small bars of silver, which he shrewdly predicted would rise in value, and buried some in the nearby woods and some in a stream. When he returned to find them after the war, the landmarks in the wood had disappeared and the stream bed had been cemented over.

Alexander, Golombek and Milner-Barry formed a striking trio of a different kind. All three were representing Britain in the International Chess Olympiad in Buenos Aires when the war broke out, and all three were eventually recruited to Bletchley. Finally there were several husband-and-wife teams, starting with Denniston and his wife – though they were often split between different departments.

It was a happy characteristic of Bletchley Park that differences of age, rank or background, as well as departures from convention, were largely disregarded. The atmosphere was often likened to that of an Oxford or Cambridge college. Discipline or hierarchy in the normal sense hardly existed, and in return GCHQ was rewarded with men and women who 'hated to take leave or rest days'; a cautionary notice exhorted them to 'take at least one day off every week'. The 'long-haired intellectual', far from being a figure of fun, was at the centre of the imaginative and flexible approach needed for successful codebreaking. Denniston, Travis, Tiltman, Cooper and others put their faith in 'the ability of the highly intelligent amateur to grapple successfully with very complex problems'.

Neil Webster, an old hand, puts it like this:

> The cryptographic organisation at Bletchley was highly efficient. Indeed it was the most efficient working organisation I have met ... It was run neither by business men nor by civil servants but by mathematicians and chess players who brought detached and decisive minds to the solution of cryptographic, organisational and human problems. Contributory factors were the devotion, high morale and esprit de corps of the picked band of workers. Gifted people were willing to work on boring and repetitive tasks if it was important that these should be done by people capable of spotting the occasional small nugget which might turn up in the sieve.[7]

David Kahn, the author of the still unrivalled book on the history of codebreaking, waxes lyrical: 'An unbelievable galaxy ... white-hot

with talent'.[8] A further tribute comes from George Steiner, surely one of the last men to join in any popular ballyhoo: 'It looks as if Bletchley Park is the single greatest achievement of Britain during 1939–45, perhaps during this century as a whole'.[7] Lord Dacre, formerly the intelligence officer Hugh Trevor-Roper, adds that 'The state of friendly informality verging on apparent anarchy was Denniston's particular contribution, that enabled these clever and sometimes anarchic men and women to develop their talents and carry out their work.'[7] One ironical comment attributed to Churchill, a passionate supporter of Bletchley's work, and one of its best customers, sums up the motley and unsoldierly aspect we must sometimes have presented: 'I told you to leave no stone unturned in your search for suitable staff. I didn't expect you to take me so literally.'

Bletchley Park had changed its title in 1942 from Government Code and Cypher School to Government Communications Headquarters, as it remains today despite its move to Cheltenham. Oddly enough it kept its original name in the USA, at least in exalted circles. A memorandum for President Harry Truman, dated 12 September 1945, points out the 'profitable collaboration' between the two countries, recommends that it should continue in peacetime 'in view of the disturbed conditions of the world and the necessity of keeping informed of the technical developments and possible hostile intentions of foreign armies', and is signed by Acting Secretary of State Dean Acheson, Secretary of War Henry L. Stimson, and Secretary of the Navy James Forrestal; it still mentions 'the British Government Code and Cipher School'. Despite the change of name on the gates, any casual passer-by could see that the clientèle had not changed, though it continued to grow. Security passes were still needed to satisfy the men of the RAF Regiment at the gates. Was it really likely that a nation fighting for its life would need the codes and ciphers mentioned in the original name any the less? What were all the despatch riders and tall aerials for? Why were men and women of all nationalities and every sort of uniform coming and going, often on night shift?

Yet the extraordinary fact persists, that throughout six years of wartime growth to a maximum strength of over 10,000 with Free Poles, Free French, Americans, and British Army and ATS, Navy and WRNS, RAF and WAAF, and countless varieties of civilians, no leaks seem to have occurred. Lord Camrose is said to have stumbled on the secret in 1941, but to have promptly sat on it. Any

enemy would have taken it for granted that we would have such an organisation, especially after the success of Room 40 in the previous war – just as they had themselves. It seems impossible to believe that none of those working there ever told the secret to a wife, husband, lover, friend or parent; yet it never emerged. This is all the more striking in view of wartime tensions, enforced departures and family separations, and above all the personal tragedies of many of the European refugees.

Lewin tells the story of Judy Hutchinson, who had been in charge of Field Marshal Alexander's War Room in the Italian campaign, who faced a severe brain operation in 1970, twenty-five years after the war ended, not at all afraid of the consequences of the critical operation but with 'the terror, over-riding all other concerns, that in delirium she might give away the secret of ULTRA' – the breaking and reading of the German Enigma machine signals.[9]

On the face of it this silence seems all the more astonishing since the security precautions at Bletchley Park, though strict, were never ridiculously oppressive. No doubt the many other secret activities going on in the British Isles made tight security more palatable – but there were whispers about some of them, whereas Bletchley and its offshoots seem to have been leakproof. Presumably people capable of seeing the point of breaking the enemy's signals, and of doing it, could readily understand why it was important not to jeopardise the whole affair; very logical, yet logic is not always put into practice, as the unlocked car door, the lost credit card with the PIN-number scribbled on it, the key left under the front doormat, all testify.

One part of the explanation must have been that we could all see that this was a true secret. It is when attempts are made to keep everything secret, regardless of commonsense, that leaks occur. The more indiscriminate the embargo, the less effect it has. The other point is that we were trusted; we willingly lived up to a trust placed on us and were not subjected to lunatic, draconian and ultimately counter-productive measures.

Yet another factor was the long tradition of 'the need to know' principle; only someone who needs to know a secret can be told it. That rule was enforced very rigorously in sigint units. As Kozaczuk puts it: 'Few people, even at the top, had a clear overview of the totality of the operation, from interception of ciphered German messages, through their breaking, translation, editing and annotation, to the distribution of decrypts and intelligence summaries. The operation was so compartmentalised that hardly anything that any one person could have divulged about

it would have given the secret away.'[10] But that is a different form of security: what mattered was not that no unauthorised person could know the whole story, but that Bletchley Park was not identified as the British codebreaking centre, even though the German Black Book listed at least one member of the security services as having gone 'to Bletchley'. There were no air raids, no suicide squads, no sabotage. This is not solely due to the guards and the perimeter fence: when the civilians in the Home Guard took on the military in a friendly exercise, they breached the wire in a few minutes by tunnelling under it.

The 'need to know' principle was reinforced by the 'once in, never out' rule. There was no escape, unless you were going on to another sigint unit overseas. Otherwise, however genuine and compelling your plea, it was almost impossible to convince the authorities that they should release you to move on to other work.

The internal compartmentalising that Kozaczuk mentions was certainly strict. People might live in the same lodgings, eat together and know each other very well indeed; but if one was working on army and the other on navy Enigma, let alone on Japanese material, then no discussion took place outside. Again I cannot believe that was 100 per cent true, but nothing leaked out as a result.

We rarely knew what was going on in the next room, unless that was literally sharing the same work with us. To judge by the number of rooms in Block F, many other Japanese crypto systems must have been worked on. A few yards along our corridor, nicknamed 'The Burma Road', was a team that included Herbert Murrill, later the BBC's Director of Music. He was another lively character: a senior officer who visited us without warning found him standing on the table using the single overhead light socket, the only power available in the room, for his electric razor. We used to discuss music while we were both off duty, but to this day I have not the foggiest idea what he and his colleagues worked on. One night shift I was called on to do some key-breaking, an activity I had never heard or dreamed of until then, though it had been going on all the time I had been there.

It can be argued that this was overdone. When a codebreaker gets stuck he appeals for guidance to colleagues in his own room. If that fails, he has to fall back on his own wits again. Very probably there is someone in another room who has met and overcome the same problem. Some of the Hut 3, 6 and 8 Enigma experts who had worked together before coming to Bletchley did pool their wits. The girls who tended the Bombes were encouraged to discuss difficulties

and exchange ideas. The 'Sunday Soviets' at the radar research unit at Malvern existed for this very purpose. Not only was security unimpaired: quantum leaps forward in their research resulted.

I joined a roomful of twenty or so young men, mostly undergraduates like myself, presided over by two slightly older men, Maurice Wiles and Alexis Vlasto. We were all working on the Japanese Army Air Force code system, called 6633. David Nenk, in a small room nearby, was one step higher but was generally busy with key-breaking. (See the Glossary for this and other technical terms.)

As a newcomer I was set to work on translating signals which had already been stripped of their key and been decoded. I was at once staggered by the volume of useful information most of them carried. They told us the movements of squadrons, described Allied air attacks on airfields and aircraft, fit and unfit airmen, fuel and ammunition stocks, requests for spare parts, and occasionally the impending visit of a senior officer on a tour of inspection. Most of the messages came from Burma, but others were from the areas of south-east Asia or further afield: the East Indies to the south of Burma, and the Philippines to the east. Even those which mentioned only low-ranking personnel were passed on to the indexing staff, and helped to build up a remarkably detailed picture of the enemy's organisation. Even after my brief apprenticeship at Bedford I was dazzled by the picture which this one code painted of the Japanese military machine in action.

Its clear relevance to the bitter fighting now going on had one curious result: although Burma was over 5,000 miles away, Tokyo 6,000 and Singapore 7,000, Block F felt closer to the Japanese war than to Europe and the Mediterranean. It was almost a shock to leave the building at the end of a long shift and emerge into the humdrum Midland landscape with not an Oriental face in sight.

There is so much to say about this and similar code systems, both from the signals and from the intelligence aspects, that I shall give a much fuller description in later chapters.

To return to 1944: the undergraduate tradition led our room to compose a special message on 1 April, purporting to have been sent from Rangoon to signals units throughout Burma to remind them that 'all 6633 signals with the following call-signs are bogus messages'. We dressed it up coquettishly with the proper clerical paraphernalia, put it in the middle of the pile marked for the attention of Maurice or Alexis, and awaited the outcome. An hour or so later Maurice worked down to it. There was a long,

tantalising silence, and he asked Alexis to have a look. Both seemed thoughtful, as befitted men who were being told that much of the work they and we had been doing was a waste of time. It was Maurice who noticed the significance of the call-signs above the message: from BI PI I to MO RI SU. I have since learnt that one of Anthony Fitton Brown's team in the next corridor fabricated a similar spoof message which he planted 'on one of our more gullible colleagues'.

Most of the people at Bletchley Park were busy breaking, reading and assessing German signals traffic, primarily that of the Enigma cipher machine in its varied forms, and this has been widely described. The Germans also developed, somewhat later, the *Geheimschreiber* on-line machine, for a small volume of important traffic, and it was a relief that they were not able to switch more signals over to it. There were further signals using hand ciphers, which have been well described. The number of people engaged in Japanese military traffic was much smaller.

As the total numbers increased not only were new huts erected but some began to be replaced by new and solider buildings, designated by letters instead of figures; some of them were large enough to swallow up several different sections. Hut 3, dealing with the intelligence derived from German Army and Air Force Enigma, moved from its first tiny hut to a bigger one next to Hut 6, which did the actual breaking, and a primitive wooden tunnel connected the two huts so that decrypts could be shunted through on a tray without delay. Nearby was Hut 8, for naval Enigma. By summer 1943 the staff of all three huts moved to a large brick building, taking their original hut numbers with them 'to avoid confusion'.

These new buildings were much stronger. Some were made not of brick but of prefabricated concrete slabs, but the structural members in walls and roof were not the usual concrete beams and rafters, but rolled steel joists and uprights, bolted together.

Our part of the Japanese section worked in the second spur of Block F, one of the single-storey blocks, and I do not know far along this long building it extended. I learnt recently that the first spur was 'The Testery', named after Major Tester's unit, including Roy Jenkins, which did much of the early cryptanalytical work on the *Geheimschreiber* and its cover-named FISH traffic. On the other side of the arch, nearer the mansion, was 'The Newmanry', Max Newman's team which attacked FISH by means of the ROBINSON machines. Some of the buildings which housed the later ROBINSONs and the COLOSSUS computers were massive,

somewhat in the style of surface bunkers, with even more heavily reinforced roofs. Most of these have only recently been demolished, apparently with great difficulty and to the wonderment of the workmen.

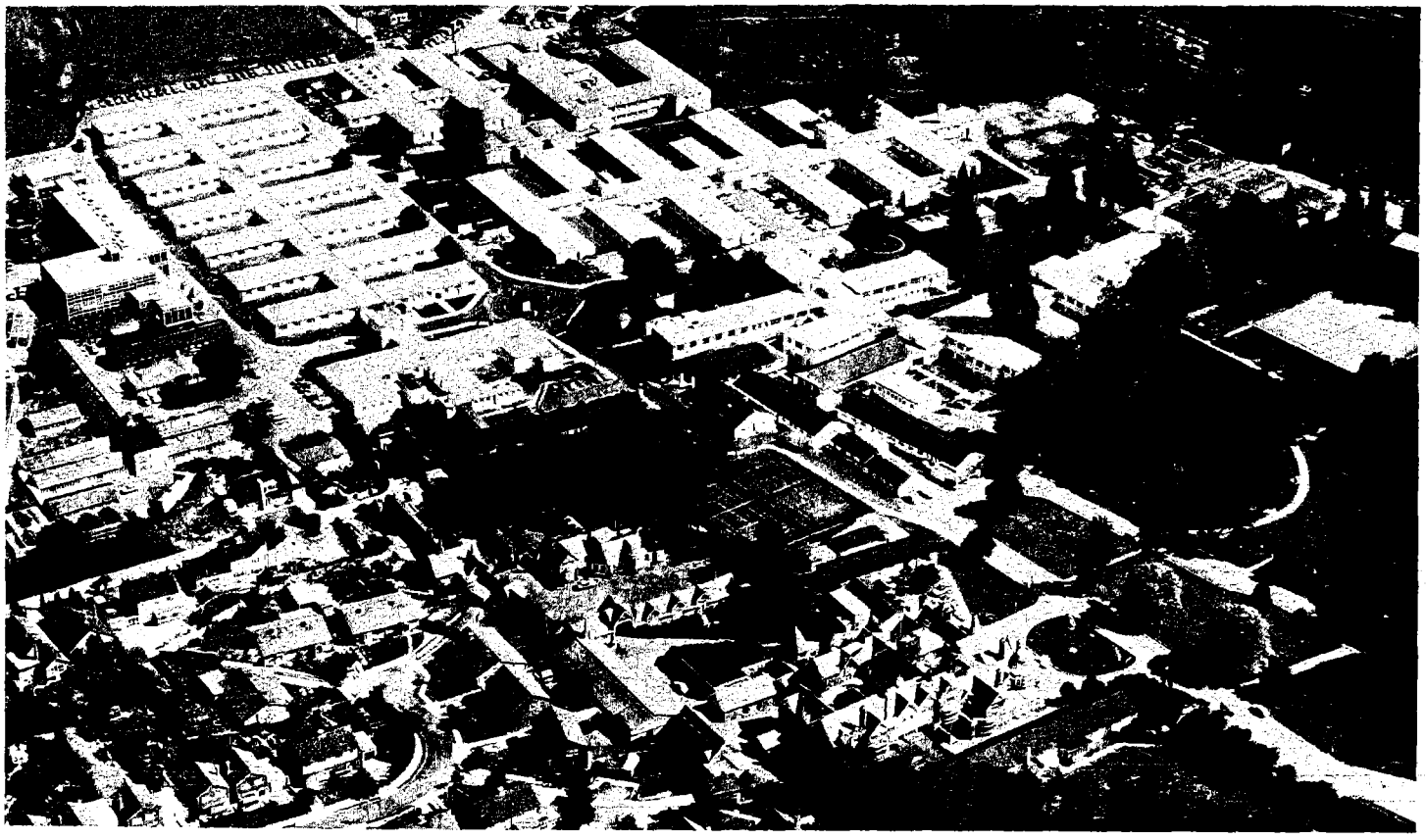
Security within GCHQ was tight in physical as well as personal terms. When pieces of apparatus had to be moved the short distance from Block F to the extension in Block H, everything had to be hidden in brown paper sacks. Things too large to go in a bag, for example the standard 19″ Post Office racks which were widely used, had to be carried at the run, so that no prying eye could see what was afoot, even though the only eavesdroppers who might catch a wondering glimpse of the move would be already inside the security area.

The more massive buildings seem to have been built not merely with air raids or V-weapons in mind. Even the upstairs windows of the two-storey part of Block G were closely barred; the sockets are still visible. The next block, also reinforced, was still in use until 1987, and the group of tall aerials came down about the same time; GCHQ had been there until then. Now most of the former GCHQ site is used by British Telecom.

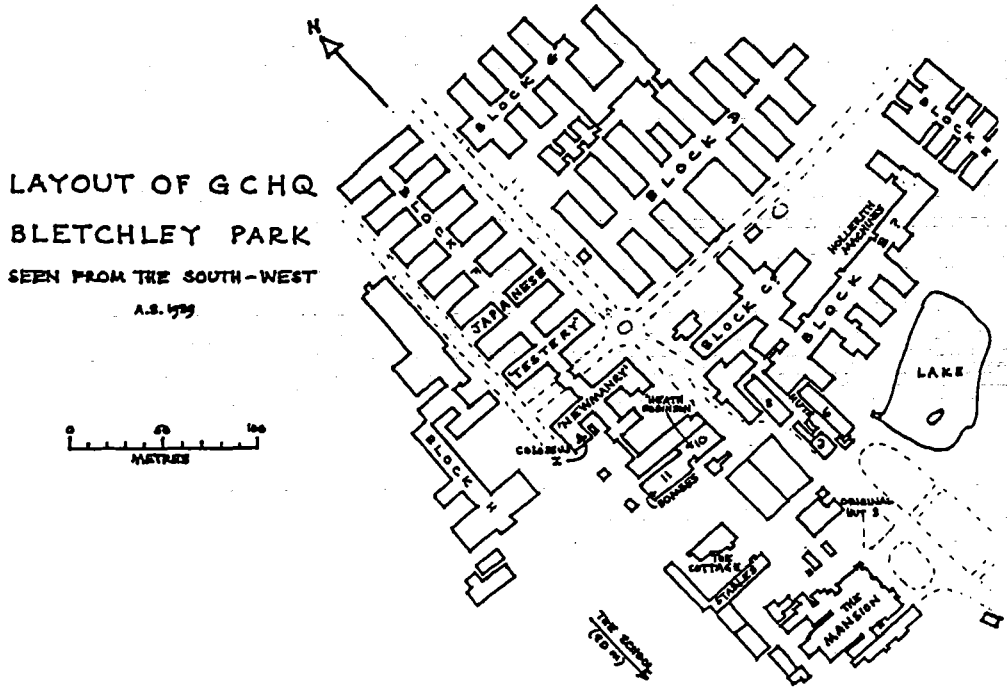
I never heard of any anti-aircraft defences set up specifically for GCHQ, even though it had been brought out of London for fear of air raids. The original flimsy Huts 3, 6 and 8, in which work of such crucial importance in avoiding defeat and later in helping to ensure and hasten victory was done, would have been wrecked by any bomb falling nearby. It may be relevant that by 1944 the thickly-wooded country to the east, near Woburn, was filled with almost continuous ammunition dumps hidden in shelters under the trees, so no doubt some special precautions were taken for the whole area.

We did occasionally visit the Hollerith hut, which had been moved inside the area at last. Hollerith machines handle punched cards, each containing a wealth of carefully-tabulated information within a small space. If you wish to try a signal against each of 10,000 possible starting-places in a known key, the machine will do that for you at high speed, though you will still have to see which of the 10,000 results makes sense. Provided that there is some way of doing this, the task is worthwhile. The Hollerith machines were always in demand, and Freeborn, who was in charge, was sometimes cast in the role of a prima donna accepting or rejecting suitors. It is not clear whether he was personally ambitious or because he had to protect his machines from overuse and himself from being dictated to.

I must digress here to emphasise that the Hollerith machine was

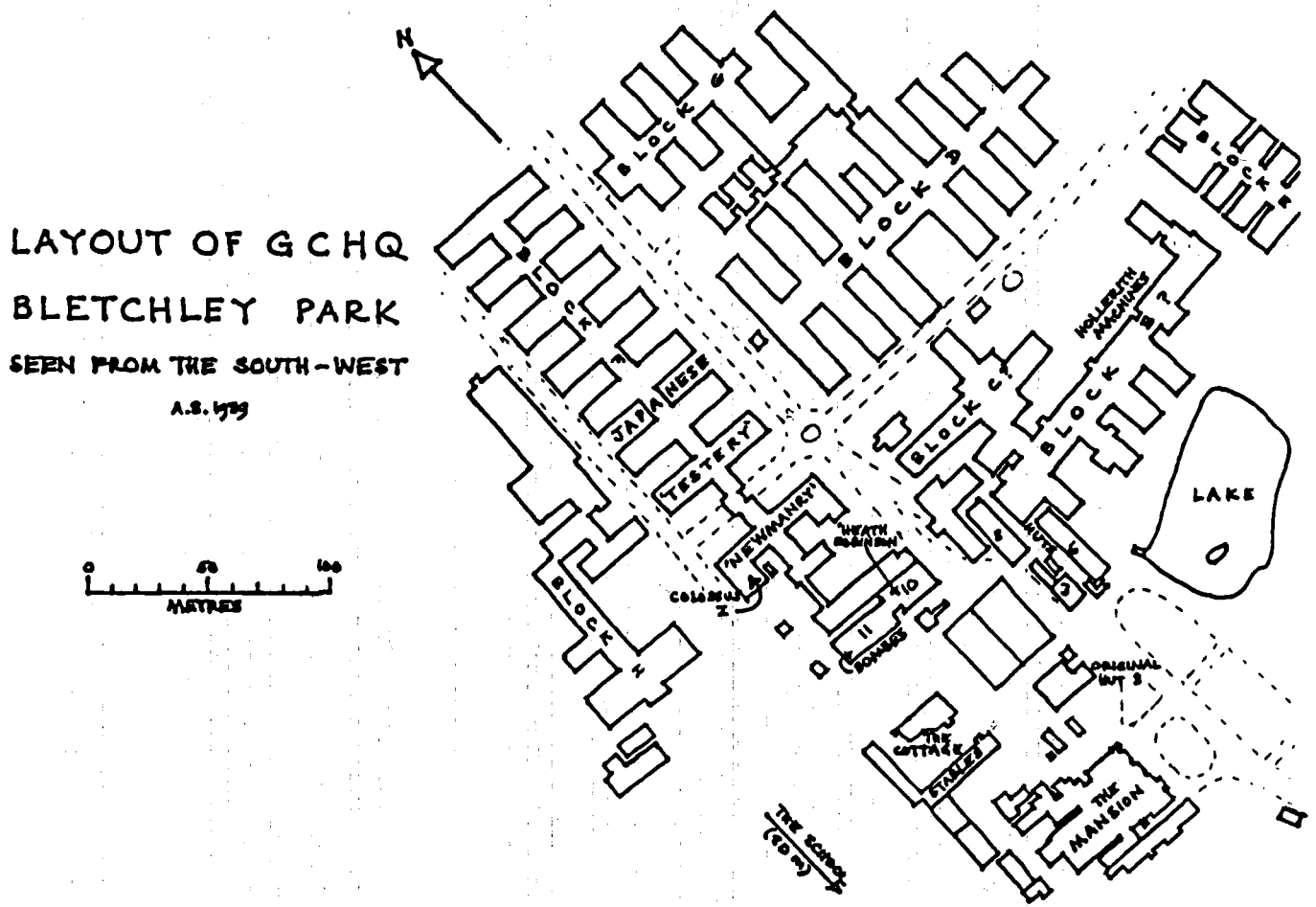


Aerial view of GCHQ, Bletchley Park, seen from the south-west (Aerofilms)

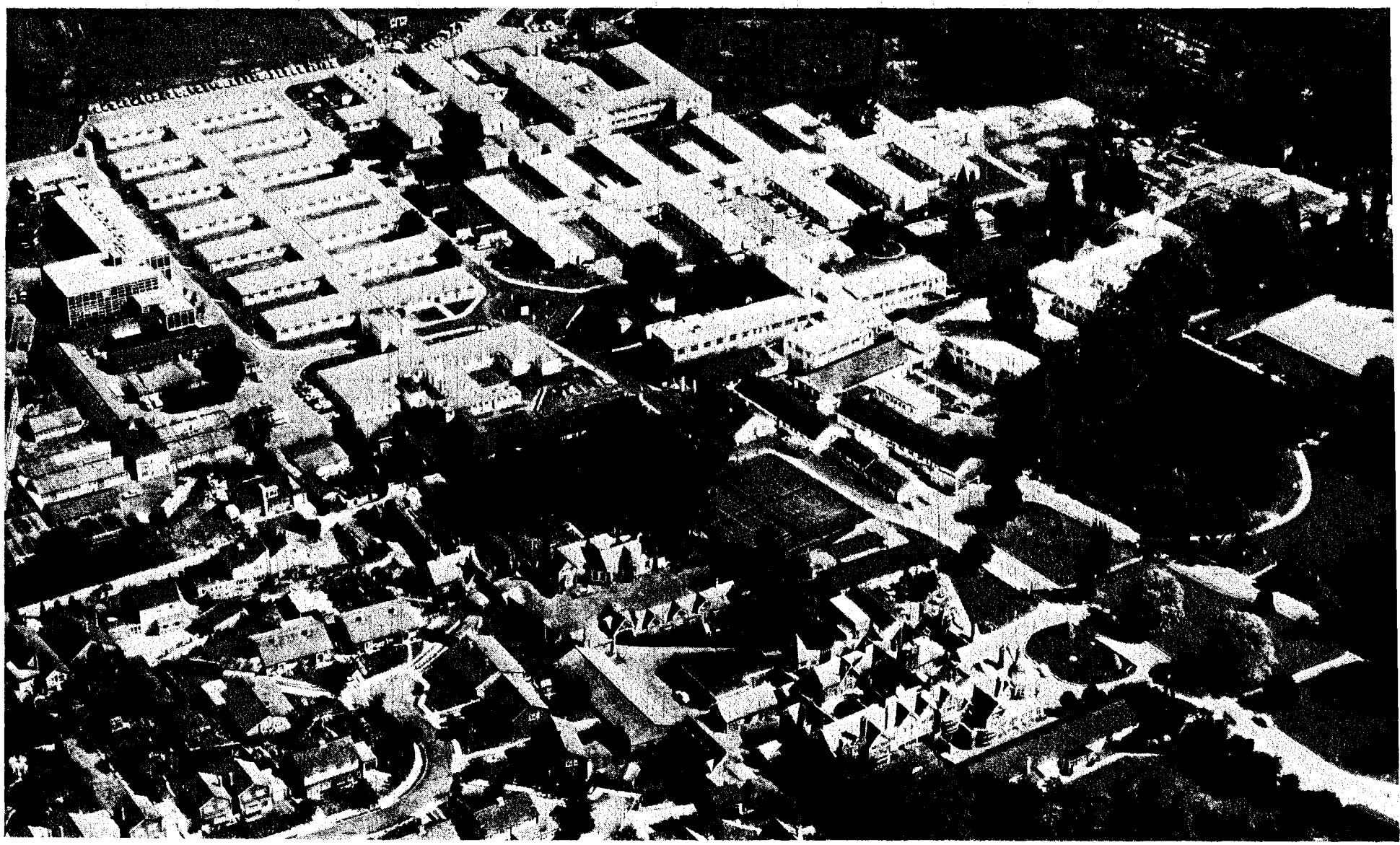


Lay-out of Bletchley Park

Aerial view of GCHQ, Bletchley Park, seen from the south-west (Aerofilms)



Lay-out of Bletchley Park



Aerial view of GCHQ, Bletchley Park, seen from the south-west (Aerofilms)

not a computer. This has been widely mis-stated and misunderstood. The confusion arose because similar punched-card machines, produced by IBM among others, were often used in the USA, and the term 'IBM machine' has since become synonymous with 'computer'. Winterbotham, who set up the admirably swift yet secure system for distributing Ultra to overseas commands, and who never pretended to understand cryptography, inadvertently misleads us when he hints that the machine which he saw at Bletchley in 1940 was a computer.[11] It was simply an improved Bombe.

Only one type of computer was used in cryptanalysis anywhere in the world during the war: the Bletchley Park COLOSSUS. The initiative first came from a GCHQ research team, including Jack Good, Alan Turing and Max Newman, which was attacking the formidable non-Morse on-line traffic of the *Geheimschreiber* cipher machine – a ten-wheel affair – not the Enigma. They conceived an electro-mechanical device to help to solve the new settings of this machine, with its cover-name FISH, by high-speed machinery. The protype, built at the Telecommunications Research Establishment with advice from Wynn-Williams, and delivered to Bletchley in May 1943 was, to use Hinsley's happy phrase, 'a bit of a lash-up'. It was thereupon christened 'Heath Robinson', the English equivalent of the American Rube Goldberg. Twenty-four more were ordered, but other technical developments followed so rapidly that only two were built, called 'Robinson' and 'Robinson and Cleaver' after the London store.

Close collaboration with T.H. Flowers, of the Post Office research laboratories, was already leading to the construction of the COLOSSUS Mark I, an all-electronic computer which used 1,500 valves against Heath Robinson's 100, and incorporated a photo-electric punched-tape reader operating at 5,000 characters a second – above this speed the paper tape began to disintegrate – and went into service early in 1944. COLOSSUS Mark II, of late 1944, had 2,400 valves, and by processing tapes in parallel its effective sensing speed had risen to an impressive 25,000 characters a second.[12] The whole thing was the size of a smallish living-room, and like most early computers with valves it produced a good deal of heat. At least ten were built, no two exactly the same, and they were housed in the western spur of Block F and the southern extension of Block H.

The Americans had been working along broadly similar lines. IBM had built an electro-magnetic machine for the Navy which began working in 1944, but it was neither intended nor used for

cryptanalysis, and it was inflexible in application. The more flexible ENIAC machine had been designed for Army ballistic calculations. It used 19,000 valves but suffered from some cumbersome storage features, and was still incomplete at the end of the war.[13]

Once off duty we dispersed. In 1939 and 1940 most of the newcomers had been in their twenties or older; many of them remained civilians and were billeted in and around Bletchley. We in the Army were housed at Shenley Road Military Camp, at most half a mile from GCHQ; each of us had a bunk bed and a cupboard to store our belongings. There were always some people asleep who had just come off shift and we tried not to disturb them. We shared the camp with women of the ATS (Auxiliary Territorial Service) who also worked in GCHQ, and as military camps go it was reasonably civilised: a large mess, library, games room, music room and so on. Most of our colleagues were from those sections that so out-numbered ours, modern linguists who like us had been recruited from the middle of their studies. Their quotations from Goethe and Schiller, spoken or sung, left little doubt of their speciality.

Because people were always coming and going, and those off duty were under no compulsion – or at least no enforceable compulsion that we could discover – to stay in camp, it became a sub-standard hotel with no reception desk and nothing to pay. More than once a soldier on night shift or on leave let a personal friend, or a civilian colleague temporarily without lodgings, use his bunk in a Box and Cox arrangement. The one feature not to miss was the weekly pay parade.

The camp commandant was Colonel Fillingham, of the Durham Light Infantry, and the DLI provided the camp staff who kept the place more or less clean and tidy. They can hardly have been the pride of the regiment, most of whom were in Burma with 33 Corps, and there was a culture-gap between them, condemned to this servile role, and us with our hoity-toity ways, our lah-di-dah talk, our regrettable tendency to wear shoes, not boots, and our constant comings and goings between the camp and the mysteries of the security area.

Fillingham was determined to give his guests some semblance of good order and military discipline, though his room for manoeuvre was limited; he was not our employer but our hotel manager. He was, I think, not so much unjust as unimaginative, and he had a bee in his bonnet about the need to preserve the military orthodoxies. He had a very short fuse and could explode if provoked. Michael

Dealtry, from the Bedford course after mine, made 'a witty but ill-judged speech about the day he joined the great unwashed' – perhaps too much in earshot of the DLI, who may have thought they were meant. He was sent for three days' punishment under the command of Captain Blackman, the Adjutant. It was very cold, but 'Dealtry shot a grouse with his rifle, which was entertaining' – and which I should have expected to lead to three more days, or worse.[14]

Towards the end of my stay at Bletchley Park several of us were told that we would be commissioned and sent away for further training. Immediately Fillingham and Blackman sprang into action to ensure that Shenley Road Military Camp should not be disgraced. Before breakfast each day we had to carry out 'Purposeful PT', which meant climbing trees and swinging across rivers on ropes. At least this lacked the sheer corrosive malevolence of Wentworth Woodhouse.

By 1945 Fillingham had managed to insist that students on the Bedford course should spend some time doing PT and military training. This went against the belief of staff and students alike, that the intensive language syllabus demanded exclusive priority and no outside interference. The PT was reluctantly swallowed, but the arrangements made for training on Wednesday afternoons were often erratic and sometimes non-existent, and this pointless waste of time caused a lot of resentment.

I was able to get over to Bedford a few times to see Mary, sometimes by the slow train which still linked Oxford and Cambridge via Bletchley Junction, and at least once, on an unforgettably hot day, by bicycle.

An important feature of Bletchley Park was the music. There was a choir which raised the standard of singing in the local church to extraordinary heights. There was always a Christmas concert and a revue written, sung and acted by those off duty. String quartets regularly visited to give recitals of chamber music, and perhaps the most memorable event was Purcell's *Dido and Aeneas*, put on for four nights in September 1944 by the Bletchley Park Musical Society, with Herbert Murrill directing a baroque-sized string orchestra, a harpsichord smuggled over from Cambridge, six vivacious dancers, an affecting Dido, a good chorus of courtiers, witches and sailors, and scenery made at the military camp. Costumes were borrowed from 'the Cambridge University Greek Play Committee, Girton College, and Oxford University Dramatic Society'.

3

Marching Orders

By now I had unexpectedly become a Sergeant and ate in the Sergeants' Mess; only at an establishment like GCHQ could one leap the two intervening ranks in one go. Mary had scarcely sewn on my three stripes when I learnt that the commission already hinted at was on its way for me and for eight others: Jock Anderson, Marcus Crowley, Joe Cunningham, Tony Fenn-Wiggin, David Jones, Peter Soskice, David Warwick and Tim Whewell. To make us still more military we were to go on a course at Rushden Hall.

We arranged to meet. The Japanese linguists just outnumbered the German, but we were united in our ignorance of Rushden Hall, and consulted the Adjutant. It was in Northamptonshire and was 'something to do with REME, the Royal Electrical and Mechanical Engineers'. Curiouser and curiouser – but we were given a few days' leave to get our uniforms and get ourselves organised. A new personal number also arrived, much easier to remember: P 329137.

One difference between the commissioned and the non-commissioned is that the uniform for the latter, shabby and ill-fitting though it may be, particularly in the British Army, is provided free; officers buy their own. There is much more to get: service dress as well as battle-dress, shirts, ties, an immense greatcoat instead of the absurd gas-cape of the private soldier, a hat, more comfortable boots that actually fit, khaki handkerchieves by tradition, a short swagger-stick, and a pair of pips. Most people, knowing that the transition from second lieutenant is only a matter of time, buy two pairs. Optimists get three; only the immodestly ambitious buy a pair of crowns as well. My prospective father-in-law kindly gave me his Sam Browne belt from the 1914–18 war, in which he had won a Military Cross.

I forget where I first tried the complete ensemble, feeling that I was impersonating someone else, and getting used to being saluted, yet still having to look out for officers of field rank (Major and above) to salute. It's easy to see that someone is an officer, but are

Course at Rushden Hall, summer 1944
Soskice Jones Warwick Anderson
Whewell Cunningham Fenn-Wiggin Stripp Crowley

the two things just visible on the shoulders of that tall middle-aged chap two pips or one pip and a crown? Better play safe and salute. He returns it, looking amused: he was a mere lieutenant. Next comes a tall boyish fellow, surely a one-pipper like me? He looks put out; it was a crown. Short men are no problem.

Rushden is just east of Wellingborough and some 12 miles north-west of Bedford, and the Hall was a small manor-house, built in the local stone and used as the REME training centre. We were expected and made to feel at home. What exactly had we come to do? We were nonplussed.

'To take part in the special course.'

'Naturally; but which special course? What do you want us to train you for?'

'Very difficult', we told him. 'We aren't allowed to tell you. It's Top Secret.'

'Of course. But we can't help you unless we know what it's all about.'

We explained that this Top Secret really was inviolable. We were sorry, we trusted him, but the decision was not in our hands. Could he get on the phone to GCHQ?

He retired, looking shaken, and returned half an hour later, having got nowhere.

'The War Office say they will write and tell us as soon as they find the right person to ask. I see your point about the secrecy. It's not your fault. Come and have a drink. Then we'll find you some rooms and have dinner.'

They did their best for us. In the end they laid on a typical officer-training programme. Each man takes it in turn to lead the rest ('I am in command; follow me') in surmounting some unnatural hazard: getting a heavy metal drum across a river without dropping it in, hauling it over a brick wall fifteen feet high, or using an odd collection of planks to make a bridge. As with our drill at the unspeakable I. Corps Depot, this team worked together and tried to cover up the inadequacies of each leader in turn. Fenn-Wiggin, I think, carried it off best, having a natural authority that the rest of us lacked; he knew when to relax. We learned to ride motor-bikes and, working in pairs, made for some capricious map-references; each had a feature that we had to note down to show we had been there.

One night there was a dance, to records on a radiogram. The permanent staff, who throughout our stay put themselves out to welcome us, brought their wives, who gave us kind smiles and thanked us when, duty bound, we invited them to dance. They may

already have guessed that none of us was much good at it, but they bore it graciously and we lamed none of them. Slow waltzes seemed to be the safest. My memories of Rushden Hall, such as survive, are warm.

We were sent on, inexplicably, to their depot near Nottingham: larger, more formal, but still keen to fit us in. 'The War House tell me that you do Japanese crossword puzzles. That's beyond our resources. We can train you in sabotage, which is presumably what this Top Secret stuff is about?'

We protested. 'We aren't going to be saboteurs. The Japanese crossword puzzle idea is warmer but we can't tell you more than that.'

'The sabotage it will have to be. There's no danger. Come and have a drink.'

We spent the first two days on further motor-cycle excursions, and Joe Cunningham and I managed to convert one mission into an unforgettable visit to the stone leaves of Southwell Minster. Few if any of us had flown before, so we had a practice flight in an ancient and creaking Anson – a sensible precaution for a budding parachutist. Less obvious was the reason for our being taken to Bulwell where we were shown, under strict vows of secrecy, the 'swimming' tanks that could be used in an invasion.

Next we were taught how to blow up railway lines and bridges. Nottinghamshire County Council had apparently produced a list of derelict objects that they would like to have removed, free of charge, and our explosives expert trained us in using Amanol and 808, anti-tank mines, sticky-bombs and slow and quick fuses. The dreary countryside echoed with the sound of our explosions and our ears rang. We took it in turns to booby-trap a ruinous cottage, using push *and* pull detonators to fox the opposing team, but with a gentleman's agreement not to connect them to explosives. Neither team could defeat the other. Finally we practised abseiling down the side of a three-storey building, on the assumption that we had landed on the roof and had a long rope handy. It seemed a little far-fetched – but our instructors in all these skills knew their stuff and were a pleasure to try to emulate. It is the drill-sergeant and his underlings who are so often, as one of our squad pointedly remarked, rancid. On our last night there was another informal dance, dominated by the safer slow waltzes; someone must have rung ahead from Rushden Hall.

The next day we were told that travel warrants had come through for all of us. A couple were to go back to GCHQ, one to London, one

or two to the Mediterranean. Soskice and I were to join 'Group Marr-Johnson'.

'That snob', said someone in the know. 'Bad luck. It means New Delhi.'

We were given a week's embarkation leave. When it ended I travelled up from London to Yorkshire and made my way to Wentworth Woodhouse, remembering to avoid the tradesmen's entrance this time, and make for the mansion itself. They searched their files.

'You've another week's leave. Go back home and enjoy yourself.'

I spent a night there first. It was a cheerless dinner despite some merriment among the permanent staff: the Earl of Northesk and others. The next morning I slipped away unobtrusively; in the distance the staff corporals were still ranting at their squads. After a further week in London, with renewed greetings and renewed farewells, I took the precaution of telephoning.

'Yes, this time it's on. Get up here as quick as you can.'

Almost predictably, when I arrived I was told to stay within reach; there might be several days to kill, and they would try to arrange something interesting for me and three others who were killing time. The next day was spent on the 'something interesting': we were to impersonate enemy agents and make our way to a nearby reservoir where we must drop an imaginary packet of poison into the Sheffield water supply without being observed. So even our own Corps didn't know, or care, what we were doing and what we needed to be trained for.

We had a small truck at our disposal and were pleased to see four oafish corporals, including my pet abomination, following us in a car, trying to look like civilians. We told our driver that he was free for the day but was to pick us up at 1700 hrs. Two of my colleagues were about my age; the other was older, unassuming and studious in appearance. He offered no suggestions but fell in readily with ours. We had coffee, studied our maps, and decided to have a leisurely day while the corporals waited; by late afternoon they should have become bored and careless. We observed with malice that it was beginning to drizzle. After lunch it started raining more heavily, so we went to a cinema, had tea, and split up to make separate detours, approaching the reservoir from different directions and at varying intervals. Each of us in turn saw the four loafing about, trying in vain

to merge into their surroundings, and looking very damp and dejected. Serve them right.

We had no difficulty in mingling with passers-by, strolling past a far corner while the watchers were watching the one obvious approach, almost shoulder to shoulder. We jettisoned our imaginary poison, met at the truck and told the driver to take a circuitous route back to the Depot, entering by the back gate. He entered into the spirit of it. Much later the corporals returned by the main gate, looking furious.

The Training Officer summoned us to hear his verdict on the day's events: we had all been recognised.

'When and where?', we asked. He refused to be drawn.

We guffawed. 'They're pulling your leg. They haven't the foggiest idea how or when we did it.'

He persisted. The monosyllabic man broke his silence. 'Are you seriously saying that you accept the word of those detestable buffoons in preference to ours?'

The Training Officer capitulated.

The following evening half a dozen of us were invited – a new word – to join a team looking out for heath fires near Penistone. It had been a warm summer and the parched heather in the peaty soil could smoulder underground for days. It was a pleasant evening and a good cause, so we accepted. We waited half an hour for the truck, and eventually ran it to earth. To use John Trench's immortal phrase, 'The lorries, by a mischance that will surprise no one who has served in the Army, were waiting for us at the wrong gate'.

We drove up to the gaunt moorland, grey and tawny except where the Ewden Beck made a vivid green oasis, and as the light faded we could see occasional flickers of flame, mostly on the far side of the valley. We each had a beater to deal with any fires within reach, but few were; each flame burned for only half a minute or less, and by the time we reached it there was nothing but a smoking patch of heather. From time to time a grouse would burst from cover almost under our feet with a shockingly loud chortle. As an untravelled Southerner I had never heard them before.

Next day I was told that I had one more night before going to join a convoy at Glasgow. I was able to take the train across to spend it at Bradford, where Mary was staying with her aunt and grandmother.

At Glasgow I found a hotel where I had a bath and a princely breakfast, and made my way, as directed, to King George V dock.

The officer in charge was scornful. 'You should have been here two days ago.' No co-ordination, as usual. But what was I wanted for?

'You're Security Officer for your ship. You know what to do?'

The same old story: they too had assumed I was in Field Security. I received an armlet with 'Security Officer' in large red letters, and invented a job for the next day or two. The lists told me which troops were due to arrive; when they turned up I told them impartially that they were too early or too late but I would do my best to fit them in. I checked them off as impressively as I could and told the Purser, who told another officer where they should go. When they got there they were told it was the wrong place. 'But for me', I told myself, 'they would be standing on the quayside still.'

Eventually most of the list was complete, but for a few would-be deserters and some who were genuinely ill, and I reported the omissions, which the real Field Security would have to look into. 'You don't board the ship here', I was told. 'Take your kit, have some dinner, and go down to Gourock, the Tail of the Bank. The convoy is forming up there.'

It became more Alice in Wonderland all the time: was I now to navigate as well? We drove down to Gourock and on to a pierhead, where a launch was moored with the crew standing ready.

'Quick, the convoy is waiting.' Impossible. 'Where's your kit? Get on board as quick as you can.' I scrambled on, the lines were cast off, and as the coxswain went Full Ahead another figure rushed out of the tiny office.

'He's not for Q3. He's for Q13. She's right over there', pointing far out towards Holy Loch.

I learned later that Q3 went only as far as the Eastern Mediterranean, and I wonder how different the rest of my life might have been if the message had arrived a few minutes later. Would they have passed me on to Delhi or found it simpler to retrain me for some Middle East post? I also wonder how we ever succeeded in sending our invasion troops to the right place at the right time.

Meanwhile I scrambled aboard, and again it seemed that the world had been waiting for me, not the opposite. The Ship's Security Officer was needed for this and for that awkward decision, and above all for censorship.

I can still remember that job, for which no doubt other Field Security officers are trained. Every umpteenth letter had to be sampled, and all letters not in English had to be handed to me unsealed. The *Strathnaver*, the P and O ship on which I had at last arrived, was supposed to carry over 1,000 passengers in normal

Notes

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12. F.H. Hinsley *et al., British Intelligence in the Second World War*, Vol. 3, Part 1 (London: HMSO, 1984) p.479, and Gordon Welchman, *The Hut Six Story* (London: Penguin Books, 1984) pp.177–9. Two photographs of the *Geheimschreiber* appear in Calvocoressi, op. cit., between pages 86 and 87; a brief appraisal of the machine in Lewin, op. cit., pp.130–3, and a summary of GCHQ's attack on its traffic in Hinsley, op. cit., Vol. 3, Part 1, pp.477–82. I am asked to emphasise that I am not revealing first-hand information.
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19. I am very grateful for the help of Bernard Bellingham, Carmen Blacker, F.W. Clayton, Eric Copson, Jack Dalglish, Anthony Fitton Brown, Robin Gibson, Michael Herzig, John Horwood Smart, Cyril James, David Kahn, Toshiaki Kohara, John Martin, Hugh Melinsky, Sean Morgan, Bennie Polack, John Prentice, Frank B. Rowlett, Richard Rutt, David Sissons, Hugh Skillen, Barry Smallman, Alexis Vlasto, Brian Warmington, Maurice Wiles and several colleagues who wish, or are compelled, to remain anonymous.
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22. Nigel West, *GCHQ* (London: Weidenfeld & Nicolson, 1986) p.171.

23. Cipher A. Deavours and Louis Kruh, *Machine Cryptography and Modern Cryptanalysis* (Dedham, MA: Artech House, 1985), Chapter VI *passim*.
24. Hinsley, op. cit., Vol. 3, Part 2, pp.779–80 (footnote).
25. Lewin, *The Other Ultra* (London: Hutchinson, 1982); also known as *The American Magic* (London: Penguin Books, 1983) pp.196–7.
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27. This and later signals and intelligence summaries, listed under SRH references, are from material in the US Army Military History Institute, Carlisle Barracks, Pennsylvania, in the SRH Histories series: SRH-258 *Japanese Army Air Forces Order-of-Battle 1945* pp.143–6.
28. SRH-287 *Movements of Japanese Forces* Series A, Nos. 1, 2, 3 and 4, *passim*, and SRH-219 *Ultra material in the Blamey Papers, passim*.
29. Horner, op. cit., p.323.
30. SRH-219 p.12.
31. The daily US MAGIC Summary was started about March 1943.
32. SRH-258 pp.054–5.
33. Horner, op. cit. p.322, quoting MAGIC Summary SRS 35 of 7 April 1944.
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39. Kahn, *The Codebreakers*, pp.595–601.
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41. Ibid., pp.312–3.
42. Hinsley, op. cit., Vol. 3, Part 1, pp.519–26.
43. Ibid., pp.515–7.
44. Ibid., pp.352–3.
45. SRH-254, pp.005–6.
46. SRH-211 *History of the Signal Security Agency*: Vol. 3 – The Japanese Army Problems: Cryptanalysis (prepared under the direction of the Chief, Army Security Agency) pp.013–022. I am most grateful to colleagues at the Faculty of Oriental Studies, University of Cambridge, for the admirable illustration of the typical form of such a text.
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52. West, op. cit., p.174.
53. Field-Marshal Viscount Slim, *Defeat into Victory* (London: Macmillan, 1956) p.272.
54. SHR-196 *Reports on the Activities of Dr Marshall Stone in the China, Burma and*

China Theaters, 29 January–31 March 1945, p.004.
55. Letter in *The Guardian* of 29 November 1985, reprinted in *Intelligence and National Security*, Vol. 1, No. 2 (May 1986), p.280.
56. Kahn, *The Codebreakers, passim.*
57. Kahn, *Codebreaking in World Wars I and II*, pp.155–6.
58. Clayton, op. cit., p.100.
59. Christopher Morris, 'Ultra's Poor Relations', *Intelligence and National Security*, Vol. 1, No. 1 (January 1986), reprinted as *Codebreaking and Signals Intelligence*, pp.114–15.
60. Clayton, op. cit., pp.244–5.
61. Noel Currer-Briggs, 'Some of Ultra's Poor Relations', *Intelligence and National Security*, Vol. 2, No. 2 (April 1987), p.277.
62. Kahn, *The Codebreakers*, p.467.
63. 'Private Signals for knowing each other by Day'
On odd days:
'The ship or vessel that first makes the signal, shall hoist a Spanish jack at the foretopmasthead and an English ensign at the mizen peak, with one gun. To be answered by a Dutch ensign at the maintopmasthead, and an English jack at the mizen peak, with two guns.'
On even days:
'The ship or vessel that first makes the signal, shall hoist a French jack at the maintopmasthead and a Dutch ensign at the mizen peak, with three guns. To be answered by an English ensign at the foretopgallant masthead, and a French jack at the mizen peak, with four guns.'
After which, both ships were to hoist their proper colours. Further sets of signals using lights, false fires and passwords to be hailed and answered, were laid down for night recognition. The order, signed by Admiral Leonard Horner, on HMS *Perseus*, and intended for Captain Darby, commanding HMS *Pylades*, was dated 13 November 1782.
What *were* they up to?
64. Kerckhoffs, *La Cryptographie Militaire* (Paris: Baudoin, 1883 and later reprints).
65. Kerckhoffs was probably the first person to grasp the significance of what is now called 'reciphering' a code or cipher text by a separate key which can be changed whenever necessary without altering the system. He explained how the cryptanalyst could create a 'superencipherment' (nowadays 'build a depth') of different messages reciphered on the same key, and illustrated the principle that the greater the depth, the easier and securer the solution became. Kahn, on pages 236–7, usefully gives letter-by-letter examples of a principle which, as Kerckhoffs shows, applies equally to word-by-word key-breaking. His principles were later embodied in the celebrated St. Cyr system, which was taken up by the French army.
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67. Gordon Welchman, *The Hut Six Story* (London: Penguin Books, 1984) p.131.
68. Calvocoressi, op. cit., p.15.
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70. Jones, op. cit., pp.420–1.
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75. Hans-Otto Behrendt, *Rommel's Intelligence in the Desert Campaign* (London:

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76. Spector, op. cit., p.188.
77. Calvocoressi, op. cit., p.4.
78. Kahn, *The Codebreakers*, p.264.
79. Ibid., p.469–70.
80. Harold Deutsch at 'The Ultra Conference', November 1979, quoted by David Kahn in *Cryptologia*, January 1979, p.4.
81. In a BBC series 'The Profession of Intelligence', written and presented by Christopher Andrew, on 16 August 1981; quoted in *The Missing Dimension*, op. cit., pp.1–2: 'My calculation is that supposing we had had none or little as compared with the vast amount we did have, the war would have lasted about three years longer than it actually did.'
82. Horner, op. cit., p.316.
83. Spector, op. cit., p.170.
84. Winterbotham, op. cit., p.89.
85. Spector, op. cit., pp.178–9.
86. Lewin, *The Other Ultra*, pp.150–1.
87. SRH-046 (a) Procedure governing the handling of ULTRA DEXTER intelligence in the China–Burma–India Theater, March 1944, *passim*; (b) Regulations for maintaining the security of Special Intelligence in Pacific and Asiatic Theatres of Operations, 1944, *passim*.
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89. SRH-196, p.017.
90. Letter from Eric Copson, formerly of WEC Delhi.
91. Information from Dr Tony Clayton of the Royal Military Academy, Sandhurst.
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