KENNETH MARTIN WARD

EPISODES IN A LIFE

(including memories of WWII)

Compiled from Kenneth's notes and shared memories

by
Kate Ward

March 2015

PREFACE by Kate Ward

I have compiled the following paragraphs principally from notes written – and sometimes typed – by my father, Kenneth Ward. For the most part Ken wrote down his memories of how things were in response to requests from various people, including family members and those interested in his wartime exploits. In recent years Ken enjoyed reading published articles and books concerning WWII and he tried to correct what he perceived to be erroneous reports of events and activities regarding wireless development and communications issues.

Ken's notes mainly relate to his activities in the Royal Signals and the Auxiliary Unit Signals. He used to tell the family stories of his exploits during his time with the Special Operations Executive (SOE). However he was selective in his story telling, focusing on discrete incidents, and mindful of the Official Secrets Act. Without doubt Ken took many secrets with him to his grave.

Amongst his papers were some notes about his early life and several versions of his curriculum vitae, compiled and updated periodically, and which track the development of his career. I have included some of this information to show how Ken's interest in wireless communication led to his wartime activities and how, in turn, these fed into his postwar engineering and consultancy career.

As far as possible I have used Ken's own words to convey his involvement and engagement with events. I have edited his notes only to improve their readability – and spelling! Occasionally it has proved difficult to decipher his writing and so names, and occasionally other words, may have been guessed incorrectly. Also Ken's notes provide several versions of the same events or periods and contain some inconsistencies; I have used my judgement to present what seem to be the most likely truths.

KENNETH MARTIN WARD, 12th June 1915 - 31st August 2011

Education

Primary: Miss Kathleen Farish; Mrs Wilson - Gladstone Terrace, Grantham, Lincolnshire

Prep School: 1923-28, King's School Grantham

Secondary School: 1928-33, King's School Canterbury

University: 1933-36 Pembroke College, Cambridge University

Qualifications

1936 BA (Hons) Mechanical Sciences Tripos

1940 MA (Cantab)

1944 AMIEE (Associate Member of the Institution of Electrical Engineers)

1948 AMIProdE (Associate Member of the Institution of Production Engineers)

19… MIEE (Member of the Institution of Electrical Engineers)

19… C.Eng (Chartered Engineer)

Forces

4 August 1936 *Commissioned Royal Signals.*
Served with Signal Research Section, Cambridge University OTC, on VHF Communication Development.

October 1936 *Commissioned 2/Lieutenant Royal Signals.*

August 1939 *Promoted Lieut. Royal Signals and mobilised (1st August 1939); joined as Wireless Officer with 4 Div Signals, later renamed 2 Army Signals ('Y' Service); Officer in charge of Operator Training – Operators Wireless & Line (training morse operators for intercept work) in No 2 Company (Intercept Unit).*

February 1940 - March 1941 *Technical Officer, 110 Special Wireless Section.*

1st January 1941 *Joined Auxiliary Units Signals (on its formation) as Staff Captain & Workshop Officer; responsible for development and manufacture of special VHF communication equipment: Manufacture, Installation & Maintenance for 'Stay Behind' Communications.*

15th March 1941 *Promoted to Captain, Royal Signals. Posted to Auxiliary Units GHQ. Appointed Technical/Wireless Officer in Special Wireless Manufacturing Unit.*

March 1941 - January 1942 *Workshop Officer and A/Adjutant, Special Wireless Intercept Unit.*

January 1942 - November 1945 *Transferred to SOE, Interservices Research Bureau; responsible for supervision of Manufacture of Special Communication Equipment in contractors' plants.*

March 1946 *Transferred to Company A Reserve.*

1972 *Released from Company A Reserve.*

Employment

1934-36 RUSTON & HORNBY Ltd, Grantham, Lincolnshire
Vacation employment

1936-39 THE ENGLISH ELECTRIC COMPANY, Stafford
Graduate Apprenticeship
Assistant Production Engineer

1946-48 THE ENGLISH ELECTRIC COMPANY, Liverpool
Production Engineer, Fusegear Department
Production Control Officer, Fusegear Works

1948–51 MULTITONE ELECTRIC COMPANY LTD
Sales Engineer
Assistant Sales Manager
Sales Manager (Electro-Medical equipment)

1951 PRODUCTION ENGINEERING CONSULTANCY
Self-employed

1951–64 INDUSTRIAL ADMINISTRATION LTD, London SW7
Resident Consulting Engineer
Staff Engineer
Chief Consultant Engineering & Training

1954-64 Head of EIGA (Engineering Industries Group Apprenticeship Scheme)

1964–69 ODHAMS, Watford (IPC)
Chief Engineer

1969–87 SELF-EMPLOYED CONSULTANT
Consulting engineer/ Production engineer

Directorships

1969 – 1992 COMMUNICATIONS & EQUIPMENT CONSULTANTS LTD., London

1970 - KENWARD COMMUNICATIONS LIMITED, Hertfordshire

1974 - PROJECT IMPLEMENTATION LIMITED, Hertfordshire

1979 – 1987 LIGHTNING ELIMINATION (ASSOCIATES) LTD., Thame, Buckinghamshire

Family

3 February 1940 – Married Amy Dorothea (Thea) Moir

25 August 1942 – a daughter, Patricia Rosemary

25 August 1945 – a daughter, Gillian Dorothea

3 April 1950 – a daughter, Catherine Frances (Kate)

EARLY DAYS

Kenneth Ward, widely known as Ken, was born on 12th June 1915 in Grantham, Lincolnshire (at 2 North Terrace). He was the only child of Harold Ward and Louise Marion Ward (née Jacques) [LMW].

I was born on the 12th June 1915 in Grantham, Lincolnshire, where my father was stationed. My father taught Geography and PE at King's School, Grantham. He was located in Grantham because he was sent [from Yorkshire] to set up OTC in 3 schools there – at Bourne, Sleaford and King's School Grantham. He was an officer in the 2/4 Lincolnshire Regiment. When I was born he was working at the local army camp, Camp 167. When I was only a few months old we went to Ireland and were stationed at Tralee and later Fermoy. We returned to England when I was about 2 years old, to St Albans. (The ferry which we took to Liverpool was torpedoed on its return journey!)

My earliest and very clear recollection is sitting on Dad's charger while he led the horse along the drive, with his left arm around Mother's waist; she in a white blouse and dark, long skirt. It must have been summertime.

My next recollection was sitting in a high chair in a hotel dining room; there was a long screen and behind it I could see just the heads and the trays of waitresses bringing the food. Later Mother and I went to the same hotel which was in Scarborough. That first visit had been my Dad's last leave. He was killed in France on 21st March 1918 while commanding the 2/6 Battalion of the Lincolns.

Harold Ward has no known grave and is remembered in the memorial at Arras, in Northern France and in the Shipton Street School Memorial, York.

We stayed in Grantham. Mother chose not to go back to the farm in Yorkshire – much to her father's disapproval - and in 1920 she decided to train as a masseuse (today's Physiotherapist) at Guy's Hospital in London.

Back in Grantham Mother started as the Physiotherapist at Harrowby Camp Hospital. Patients were all war casualties, wearing light blue suits. The clinic was in a large wooden hut. Mother often took me with her on the back of her bicycle. At home there was a wooden annex behind the house (large enough for 12 boarders) in which a room was partitioned off for private patients.

LMW started with a contract to head up Physiotherapy at the army camp. When the camp closed, she had the contract to continue care of the longer-term ex-army patients.

AN EDUCATION

September 1923 - July 1928, KINGS SCHOOL GRANTHAM

When I was nine, I went to the Prep department of the Kings School. Because Dad had been there to start the OTC before the war, they gave me a free scholarship (fees were £12 a year, I think). We had some good masters and I think were well taught. Also I went to a Mr Tuddenham for extra Maths which he made enjoyable, and to Mrs Stokes, wife of a master, for French (she was French).

I built my first receiver when I was about 10. It all started at an early age. When I was about 8 years old I went to tea with a man (Betts) who looked after the x-ray equipment at Harrowby Camp Hospital in Grantham. After tea he spread out lots of mysterious things on the table and proceeded to connect them up with wires, then to a pair of headphones which he placed in a glass bowl, connected some batteries and then sound came out of the bowl and he said, "That is the wireless station at Nottingham (some 25 miles away)". That was my introduction to wireless and I was fascinated.

Later, just before the General Strike in 1926, Betts built a 2-valve receiver for my mother. It used 2 Cossor valves mounted on the sloping front panel, had 2 large coils above the box top, tuning dials and a brown horn speaker; separate coils could be plugged in for different wavelengths. Soon after that I was given a kit for a set, the Mullard Master Three i, a 3-valve battery-operated receiver which I built and made a cabinet for. It worked very well and was the set used at home for several years.

September 1928 - July 1933, KINGS SCHOOL CANTERBURY (School House)
[Headmaster: Norman P Birley 1927-35]
June 1932: Oxford & Cambridge Joint Board School Certificate – 7 credits
Military: Sgt. OTC

At 13½ I left Grantham and went as a boarder to Kings School Canterbury.

[Apparently Ken acquired the nickname "Guy", which has relevance later in his life – see below. He did not report why he was given this name; it may be a coincidence that in some calendars 12th June appears as St Guy.]

There was a maths master, Hodson, who was a keen wireless man. I went to him for extra maths in the evenings between tea and prep, but quickly maths and wireless got mixed up. A wireless society was formed and a room allocated to it. I was Secretary of the society. I started to design my own receivers: we did not aspire to transmitters but designed and developed gradually more sophisticated receivers. I even sold some designs, complete with instructions and part lists, to some weekly radio magazines.

I was in the school OTC and eventually rose to the dizzy height of CQMS. I was also Captain of Shooting and, in my last 2 years, played a lot of tennis. This period included the building and opening of the 25 yard rifle range on Blore's [still today the school's recreation centre].

[**In 1932**] When I was 17, I got a car licence and while Mother was treating a patient at a farm on Ermine Street (a Roman Road) I taught myself to drive, in an Austin 7.

8 March 1932 *– Awarded Officers Training Corps Certificate A, for fulfilling the necessary conditions as to efficient service, and qualifying in the Infantry syllabus of examination….*

*In **July 1932** Kenneth was awarded the School Certificate of the Oxford and Cambridge Schools Examination Board, and passed with credit in 7 subjects: English, History, Geography, French (including Oral), Elementary Mathematics, Additional Mathematics, Physics.*

I sat for my Higher Certificate in one year after School Certificate [**in 1933**]. I took Maths, Physics and Chemistry; I passed those but failed subsidiary English and French and so I didn't get the Certificate. Nevertheless Pembroke awarded me a place to read Mechanical Sciences, to start in September 1933.

1933 Enlisted with Royal Signals
[Ken spent much of his holiday time helping his Uncle on his sheep farm in Yorkshire.] (I was) back on the farms for a while, then one evening Uncle Ted came in and said, "Since you don't want to farm and want to be an engineer, we've fixed an apprenticeship for you at Swan & Hunter shipyard, starting on Monday." I said "No!" I am going to Cambridge next September once I've passed my Latin Littlego Exam. He was insistent that it was all fixed up. So on the Saturday I went into York and enlisted as Guy Devreau* in the Royal Signals, starting at Catterick Camp the following Monday.

[So far I've found nothing to confirm that he enlisted under this name although anecdotal evidence supports the fact that during WWII (in SOE?) he was known by this name, at least by some colleagues.]

Dick [cousin] took me over early on Monday on the back of his motorbike. The day was spent getting my uniform and other kit, having interviews and medicals, then on the square for drill instruction. At the end of the morning the officer called me out, "Where did you learn your drill?" Answer: "In the OTC at school." "Tell me more". "Well", I said, "I finished up as CQMS and also was captain of the Shooting Team". "Well tomorrow you move up to 25 squad (from Squad 30)." I guess I knew my drill better than the NCO drilling us! At the end of 2 weeks I was taken off the square and put on a course for training as an instrument mechanic. IMs were responsible for repairing and maintaining all the wireless and electrical equipment. Soon I was posted to 4 Div Signals at the Cavalry Barracks Canterbury.

On arrival I was sent to see the TMO (Technical Maintenance Officer), one Captain Butcher. He took me to a room over the harness stores. Some 15 'No 1 Set' wireless sets were piled in the middle of the floor. "That's your first job; they tell me none of them work." "Where are the other IMs?", I asked. The answer: "We are supposed to have 9 but you are the only one." I had worked on 'No 1 Sets' at the OTC camp and at Catterick; most faults were minor and soon fixed. Getting bored, I saw a group of men using sets and wandered over to see what was happening. As the only IM, I had been made up to Corporal. The group seemed to consist of a young RN Lieutenant, a Signal Sgt and an assorted number of ORs, RN and Signals. After a few days Lt Williams (Jack) said, "I think I'd better make your presence official"; so I was transferred to the Combined Signals Research (CSR). Work was mainly concerned with antenna (aerial) improvement. One day Jack came out and said, "We're moving to Cambridge for 4 years; any of you qualified can go to the university to read technical subjects." Six of us had places offered - 5 to Natural Sciences and myself to Mechanical Sciences.

CAMBRIDGE UNIVERSITY, PEMBROKE COLLEGE (September 1933 – June 1936)

In receipt of a Kitchener Scholarship (from the Lord Kitchener National Memorial Fund)
1936 BA (Hons) Mechanical Sciences Tripos
1936 Grad. IEE
Read Telecommunications (Electric Signalling) as an additional subject
Was on the Signals Research Section of the CUSTC engaged on experimental use of VHF for military communications
Military service: 1933-36 Sgt. Experimental Section, Wireless Set Developments. Instructor CUOTC

So, in **September 1933**, I became an undergraduate of Pembroke College, reading Mechanical Sciences.

Because I was Army, I was immediately attached to the STC Signals Company as an Assistant Instructor, as well as continuing some work with CSR. Signal work was mainly Sunday and Thursday evenings. I soon passed the Certificate B exam which qualified me for an Army commission *(results received in letter dated 17 January 1935, certificate dated November 1934, qualified in the Signals syllabus of examination).*

I worked with W.B. Lewis (later Head of TRE Malvern) in the Special Signals Research Section, employed on investigation and design of VHF field radio-telephone equipment and its characteristic performance, and on field antennae systems. We worked on the development of the first duplex telephony Radio

Telephone short wave wireless sets, intended to provide non-interceptable signals, for communication between observation posts and gunnery batteries. We were responsible for the development of the first small radio telephone transceiver (a 4 meter quench transceiver) for the use of the Royal Artillery. At this time practically no speech sets were available to the Army. The set is described in The Wireless World, September 1936 (article by Lewis & Milner, I think) [see Wireless Engineer and papers re Auxiliary Units Signals]. This work was continued while I was at The English Electric Company from 1936 to 1939.

I was still doing some work with Jack Williams (Lt Col ROV) in Compound Service Signals Section, on antennae experiments.

July-August 1934-36, Messrs RUSTON & HORNSBY Ltd, Grantham
Vacation workshop course.
Experience in tool room, foundry, and auto shop.
In charge of engine testing.

Tuesday 21st to Tuesday 28th January, 1936: Funeral of King George V

Just before midnight on the night of January 20th/21st it was announced to the world that His Majesty King George V had passed peacefully away.

On the morning of Thursday 23rd a letter was sent to all members of CUOTC. Twenty-eight members of the Signals Unit responded to the letter and attended the first practice parade the following afternoon. Parades were held again on Saturday and Monday afternoons, and on Sunday a full dress parade was held.

Monday evening was spent cleaning everything that could be cleaned – boots, belts, buttons, rifle, bayonet, scabbard, etc.

Tuesday started with the ringing of my alarm clock at 5:30 a.m. This was followed by a hectic recleaning of all equipment, then breakfast and a sharp walk down to HQ where we were to parade at 0715hrs. I was in No 2 Platoon, officer S/Lt Holmes, Sgts Crisfield, Fox and Ward.

The contingent consisted of 3 infantry platoons under Capt Goodfellow. Dress: great coats with belts and side arms, plus fours. One troop Cavalry and 2 sections Artillery – dress: great coats, breeches, spurs. The whole unit under the command of Col K D Murray (Commandant) and Bt Lieut Col Portway.

We travelled to Windsor in 6 buses, leaving Cambridge at about 7:30 and arriving at the Victoria Barracks at about 10:30. On arrival we were served with a cup of tea and 2 buns per man and formed up and had our turnout adjusted by the PSIs.

The contingent moved off from the barracks at 11:20 and marched to its position through the crowded troop-lined streets of Windsor where a huge crowd was already breaking through the police barriers. Several times we had to force back the crowd before we could continue. We entered the castle by the King Henry VIII gateway, for ours was the place of honour, the last of the troops through which the procession would pass before entering the forecourt of the chapel.

Then, when we were all correctly posted, the infantry fixed bayonets. We were the only troops on the whole route who were permitted to do this, except for the guard of honour of the Guards in the forecourt.

We then settled down to our long wait. Even the solemnity of the occasion and black armbands of the men could not take away the colourful splendour of the many dress uniforms. Occasionally our wait was interrupted as we were brought back to the present for the passing of a colour guard or a car bringing royal persons who were not to walk in the procession.

A guards officer trotted up the route. The procession was half an hour late in London. The sun had gone in and it was cold in spite of our thick greatcoats and gloved hands.

A moment later a Union Jack broke at half mast and the standard was lowered. Over the walls behind us we heard the massed bands beginning their slow funeral music as the procession moved out from the station. The people were silent - just the music gradually moving away into the distance and the sharp commands of the officers. Minute by minute the great bell in The Tower and the guns in The Park gave their salute.

Now the sounds began to approach us again as the procession turned through The Park and up Long Drive to the Sovereign's Gate. Then, as the procession reached the gate, the Union Jack was replaced by a larger one and units lining the route were called to attention.

Then came the head of the procession, an Officer of the Royal Horse Guards in his long red coat and shining helmet, closely followed by two more. As they reached us each platoon reversed arms at the "rest on your arms reversed". So we remained until the head of the massed bands reached us, then "Platoon Shun – Present Arms". For nearly 20 minutes we remained at the Present while the procession moved slowly past us. First the bands of the brigade of guards and then the Heralds and then the Naval Ratings, 8 abreast, drawing the gun carriage, and then more Ratings towing behind.

King Edward and his 3 brothers were followed by Europe's kings and rulers. I noticed especially Leopold, King of the Belgians, King Boris of Bulgaria, President Lebrun and later Prince Staremberg. And then came the Queen with the Queen of Norway, the Princess Royal, the Duchess of York and Princess Elizabeth, in a closed carriage which stopped straight in front of me for what seemed like hours but which was probably only 5 or 6 minutes. As soon as they had passed, we reversed arms again and with bowed heads my chief impression of the rest of the procession is one of a multitude of different coloured trousers and two gentlemen in morning dress walking out of step. There were officers from every country in the world, an Emir of Arabia with his shoelaces undone, and then Petty Officers of the Royal Navy, Officers of the Mercantile Marine and the Crew of the Royal Yacht.

The background to all this (was) the wail of the bosuns' pipes as they piped their King alongside, and then the Pipers playing the Lament 'Over the sea to Skye', and then the wail of the bosuns' pipes again, 'piping their Admiral aboard'.

At last the procession passed through the arch to the Chapel and commands once more rang out, "Platoon Shun – Present Arms – Slope Arms – Order Arms – Stand at Ease". Then, "Company Shun – Fix – Bayonets – Stand at ease – Stand easy". Then we stood silent, listening, just catching strains of the service from a nearby

monitor loud speaker. Then very soon the short service was over and the company begins to come out of the Chapel. Again commands ring out, “Company Company – Shun! – Royal Salute – Present Arms.”

And so, for 10 more minutes of the Present and then, “Platoon – Slope Arms – Order Arms”, then, “Company – Unfix – Bayonets. Ranks right and left close – Front Rank quick march – halt – about turn. Company form fours – form 2 deep – move to the right in fours – form fours – right. By the left, quick march”. And so we moved out again into the crowded streets of Windsor to push our way through the enormous, now uncontrolled crowds, back to Victoria Barracks where we were served with hot coffee, 2 ham sandwiches and a piece of cake each.

We finally “embussed” at about 3:45 pm and after various stoppages, including the failure of our bus to climb a hill near St Albans, and the complete breakdown of another, we reached Cambridge at 8:00pm; the occupants of the broken down bus arrived shortly before 11:00 p.m. We deposited our arms at HQ and then walked back to our respective abodes. I got some food sent across to my rooms.

June 1936
Despite all these (distractions), I sat my finals in June 1936, (with) my last exam on Thursday 10th. On spec I went to my tutor on the Saturday morning for an exeat. He greeted me with “Well done, you’ve got your honours degree”, only 48 hours after exams ended.

I arrived at home just before lunchtime and went to the door clutching a firkin barrel of Audit Ale. The door was locked; so I rang the bell and it was opened by Mother’s newest assistant physiotherapist. That is how I met your Mother (Thea). She said “You must be Kenneth. I am Miss Moir.” – very formal.

Then to camp at Canterbury 4th Div Signals with the STC. I lived in the Sergeants Mess. An energetic 3 weeks' training was followed by a short tour of Devon and Cornwall.

4th August 1936 - Commissioned 2/Lt Royal Corps of Signals, RAROSR
Army Reg No: P.68684 *(recorded in 1946 diary)]*
[The London Gazette, 4 August 1936, (p 5080): “Regular Army Reserve of Officers – Royal Corps of Signals. Kenneth Martin Ward (late Offr. Cadet, Cambridge Univ. Contgt., Sen. Div., O.T.C.) to be 2nd Lt. 5th Aug. 1936.]

In August 1936, having achieved my degree in Mechanical Sciences, I was (on 4th August) commissioned in the Royal Signals, and attached to 4 Div Signals at Cavalry Barracks, Canterbury. “I hold a commission in the Royal Signals, Supplementary Reserve” *[written by Ken on 1st October 1936]*

Ken was proud of being one of the few officers commissioned during the reign of Edward VIII, and having his commissioning papers and ceremonial sword with the king’s signature.

I was commissioned as 2/Lt R Signals with 18 months antedate for previous service. Hasty return to London to get uniform, etc. Then to Catterick on 1st September for 4 weeks of training courses.

There were a large number of OKS (Old boys of King's School Canterbury) in residence - between 30 and 40 of us - and every term Dr Budd, a local GP, had us all at his house for an evening get-together.

INTO THE WORLD OF WORK

THE ENGLISH ELECTRIC COMPANY, Stafford, October 1936 – February 1939, Graduate Apprenticeship

I was commissioned in the Royal Corps of Signals on 4th August 1936 but, having broken some bones in my foot, in October I went to the English Electric Company for a 2-year Graduate Apprenticeship, during which some 6-8 weeks each year was back with my unit, 4 Div Signals, at Canterbury.

At English Electric I gained practical experience in various departments: heavy machine shop; core building; machine winding; insulation; transformer assembly; machine and transformer test. I worked in, and then undertook the reorganisation of, the Switchgear Tool Stores. This was followed by 5 months in charge of internal transport organisation. During this period I was responsible to the General Manager. I then transferred to the Switchgear Sales Engineer's Department where I was retained as Switchgear Sales Engineer on completion of my apprenticeship in February 1939.

11 February 1937: *Elected a* ***Graduate of the Institution of Electrical Engineers.***

February – August 1939, Assistant Production Engineer
I had sole responsibility for designing, equipping and putting into production an Instrument Factory to manufacture electrical aircraft instruments. Work included preparation of plant, preparation of parts lists, sub-assembly lists, specification of methods and sequence of operations, tooling, factory layout, selection and training of labour and build up of production. I was at this time responsible to the Manager of the Meter Department. The number of employees was built up from nil to 50-60 over this period, but before flow production was in full swing, I was mobilized.

A SOLDIER'S LIFE

ROYAL CORPS OF SIGNALS, 1938-1946

Whilst I was undertaking my 2-year Graduate Apprenticeship with English Electric in Stafford, for some 6-8 weeks each year I was back with my unit, **4 Div Signals** at Canterbury. In **June 1938,** "Munich", and I was hauled back [to **Canterbury]**. (One day) I received a telegram telling me to be in Canterbury that afternoon. I was to be a full Lieutenant on pay of £180 p.a. (compared with the £500 p.a. I was getting at English Electric).

4 Div was acting as an additional training unit at the School of Signals and had some 12 to 16 squads of about 30 men each. I was posted to **"A" Section**, the Wireless Section with No.1 sets, and was responsible to the Chief Training Officer for training 'Operators – Wireless and Line'. Normal training continued.

1st August 1939 - Mobilized. Returned to **Royal Signals 4th Division Signals, as Wireless Officer**. Promoted Lieut (4th August).

September 1939
1100 on 3rd September: Chamberlain's radio broadcast announced that a state of war existed between Britain and Germany.

Some of Ken's reported early memories of WW2:

- (First memory) Sitting in an air-raid shelter, hearing bombs.
- Due to danger of bombing of Portsmouth, sister-in-law, Yvonne, evacuated for a term (or more) with her school to Petersfield.
- Thea, on her way to Canterbury to visit Ken, was on the train, stuck at Deptford when bombing of the docks and train started.
- When in Frant (Tunbridge Wells), sitting in a ditch, going for a walk and watching Spitfires heading for the Battle of Britain [July – September 1940].

4 Div Signals was organised as a branch of the **School of Signals**, later renamed 18 Div Sigs; then became **2nd Army Signals** but were to continue as a training unit.

On mobilization in September 1939 our reservists and the last of our training squads arrived. In one week we received an intake of some 3000 recruits and militia for training in Signal Trades. They arrived in civvies, just called up. Each man was interviewed by the chief instructor and his team and allocated to a trade. Major Dan Maguire was Chief Training Officer. Officers were allocated responsibility for training of various trades.

Signals was a Cavalry Regiment but, on October 18th, our horses were handed over to the Middlesex and Shropshire Yeomanry Regiment who were bound for Palestine. – the first time I had seen grown men cry.

October 1939 – April 1940, Officer i/c Operator Training
February 1940 - March 1941 Technical Officer, Special Wireless Section

[I was in] **No. 2 Company** as officer in charge of "**Operators Wireless and Line**", Canterbury. The selected men would be trained to meet the needs of Y Service (Interception), i.e. to intercept enemy radio transmissions. We intensified the operator training course to achieve greater speeds and accuracy. Our operators had to achieve the ability to receive Morse at high speeds of up to 30 groups a minute, compared with the average field operators' 12-16 words per minute. [The unit] comprised 4 B-type sections, each with 110 Signals personnel, and 6 Intelligence Corps German speakers with 2 Royal Signals Officers and 2 Intelligence Corps Officers, 4 C-type sections with 1 officer and about 25 Signals personnel.

I was the TMO [Technical Maintenance Officer?] of **No. 110 SW (Special Wireless) section Royal Signals**, the mobile intercept section (part of No 1 SW Company, formed from "Company Army Signals"). [Ken was employed as technical officer on intercept duties, responsible for construction and maintenance of set rooms and equipment and antennae systems, and later on Installation Coast Intercept and DF Stations prior to use of radar watch. Section Commander, Company Commander and Technical Officer.]

A good number of the Sergeant instructors had Y Service experience in overseas stations. Training went pretty well and, in the **Spring of 1940**, No 2 Company formed 2 B Type and 2 C Type mobile intercept stations, as well as providing operators for the Railways Signals Unit. All were grouped together with company HQ to form No 1 Special Wireless Unit at Walton on the Hill. Similar training had been

provided in No 1 and No 3 Companies for other signal trades. (Responsible to **Brig Nicholls,** 2 Caxton Street, London, SOE HQ.)

From the base in Canterbury, mobile intercept stations used direction-finding stations in Arras (France), and Braine-le-Comte (Belgium). Practise was required. So Ken went to see Monty (General Montgomery), Corps Commander, to tell him they were bad at hiding signals. Monty said, "I suppose we're more advanced than the Germans". I replied, "Well, we are using German Telfunken Direction Finders as the Marconi ones are not so good!".

Invasion was a worry. I was sent off to establish a series of listening stations along the south coast to follow the activities of the E Boats, someone having discovered that their R/T Intercom was on 4-5 metres and 'used clear'.

3rd February 1940 – Kenneth Martin Ward married Amy Dorothea (Thea)Moir
That day Ken had flu with a temperature of 102. He was allowed leave only if he took his batman, Worth, with him. Worth aided and abetted by cooling the thermometer in a bucket of water!

Because of lack of access to Portsmouth (where Thea's parents were living) due to the war, the wedding took place at St Wulfram's Church, Grantham. It snowed hard and they had to dig their way to the church in order that the vicar, who was in a wheelchair, could get to the church.

After their wedding, Ken and Thea 'honeymooned' in Eastbourne for 4 days. (Ken had to be within 60 miles of Canterbury.) Thence they moved into Married Accommodation in Canterbury….. then Frant.

Thea joined the ATS (later the WRAC) in order to get the same leave as Ken. She was sent to the Cadet Training Unit in Edinburgh and became a junior subaltern and was then, in 1941, recruited/commissioned to Aux Units as an officer in the Signals branch of ATS. Also recruited was Mickey Browne (later Trant) and Eleanor Norman-Butler; they were all sent to Norwich to run a wireless station in the Divisional HQ, to liaise with stations run by civilians (with radios up trees, etc) because there were plans for civilians to be informers in the event of a German invasion. They worked in the supposedly secret "Met Hut" in the grounds of the HQ. [Thea told stories of being asked about the weather and momentarily being non-plussed until realising their cover! Her personal code poem(?) was "You are old, Father William" which she could recite word-perfect till her dying day.] She had to leave ATS, before the end of the war, in May/June 1942 for the birth of Patricia (in August).

June 1940 – Dunkirk [27th May to 4th June 1940]: KMW was part of Margate beach "reception committee".

Immediately after Dunkirk, No 2 Company (renamed **No 1510 company** under Maj GG Clarke?) became **No 1 Special Wireless Company** with 4 "B" type mobile sections of 100 Royal Signals and 6 (or 8) Intelligence Corps interpreters. We moved [from Canterbury] to **Walton on the Hill** and began to get the B and C sections ready to function.

McSweeney and I were given **No. 110 B type section**: strength - 100 Royal Signals plus 2 officers and 6 corporals from Intelligence Corps (linguists). We had 2 Leyland Lyon 10-ton vans, one as a receiving station and one as an office, two 15cwt

direction finding stations, a cable wagon with team, workshop vehicle with Instrument Mechanics and electrician fitters, a cook house, and 30 cwt trucks for personnel and stores.

After a few weeks my section, No 110, was suddenly sent to **Rothamsted House**, **Harpenden**, to assist on the construction and initial operation of the 120 set Central Intercept Station, augmenting 1 SW Company which comprised an expanded A Company, the pre-war Royal Signals intercept unit at Aldershot. It was there I met John Hills, A Company TMO; he and I worked together on the preparation of the set room aerial arrays and supporting services; together we established a station with some 120 receiving stations – a vast number of antennae, power supplies, etc. The CO was L/Col Dicky Barton OBE. It was here also that I first met Col F Nichols OBE, then head of Y Service with its Headquarters at No 2 Caxton Street, London.

At this point someone found that the German E Boats were using 4-5 metre RT plain language for communication between boats and that they could be received on our coast. John Hills designed and built suitable receivers (4-5m wavelength) and I was sent to reconnoitre suitable sites along the south coast, some 6 in all. We established a station at Start Point, with sub stations at Portland & Lizard, and built Direction Finding antennae with the assistance of BBC Start Point. [In 1939 the BBC built a transmitter (and 2 masts) close to Start Point in order to relay the 'Western Programme' to the West Country and Southern England.]

July 1940 *Identity card No M177501 Home Forces, issued by MI8 at War Office*

Some Memories of South Devon, July – November, 1940

Just after Dunkirk some bright lad discovered that the Germans were using very shortwave radio for intercommunication between E boats. Presumably they believed, as we did, that these wavelengths had a very limited range of a mile or so. In fact we found this not to be the case over water.

Suitable receivers were quickly designed and built and Geoff Claridge and I were sent off to reconnoitre suitable sites for radio listening posts on the south coast. Several were identified and Geoff took charge of the eastern end and I the west.

To Beesands (Start Point) for 5 months.
Two days later I set off for Devon. Our selected pitch was on high ground just south of the road down to Beesands and about 150 yards inland from the cliffs where there was a thickish hedge into which we could camouflage the vehicles. We had radio operators, 2 German speakers from I (Intelligence) Corps, drivers, a radio mechanic, a cook and a DR (despatch rider).

With the aid of the local policeman we took over the annex to the village inn as the main billet and the cook set up his field kitchen between the road and the beach. After watching this activity for a day or so, the village wives came to me and said, "Your cook is ruining good food. We will cook and feed your chaps."

Also at Beesands was a detachment of DLI [Durham Light Infantry], under 2/Lt Tommy Walker, and about 100 RE [Royal Engineers] to build beach defences. They were Clydeside dock workers, commanded by their civil boss, a 2/Lt Matt Taylor. There was a platoon of Devons, guarding the BBC Station at Start Point (Lt Barnes?) and another detachment of the 11th DLI at Stoke Fleming. DLI HQ was at Halwell [south of Totnes in Devon], from whom we had to collect

our rations and pay. Tommy, Matt and I billeted ourselves at the Crabpot Café (at Beesands) in real comfort. The only other service personnel between Dartmouth and Plymouth naval areas were a small RAF radar post just west of Burgh Island.

Our listening post soon found how to locate the E boats' intercom and found they also talked to patrolling aircraft on the same system. All information was repeated to the SNCOs at Dartmouth and Plymouth and sent daily to our HQ in London by DR. Several successful actions were skuttled.

As a secondary occupation I was told to keep contact with the locals and particularly with the Local Defence Volunteers (LDV) commanded by one Captain Beer. The LDV had detachments at most villages between Dartmouth and Plymouth Naval Areas, but we did not feel that pitchforks, etc, were much use to repel raiders; so, courtesy of RN Dartmouth, I managed to scrounge a batch of Belgian Hotchkiss Machine Guns (rather like our Lewis Gun) which had been evacuated by a number of Belgian trawlers which had become part of the inshore patrol out of Dartmouth. We issued these, one to each LDV detachment. For practice we floated some glass net floats out to sea and got the LDV chaps to fire at them single shots. Courtenay, son of the innkeeper and ex navy, smashed one with his first shot and the rest were almost as good.

After a short time the RE started to build a beach barricade of posts and barbed wire along the shoreline. They were told, "If you don't leave a way through for our boats, there will be no more crab salads, etc". Unofficially a gap was left. Old Mr Courtenay, who spent most of the day sitting outside the inn, said it was a waste of time as no ship of any size could get anywhere near.

Occasionally we received a signal to say, "Expect enemy landing in small boats". We alerted the various lookout posts and on some occasions sat on a cliff and watched while a canoe came ashore and was destroyed – and then we went down and welcomed the arrival before sending him off under escort to the security at Dartmouth.

The signals we were picking up were often quite strong and we thought we ought to be able to get a bearing on them. I lashed a rather crude H aerial and, after a few tries, got a bearing. But one bearing does not locate a source. So I asked London for permission to use the BBC workshop at Start (Point) to make a pair of aerials properly. The first answer I got (from one Sellars) was, "Don't be ridiculous; everyone knows you cannot direction find wavelengths below 190 meters." When I persisted, I was told, OK but you may only tell the BBC the measurements you require and on no account the wavelength you are using! The length of an aerial is a direct function of the wavelength. Result – roars of laughter when I went to Start Point, but they made splendid aerials which, when suitably sited, gave us two intersecting bearings. When we were sure, we reported the position to Dartmouth. Shortly after, my phone rang and Dartmouth said, "See that Destroyer going out? It's going to see if you are right." Near enough we were.

To pick up local information we liaised with the IO of the LDV, a schoolmaster from a nearby village, encouraging folk to tell us their thoughts and worries, and soon getting information which was passed to the I Corps Sgt at Dartmouth. From our hilltop station looking north, our sentries started reporting a number of lights appearing, followed by the sound of a single plane. This persisted; so we took compass bearings on the lights and went to look the next day. We found a

number of round cans sunk into the ground with traces of burnt out wicks and oil and grease. We handed that one over to I Corps and the police; I don't know if they ever found who was doing it.

Socially: Captain Beer had occasional jaunts and drinks at the hotel(?) where we met lots of locals. I also remember long chats with Bessy Sharpe (retired Kings Barge Master) at Torcross where he lived and, at Beesands, one Dennis O'Neil, a singer with two small children. One day there had been an ENSA show for the troops somewhere inland and, in the evening, Dennis O'Neil was in the local with Jack Buchanan who asked Cpl Bennett if he'd enjoyed the show. Bennett said, they were all on duty so could not go to it. So JB and D O'Neil proceeded to give an impromptu performance there and then.

One afternoon my Batman came to me to say they were holding 2 civilians with a car and a marked map on the beach road. I went down and found a man and a woman and OS 1" map with various markings which to my knowledge seemed to refer to various lookout posts, etc. Asked what they were doing there as (it was) out of bounds to non-residents, they said, you can't hold me up; I'm an adjutant. I am looking for someone who lives at a farm near here. Took his map and told him how to get to the farm in Gweek which was down a lane off the road. I phoned security who said they would be along and please to block the exit till we get there. We did so with our 3 tonner. Security arrived and we left them to it. I was later told they collected several undesirable characters, and thanks for your help.

When Plymouth was bombed I was called in to move the signal office and then evacuate the people to the fields. They bombed 3 nights running; the place was decimated.

After about 5/6 months we were released to return to our Unit (110 Section) and replaced by a well-trained team of WRAF. We had worked for 24 hours a day, and certainly helped to account for some E boats, and were sorry to leave for a more energetic time.

I rejoined **110 SW Section**, now at **Frant**, near Tunbridge Wells, reporting to 12th Corps (Gen Thorn & later Monty) as W.O. Transfer, as well as to Y Service in London.

Returning to No 110, Mac and I soon realised that the equipment and layout of the vehicles provided for the receivers and interpretation were operationally useless. So, without asking anyone, we proceeded to alter them to accommodate 6 in stead of 4 operators, etc. We demonstrated this to FN [Brig Nicholls] on one of his regular visits. He was quite enthusiastic and approved of the changes but said, "You will get into awful trouble if you have to send the vehicle into ordnance workshops for altering the interior without authority". Then said, "Can you do the same for the other 3 sections, if I get them to you one at a time?" The answer was 'Yes' and in due course we did.

December 1940 – December 1941, AUXILIARY UNITS, Home Forces
[The original formation of Aux Units is well-described in Chapter 9 of "Gubbins and SOE" which also describes the organisation and training of the "Stay Behind" sabotage sections. For full details of the story of Aux Units, read "With Britain in Mortal Danger" by John Warwicker, published by Cerebus.]

Later in 1940 it was decided to establish a parallel intelligence network, separate from the fighting units, consisting of persons who would be likely to continue to go about their normal work even after an invasion, with secret communication facilities to static divisions further inland. These individuals were found and briefed by County Intelligence Officers.

In December 1940 John Hills appeared at Frant and asked me to join him in the formation of **Auxiliary Units Signals**. John also suggested that my wife, Thea, should join the ATS as a radio operator, as a Commissioned Officer. *[Note: 2/Sub Thea Ward – Met Huts Norfolk & Halstead to April 1942.]* Major Hills and I both came from Royal Signals "Y" Service and had met when setting up the main intercept station at Harpenden in May 1940.

On **1st January 1941** I joined the Aux Unit (Home Forces) Signals, on its formation, as a Staff Captain Adjutant and Workshop Officer of a special unit where I was responsible with the CO for design, manufacture, installation and maintenance of Special Wireless Duplex Radio systems, equipment for a radio network staffed to provide underground communication in the event of invasion, located round the coast, working to Station Div HQs and Stay Behind Units.

My posting order told me to report to Major John Hills at 'The Bull', Long Melford, Suffolk. On arrival we found that a billet had been arranged at the local baker's. At 'The Bull', I met John (Hills) and Freddie Childe; both he and John were billeted there. Freddie swore me in to the Official Secrets Act, then explained what we were to do.

Briefly our objectives were to establish a network of civilian watchers - whose situation meant that they would stay in their existing locations and activities in the event of an invasion - and to provide them with radio communication back to static Division Headquarters.

At this stage a trial network (a pilot scheme) had been set up in Kent, with 4/5 civilian operated, concealed coast stations working to an inland base station at the Static Division HQ staffed by 4/5 ATS operators. Major Hills had designed radio transceiver sets and arranged for manufacture and established the coast stations. Lt Tom Shanks was looking after things, in co-operation with the County IO, Capt Fleming.

On arrival I found that, apart from this, the unit consisted of the CO Major John Hills (R Sigs), Captain Freddie Childe (I Corps), myself, and Corporals Chalk and Crawley (RASC). We also had a 15cwt GS wagon and a civilian registered, red American Essex saloon car, and I had my own Standard 8 Tourer. We had no base and no other personnel.

The initial sets were VHF Quench type duplex telephony units, designed by Major Hills and manufactured by Bryan Savage Ltd of Kingsbury [near Hendon, London; later Savage & Parsons, Watford]. The Quench set is in fact a duplex telephone transmission, being voice switched, using the 4 metre spectrum with horizontal di-pole antenna – very difficult to intercept or to direction find. Our brief was to establish similar networks along the coast from Berwick-on-Tweed to the Devon border. Close liaison with the County IOs was necessary to ensure that locations were suitable for siting concealed sets and antennae.

Our first problem was to find a convenient, out-of-the-way base, preferably in East Anglia – the first area to be developed – where we could establish our activities. This resulted in us taking over **Bachelors Hall**, Hundon, (Suffolk) between Haverhill

and Stradishall. It had recently been vacated by a Manchester Regiment and was pretty shoddy, but isolated, with plenty of accommodation and sufficient outbuildings for workshop and stores, and standing in several acres of grounds, far from any other dwellings. It had a large kitchen with an Aga cooker, plumbing and hot water, etc. The main disadvantage was lack of electricity; so lighting was with pressure lanterns and in workshops soldering irons were heated with blow lamps.

[Bachelor's Hall in Hundon, Suffolk was the first headquarters of the Special Duties Section or SDS. It was only Aux Unit Signals, quite separate from the field sections. Aux Unit HQ was at Coleshill, originally set up by Col (later) Gen Gubbins and now commanded by Col Tom. It grew to a large organisation, but Signals only expanded to some 140 + 50 or more ATS officers. Activities at Bachelors Hall had nothing to do with the stay-behind fighting section.]

Next John and I visited **Coleshill** to meet with CO Aux Units, Col Major, who had taken over from Gubbins. We were loosely briefed and then left to get on with it. Speed was essential; we needed personnel to make and service equipment and to install it, recruit and train operators, maintenance personnel, site vetters, site builders, transport, support staff such as cooks, clerical workers, etc, and of course workshop equipment and supplies of materials and components. John and I started to get organised.

Our next problem (was to find) personnel with radio experience. We were told very firmly that we could not seek transfers of Royal Signals personnel. John Hills, himself a radio ham (G2AW), contacted Mr Clarry [John Clarricoats], Head of the Radio Society of Great Britain (RSGB), who provided a list of good, keen, amateur radio hams already serving in infantry regiments in non-technical capacities. They were quickly vetted and, if OK, we were able to arrange for cross postings. We were very lucky and obtained some 20-30 keen radio amateurs. An efficient and knowledgeable base workshop team was quickly operational, including among others Sgt Ron Dabbs, Cpl Bill Bartholomew, Tom Higgins, Les Parnell, and J Mackie, a sheet metal worker.

Concurrently we received some RASC personnel - a few NCOs and non Signals ORs (including Cpl Arthur Gabbitas), 9 RASC drivers and support personnel, including drivers Dickerson, Caldow, Perkins and Atkins, an MT mechanic, a store corporal, cooks and an office clerk. A little later we actually received one Royal Signals Cpl, later Sgt Spencer, and a Sigs despatch rider, Simon Harden. Altogether my unit consisted of some 40 ORs all of whom had been drafted to us from non signals units in the army.

In parallel with this we required operators for the base stations. For security reasons it was decreed that these should be ATS Officers. A gradual build-up was achieved with the help of Lady Carlisle, who was chief ATS officer at SE Command, Reigate. Lady Carlisle was instrumental in providing the first 4 or 5 ATS from SE Command Units to man the Kent base station in late 1940, and continued to be of great help in the recruitment of civilian girls for enlistment and giving them a short basic training as base station operators at Great Yeldham. Most importantly she arranged that our recruits could then attend a shortened course (about 9 weeks) at ATS OCTU Edinburgh and thus be qualified for commissioning as quickly as possible. They were commissioned as Second Subalterns and authorised to wear the Royal Signals badge on the their collar dogs. They were then allocated to a Base Station (Met Hut) in groups of 2 or 4 per station. Apart from the 5 in Kent, all ATS were directly recruited from civilian sources.

By the time Beatrice Temple came on the scene in Oct/Nov 1941, we had already recruited and trained some 40 or more S/Subs, and base stations (Met Huts) were operational at Sherborne, Winchester, Sussex, Kent, Hatfield Peveril, Halstead (Buttercup), Norwich, Lincolnshire (2), East Yorks, North Yorks, Durham and Northumberland – each adjacent to static division HQs.

Cpl (later Sub) Mickey Brown [later Trant] was transferred from Kent to Hundon to help with admin, training and voice testing. She was established in a house at **Great Yeldham** and ran training courses for new entry who had passed voice tests, prior to their going to OCTU.

We requisitioned 2 small houses (1930 Miners redeployment) in Great Yeldham, one for ATS in training, and the other for Freddie Childe's area IO (Suffolk and Essex). The base station S/Subs were in civilian billets but were attached to Div HQs for admin, etc, and in many cases used the HQ officers' messes.

We also required more transport for site surveys, installation parties and maintenance teams in each county area. We received 2 x 30cwt Bedfords, 2 more 15cwt GS trucks, and 3 Canadian Ford V8 staff cars. However the only transport that could be released to us for the maintenance crews were some 24 rather elderly Norton motorcycles with open sidecars. There was considerable hilarity in the efforts to learn to control these, with much damage to local hedges, fences and gateways before their peculiarities were mastered. Fortunately there were no injuries to personnel - apart from pride. We, of course retained the Red Essex for when we did not wish to advertise military presence.

While recruiting continued, I was mainly concerned with equipping the workshop. Benches were tables barrack 6', later strengthened with legs and braces. Machines – all manual or treadle operated - came from a tool stockist in Cambridge. A pedestal drill, a bench drill, 2 fly presses with standard punches, etc, a treadle guillotine and a folding machine, blow lamps, soldering irons, miscellaneous hand tools, etc, files, a large number of Tilley petrol lanterns, including 2 large floodlights for the workshop.

The workshop crew was assembled: Sgt Dabbs i/c, Cpl Bartholomew and, among others, Tom Higgins, Jack Millie, Les Parnell, and Cpl Mackie who had completed his apprenticeship as a sheet metal worker and was an invaluable member of the team. Dabbs, originally a Sgt in a TA unit, came to us as he was considered too young to continue as a Sgt – what luck for us! He and Bill Bartholomew soon made the incomers in the workshop an effective team.

Sgt Dabbs would present me with lists of components, materials and tools needed, and it was part of my task to see that we got them as soon as possible. One of our early problems was getting radio components when we wanted them; this entailed many trips by me to the London area. As far as materials and components were concerned, the Radio Component Control department had not then started to function but a company/shop by Great St Mary's in Cambridge had pretty good stocks of common components. Webbs Radio in Soho, well known to all radio hams, was an excellent source. Test gear was obtained from the Ordnance depot in Donnington (Brent, North London); a sheet metal worker on the outskirts of Cambridge, Bulgins, and a few manufacturers which were not supposed to supply direct, often let me have small quantities.

We immediately took over the manufacture of the sets and their installation in the Met Huts and in the coastal concealed out-stations. Cpl Chalk and his mate were experts

in installing the concealed di-pole antennae in trees, lofts, barns, etc. The first areas to be equipped after Kent were Norfolk, Suffolk and Essex, with their Met Huts at Static Div HQs near Norwich, Halstead and Hatfield Peveril. The county IOs concerned with finding and briefing the civilian operators of coast stations were John Collins in Norfolk, and Freddie Childe with his billet, etc, near Great Yeldham.

Sgt Spencer(?), R Sigs, was given the job of appraising outstation sites suggested by IOs. None of the other radio staff were at that stage Royal Signals and continued to wear their original unit markings.

Sgt Ron Dabbs, i/c workshops, Cpl Bill Bartholomew, and one other (whose name escapes me), convinced me that we really needed some improved sets; so they proceeded to do a redesign job, the only limitations being that any new sets must be able to work with the original equipment. Cpl Mackie made the prototype cases. The result was the **TRD** (Transmitter Receiver Dabbs) 4-meter transceivers which became the standard set for all stations. They were later made by a small company in Cambridge.

The TRDs at Hundon were tested out by working to "Radio Buttercup" at Halstead, some 15-20 miles range.

March 1941 - Posted to **Auxiliary Units GHQ** as **Wireless Officer** responsible for design, construction and maintenance of apparatus and stations for large UHF (4-5 metre) network.

15th March 1941 - Promoted to Captain, Royal Signals

March 1941 - January 1942, Workshop Officer and A/Adjutant, **Special Wireless Intercept Unit**
Appointed **Technical Officer** in a Special Wireless Manufacturing Unit; responsible for design, manufacture and installation of static VHF wireless stations, including siting, and supervision of maintenance – to be used in the event of invasion.

In the year of 1941 we designed, built and installed the TRD in concealed wireless stations on or near the coast from Berwick upon Tweed to the Devon border, some 140 in all. These were operated by civilians who would stay put in the event of the expected invasion, and provide information from behind enemy lines, reporting to inland stations staffed by ATS officers at Divisional HQs. [See John Warwicker, "In Britain in Mortal Danger".]

Towards the end of 1941, Hugh Winterbourne had taken over from John Hills and our work of equipping county networks from the Scottish border to the Devon border was completed. it was recognised that no further installation was likely to be required and the work could be carried on by the ATS operators of the base stations with a small maintenance team in each region.

It was decided that the design and manufacturing facility at Hundon was no longer justified and that radio and maintenance teams and 'Met Hut' personnel could be controlled from **Highworth** [Coleshill]. Operations at Hundon "Bachelors Hall" were to stop and the personnel reposted. Replacement equipment could be provided from another source of manufacture. So Aux Unit Signals scaled down to Maintenance only.

At the end of the year The Radio Communications Division of the Interservices Research Bureau, ISRB (part of SOE) agreed to take over the manufacture of the

TRD needed for replacement or extensions. I was posted to them. We made a few TRDs in-house and then arranged a contract for manufacture of TRDs with Peto Scott Ltd (one of the original radio manufacturing companies from the early 1920s; they were bought out by Phillips in the late 1950s and no longer exist).

January 1942 – November 1945, Seconded to **INTERSERVICES RESEARCH BUREAU (ISRB), RADIOCOMMUNICATIONS DIVISION (RCD).**

ISRB was the cover name for the Radio Research Development and Manufacture of Communications Equipment for SOE – even more secret than our Aux Units! I was interviewed in London at the War Office on the Tuesday and posted to ISRB-SOE on the Thursday, and stayed with the RCD until it disbanded after the end of hostilities.

It was a very small outfit at this time (January 1942), comprising 5 officers and a laboratory of some 30 persons and an embryonic manufacturing unit with very few personnel. Prior to this date SOE communications had been provided by the Secret Intelligence Service (SIS).

January 1942
On the first Monday of 1942 (**4th Jan 1942**), Major Herbert Pickard of ISRB Welwyn came to see our set-up, to see what was involved and if his Unit could undertake future manufacture of the standard set which we had developed, the TRD.

After a detailed tour of the workshop, etc, as he (Major Pickard) was about to leave, he turned to me and said "If you want a new job any time, let me know." To which I replied, "I want one now. I am waiting for a new posting." Pickard turned to my CO, Hugh Winterborne, who said "That's right; he's free." He then picked up the phone and spoke to someone who he addressed as 'Tommy': "You know where I am? I think I have found a chap for the work we spoke of yesterday– available now; OK". Then he turned to me, "Can you get to London for an interview by 1100hrs tomorrow, Tuesday?" Then to Tommy, "Right, I will lay it on." He turned to me, "Be at the War Office, Room 64 for interview at 4 pm tomorrow."

Next morning (5th January) I duly presented myself at Room 64, the War Office, to be greeted by a rather benevolent Group Captain, "I am Group Captain (Frank) Pyle but everyone calls me Uncle" [ex H Kay Water Works]. Later he proved to be Deputy Chief Signals Officer. After some general chat and lunch at the QE Club, I returned to Hundon to find that my posting instructions had already arrived, "Report to Maj H Pickard, The Frythe, Welwyn, Hertfordshire, 1600hrs Thursday. Seconded for special duties without army pay or allowances from this date."

So, on **Thursday 7th January**, I reported for duty at **The Frythe**. My driver duly delivered me, complete with all kit, to be greeted by one Sgt Jones, receptionist, "Major Pickard is out but I will tell Miss Cross that you are here." She soon appeared and whisked me off to the housekeeper who allocated me a bedroom. Queer spot! What have I got into? Blue Cap security police; miscellaneous soldiers, airmen, sailors and civilians, all in a stately pile with sundry wooden huts in the grounds.

In due course Major Pickard arrived with Lieut Myshrall, his Adjutant. I was introduced to Lt Col John Dolphin, CO of Station 9, and his Alsatian dog. It turns out that The Frythe is really Station 9 and that Signals are Station 7, our designation Radio Communications Division of Inter Services Research Bureau (RCD ISRB). We forgathered in the library with sundry other introductions before dinner, at which there were some 50-60 present (Navy, Army, RAF and civilians, male and female).

Later we went to Pickard's office – Pickard, Myshrall, Professor Wilson (2 i/c responsible for the labs - civilian), Capt Sexton and myself - it transpired, all very recently appointed. The outfit had been in existence for some time as a development lab under Col Shroeder. HP had arrived in Nov/Dec 41 from AF Sigs N Ireland with Mysh and Driver Roberts, Batman.

Our brief was to design, manufacture and provide all communication needs for the SOE personnel operating in the field. At this time signal traffic was handled by SIS who did not like SOE and were inclined to give priority to their own needs. So there was considerable urgency to get some output of good equipment. Prof reported that there were some 42 projects in hand in the laboratory but he was doubtful whether any were ready for production or if some would ever serve a need. We decided to make a detailed tour of the facilities in the morning and to find out the real situation.

Leading from Pickard's office was *the Model Shop* in the former conservatory. In charge, Mr Moore, with 3 tool makers. The shop was equipped with first class machine tools for very high precision instrument engineering. Work in progress – some precision wave guides and the like.

The Lab, in a range of wooden buildings in a Monkey Puzzle grove, was organised into 3 sections, divided into separate areas: Airborne (Air to Ground), Portable Ground Station, S Phone and, in support, Instrument Section, Drawing Office and Photographic Section. Some 20-30 projects in progress.

The *S Phone Section* (Hugh Bovill and Bert Lowe) was responsible for this small chest set intended to work from ground to air to provide for equipped aircraft to home onto it. The prototypes had been well tested and details sufficiently advanced to consider it for production. The S Phone was the only project ready for manufacture. There were 7 very large and heavy Suitcase Sets built in the laboratory but awaiting valves from the USA.

The Airborne Section (Valentine Jones) was concerned with the development of the airborne end of the S Phone system. A lot of work had been done and the theoretical design virtually proven but there appeared to be a lot more to do before production of the numbers required.

The Ground Station Section had several staff, including Capt Bob Bryant, Capt Stuart Halliday and SM Ted Stallworthy. A rather large and cumbersome field set was in progress but awaiting special valves from the USA.

Lab Instruments: standards and sub standards all well organised under Bill Williams.

Drawing Office: 2 boards under Mr Livingstone, and the Photographic Section under Mr Hillam.

We then moved over to *Hut 4, the Production Unit*. The main part was laid out with some 40 positions for assembly work, and a stores area.
Personnel:

- Mr Chollot, supervisor/foreman
- Tony Klein, production control
- Jim Lowe, planning engineer
- Pete Piness, buyer & properties

- In the workshop, a foreman, an inspector and 2 fitters, but no assembly labour.

Returning to the office, it was agreed that we could proceed with manufacture of a batch of 50 S Phones. Jim Lowe got started on working out the manufacturing methods; Pete Piness, the buyer, got the necessary bits on order, and I – aided by Mr Challot and Tony Klein – got the workshop in order.

As far as ground station portables were concerned, the 7 Suitcase Sets could be finished as soon as the special valves arrived but they would be extremely heavy and cumbersome. We needed design staff with knowledge to develop more appropriate equipment. The general specification of needs was known: frequency bands, range, simple to operate, as lightweight as possible, capable of working from rechargeable batteries or mains voltages, transmission by CW (Continuous Waveform Morse Code).

We also would need workshop personnel for assembly, test, etc. This was all confirmed at an evening meeting with Uncle Pyle at HQ. Pickard went off to arrange for works personnel, and hopefully for a new location where we could expand our facilities.

A few days later a detachment of 30-40 ATS arrived and workshop training started. We needed to train them to solder and do all the other tasks. In this we were helped by 4 men who were all ex McMichael Radio and really skilled electrical fitters. (It was from this small beginning that Station VII, with its public title of ISRB RCD, grew to provide all the communication equipment required by the organisation. With a mixture of service and civilian personnel, we numbered some 700.)

Professor Wilson went off to Catterick, the Royal Signals Training School, to look for a Design Engineer. He found a young Corporal, John Brown [John Isaac Godfrey Brown (JIB)], lecturing to an Instrument Mechanics course but obviously very bright, extremely knowledgeable and wasted there. He and John took the train to London. John Brown was immediately promoted to 2/Lt General List and put in charge of Ground Set development. [*Imperial War Museum interview with JIB, 14/11/1989, cat no 11035 – ref to KMW on Reels 2, 3….*]

Sexton took over responsibility for the workshop and I was given **Contract Liaison with industrial suppliers.** Initially my task was establishing contact with component suppliers to locate the sources for the particular needs of the lab and then for 7A (Manufacture).

RCD was Station 7: 7A Manufacture; 7B Supplies and liaison with industry; 7C The Laboratory; and later, 7D Airborne Equipment.

But first I had to go to our Baker Street HQ for security briefing. This was slightly hilarious! A very serious young captain (Mott) explained that the organisation and its locations were highly secret and must not be discussed with anyone, etc, etc. He then said, I understand you will be liaising with suppliers to obtain your materials and equipment; you should tell your contact that you will be, say, by the BBC building at 2:15 and they should deliver to you there! I pointed out that our orders bore our title, ISRB RCD, and our address. Would it not be better to tell our suppliers that we were purchasing for our European allies' forces located in the UK and then follow normal commercial practice with regard to purchasing, delivery, etc? To this he eventually agreed.

The next day Pete Piness provided me with a list of some dozen firms which needed visiting to arrange supplies, and I set off into London. My knowledge of the place was confined to travelling by taxi between mainline stations; so I stopped at WH Smith in Baker Street and, with some difficulty, persuaded the manager to sell me an ABC Guide and set off for the first name, A F Bulgin at Barking, Essex, then the second, TCC (Condensers) in Acton; the third was back in the East End – stupid! – but I zig-zagged across London for the rest of the day and returned to The Frythe exhausted with an awful lot of miles on the clock.

Over the ensuing weeks, I set out to learn the main roads of Greater London and then the short cuts. I could then plan my journeys more sensibly.

Apart from field station equipment, 7B also had to obtain the equipment for base stations and other special needs, either by scrounging it from other Navy and Airforce stores, or from commercial sources. Organising the supply of transmitters, masts, rigging, cables, etc, entailed many visits to manufacturers and close liaison with both end users and designers to ensure everything was exactly as required.

One day when I visited TCC, my contact told me that Radio Components Control (RCC) had been established and they could only supply against requisitions routed and duly authorised through this new organisation. This was a complication as normally the RCC would work on broad specs only so that they could place orders according to makers' schedules; they could not accommodate our full and precise specifications. We frequently required a particular make (because of its size, tolerances, etc) at a specific time. I reported back and after some discussions was told that temporary arrangements were that I should contact the GPO liaison officer at the control who would be able to process our requirements.

RCC was then at Oakwood Mansions, near Olympia. I went there and found a very helpful fellow, the GPO Liaison Officer, who listened to my needs and explained the set up. There were separate sections each dealing with a particular group of components and allocating the demands of manufacturers to ensure full use of their available capacity. Thus, for example, a requisition arrived for a batch of 1Mfd paper tubular condensers; they would check the loads on each manufacturer and pass the demand to the one with spare capacity available to meet the demand date. But different makers' products varied in size, detailed specification, etc, and special liaison with heads of sections would be needed to get components from a particular maker. He then suggested that he would give me a conducted tour and introduce me to the section heads; I would then be able to bring in our requisitions on forms supplied and take the necessary action to ensure we got the right items.

After a couple of hours or so, on the way back to his office, he said, "You'd better have an office here so that you are recognised as an authorised person and not have difficulty coming in at any time." He opened the door of a minute room, with desk and chairs and an internal phone, said "This will do", and stuck a card on the door with my name and ISRB-RCD on it. So we were officially home and dry.

Subsequently the RCC moved from Oakwood Mansions to Thames House and later to the upper floors of Church House, Westminster. Each move took my office and door label with it and nobody ever seemed to wonder how and why I got it!!!

This was all very fortunate as the need arose to use outside sources for the manufacture of sets for quantities beyond 7A capacity. My job then expanded to processing the demands of all our set-making contractors and overseeing of their work. My section expanded to include Capt Stallworthy, Captain Halliday, 3 or 4

civilians, and Cpl Kershaw who kept the records, handled incoming requisitions and always knew where everyone was.

My responsibilities were to find and arrange supply of the necessary components, materials and equipment required, ensuring the ability of contractors and factory staff to deliver top quality work on time, ensuring availability of parts etc at all times to meet lab needs. This involved close contact with a very large number of firms. The work included progress of firms' outside orders, planning of operations in the various factories, liaison between contractors and laboratory and inspection departments, and with Ministry and Government Departments, all necessary contacts with MOS, MAP, etc. to ensure material and component supplies. Range of apparatus covered, from microwave equipment to 25-50 Kw transmitting stations, power supplies of all types and sizes driven by water, petrol, oil, steam, etc. Undertook the setting up of a number of complete plants and the re-layout of many others to met our output requirements. (Assistant staff of 10-12 officers.)

Concurrently the search for larger premises continued and in April we moved Manufacturing and Supplies to Bontex Knitting Mills at Stonebridge Park on the North Circular. Joe Kennedy, Royal Signals (and like myself ex "Y" Service), joined as Head of the Supplies Station. Manufacture became Station 7A and Supplies became Station 7B. Very soon the next door factory, Spartan Refrigeration, was requisitioned and initially accommodated 7B and its stores.

It now became apparent that we should never be able to manufacture all our requirements, and the same applied to the other Stations, e.g. Mechanical Engineering Station 9, Weapons Station 12. So a department was set up in the Ministry of Supply, Con XM, to handle the allocation of factory capacity, contract payments, etc.

A little later it was realised that 7A needed all the factory space and 7B moved to the Yeast-Vite factory in Watford (Hertfordshire). There we had Goods Receiving, Inspection and Test, Stores, Packing and Despatch, with special out storage for valves etc in Kidderminster (as the valves did not react favourably to nearby bomb blasts).

A month or two later Lab 7C was moved to Allensor's Joinery Works in Watford, close to 7B. Much later the Airborne Equipment Group, under Bert Lane, was moved to Birmingham as 7D.

In due course the special valves arrived and the big 7 (Suitcase) Sets were finished off and whisked away to a group going to Yugoslavia. Some were lost but one actually got through and a signal was received by a group of us waiting all night in Uncle's office at 64 Baker Street. *[Handwritten note says, "Sent to Yugoslavia. I actually worked in the field and signal was picked up by U Pyle and officers in 64 (Baker Street)"]*

When John Brown arrived at The Frythe, he quickly started work on the design and development of the first of the B type transceivers. This new design became the **B1 (Transceiver B Mark 1)**. It comprised 4 separate units, mounted in a frame and then into a suitcase. In a very few weeks John and his team produced 3 prototype sets which were successfully tested. The transceivers were operationally OK; the only snag was that they were far too heavy, when packed in their leather suitcases with all accessories, to be carried as hand baggage.

Peter and I had a pretty hectic time sourcing suitable and obtainable components to meet JIB's specifications. The 'first off', fitted into a leather suitcase provided by Baker Street, was still far too heavy.

One morning Lt/Col Pickard came into my office in Hut 4 and dropped one of them on the desk. "There is no time for redesign. What can you think up in a few days to reduce the weight by some 20%?" (It weighed over 50 lbs; I was set a target of 40lbs in a timescale of 1 week.)

Apart from the suitcase the main offender was the content of the accessory container. Physically the set comprised 4 same size units in sheet steel cases: the crystal controlled transmitter, the receiver, the battery powerpack, and the accessory case which was supported in a metal frame which then fitted into the suitcase.

The accessory case contained coils, spare valves, aerial wire, crystals, an army Morse key, army headphones and a range of bulky devices to permit mains connection to all known mains sockets. The Morse key was some 9 ounces, the headphones 12 ounces and the mains connectors over 1lb; so there was a start.

> First I went to N. Benjamin in Shepherd's Market, who had made the heavy leather cases. He had a small factory, nearby in Mayfair, staffed by some 60 skilled case makers, mostly refugees from Austria and Hungary. I explained my problem and the manager said they could make an equally strong and exactly dimensioned suitcase in special fibre which would be only a fraction the weight of the leather one but strong enough to take a set and its probable rough journeys. One slight snag was that the locks required had the UK maker's name stamped on them, but he was sure he could persuade them to supply some unmarked; if so, I could have 25 'continental fibre cases' inside 2 days.
>
> I went next to Multitone, makers of hearing aids. Alex Poliakoff was most helpful, showed me a pair of lightweight headphones which looked and sounded OK, except that the cable was too fragile; they weighed 2oz compared with Army ones at 10oz. He was sure that Phoenix Electric, who made their own requirements, would be able to produce stronger, but still light, cables. A visit to Phoenix Electric in Edgware confirmed that they could make suitable cables in 48 hours and Multitone said 50 pairs of headphones would be ready in 3 days.
>
> Next, on Alex Poliakoff's suggestion, I went to The Sykes Interlocking Signal Company, makers of railway signalling equipment. Mr Sykes agreed to help, with great enthusiasm. After a short discussion, he said "Let's go down to the Stores and see what we have." After a search of the metal and part stocks, we found some U-shaped aluminium section, some aluminium bars, springs, knobs and black ebonite sheet for a base. Returning to his office, we sketched out all the bits needed, decided it would weigh about 2 ounces (compared with the Army key at 8oz), and Mr Sykes said, "That looks good. You can have 25 in 4 days' time." They were a success and, with slight modifications, such as a moulded base and a cover, became standard fitment on all the sets we produced until the end of hostilities.
>
> I then took a set of metalwork drawings of each part to J&H Walters, sheet metal workers in Fulham. After a short discussion with Mr Walters, he passed me over to Johnny Johnson, his works manager, a Sheffield sheetmetal engineer and his senior foreman. They did a quick weight reduction exercise

on our drawings, redesigning the metal chassis and cases – thinner metal with ribbing for strength, and lots of ventilation holes. They examined my samples and drawings and confirmed they had all the necessary punches for the various shapes of holes required and would suggest using much thinner gauge metal than our samples, but ribbed for strength, with extra holes punched out to further reduce the weight to about one third of the original. If I agreed to the changes, I could have 50 sets of metalwork in 5 working days *(or 25 sets in 3 days?).*

I returned to the Frythe to report my results to Pickard and the production of a first batch of 25 sets went ahead in the Lab. I also pointed out that, as the country for which the sets were intended was usually known, the only adaptors needed were those needed for that country. As a result of all this, the finished sets weighed 42lbs compared with 54lbs for the prototypes - still heavy but a bit more practical and just acceptable.

The first 25 or so B1 sets were assembled and tested in the Lab, with all hands involved, the team working on the transmitter and power pack whilst JIB concentrated on the more complex receiver.

The sets were urgently required. Twenty-four hours before despatch date, no receivers were ready. At 4:00 p.m. on despatch date, a civilian officer from Baker Street arrived to take the consignment to a Cornish airfield for forward delivery. By then only some 4 or 5 sets were completed and tested. The courier was using his standard army 15cwt truck and insisted that to meet his ETA he must leave by 5 p.m. It was then agreed that the courier would go with the 5 sets and that Myshrall would follow later with another batch in a faster vehicle. In the event he left at about 8 o'clock with about 8-10 more sets. Pickard asked if I knew the way to Cornwall and I was told to go and get some rest. At about 2 a.m. I left the Frythe with the remainder of the 25 sets in a batch and hared off to the west country. Driving through the night I did the trip in about 6 hours to find that Mysh had arrived safely but still no sign of the 15cwt, which eventually lumbered in about 10 a.m. So that is the story of ISRB's first consignment; I do not know their destination.

Back to routine, a first production batch of B1 sets was put into production in Hut 4 as soon as the necessary parts had been accumulated. Several hundred B1s were built. A manufacturing unit was established in April '42 at Stonebridge Park in North London.

The Morse key was later provided with a moulded base and cover and it, with the Multitone headset, became the standard issue with all the other field sets subsequently designed and manufactured. And Benjamin made all the many thousand suitcases for all the ISRB field sets.

As mentioned, the B1 was still too heavy and John Brown was already full of ideas for replacement and I was kept very busy seeking new sources for components to meet his needs.

Meanwhile John Brown and his team were well on the way with the development of the **B2**. As soon as drawings and component specifications were available, Pete Piness and I were fully occupied in locating sources of supply and placing orders and contracts for everything needed to build an initial batch.

The B2 proved to be an instant success and replaced the B1 as it was smaller, lighter and more efficient in every respect. It became *the* field set for Europe.

In the following years many thousands of B2s were made. Even with a greatly enlarged workforce, 7A was overloaded and contracts were placed for the manufacture of the receivers with R.G.D. [Radio Gramaphone Development Co Ltd] Bridgnorth, RF Equipment of Amersham, and McMichael of Slough.

Once the B2 was underway, it was decided to produce a range of **A sets** with a smaller frequency band and operating range. The first A set, the **A1**, was developed and produced under contract by Pye of Cambridge. This was in a suitcase but based on the Army 18 set. It wasn't small enough and so a contract was placed with Marconi for the design and development of a smaller set, the **A2**. Design work was at their Writtle labs, under a Mr Burroughs and Mr Lister. Like the B sets, it consisted of transmitter, receiver, power pack and spares box, each about 10x4x4 inches, which fitted side by side into a Benjamin fibre suitcase.

Accommodating the spares was a problem, particularly the range of adaptors required to connect to the mains in foreign parts. Lister and I made a list of all the connections required: Bayonet socket, Edison Screw, Continental Screw, to fit lamp holders, flat and round pins of various diameters, for connection to many varieties of power sockets. The result was a very small object, not much larger than a bottle cork, which, with its collection of pins, weighed less than 2 oz, compared with over 8 oz for the previous collection of separate items. This mains adaptor became the standard issue on all our sets; some 50,000 were made before production was discontinued long after the war.

The A2 was approved and went into production at the Marconi Chelmsford works. Some 2000 were made and then another 2000 for the Russians, some of which were modified to permit K/T *(tank?)* operation.

Writtle then went on to develop the **A3**, physically smaller, in a single metal case which, complete with spares, fitted into a foolscap size case, about 14x9x4 inches. It proved a popular set, with sufficient range to work to the UK from most parts of France. The build contract was with Marconi Hackbridge (near Croydon) who continued to make them until the end of hostilities.

> One day I went on a routine visit to Marconi Hackbridge who were making large quantities of the A3 set but had only a cover story of their purpose. Mr Telford greeted me and threw a lunchtime issue of the Evening News opened at a page with a picture of an A3 and an article describing the sets. An American plane supposed to be dropping them in the Isere had dropped them in Switzerland. Telford said, "You have been stringing us along with garbage as to their purpose." I was horrified, grabbed the telephone, and got onto Lloyd at 64 Baker Street who leapt into action. Delivery of further copies of the paper containing the article were stopped and staff sent out to the distributors and the newsmen on the streets of London and I was told later that all but a very few of the papers were recovered and destroyed. If I had not reported it so quickly, and he had not acted, our security would have been blown. In the event nothing more was heard of the leakage.

The **B2** was the most used set and, when sets were required for the Far East, the problem was to supply them in watertight containers in stead of suitcases. We got several companies to submit prototypes, most of which failed submersion tests, but eventually B. Rosenberg, Kings Cross, were successful and started production until, one night, their 4-storey factory received a direct hit. With the aid of MOS we located

a garage in Broadwater, Tottenham, full of stored cars; the cars were removed, much of the machinery salvaged, and we moved in and production restarted within 5 days.

John Brown, having perfected the B2, went on to design the **MCR** [see Appendix I]. The specification called for full waveband coverage and performance equivalent to the HRD which was the most effective communication receiver then available and widely used, worldwide.

When John Brown started the development of the MCR he kept me very busy, seeking out the sources of supply for the special small components he needed. Many standard components tended to be larger than necessary; size had not been a problem in pre-war receivers.

> *One example*: John had found in the lab a very small tuning condenser, only some 1 ⅓" diameter, in unplated brass; he asked me to find its source. I visited the known manufacturers of tuning condensers but none recognised it or were willing to make it. One afternoon I was at Multitone and showed it to Alex Poliakoff, the MD. He immediately said "Where on earth did you get this? It was made for a pre-war Admiralty project which did not get into production. I don't think they made many." It was designed by a little firm which had moved out of London and which I eventually found in Bushey (Hertfordshire) – one room and 4 or 5 men. Yes, they designed it, and had made 7 or 8 only. They had the 2 press tools for the fixed and moving plates, but no tools, no facilities to make more, but they had some sketches and drawings and another capacitor which was a reject. Obviously they could not produce the quantities we should need. The boss knew of a firm on the Edgware Road, GR, who were going to make them if work had gone ahead. Though small, they had a good press and machine shop and an assembly area. We got power press tools made by Tetra and arranged supplies of brass sheet and rod, etc. Meanwhile, after a few teething troubles, they succeeded in making a few, using the original fly press tools so that John could proceed with his prototypes. The same sort of problems occurred with other items.

John Brown later designed the **B3** set for the far eastern theatre. This was built in dyecast aluminium cases, watertight in themselves but vulnerable components were also sealed in watertight units. We made a Deck Chair Pedal Generator for the power unit. The complete set worked perfectly after immersion in 20 feet of water. Production had just started at Marconi, Chelmsford, when hostilities ceased but later Marconi, with permission, made 2000 sets for a South American country. The UK production was stored after the close down of ISRB.

We did not only make wireless sets. We also made **supporting equipment**. Battery charging was quite a problem although we did provide a number of commercially built chargers - mains supplies were often not available and 12v car type batteries were then required. Many and various devices were produced and used (see Appendix I).

The vehicle allocated to me was a Hillman utility van with a foldaway seat in the back and small side windows, khaki green with civilian number plates. In the years that followed I covered some 110,000 miles in it.

One of my sideline tasks was to collect the daily mail cases from 64 Baker Street at the end of the office working day and take them to The Frythe and occasionally one

for Hatfield House where Lord Selbourne was living. At The Frythe, Marie Cross sorted the mail which were then taken to their northern destinations by officer-driven transport, usually by Buick station wagons. I was rarely home before 7 p.m. but normally did not work on Sundays.

Eight weeks after VJ Day, I was posted out of ISRB back to Royal Signals at **Thirsk**.

Special Forces, SOE – Special Operations Executive (1942-1946)
Anecdotes

- *Called Guy Devreaux(sp?) [no record yet found of 'official' name whilst in SOE] (In 1990s Ken reported going to a reunion where someone called to him across the room, "Guy!")*

- An SOE pilot brought some bananas from the Canaries. Patricia didn't like them!

- Champagne at Gillian's christening (1945) was labelled "For German occupation forces only".

- If KMW said "I've got to go to Bridgnorth", that was code for "I'm going overseas". "They" even sent postcards.

- Ken recalls being aboard a flying boat with sports jackets in a wardrobe on the plane – no uniforms.

KMW reported visits to:

- USA twice in connection with making radios for tanks for use in North Africa where it was too hot and so components popped
- North Africa
- France – several times
- Portugal – often

"Just before landings in the south coast of France, we were looking for a good station for the south of France, so had equipment to fill 7 Halifaxes; an airstrip was cleared specially for us and we built a 12kw broadcasting station at Izère, south of Grenoble.

Conversation re Prison Camps, etc – reference Douglas Moir (brother-in-law), ex Colditz prisoner:
"We were on the other end of that, getting tools etc to the PoWs. We bought tobacco from the West Indies; then, in Helford Creek, transferred it to trawlers which shipped it to the Spanish coast and sold it for local hard currency. With this money, I then visited a hotel in Lisbon where Japs and Germans were at tables. I bought German handtools, etc, and these were smuggled into PoW camps."

Ken's stories included:

- *Meeting Tito in Croatia**
- *Meeting Chiang Kai-Shek**
- *Regular trips to France and meeting de Gaulle several times**
- *Flying behind German lines in France*
- *Being one of the first into liberated Copenhagen*
- *Helping Norwegian resistance with their radios. (Also the War Office made use of 8mm film of the Norwegian coast, taken by cousin John Jacques when he and Ken had sailed up the coast before the war.)*

- *Since Ken would not parachute, he and the radio sets were flown into France in a small plane, hedge-hopping across the country, flying low to avoid radar detection. He set up the sets and trained the locals to use them – and then was flown back to England…until one day he was told that they could not spare a pilot for him and gave him a few flying lessons so that he could fly himself. Short of fuel and unable to gain enough height to get over the cliffs, he flew up the east coast and landed on the beach at Deal. He phoned someone and told them where he'd left the plane!*

**When, in recent years, he was asked how come he met with these dignatories, Ken mumbled something about needing to know where they wanted the radios.*

SOE Confidential Report as at 31st December 1944
Reporting Officer's opinion (supported by Pickard & Davies)
Personality fair, appearance poor. Very hard, rapid and willing worker with considerable ability in achieving broad results. Tendency to get involved in matters outside his own immediate duties and to depend too greatly on his extremely good memory. Somewhat hasty in his decisions. Nevertheless a very useful man with an extensive technical background.
State if recommending for promotion: Not at present.

SOE Confidential Report as at October 1945 (WE Dennis)
An energetic officer with a capacity for working at high pressure. Liable to depend on his generally excellent memory. Is hard working with good technical background. Somewhat careless about his personal appearance.
State if recommending for promotion: No. Has little experience of military matters.

AN ENGINEER'S LIFE POST-WAR

November 1945 – January 1946
At Royal Signals Depot, **Thirsk Racecourse** employed on regimental duties (No 3 Training Bn), waiting transfer to Reserve.
January 1946 – ISBRD closed down.

10th January 1946 – demobbed in York; transferred to Reserve as Capt RARO (Regular Army Reserve of Officers) - Company A Reserve.

January 1946 – 12 March 1948, THE ENGLISH ELECTRIC COMPANY LIMITED, Liverpool
Production Engineer– Fuse Gear Department

Re-engaged on release from the Forces, as from 3rd February 1946, "as a Production Engineer or upon such other duties as you may be called upon to perform and will act under the general direction of the Manager, Fuse Gear Section".

Extract from letter of 7th January 1946.
To: Captain K M Ward, 31 Cedar Road, Berkhamsted, Herts

Dear Sir,

On your release from the Forces, we have pleasure in re-engaging your services on the staff of this Company conditional upon your acceptance of the terms of this letter. Such terms are, of course, subject to the Emergency Powers (Defence) Acts and any Statutory modifications thereof, or any Statutory Rules and Orders issued under such Acts.

Salary: £650 per annum. In addition, you will receive a War Bonus of £1. 6. 6d. per week as an ex gratia payment, subject to the Company's discretion as to adjustment or withdrawal at one week's notice.

I was to examine the set up in the 5 existing works, to design and establish a new integrated works (in Liverpool) and to effect the move into the new works while maintaining a steady increase in output. In fact the new plant was prepared, the move effected, and full production achieved well within the 2-year target. Although under 50 of the personnel were transferred from the old factories and some 1,400 had to be recruited and trained, at the end of the 2-year period output had been more than doubled with only a marginal increase in the total labour force.

January 1947 – Production Control Officer, Fusegear Works
Responsible for introduction of planning and production control system - all matters relating to production, planning and progress in the fusegear works.

During this time Ken went to Valentia Island, off west coast of Ireland, to make the electrical connection for the transatlantic cable.

At the end of this assignment I was offered a similar assignment in the same district, but I considered that I should obtain some commercial experience and decided to return south.

Letter dated 5 November 1947 from Col. C. A. H. Chadwick CBE, A.A.G. R Signals, The War Office *(to Capt K M Ward, Ebor House, Gladstone Terrace, Grantham, Lincs.)*

Dear Ward

I am writing on behalf of the Corps to thank you for all the good work you have put in during these past strenuous years.

The good name which the Corps has earned for itself and its success under test of battle have been due in no small measure to officers like yourself who prepared themselves beforehand for the emergency and by their energy, enthusiasm and whole-hearted devotion to their job, carried us through so successfully.

Now that you are returning to civil life again I should like to express the appreciation of the Corps for all you have done during the war and to wish you every success in the future.

I hope that we shall be able to keep some touch with you through The Royal Signals Association and that the many friendly associations of these years will not be allowed to die out.

Yours sincerely
Cecil Chadwick.

In 1948*, once employment opportunities improved, Ken gave in his notice and went south in search of work and then somewhere to live. This was difficult as there was an acute housing shortage. He stayed at the Special Forces Club in London where he again met Col Dennis, whom he had first met during the war and who owned a house in North Finchley – 66 Woodside Park Road – with a first floor flat to let. So the family moved here.*

18 May 1948 – January 1951, MULTITONE ELECTRIC COMPANY LTD
1948 Sales Engineer, covering the Home Counties
1949 Assistant Sales Manager
1950 Sales Manager (Electro-Medical equipment)

When Ken joined the company it had just been decided to enter the electro-medical field and to market their own products: hospital equipment, deaf aids and audio systems.

"I was concerned with marketing and introduction of electro-medical and acoustic equipment." Work included control of sales staff, export sales, after sales service, liaison between the Design Department and the medical research authorities, and delivery of technical lectures to professional audiences.

KMW on Signals Committee – organised annual garden party (in July) at 66a Woodside Park Avenue, Finchley, N12.

20 July 1953 *– Purchased and moved to Martlet Cottage, The Common, Chipperfield, Hertfordshire, later renamed "Martlets" as registered address of Ken's various companies.*

January – November 1951, PRODUCTION ENGINEERING CONSULTANCY
Self-employed Consulting Engineer.
Various assignments – factory planning and control systems.

November 1951 – October 1964, INDUSTRIAL ADMINISTRATION LTD
Management consultants and consultant engineers.
Head Office: Thurloe Place, London SW7 (Commuted, from 1953, by car from Chipperfield, Hertfordshire, making good use of his knowledge of London's road network).

Resident Consulting Engineer
I was concerned with the broad field of Industrial Engineering, including design for production, plant and factory design and layout, as well as factory organisation, control and management in a large variety of industries.

1951 – 54 Responsible for a number of assignments on the production and manufacturing side. These included:

- Organisation of production and provisioning.
- Television plant – provisioning, stock control, production control, layout of production assembly lines including methods, line test and line inspection, design and layout of Test Department.
- Light engineering (cycles, tricycles and pressure lamps) – as acting General Manager, rationalisation of manufacturing policy, building of new works, closure and disposal of old works, establishment of organisation and introduction of control routines at new works.
- Plywood mill – complete reorganisation, introduction of material and production control, waste control, work measurement and incentives, cost and budgetary control, planned maintenance, etc.
- Sheet metal works – establishment of production and material control routines, planning and estimating, equipment and layout for new factory.
- Establishment of technical routines for Electrical Companies.

1954-64 Staff Engineer (later retitled **Chief Consultant Engineering & Training**) Responsible for the control and supervision of assignments and, jointly with one colleague, for the administrative work of the company. I was also in charge of the company's design service and later the selection service and management training work.

In this period I have been concerned with many assignments in a wide range of industries. In almost every case the objective has been the improvement of profit on investment and has entailed a close examination of every aspect of the business.

Work undertaken:

- Production engineering
    - Plant layout
    - Planning
    - Estimating
    - Work measurement
    - Methods improvement
    - Part numbering
    - Variety reduction
    - Production control
    - Material control
    - Inventory control

Assignments in Electrical Engineering, electronics, timber trade, machine tools, vehicles, domestic appliances, process industries, etc:

- Electrical engineering
    - Heavy plant
    - Lighting
    - Heating elements
    - Plating plant
    - Domestic products
- Electronics
    - Industrial controls
    - Guided weapons
    - Radio service
    - Television
    - Communication equipment
- Automotive
    - Car manufacture
    - Scooter manufacture
    - Friction materials
    - Vehicle hydraulics
    - Seating and trim
    - Agricultural machines
- Timber
    - Plywood
    - Veneering
    - Saw mills
- Chemical
    - Plastic foam
    - Plating chemicals
    - Plating plant
- Mechanical engineering
    - Hydraulic pumps
    - Centrifugal pumps
    - Instrument cabinets
    - Heating and ventilation
- General
    - Slipper manufacture
    - Asbestos yarn
    - Spinning and doubling
    - Narrow fabrics

1954-64, Head of EIGA, Engineering Industries Group Apprenticeship Scheme
Appointed as Head and oversaw the national expansion of the scheme from a single group of some 20 firms.

“I now have a deputy, 5 regional engineers, 26 group engineers and office staffs. EIGA now has 30 groups spread over the country, with over 450 member firms and over 1000 training places, and is nationally recognised as the most successful contribution to the country’s training problem.”

November 1964 – March 1969, ODHAMS (IPC), Watford, Hertfordshire
Chief Engineer (from 1st January 1965)

Responsible for upgrading the Gravure Presses and associated services to print colour on both sides of the paper: a 4-year, £4.5m, programme completed on schedule and within budget, mid 1968.

May 1969 – June 1987, SELF-EMPLOYED CONSULTANT
Consulting engineer/ Production engineer
Set up my own organisation of Consulting Engineers specialising in the location, design, planning and establishment of new factories for companies needing to expand into new premises.

November 1969 – Dec 1992, COMMUNICATIONS & EQUIPMENT CONSULTANTS LTD
Director
With Col Jerry D Parker (ex SOE Signals & Secretary to the Committee Internationale Radio Maritime) formed CEC Ltd, consulting engineers in Radio and Telecommunications.

Works involved maritime and port communication systems, search and rescue, tropospheric scatter, microwave systems, and satellite communication systems, military, naval and civil systems, signal security, etc.

Jobs included communications for the Nigerian Ports Authority – system completed but never operational! (involved several visits to Nigeria).

1970 - KENWARD COMMUNICATIONS LIMITED
Director and Consultant

1972 *Released from Company A Reserves*
[CFW recalls that KMW was charged with visiting/inspecting 'secret' ammunition stores, etc, for many years after WW2, certainly up until mid '60s, if not later.]

1974 - PROJECT IMPLEMENTATION LIMITED (*Incorporated 19th March 1974 - Company Number 1163587)*
Self-employed consulting engineer.

October 1979 – June 1987, Director, LIGHTNING ELIMINATION (ASSOCIATES) LTD., Thame, Buckinghamshire
Director
With 2 colleagues, established company to design, manufacture and market a range of products to protect computers and electronic equipment from the adverse effects of surges and lightning induced effects.

Involved visits to USA, to negotiate supplies, etc.
Assignments included protecting signalling equipment on Irish Railways – hence visits to Dublin.

INTO RETIREMENT

June 1987 – RETIRED!

Continued as Director and Consultant to Lightning Elimination (Associates) Ltd.

Keen caravanner – 50+ years with Caravan Club, touring UK and western Europe.
Voluntary activities:

> **Royal British Legion** President (including 1993-94): *KMW writes: " When I came here (to Chipperfield) in 1953 we had an active branch with over 100 members, held an annual fete and dances. Now, with only 24 who lived through the 2nd World War, we need new members to ensure continuity."*
>
> **Conservative Association**
> Various roles including President of the Chipperfield Branch of the SW Herts Conservative Association and Election Agent for Chipperfield.

27th July 2001 *– Thea died (in hospital in Hemel Hempstead, following a hip replacement operation, necessitated by a fall at home in Martlets in May).*

Ken thereafter lived on his own at Martlets, Chipperfield.

*In **December 2010**, following a fall at home in Martlets, Ken had been admitted to hospital in Watford, Hertfordshire. On 1st January 2011 he moved into the Cornish House Care Home, Chipping Norton (where his daughter Kate lives); it was not known whether this would be temporary or long stay.*

31st August 2011 *– Ken died whilst in The Horton Hospital, Banbury, Oxfordshire.*

His funeral took place on Tuesday 13th September, 2011 at St Paul's Church, Chipperfield, Hertfordshire. He is buried there in the churchyard, with Thea.

He is survived by his 3 daughters, Patricia (Trish), Gillian and Catherine (Kate) and his 2 grandchildren, Roger and Sophie Franklin.

APPENDICES

APPENDIX I: STATION 7 TECHNICAL ACHIEMENTS

[Written in KMW capitals; minor edits by CFW to improve readability]

'A' SETS

In parallel with the 'B' sets, the 'A' sets were developed. The A1 by Pye Ltd Cambridge was based on the popular army No18 pack set. Pye was owned and run by C O Stanley who was an amazing man – he always made time to walk round the works and knew exactly how everything was going, talking to staff and operatives, taking supervisors aside and quietly telling them if anything should be altered.

Later the transmitter section of the A1 was modified and with the MCR receiver (see below) formed the Jedburgh Set.

At Marconi, Writtle, Mr Burroughs and his team developed first the A2 and then the A3.

The A2 was similar but smaller than the B2, covered a more limited frequency range, but as before was in 4 metal boxes each about 9"x4"x3" deep: transmitting receiver, power pack, and spares and accessory box, fitted into the usual fibre suitcase about 17"x10"x5" and half the weight of the B2, manufactured at Chelmsford; some 2000 for us and then 2000 for the Russians.

The A3 was much smaller, in a foolscap size briefcase all in one enclosure, with space for accessories. It was made in quantity at Marconi Hackbridge, some 2000 being produced during the Doodlebug period. The accessories, headphones, morse keys, coils, crystals, etc, were the same as those developed for the B range.

All A sets saw service in Western Europe and other parts of the world.

NORWAY

In 1942 a Norwegian Lieutenant, Willy [Christian] Simonsen, having escaped from occupied Norway by rowing to Scotland, joined 7C to design a miniature receiver to replace the domestic radios seized by the German occupying forces. The brief was to design and develop a small easily concealed MW receiver to be issued to the Norwegian resistance.

He designed the **Sweetheart**, a 3-valve medium-wave miniature receiver, about 5"x4"x¾", with a slightly smaller power pack about the size of a packet of 20 cigarettes. Attached to the pack was an etched copperplate with full user instructions in Norwegian. The valves used to permit the small size were Hyvac valves, each about 2½ " x ½" diameter; it made use of deaf aid earpieces. Many components had to be made specially for the set as standard products were frequently far too large. Flanges were rounded so that the set could be secured in concealed places. It was capable of receiving BBC and other MW stations. It was highly successful and several thousand were assembled by Hale Electrical of Tottenham and delivered to Norway [see Oslo Resistance Museum]. It may be said to be the first miniature receiver.

After this Willy went on to design a small transmitter receiver, to be worn on the shoulder for interpersonnel communications; size about 8"x6"x2" with a battery pack in a satchel worn on the belt.

MCR
With the experience of those in the field and the changes in operating procedures so that transmissions from the field were acknowledged, later it was realised that a small communication receiver would make it unnecessary to transport the suitcase transceiver to every location.

One of John Brown's triumphs was the design and development of the Midget (or Miniature) Communication Receiver. Although small, it equalled the performance of the HRD. The receiver measured 8"x3"x2", with 4 Upton(?) coil boxes which plugged onto the end of the receiver, and covered short, medium and long wavebands. For shipment, the sets were packed into a standard biscuit tin with either a power pack, 2 dry battery blocks, aerial and headphones or with 3 battery packs. After inspection and test at Watford, the tin lids were soldered on to ensure a watertight package.

The MCRs were made on a production line set up at Philco Radio in Park Royal, and in this contract we had our own line inspectors and testers on the line. Production reached 800 sets per week at peak. Among other men they were issued to all the Jedburgh teams.

GENERATORS
Battery charging was quite a problem; mains supplies were often not available. Many and various devices were produced and used.

Our first effort was a **hand generator** – gear box, crank handle and generator designed from a sketch airforce generator and made by Hoover; it was very hard work and took a long time.

Next came the **bicycle adaptor**; a simple framework raised the rear wheel clear of the ground, then, with the mudguard removed, a hinged framework attached to the saddle clamp supported a Hoover generator with a small wheel attached which rotated, driven by running on the rear cycle wheel. It was an improvement if you had a bicycle!

The next development was the **Tripod Pedal Generator**, a 3-legged folding frame with saddle and joystick handle, with pedals on the front leg and Hoover generator, chain driven, under the seat. It was built in large numbers by Dayton Cycles of Park Royal. A slight snag was exposed at one stage with a signal from India: "Re Ped Gen: length crutch to pedal axle 21 inches. My Ghurkas 18 inches. Photo follows." Photo showed a Ghurka sitting on the ground and pedalling with his hands. Mods were soon made.

Then the **steam generator**, a small Stuart and Turner 2 cylinder steam engine, driving the Hoover generator with boiler and outer shield about the size of a 5 gallon oil drum, raised steam using any available fuel – wood, dung, rubbish, etc. For transit, generator assembly went into boiler and boiler into outer shield. Several hundred were made by Arthur Lyon.

Much later we made a **Deck Chair Pedal Generator** for the **B3** power unit. This was built on a standard backpack frame with canvass deckchair seat; projecting forward, a single bar on which a pedal driven gearbox was directly connected to a generator which was arranged to provide all the various voltages required for the B3 set. Easy and comfortable to use; the operator could read a book while pedalling and, most important, no batteries were required.

OTHER THINGS WE DESIGNED AND/OR BUILT

- Course/time control unit for RN for N African landings(?)
- Beach markers – torch capable of sending Morse letters
- Squirt Transmitter
- TRDs for Aux Units
- Main stations (UK and all British possessions) – masts, rigging, receivers
- Broadcast stations
    - Buttercup at Gorhambury Studios
    - Buttercup at Grenoble
    - Chunking, China (3x 10 kw broadcasting stations with boilers, steam generators and all station equipment)
- Multi-channel transceivers – for GPO Birmingham
- Receiving units Squirt – for GEC & GPO Birmingham
- Wire recorder (pre tape recorder) – Canadian basic design
- Aerials
- Battery parts for MCR (with Eveready)
- Mains chargers – Lombard Westinghouse(?)
- Power modulators for broadcast stations - Lombard Westinghouse(?)

APPENDIX II: Abbreviations

Abbreviation	Full name or meaning
2/Lt	Second Lieutenant
A/Adjutant	Assistant Adjutant (?)
AFSigs N Ireland	Air Formation Signals
AMIEE	Associate Member of the Institution of Electrical Engineers
AMIProdE	Associate Member of the Institution of Production Engineers
ATS	Auxilliary Territorial Services (women' branch of the British Army formed in September 1938)
Aux Units	Auxiliary Units
BA	Bachelor of Arts degree
Bn	Battalion
Brig	Brigadier
C Eng	Chartered Engineer
CFW	Catherine Frances Ward (youngest daughter)
CO	Commanding Officer
Cpl	Corporal
CQMS	Company Quartermaster Master Sergeant (non-commissioned officer in charge of supplies)
CSR	Combined Signals Research
CUOTC	Cambridge University Officers' Training Corps
CUSTC	Cambridge University Signals Training Corps?
Div	Division
DLI	Durham Light Infantry
DR	Despatch Rider
ENSA	Entertainments National Service Association
ETA	Estimated time of arrival
GHQ	General Headquarters
HQ	Headquarters
HRD	Ham Radio Deluxe (?)
I Corps	Intelligence Corps
i/c	in charge
IM	Instrument Mechanic
IO	Intelligence Officer
ISRB	Interservices Research Bureau
JIB	John Brown
KMW	Kenneth Martin Ward
LDV	Local Defence Volunteers
Lt *or* Lieut	Lieutenant
LMW	Louisa Marion Ward (KMW's mother)
Lt/Col	Lieutenant Colonel
MA (Cantab)	Master of Arts degree awarded 4 years on from graduation by Universities of Oxford and Cambridge
MIEE	Member of the Institution of Electrical Engineers
MMB	Milk Marketing Board
Mtce	Maintenance
MT	Maintenance?
MW	Medium wave
NCO	Non-commissioned Officer
oic	Officer in charge
OR	(Other Rank?)
OTC	Officers Training Corps

PE	Physical Education
PoW	Prisoner of War
R Sigs; Signals	Royal Signals
RAF	Royal Airforce
RARO	Regular Army Reserve of Officers
RASC	Royal Army Service Corps
RCC	Radio Components Control
RCD	Radio Communications Division
RE	Royal Engineers
RN	Royal Navy
RSGB	Radio Society of Great Britain
SDS	Special Duties Section (Aux Units)
S/Sub	Second Subaltern
SIS	Secret Intelligence Service
SM	Sergeant Major
SNCO	Senior Non-commissioned Officer
SOE	Special Operations Executive
STC	Signals/Services Training Corps?
SW	Special Wireless (section of Royal Signals)
TB	Tuberculosis
TMO	Technical Maintenance Officer
TRD	Transmitter Receiver Dabbs (radio)
TRE Malvern	Telecommunications Research Establishment
UHF	Ultra High Frequency (radio waves from 300MHz to 3 GHz, with corresponding wavelengths of 1 to 10 decimetres)
VE Day	Victory in Europe Day (of WW2) (8th May 1945)
VHF	Very High Frequency (radio waves from 30MHz to 300 MHz, with corresponding wavelengths of 10 to 1 metres)
VJ Day	Victory over Japan Day (2nd September 1945)
WW2 / WWII	World War 2