

## AERIAL WARFARE AND HOME DEFENCE

### PREPARATIONS FOR WAR

The term 'Munitions' included motor-cars and aircraft when used for war.<sup>1</sup> As we have seen, Lincolnshire's factories helped build these, and the county was an early centre of military air bases due to its geography. Its farmland was requisitioned and transformed into landing grounds for aeroplanes, balloons and air stations, the Defence of the Realm (Consolidation) Act, 1914 conferring on the competent naval and military authorities 'an absolute and unconditional power to take possession of land and buildings' even though that act interfered with private rights to property. A judgement in the Appeal Court in July 1915, even decided there was no right to compensation.<sup>2</sup>

In August 1913 the Admiralty ordered the construction of a handful of coastal air stations to include a sub-command and station based at Cleethorpes; this did not materialise. However, it gained rights for a strip of land adjoining the Oil Depot at Immingham so the Royal Naval Air Service (RNAS), which was officially recognised on 1 July 1914, set up No. 8 Kite Balloon Section on the south bank of the Humber. The first aircraft landed there during July and the first operational sortie took place on 21 August.<sup>3</sup> Killingholme became a large operational seaplane station to protect the Royal Navy's fuel storage tanks and nearby ports.

(Fig. 5.1 s01417 Seaplane at the Airbase at Killingholme during 1st World War. c/1014 Imperial War Museum)

Tethered kite balloons were trailed from convoy escort ships, taking observers aloft in a wicker basket to around 3,000 ft to watch for sea mines, torpedo tracks, Zeppelins and U-boats. In addition to the primary ballooning role, some aircraft, such as the 154 DFW Military Arrow Biplane, were based at Immingham, and limited numbers of airship operations were also conducted from there. Later in the war there was also a salvage depot.<sup>4</sup>

Along the Lincolnshire coast, the RNAS had a seaplane base, an air gunnery school and several patrol aerodromes, and at Cranwell it developed a huge airship training station. The results of the struggle between the Admiralty and the Royal Flying Corps (RFC), formed in April 1912, for the right to be in charge of the new air force and its stations was played out in Lincolnshire.

Two days after the declaration of war a Naval Air Station opened at Skegness with the arrival of Squadron Commander Samson and a flight of seven aeroplanes, two of which crashed on landing. Skegness Air Station was closed in the last week of August 1914, and was replaced by NAS Killingholme. The sight of an aeroplane was still so unusual that when at 8.00 a.m. on 1 May 1915 a Government aeroplane was seen engaged in patrol work along the coast at Skegness, people rushed into the streets to watch the airman's progress.<sup>5</sup> Civilian flyers often volunteered for military service. Mr B.C. Hucks, whose fine performances in Spalding and other parts of Lincolnshire will be recalled, was appointed Second Lieutenant on probation in the Military Wing of the RFC.<sup>6</sup> By the end of the year Captain Dawes of Long Sutton, also of the RFC, was awarded an Allied military medal - the Legion of Honour.<sup>7</sup> However, the engines of these new flying machines were unreliable and during the first week of August 1914 a naval airman came down in the neighbourhood of Willow Hall, Thorney, the magneto of his machine having developed a defect.<sup>8</sup> The dangers of flight were evident, but nonetheless 'The cult of the airman developed during the war as an heroic counter to the squalid and anonymous war in the trenches. It contained three features: a belief in the dynamic power of flying, an illusion of the airman as a hero and a militarist recognition of the potentially offensive use of the aeroplane.'<sup>9</sup>

In 1914 it was important that aircraft be easy to fly, as the amount of training that pilots received was minimal. Fighter aircraft were small, relatively easy to build and became obsolete very quickly. Engines were not of British design. Technical problems like inventing interrupter gear to enable shooting as the propeller turned needed to be solved to make the aeroplane a viable weapon. An early graduate of the RFC flight school, Louis Strange, began flying combat missions having completed only three and a half hours of actual flying time. Strange had the idea of attaching the bombs to racks on the wings, and dropping them by pulling a release wire. He successfully tried this out on his BE2c in March of 1915.<sup>10</sup> This type of aircraft, built in Lincolnshire, was ready for its test flight in six months and designed primarily for home defence.<sup>11</sup>

### AIRCRAFT PRODUCTION IN LINCOLNSHIRE

At the start of the war the government sought engineering firms to adapt to manufacture aircraft. Lincoln was ideal and between 1915 and 1919, it became one of the largest centres of aircraft production in the world.<sup>12</sup> Ruston Proctor & Co. Ltd employed over 5,000 people on a site of 100 acres. They received their Government contract for 100 BE2c reconnaissance aircraft on 15 January 1915 and were the first Lincolnshire firm to start making aircraft, becoming the largest producer of aircraft engines in the kingdom and one of five leading British

firms, employing about 3,000 men and women in 1918 on aircraft production.<sup>13</sup> They built over 2,000 aircraft, over 3,000 engines, and spare parts amounting to a further 800 engines (Table 5.1). In September 1916 the Bishop of Lincoln saw some of the skilled engineering work necessary for the construction of aeroplane parts. He called on ð Cobb of Waddington. Cobb took us to his workshop and showed us how he turned the little aluminium discs etc. for aeroplane joints. They have to be exact to 1/1000 of an in. [inch] & even beyond that!<sup>14</sup>

Firm	Type of Aircraft	Date (where known)	Number of Aircraft
Ruston, Proctor & Co. Ltd	BE2c	15.1.1915	100
	BE2d		31
	BE2e		69
	Sopwith 1½ Strutters	1916-1917	350
	Sopwith Camels	1917-1918	1,600
	Sopwith Snipe	1915? - 1919	800
Robey & Co. Ltd	Sopwith Type 806 Gunbus	21.5.1915	30
	Short 184 Seaplane	November 1915	300
	Maurice Farman Longhorn <sup>15</sup>	May 1916	
	Robey and Robey Peters aircraft		5
Clayton & Shuttleworth	Tail stabilizers for airships		
	Sopwith Triplanes		49
	Sopwith Camels	1917-1919	650
	Vickers Vimy		3 delivered
	Handley Page 0/400 bombers	1917-1919	46
Marshall, Sons & Co.	Bristol F.2B	November 1917	150

Table 5.1. Aircraft Production in Lincolnshire, 1915 - 1919  
Compiled by Katherine Storr from available sources

Lieutenant William Leefe Robinson, Worcester Regiment and RFC, was flying the fourth aeroplane built at Ruston's, a BE2c no. 2673,<sup>16</sup> when on 3 September 1916 he brought down what became known as the Cuffley Zeppelin a Schütte-Lanz airship, one of 13 raiders, at Cuffley, near Enfield, for which he was awarded the VC. It was the first shot down by a pilot in an aeroplane and Lincoln people celebrated this pioneer victory.

When Ruston's workforce completed their 1000<sup>th</sup> aircraft, Camel B7380, Colonel Ruston, an Egyptologist, was given special permission to decorate it in the style of Behudet, a winged sun. Received by Major General Sefton Brancker, Comptroller General of Equipment, Imperial Air Service, the Camel dropped thousands of War Bond leaflets over Lincoln. Wearing caps with sailor-like ribbons that read 'Ruston Proctor & Co Ltd' women workers were photographed at a women's rally pushing a fuselage through the streets of Lincoln.<sup>17</sup>



Fig. 5.2 Ruston & Proctor Munionettes pulling a Sopwith Camel fuselage through the Cattle Market, Lincoln. Ruston & Hornsby Ltd/Ray Hooley Collection Chas Parker.

There were two Aircraft Acceptance Parks on the outskirts of Lincoln where aeroplanes manufactured by firms in the city were officially tested. Lincoln West Common racecourse's 129 acres became No. 4 Aircraft Acceptance Park. Ruston's, Robey's, Clayton & Shuttleworth, and Marshall's of Gainsborough all tested here.

Robey & Co., with factories in Canwick Road, became the second Lincoln firm to manufacture military aircraft and on at least one occasion women workers were given a half-day off to see an aeroplane tested on West Common.<sup>18</sup> In May 1916 Robey's established a small aerodrome at Bracebridge Heath from which Maurice Farman's longhorn aeroplanes could be test flown. The site was on high ground and the aeroplane shed was constructed at the side of the wall of the asylum cemetery. In September 1916 the biplane being tested caught fire and crashed onto the asylum roof.<sup>19</sup> It was decided to develop Robey's Aerodrome and in late 1917 new permanent brick-built hangars were erected and ten canvas ones were put up adjacent to St John's Farm in the south-east corner of the site. No. 4 Aircraft Acceptance Park was transferred, but by this time the war was over and the site saw little use, closing in 1920. By 1919 Robey's had made more Short 184 Seaplanes than any other firm, producing 256 out of approximately 800 built. (Table 7). These seaplanes were delivered by road to various bases for testing, including Killingholme. Robey's was the only company in the area to design and build prototypes of their own machines but without much success. Most of the aircraft built in Lincoln were designed elsewhere and consequently the county's aircraft industry collapsed when the war ended. This is one reason why Lincolnshire's involvement with air warfare in the Great War is forgotten.

Prisoners-of-war from the camp west of the Abbey Works built aircraft shops at the Abbey and Tower Works for Clayton's which began aviation work in 1916 building Sopwith Triplanes in the Titanic works. These were then dismantled for transport to Bracebridge Heath for test flights. Clayton's were the fourth contractor to build the Sopwith Camel. Flying Camel B7270, which was built in February 1918, Captain Roy Brown was officially credited with shooting down the Red Baron on 21 April, 1918. The Red Baron was the allied nickname for the leading German war air ace, Manfred von Richthofen. In celebration, the firm presented a Souvenir brochure to the workers in the Scout Aircraft Works. The brochure bore the words 'End of the Red Baron. Baron Von Richthofen' and had a picture of the works on the cover. Inside was a drawing of a dog fight with the Camel diving on the German plane, and pictures of other planes built by Clayton's. However, others claimed credit for the Red Baron's kill and it remains a controversial issue.<sup>20</sup>

#### **LANDING GROUNDS AND AIR BASES**

A foundation for the network of war-time emergency landing sites was laid in 1913 when officers of the RFC began to make flights from Farnborough, Hampshire, to a new base at Montrose in eastern Scotland. This could take up to nine days and needed frequent stops for refuelling and servicing. An airman might be billeted with the farmer, and supplied with a telephone link so that he could be warned when the field needed to be cleared of livestock due to the aeroplane's imminent landing. The farmer was paid a small retainer to keep the site under grass. After the aeroplane had taken off, the sites reverted to their former use. This was the best available solution to keeping the fighters airborne as long as possible to engage enemy aircraft and dirigibles. Volunteer Defence Corps members often helped with the preparation of the landing sites.<sup>21</sup>

The early RFC used the sloping landscape feature of the Edge to build airfields along it to provide extra lift. The significance of the slope becomes evident when:

one of the planes got into difficulties over Grantham and had to make a forced landing on the Dysart Road, just below Greenhill Road, and landed in a big field that ran down at a very steep angle towards the Mowbeck. The mechanics .... repaired the defect and on Monday morning we went up to see the aeroplane take off. It ... just managed to run down and take off and clear the willow trees alongside the stream, and then climb up the other bank, and just clear the telephone wires on Dysart Road. The number of canvas hangars grew to nearly a dozen and then the building people came and started to erect more permanent hangars, and eventually it developed into a full scale training aerodrome for the Royal Flying Corps. A little while after that, another aerodrome was started on top of the hill behind Harlaxton Manor and that was Harlaxton Aerodrome.<sup>22</sup>

One aerodrome was just outside Grantham. In 1915 Ben Sewell of Grantham saw an aeroplane repeatedly landing and then taking off again, so the following Saturday he and a friend went to the top of Spitalgate Hill to investigate. There they found one canvas hanger and two or three aircraft. This was the beginning of Spitalgate Aerodrome. Belgian refugees were housed in the local workhouses in Dysart Road so it is possible they helped build these aerodromes.<sup>23</sup> (Fig. 5.3. MLL 15791).



**Lincs to the Past reference MLL 15791**

Fig. 5.3. Royal Flying Corps; aerial view of the airfield, captioned 'Harlaxton'  
From Lincs to the Past courtesy of Lincolnshire County Council  
<http://www.lincstothepast.com/photograph/309176.record?pt=S>

The more permanent structures were Belfast Truss Hangars. (Fig.13. MLL 15789). In other parts of Britain some of these are being preserved as important relics of the Great War.



**Lincs to the Past reference: MLL 15789**

Reference Name MLL15789

Fig. 5.4 Royal Flying Corps; Belfast Truss hangar under construction at the airfield.  
From Lincs to the Past courtesy of Lincolnshire County Council

<http://www.lincstothepast.com/searchResults.aspx?qsearch=1&keywords=MLL+15789&x=0&y=0>

Other airfields were built in the uplands of the Lincolnshire Wolds further north. One was Kelstern, which was used as an Emergency Landing Ground by No 33 Squadron. Lieutenant A.R. Kingsford force-landed there on 18 October 1917 and his teeth were knocked out. His observer had minor injuries so he left him with two mechanics and went to a nearby farmer's house for help. It was 3.00 a.m., and the irate farmer did not offer assistance.<sup>24</sup> It is a matter of conjecture as to why. In contrast, Servicemen were often entertained by local families. Twice in November 1917, Airmen landed and came for tea<sup>25</sup> with Fred Walker's family at Nettleham Heath.

Further north still, all aeroplanes entering the Humber Garrison, except those belonging to the RNAS at Killingholme, had to land on an examination ground and obtain permission to enter the defences before being allowed to proceed. Agricultural land one mile south east of Tetney Haven and five miles south east of Cleethorpes was appropriated. For aircraft flying north at North Coates Fitties two adjoining fields marked with a white T and separated by a road were used according to the prevailing wind. Once permission to enter was obtained, aeroplanes entering the defended area, if proceeding to Killingholme, could then fly up the Humber keeping clear of anti-aircraft armament.

In 1918 different amounts were being paid to workers at aerodromes in Lincolnshire. This was again partly due to the fact that those receiving higher hourly rates almost all came from London and were paid the London rate, but there were other discrepancies. Kirton Lindsey and Harpwell paid 1s 2d and 10d an hour and a good time keeping bonus of 4s per week. This was not paid at other aerodromes. At all aerodromes except Cranwell a lodging allowance or country money was paid at the rate of 9s per week, except Bracebridge, where 10s 6d per week was paid. The Shop Steward, F. Andrews, represented the workers when the claim was made to Fred Pitcher Limited. It is not clear why it was disputed, except that employers were unhappy that they had to pay the 12½ per cent bonus agreed by the government and their attitudes to the labour movement became more aggressive.<sup>26</sup> The dispute went to arbitration, identified as the Air Ministry Department of Works and Buildings *versus* Building Trade Operatives representing building labourers at certain aerodromes.<sup>27</sup> The list of aerodromes involved included some outside the county (Table 8).

Harpwell	Lincoln	Kirton Lindsay	Bracebridge	Scampton
Scopwick	South Charlton	Cranwell	Waddington	Harlaxton
Easton on the Hill	Spittlegate	Retford	Stamford	Sedgeford
Buckminster	Bircham Newton	Ramsey	Narborough	Wyton
Feltwell	Harling Road	Thetford	Ely	

Table 5.2. Aerodromes involved in the pay dispute  
LAB 2/250/15207/15/1918

The rates awarded did not match the Operatives' demands, and painters were not included in the skilled trades category as requested, but all the aerodromes in the chart were included. (Table 9). However, there were provisos which excluded War Muniton Volunteers or Army Reserve Munitions workers receiving a subsistence allowance; this was normal because Volunteers usually lived locally. These rates were to come into operation from the first full pay in September 1918 so only lasted until the Armistice.

Tradesmen except Painters	1s 3¼d per hour
Painters	1s 2d per hour
Scaffolders, Erectors and Timberers	1s 0½d per hour
Labourers	11¼d per hour

Table 5.3. Pay Awards to Workers at Lincolnshire Aerodromes  
LAB 2/250/15207/15/1918

## AERIAL WARFARE OVER LINCOLNSHIRE

### Zeppelin raids



Lincs to the Past reference: MLL 15808

Fig. 5.5. Press Bureau drawing of a zeppelin.

From Lincs to the Past courtesy of Lincolnshire County Council

<http://www.lincstothePast.com/searchResults.aspx?qsearch=1&keywords=MLL+15808>

Zeppelins bombarded Scarborough in 1914 and on 19 January 1915 two crossed the North Sea to the Norfolk coast, attacking Sheringham<sup>28</sup> and Great Yarmouth where two civilians were killed and two others at King's Lynn.<sup>29</sup> On 19 May 1915, zeppelin scares were reported over Skegness.<sup>30</sup> Zeppelins came at night, and were consequently more terrifying because they could only be seen as a dark shape in the night sky. They could not be photographed under these circumstances, so the press had artists to draw them. (Fig. 5.5). On 7 June 1915 the head-teacher of the St Andrews Senior Mixed School, Lincoln, wrote in the school logbook, 'many of the children were aroused during the night and consequently, the excitement and loss of a proper night's sleep is evident today.'<sup>31</sup> That night an airship was reported off Cromer at 8.25 p.m., travelling north-west. The airship arrived over Hull about 11.45 where the bombardment lasted about twenty minutes, causing considerable damage. It was fired on by the Adventure without apparent effect and then steered down river.<sup>32</sup> Sunk Island, which was Crown land, reported a bomb explosion at 11.50 p.m.; this might have been the noise from Hull. The zeppelin proceeded in a curve 6,000 yards from Killingholme at 12.15 a.m. and then flew between Sunk Island, which opened fire with Maxims at 12.20 a.m., and Immingham, which fired six rounds, again from 3,000 yards. Stallingborough also opened fire with Maxims at 12.20. The zeppelin passed through the north of Grimsby, dropping bombs about 12.25 a.m. and turning left. It passed by Waltham Wireless Station, where anti-aircraft guns fired eleven rounds from 3,000 yards, and flew south of Spurn. There were ships and stores in Immingham basin, oil tanks at Killingholme and a high power W/T station at Cleethorpes. These were left unmolested because the zeppelin ran the risk of defensive measures. The attack was confined to relatively undefended areas of Grimsby and Hull, in other words, residential areas. In addition, the Zeppelin kept out of sight of Killingholme and Immingham and crossed below Immingham about 2,000 feet high. Fog prevented the aeroplanes at Killingholme taking off. It was last seen from Donna Nook War Signal Station making to the South East over the sea at 12.40 a.m. (Fig. 14) As a result of this raid, W. Alfred Gelder, MP for North Lincolnshire, requested aircraft protection for Hull and its 300,000 inhabitants. He did not mention Grimsby or the constituency he represented.

Zeppelin raids were a disruption to war work and in some areas caused a great deal of damage. The silent airships, dark shapes in the sky capable of travelling at about 85 m.p.h. and carrying up to two tons of bombs, arrived without warning and people hid in cellars or under tables. In literature airships corresponded to the war in heaven foreseen in the book of Revelation, an apocalypse that was a judgment of civilization.<sup>33</sup> Morale dropped and people feared further raids believing that a German invasion would follow. There were no purpose-built shelters although it is claimed that at least one was built in Cleethorpes.<sup>34</sup> Zeppelin raids caused a public outcry as they attacked far behind the traditional conflict zone of opposing front lines, crossing Lincolnshire going to and returning from their bombing raids at night when the targets included steel works at Sheffield and Rotherham.<sup>35</sup> News of the raids was censored by the newly established Press Bureau. One of its official messages related to a

Zeppelin raid on the east coast on Monday night, 9 August 1915, when fourteen people were killed and fourteen injured. Around that date Thomas Pollet was taken to court, charged with scaring women by shouting there was a Zeppelin about, when there was none.<sup>36</sup> Places visited by zeppelins were not named. In one North East town a Mr Ingamells' three daughters, Cissie, Ethel and Lettie fared badly. One was killed outright; the other two died before reaching hospital.<sup>37</sup> They were cousins of two Boston ladies, Miss Goose, of Wide Bargate and Mrs Battram of Wormgate.

Street lights were now extinguished at night and people found it difficult to get about in the dark. In October 1915 Mr West of Winterton complained about the dangers. He was also annoyed that lights from Scunthorpe furnaces and the Lysaght's works remained on even if hostile aircraft approached. However, it was necessary to tap the furnaces in order to prevent an explosion, a process that created tongues of flame and attracted hostile aircraft to the town outskirts. On the night of 31 January 1916 the Frodingham Iron & Steel Works received early warning of hostile aircraft. The Manager of Frodingham Iron & Steel was Austrian-born Mr Mannaberg. Although a naturalised Englishman, this raised suspicions. During that particular night he was at home but the Chief Constable, Captain C. Mitchell-Innes, explained to the Home Office: 'I don't know what instructions he had given before he left for home' providing himself with an excuse. The situation was further complicated because the telephone wires between Scunthorpe and London were down.<sup>38</sup> Staffordshire, Derbyshire, Leicestershire and Lincolnshire were the principal targets bombed that night and 70 people were killed, more than in any other single raid.<sup>39</sup> This raid made the public very nervous.

There was widespread panic on 10 February, as a result of which Warning Control Centres were set up and were operational by December.<sup>40</sup> The Bishop recorded how, on 13 February 1916, driving home by moonlight the sentries stopped him to put out his lights because the buzzer had signalled for Zeppelin dangers.<sup>41</sup> This may have been the same raid that ended in tragedy for a farmer near Boston. A woman found the detonator of a bomb and took it home. Her family thought it came from a car radiator that had become jammed. The farmer forced it round. He was killed and his sister injured.<sup>42</sup> Mrs Fane recorded several places where zeppelins were seen and dropped bombs. Early in February, Fulbeck, where she lived, received zeppelin attention with bombs dropped near Welbourn, Stamford and Frodingham. There were again zeppelins over Fulbeck with bombs dropped at Heckington, Ruskington and Dry Doddington on 6 March.<sup>43</sup> Bombs were dropped at Grimsby and around Boston, where there was a small airfield with two hangars. In September the Bishop of Lincoln learned that four bombs were dropped at Boston on Saturday night September 2, the first falling on the bank of the river just this side of the sluice-bridge, about 250 yards from the Church. The loss of life so far is limited to a lad of sixteen.<sup>44</sup>

Censorship meant not all attacks were publicized. A zeppelin story sent in by the *Sleaford Journal* in September 1916 was returned on 11 January, 1919 marked 'not to be published.' The Press believed it had a duty to maintain morale, local newspapers' reports indicate curiosity rather than panic, and amusement that the bombs dropped on agricultural land or in the sea. A raid over Lincolnshire in October 1916 was described as a complete fiasco. More than forty bombs were dropped and the only casualties are the killing of a horse, a cow, four sheep and a rabbit, plus a few broken panes of glass.<sup>45</sup> In fact, animals and people were badly frightened. Aircraft were scrambled from aerodromes including RNAS Killingholme, Cranwell, and RFC Home Defence Squadrons at Leadenham, Kirton-in-Lindsey, Elsham Wolds and Tydd St Mary. A bombing attack on Humberston and Cleethorpes caused the death of thirty-one soldiers and its aftermath is described in Chapter Eight. It had not been possible to contact the fighter aircraft at Cranwell because the phone lines were down. There were several air-raids in September 1916. Scartho inhabitants erected a plaque commemorating the site of a zeppelin bomb drop on 23 September. (Fig. 5.6) The wording indicates the fear felt at the time, the Biblical text in Psalm 91 referring to the injunction 'Thou shalt not be afraid for the terror by night' and the providential protection Scartho people felt they had received, confirming that this was a just war as well as a religious one. The Bishop visited Skegness the next day and heard about a great Zeppelin raid: Nottingham, Scartho, Washingborough were bombarded & Greetwell! All safe at Lincoln.

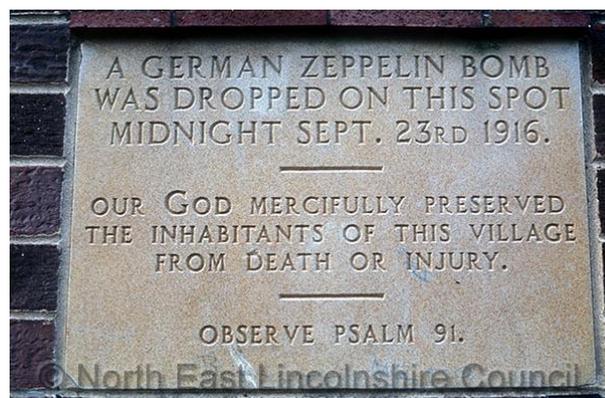


Fig. 5.6. S202:940.3. Disc 2. Scartho Commemoration Plaque.  
 Photograph reproduced courtesy of North East Lincolnshire Council Library Service

By mid-1917, zeppelins had been superseded by aeroplanes, especially the Gotha bomber which was capable of targeted bombing over a long distance and could attack during day or night. Nonetheless, on 19 October 1917 eleven Zeppelins attacked eastern England including Lincolnshire and the Humber.<sup>46</sup> These attacks, whilst frightening, strengthened civilian resolve that it was essential to defeat Germany<sup>47</sup> but undoubtedly contributed to the year's war-weariness, preceded as it was by what was called in Europe the 'turnip winter' of 1916-17. In July 1917 Grimsby police authorities planned to institute warnings for daylight raids. Mr A. Barter, the Clerk to the Cleethorpes Council, asked Superintendent Harry Osborne at Lincolnshire Constabulary, Grimsby, whether it was their intention to do anything for Cleethorpes and if so, what type of air raid warnings should be sounded. It was decided that Cleethorpes warnings should be similar to those of Grimsby.<sup>48</sup> However, on 19 July the Council received a letter from the Field Marshal Commander-in-Chief who stated that Cleethorpes is beyond the area that it is considered possible at present to be attacked by hostile aeroplanes by day.<sup>q</sup>

### CRANWELL

One result of this aerial war was the opening of Cranwell, later followed by Waddington. Cranwell was surveyed by Admiralty officials in 1914, indicating again the preparedness of military authorities for war, and in November 1915 the owners of about 2,500 acres (10 km<sup>2</sup>) of farmland, mostly from the Earl of Bristol's estate to the west of the village, were informed that their property was requisitioned under DORA.<sup>49</sup> On 28 December 1915 construction work started on wooden huts for personnel, airships and balloons. Workers were billeted at The Lodge and adjoining cottages. On 1 April 1916, the RNAS Training Establishment was officially opened. Cranwell contained two physically separate aerodromes, one WNW of Cranwell Church, and the other WSW of it. Cranwell North had several balloon sheds and in May 1916 the first three balloons arrived. A single track branch railway line was laid just west of Sleaford which was used from 1917<sup>50</sup> and Wright & Sons of Lincoln began building Cranwell Hospital extension from September 1917 until January 1919, their Accounts Book showing a total cost of £11,262 19s 5d.<sup>51</sup> By 1918 the station covered some 3,000 acres. With the establishment of the Royal Air Force as an independent service in 1918, the RNAS Training Establishment became RAF Cranwell.<sup>52</sup> Cranwell was evidently a target. On 10 January 1916 stringent regulations were brought in applying to a five miles radius from the new Aerodrome. There was to be no bell ringing in the Church and red lights on the tails of all vehicles were to be lighted half an hour after sun-down. Lights in windows of churches or houses must be invisible from outside.<sup>53</sup> In September 1916, having visited Rawson of Metheringham, Sibthorp of Blankney and Cobb of Waddington, Bishop Hicks drove home by the Sleaford Rd and saw all round the new aerodrome site: military: as large as the Naval one at Cranwell.<sup>54</sup> He meant Waddington which was constructed on Lincolnshire Heights, five miles south of Lincoln. It opened in November 1916 as a flying training station under the control of Northern Group Command at York.<sup>55</sup> There are hints in the construction of this aerodrome so near to Cranwell of the row between the Admiralty and the War Office over the control of military aviation which raged uncontrolled from January 1916 to the fall of the Asquith ministry.<sup>56</sup>

On 20 July, 1916, the same day that they inspected units of the MGC and had luncheon with the Earl and Countess Brownlow at Belton, King George V and Queen Mary paid their first official visit to Cranwell.<sup>57</sup> The royal connection with the county was strengthened when it was announced that Prince Albert would start military service at Cranwell Air Station with the rank of Acting Lieutenant. He was due to begin on 12 November 1917, but due to illness he eventually arrived on 4 February 1918, accompanied by Staff Surgeon Louis Gregg, RN, who accompanied the Prince on his frequent journeys between Cranwell and the Palace.

## HOME DEFENCE

It is evident, therefore, that the appearance of air warfare needed new forms of home defence with airfields close to the coast and the Humber estuary. Until more than a month after the war began responsibility for home defence rested solely with the War Office, but it provided no aeroplanes for the purpose and depended entirely on the somewhat erratic anti-aircraft (AA) artillery which had been developed due to the rapid pre-war advances in aviation technology. The first layouts of AA guns were made in the spring of 1914. There were two six-pounder Hotchkiss High Angle guns and two pom-poms at Killingholme, and one at Cleethorpes.<sup>58</sup>

The division of responsibility between military authorities caused confusion and inefficiency. In March 1915, there was a zeppelin raid on the East Coast where the airships were not fired on in accordance with the instructions issued by the War Office. Approval was consequently sought and given to establish a Mobile AA Section to form a defence against hostile aircraft in otherwise undefended places and towns where the Admiralty were responsible for the AA defences.<sup>59</sup> In April 1915, Leeds, Keighley and Lincoln sought protection from aerial attack. On 21 April, 1915, Mr M.A. Ashley, Mayor of Lincoln, wrote to the War Office seeking protection for the City. He said Lincoln was vulnerable to attack because several thousand workmen were employed there manufacturing munitions and it was likely that enemy aircraft may for this reason favour us with a visit. As far as he was aware there was no means locally of dealing with hostile airships or aeroplanes, and something should be done to prevent the enemy committing damage without fear of attack. He suggested that a few good marksmen, who would be easily found because there were quite a number of really good shots past Military age should be organised into a small defensive force and supplied with anti-aircraft guns. The response was discouraging. The War Office was unable to provide anti-aircraft guns for Lincoln's defence and the approval of the Military Authorities of the district needed to be obtained before establishing any voluntary body of marksmen.<sup>60</sup> Leeds got its protection, Keighley and Lincoln did not.

There had been inter-departmental bickering between the Admiralty and Army over the tank and this power struggle was also evident between the Admiralty and the new Air Force. Each service wanted to be responsible for training and disciplining its own men, each wanted to conduct its own military operations but neither had any objection to its weapons being manufactured by others.<sup>61</sup> In early 1917 a reduction in schemes of AA defences at three sites was planned to take place from 9 January 1917 to 9 May 1917 owing to the diversion of guns allotted to home defence. Cranwell air base had only recently been completed and contained works and material to the value of approximately half a million pounds. It had three guns of approved armament. Cranwell's ability to defend itself from aerial attack was vitally necessary because the supply of pilots to the Naval Air Service and the units lent to the Army in France was dependent on it.<sup>62</sup> Failure by the RNAS to prevent zeppelin bombing raids led to the RFC being given responsibility for home air defence in February 1916. Leadenham opened that year as a defence against zeppelin attack. On 15 July Mrs Fane heard that three of 'Mr Morley's best fields at Leadenham' had been commandeered by the Royal Army Flying Corps for an AA gun, the identification of best fields betraying an irritation that poorer ones were not used instead.<sup>63</sup> Far worse was the failure of the Admiralty to take any effective steps against submarine warfare, which left Britain's food supplies at risk during the worst harvest of the war.<sup>64</sup> Even as late as March 1918, the Admiralty and Army were trying to find a solution as to how the Air Services should be run and in July Killingholme was transferred to the US Navy, which took over patrol duties.

Although there were searchlights and anti-aircraft guns in place along the east coast, zeppelins were improved to enable them to fly higher than the guns could reach with their shells, and so the War Department decided to move Squadrons of fighter aircraft to new locations in the east of England, in the hope that they would be able to shoot down some of these night-time raiders. Three squadrons given responsibility for home defence were based in Lincolnshire. Scampton, which opened in late 1916 as Brattleby, originally used pasture belonging to Aisthorpe Farm for a searchlight unit. Army officers and soldiers from the RFC moved into the area. A Flight of No 33 (Home Defence) Squadron was stationed there, the Squadron having been detailed to protect South Yorkshire and North Lincolnshire. The fliers of 'A' Squadron spent some of their free time at the Blue Boar at Grantham.<sup>65</sup> There was also Service cricket and the Grantham Thursday side played Spittlegate RAF.<sup>66</sup> B Flight was at Manton (north of Kirton-in-Lindsey), and C Flight at Elsham. The Squadron Headquarters was established in a large detached house called The Lawn on Summer Hill in Gainsborough overlooking the town and the river. The War Department took over some large flat fields which were owned by Mr Layne, a Gainsborough butcher, and set up wooden huts and hangers around the edge. It is possible that aircraft built by Marshall & Co. Ltd were test flown from Layne's Field. This 30 acre landing strip was closed down at the end of hostilities and returned to agricultural use. The ground staff, the air mechanics, lived in the Gainsborough Workhouse on Lea Road. By the end of the war, it was expanded into a training station with a 287 acre aerodrome, where Americans trained. In 1920 the ground was returned to agriculture.

Searchlights were based at Kilnsea, Spurn, Scartho Top, Taylor's Avenue Cleethorpes and Clee Field Farm. To operate them effectively it was necessary for the crews to practice. H.C. Lowther, commanding Humber Garrison,

Hull, ordered that ~~all~~ AA searchlight detachments should practice every night. Restriction to two nights prevents the requisite efficiency being attained. However, on 16 September 1917 the Rear Admiral Commanding, East Coast, Immingham Dock wanted practice to cease totally. He said that the convoy's safety was more important than searchlight practice. Regular use of lights which could be seen from the sea, especially at the mouth of the Humber, would aid enemy submarines. During winter months the main convoy left the Humber for Lerwick at midnight nearly every night and working on AA lights a few hours before its departure would enable a submarine to fix his position and lay mines in or near the exit from the river.<sup>67</sup>

In mid-August 1917, after a hostile raid on Grimsby, eight high explosive incendiary bombs were found in a large stubble field near Beelsby, a small village situated approximately six and a half miles SW from the centre of Grimsby and four miles WSW from Waltham Wireless. They were in practically intact wooden packing cases, each case being labelled in German characters ~~G~~oldschmidt Co. Ltd, Chemical Factory & Works, Essen, Ruhr. Fragments of bombs and other items were collected by the local county police in the vicinity of Grimsby and Laceby and examined by Captain F. Massy Dawson, Port Minesweeping Captain, Grimsby. The bombs were dropped between 2.30 and 3.00 a.m. and created fairly large craters, five in one field and three in the next.

Dawson sent his report to Rear Admiral Commanding, Immingham, on 27 September 1917. He said the first five bombs were dropped at five seconds intervals, the next three about seven minutes later. The night was quite clear, every star showing, but while bombs were dropping he could neither hear nor see any aircraft. Further, he said the airship must have been flying quite low because otherwise these cases, even though dropped in a stubble field, would have been smashed to smithereens.

Either this opinion is correct, or what is otherwise highly improbable, viz. ~~THAT~~ THE COMMANDING OFFICER, ALTHOUGH A GERMAN, WAS A HUMANE AND CHARITABLY INCLINED GENTLEMAN - ???" (sic) and was taking advantage of dumping his cargo in a safe place before returning home. No bombs were dropped in Grimsby and nothing was observed anywhere near the Docks.<sup>68</sup>

Measures to provide early warning of approaching aircraft and airships were developed. Early forms of radio-direction and detecting stations, which included convex concrete acoustic mirrors, were set up along the south and east coasts. Some of these are now recognized to be important enough to conserve and one of these, the ~~Chain~~ Homegradar mast at Stenigot in Lindsey, was listed in 1997 as the only complete example of its type.<sup>69</sup> Scampton is also identified for protection. Its effect on the landscape was originally described as ~~dramatic~~ but its impact resulting from its use in World War Two and the Cold War is the main reason for its listing. However, it is important to remember that it was opened in the Great War.

### PERSONNEL INCLUDE WOMEN

War was considered men's business and as happened with the Army and Navy, women were excluded from being involved with war in the air. This changed very gradually but they were initially confined to 'women's work' within the Services. In May 1917, the Bishop went to Lambeth Palace for the annual Bishops Meetings. The Bishop of Dover, Billborough, told him ~~of~~ the employment (quite new) of girls in Flying Camps, for certain kinds of manual work: they will need some care! We have (~~he~~ told me) in our County now the following Flying Camps.<sup>70</sup> He listed Scampton, South Carlton and Harlaxton, with 76 men at each, and Waddington and Spittlegate with 106 each.

Once back in Lincoln he took steps to ensure he was better informed and saw ~~Bolam~~, about his Chaplain's work at Carlton - and Scampton's needs. He is to let me know about the coming of the women to the Camp (as waitresses etc). At Harlaxton Flying Camp, Grantham, seven days later, he noted the ~~careful~~ & strict discipline of the waitresses. All (now) belong to the Legion of Women, dress in Khaki, are under the governance of a Lady Superintendant, have very strict rules, and are discharged at once, if unruly. They are part of the Army itself. I am well satisfied. On 12 June he held a ~~Committee~~ of Ladies with AMH in the Morning Room. We reviewed the situation as far as we know it: (a) munitioner women: (b) young women engaged in Flying Camps. It did not seem that we could do very much; but our ladies were to get into touch with their Superintendents.<sup>71</sup> The perception of women as ~~unruly~~ was a fear rather than an actuality, usually linked with social class.

In fact, a considerable number of women were working at air stations. Some were employed by the RNAS as members of the Women's Royal Naval Service, others attached to the RFC belonged to the Women's Auxiliary Army Corps. Members of the Women's Legion of Motor Drivers also worked at air stations. In April 1918 these women were invited to transfer to the ~~Penguins~~, the Women's Royal Air Force. There were four categories of employment - clerical, household, technical and general and they were particularly wanted at Stamford, Lincoln and Grantham.<sup>72</sup> However, the nearest Employment Exchange for Lincolnshire women to apply was at Doncaster. Women of good education, between the ages of 25 and 45 were invited to apply for a variety of subsidiary tasks, including hotel administrator and technical superintendent.<sup>73</sup> Just before the Armistice, the

Bishop opened a club room for service women in uniform, a means of ensuring good behaviour. He was pleased to find that it was full the next evening, Sat and Sunday when I looked in at 8.<sup>74</sup>

## POST-WAR

After November 1918 the RAF began to run down, with the final units disbanding in 1919. Nevertheless, in December 1918 the Admiralty entered negotiations for the purchase of land in the Parish of Leasingham. This was to be added to that at Cranwell. It consisted of several fields bounded by the Sleaford Road, the West Field Farm Road and crossed by New Lane. It was owned by a group of people headed by Mrs Gertrude Sophia Lucas Calcraft of Ancaster Hall. The sale was complicated by the fact that others were involved in the ownership, and by legalities going back to 1839. Tracking down these people and one being laid up by influenza delayed things.<sup>75</sup> In the course of negotiations, the Owners twice changed their solicitor. The figure agreed finally was £608 because the fences and other repairs were not to be done but an under-bridge giving access from one part of the farm to the other was to be constructed. The purchase was completed in January 1920.<sup>76</sup>

Great War airfields became the basis of World War II Bomber Squadrons with some older airfields being modernised, others re-occupied after years of reversion to agricultural use, and more airfields, suitable for the more modern aircraft, being developed. Lincolnshire was of strategic importance to the air campaign. Forty-three landing grounds and aerodromes can be identified, with one just inside Nottinghamshire, adjacent to Gainsborough. At least 7,830 acres were requisitioned or purchased. However, this was land that could no longer be used for agriculture to provide food for the people of the home front at a time when food supplies were a source of increasing concern.

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<sup>1</sup> *Times*. 14.8.1915

<sup>2</sup> *Times*. 15.7.1915

<sup>3</sup> www.RAF-Lincolnshire.info. A brief history. Accessed 19.08.10.

<sup>4</sup> TNA. MUN 5

<sup>5</sup> *Skegness, Mablethorpe & Alford News*. 5.05.1915

<sup>6</sup> *Lincolnshire Free Press*. 25.08.1914

<sup>7</sup> *Grantham Journal*. 12.12.1914

<sup>8</sup> *Lincolnshire, Boston & Spalding Free Press*. 4.8.1914

<sup>9</sup> Joanna Bourke. *Dismembering the Male: Men's Bodies, Britain, and the Great War*. Reaktion Books. 1996. p.28

<sup>10</sup> www.firstworldwar.com/airwar/summary.htm Accessed 10.1.2011

<sup>11</sup> Bernard Newman, *One hundred years of good company*. Ruston & Hornsby. Lincoln. 1957. p.45

<sup>12</sup> LA. 27 MLL 6 & 7. J. Walls. *Ruston Aircraft Production. A Souvenir of Ruston's 1,000th Aeroplane*. Aero Litho Co. (Lincoln) Ltd. 1974. pp.11-17

<sup>13</sup> Neil Wright. 'The Varied Fortunes of Heavy and Manufacturing Industry, 1914-1987' in Denis R Mills (ed) *Twentieth Century Lincolnshire*. History of Lincolnshire Committee. 1989. pp.76-77

<sup>14</sup> Graham Neville (ed.) *The Diaries of Edward Lee Hicks, Bishop of Lincoln, 1910 - 1919*. Lincoln Record Society. 1993. 958 8.9.1916

<sup>15</sup> This aircraft is not listed in Walls & Parker, *Aircraft Made in Lincoln*.

<sup>16</sup> Newman. *One Hundred Years*. pp. 47- 48

<sup>17</sup> John Walls & Charles Parker. *Aircraft made in Lincoln*. SLHA. 2000. p.15. Wright. 'Varied Fortunes'. pp.75-77

<sup>18</sup> Ann Yeates-Langley. 'Women Munition workers in Lincoln during the First World War.' *East Midland Historian*, Vol. 7. 1997. p.30.

<sup>19</sup> Bruce Barrymore Halpenny. *Action Stations. 2. Military airfields of Lincolnshire and the East Midlands*. Patrick Stephens. Cambridge. 1991. p.53.

<sup>20</sup> LA. 18-MLL/7 Souvenir brochure from Clayton & Shuttleworth.

<sup>21</sup> Ron Blake, Mike Hodgson, Bill Taylor. *The Airfields of Lincolnshire since 1912*. Midland Counties. 1984. p.20. RAF-Lincolnshire.info.

<sup>22</sup> Michael Sewell. *Joiner's Tale, Some Memories of Grantham*. Department of Mathematics. University of Reading. November 28, 2007.

<sup>23</sup> *Bygone Grantham*. Vol 3. Michael Pointer and Malcolm G Knapp. Bygone Grantham. 1976. p.12

<sup>24</sup> Halpenny. *Action Stations*. p.116

<sup>25</sup> LA. MISC DON 948/18

<sup>26</sup> John Turner, *British Politics and the Great War, Coalition and Conflict 1915 - 1918*. Yale University Press, 1992. p.377

<sup>27</sup> TNA. LAB 2/250/15207/15/1918

<sup>28</sup> Stephen John Lawford Gower. *The Civilian Experience of World War 1: Aspects of Wolverhampton, 1914-1918*. Thesis Birmingham. D.Phil. July 2000. pp.249-50

<sup>29</sup> Gilbert. *First World War*. p.125

- <sup>30</sup> *Skegness, Mablethorpe & Alford News*. 19.05.1915.
- <sup>31</sup> LA. SR 570/8/1. St Andrews Senior Mixed School. Lincoln. 1915.
- <sup>32</sup> TNA. AH 17/122/530. Hostile air raid on Hull, night 6-7 June 1915. Gunner Weightø's report
- <sup>33</sup> Jay Winter. *Sites of Memory, Sites of Mourning: the Great War in European Cultural History*. C.U.P. 1995. p.188
- <sup>34</sup> www.rodcollins.com
- <sup>35</sup> www.raf-lincolnshire.info
- <sup>36</sup> *Lincolnshire Standard*. 14.08.1915.
- <sup>37</sup> *Lincolnshire Standard*. 11.03.1916
- <sup>38</sup> LA. CONSTAB 2/3/1/2/3
- <sup>39</sup> Martin Gilbert. *First World War Atlas*. Weidenfeld & Nicolson. 1970. p.64
- <sup>40</sup> Gilbert. *First World War Atlas*. p.69
- <sup>41</sup> *Hicks Diaries*. 764, 8.9.1915. 870, 13.2.1916.
- <sup>42</sup> *Boston Guardian*. 26.2.1916
- <sup>43</sup> LA. 9-FANE/1/1/4/14.
- <sup>44</sup> *Hicks Diaries*. 955. 4.09.1916
- <sup>45</sup> *Times*. 3.10.1916. J.M. Bourne. *Britain and the Great War*. Edward Arnold. 1989. p.207
- <sup>46</sup> Gilbert. *First World War Atlas*. p.68
- <sup>47</sup> J.M. Bourne. *Britain and the Great War*. Edward Arnold. 1989. p.200
- <sup>48</sup> Grimsby Archive. 51/111/69/1
- <sup>49</sup> <http://www.raf.mod.uk/rafcranwell/aboutus/collegehistory.cfm> Crown copyright. 2012. Accessed 07.01.2012
- <sup>50</sup> Blake et al. *Airfields since 1912*. p.55.
- <sup>51</sup> LA. WRIGHT/1/5
- <sup>52</sup> en.wikipedia.org/wiki/RAF\_Cranwell#Origins Accessed 11.02.2011
- <sup>53</sup> LA. 9-Fane/1/1/4/14
- <sup>54</sup> *Hicks Diaries*. 958, 8.9.1916
- <sup>55</sup> Halpenny. *Action Stations*. 191. www.raf.mod.uk/rafwaddington/ Accessed 08.01.2011.
- <sup>56</sup> John Turner. *British Politics and the Great War, Coalition and Conflict 1915 - 1918*. Yale University Press. 1992. p.102
- <sup>57</sup> *Times*. 21.7.1916
- <sup>58</sup> TNA. MUN 25212
- <sup>59</sup> TNA. AIR 1/655/17/122/522
- <sup>60</sup> TNA. AIR 1/655/17/122/520. Protection of Leeds, Keighley & Lincoln.
- <sup>61</sup> TNA. MUN 25212. Bourne. *Britain and the Great War*. p.202
- <sup>62</sup> TNA. AIR 1/639/17/122/186
- <sup>63</sup> LA. 9-FANE/1/1/4/15
- <sup>64</sup> Turner. *British Politics*. p.102
- <sup>65</sup> *Lincolnshire Life*. vol. 8 no. 6. August 1968. p.20
- <sup>66</sup> Sewell. *The Joiner's Tale*
- <sup>67</sup> TNA. AIR 1/639/17/122/188
- <sup>68</sup> TNA. AIR 1/639/17/122/191
- <sup>69</sup> www.helm.org.uk/upload/pdf/Twentieth-Century%20Military%20Sites.%20Current%20approaches%20to%20their%20recording%20and%20conservation\_2003.pdf
- <sup>70</sup> *Hicks Diaries*. 1060, 25.05.1917
- <sup>71</sup> *Hicks Diaries*, 1062, 29.05.1917. 1065, 6.06.1917. 1069, 12.6.1917. AMH was the Bishop's wife.
- <sup>72</sup> *Times*. 3.4.1918
- <sup>73</sup> LA. 9-FANE 1/1/4/20.
- <sup>74</sup> *Hicks Diaries*. 1341, 31.10.1918
- <sup>75</sup> TNA. TS 32.4.
- <sup>76</sup> TNA. WO 32/18335