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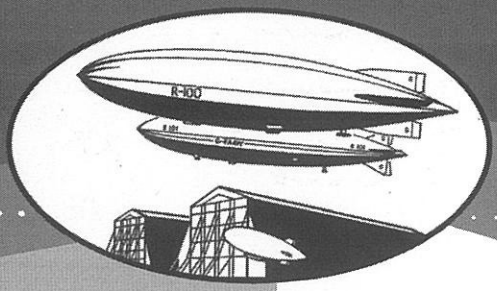
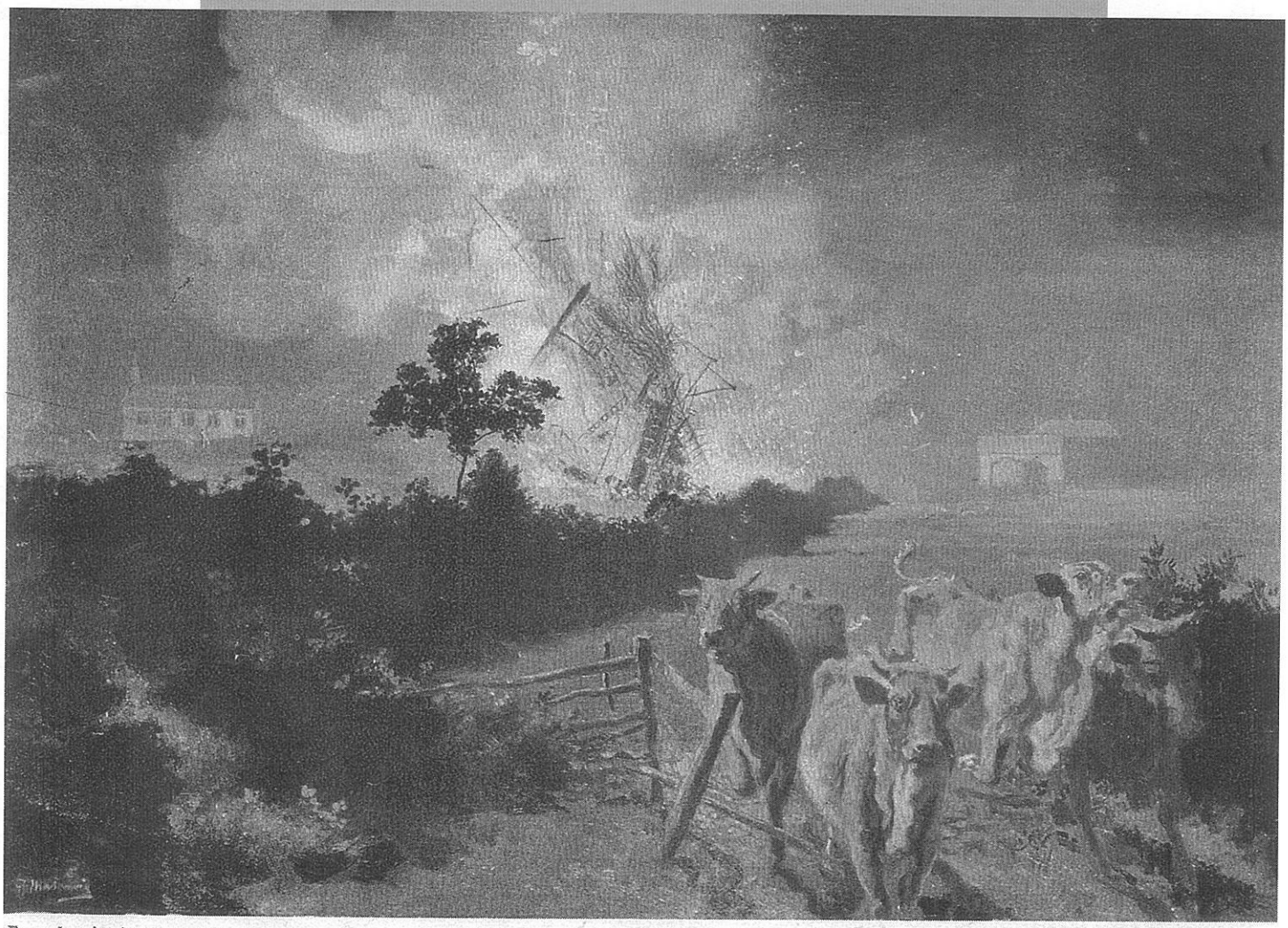
Dirigible



AIRSHIPS AT WAR



From drawing by F. Matania.

Destruction of Zeppelin at Cuffley, Sept. 2nd, 1916.

DIRIGIBLES, DEATH AND DESTRUCTION

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FRONT COVER – *Destruction of Zeppelin at Cuffley, Sept. 2nd 1916 - from a drawing by F. Matania.*

BACK COVER – *Air Raid Warning Poster issued by the Borough of Guildford after the raid of October 13, 1915 - Source: www.guildford-dragon.com/2015/10/13/terror-zeppelin-raid-on-guildford-was-100-years-ago-tonight/guildford-063/* *See p 18.*

EDITORIAL

COMMEMORATING CONFLICTS

Lighter-than-air flying machines are looked on today by the public largely as objects of fun. This is either because they are associated with 'sporting' activities (i.e. hot-air balloons) or because they did things in the past that today appear to be 'weird' or 'odd' or 'just plain crazy' when judged against what is perceived to be common practice for 'normal' aircraft in the modern world. The history books, however, tell a very different tale because they reveal that a very high proportion of LTA projects were initiated in times of war and designed or developed expressly for military purposes. This more sinister aspect can be seen to originate at the very beginnings of LTA when one of the ideas that led Joseph Montgolfier to make his experiments with smoke-filled paper bags in 1783 was the possibility of building a big enough one to lift French troops on to the top of the Rock of Gibraltar and drive the British off it.

And, as anyone who has read any LTA history will be well aware, the military connection continued in 1784 when plans for a ballonet to pressurise a dirigible envelope were submitted by Jean Baptiste Meusenier, a French Army General who foresaw the military usefulness of such a machine. These plans, in turn, sowed the seeds for the famous depictions of Napoleon's intended invasion of Britain from the air with a fleet of troop-carrying airships to say nothing of the use of tethered balloons to spy on enemy movements in a succession of military stalemates. The first of these was by the French 'Aérostiers' at the Battle of Fleurus (1794) but other nations soon took up the idea and 'observation balloons' famously played a part in the American Civil War (1861), the Second Boer War (1899) and the First World War (1914).

And, of course, it was during the 1914-18 War that airships really came to the fore in the twin guises of the 'rigid-framed' German Zeppelin bombers and the 'non-rigid' maritime convoy protecting blimps of the British Royal Naval Air Service. Huge advances were made in the technology of LTA flight at this time, and these were further improved and refined (for the blimps at least) by the US Navy during the Second World War. And the trend continues right up to the present day when the most modern of airships – the *Airlander 10* (currently residing in Cardington No.1 Shed and due to make its first flight any day now) - began life as the *American Army LEMV* designed as a Long Endurance Mission Vehicle for surveillance work in the recent conflict in Afghanistan.

This is not to say that civilian pioneers and independent 'lone-wolves' have played little of no part in aiding the evolution of dirigible flying machines – who could ignore Santos Dumont or the DELAG or the British Imperial Airship Scheme – but by and large, it is safe to say that most of the major advances and achievements in airship technology have come directly from military development programmes.

One consequence of this close association with time of war is that when it comes to commemorating specific events, be they triumphant or disastrous, the centenaries of the relevant celebrations (or of mourning) are as tightly bunched together in the calendar as the original occasions. Thus is it that we find ourselves in 2016 preparing for a rash of festivals and commemorations in the next four or five years as these correspond to the feverish development of the use of airships that took place in the First World War one hundred years ago.

In this issue you will find several reports of airships' wartime exploits along with plans to commemorate the demise of some 'Baby-killers – see next column. Doubtless there will be many more but be prepared for a civilian comeback in 2019 when *R34* is scheduled to reappear in the media!

GILES CAMPLIN – EDITOR

AHT AGM SPEAKER

The speaker at the Annual General Meeting (AGM) of the Airship Heritage Trust 2016 which will be held between 14:00 and 16:30 on

Saturday, 11th June 2016

in the Castle Room at **The Higgins Art Gallery and Museum, Castle Lane, Bedford** will be

TIM SHIELDS

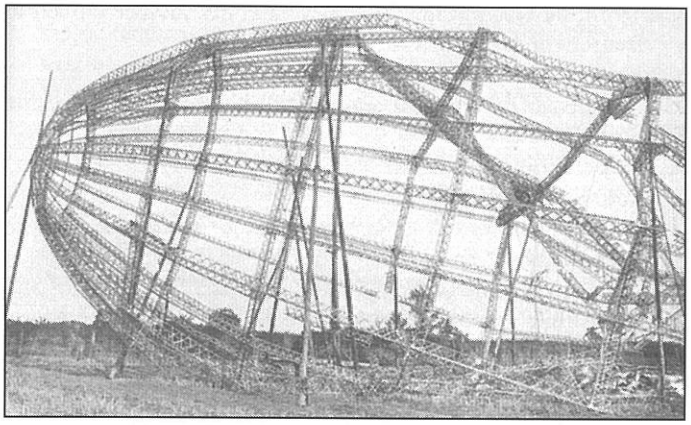
He will talk about the restoration and operation of

The London Transport Museum's genuine 1914 London General B-Type 'Battle Bus'

Refreshments (tea, coffee, etc.) will be provided so put the date in your diary and bring a friend!

www.thehigginsbedford.org.uk/visit_us/how_to_find_us.aspx

ZEPFEST - 24 September 2016 is the 100th anniversary of the forced landing of the German Zeppelin *L33* near New Hall Cottages in Little Wigborough. Zepfest will be held in the fields around Copt Hall, Little Wigborough.



"This photo is of the wreckage after it came down in Wigborough. The German crew all survived the forced landing, and promptly set the wreckage on fire to destroy any technical details that the British might learn from it. British engineers examined the skeleton and later used the plans as a basis for the construction of airships R33 and R34. Poles can be seen in the photo where the nose has been supported."

COMMEMORATING THE CUFFLEY AIRSHIP

The 100th anniversary of the shooting down of "The Cuffley Airship" (*Schütte-Lanz SL11*) by Captain William Leefe Robinson VC will be marked by a ceremony, on Saturday 3rd September 2016, to lay a paving stone, provided by The Department for Communities and Local Government ...The DCLG are producing suitable paving stones for all World War One VC Holders.

There will also be an exhibition in Cuffley Hall from Monday 5th September to Friday 9th September 2016 which will display parts from the crashed airship and much memorabilia from WW1.

ORAL HISTORY INTERVIEW EXTRACTS REGARDING CARDINGTON AIRSHIPS (Part 2)

Submitted by Stuart Antrobus

I am a Bedford local historian and a retired adult education social history tutor and researcher. In 2001-2004, I worked part-time on a Heritage Lottery-Funded oral history project, *Changing Landscapes, Changing Lives* about life and industry in mid-Bedfordshire over the twentieth century ... I am currently clearing out papers from my previous research work and thought that you might like to know about two life story interviews conducted by the project director Carmela Semeraro, which were transcribed and then summarised by me. They are with two women who had brief memories of the airship industry in the 1920s. One, Nellie Brewerton (née Mortimer) was employed around 1929, machining and pasting and making the outer cover for an airship, (see *Dirigible 77 p17*) The other, Clare Knox (née Appleby), gives more detailed recollections of life behind the scenes for the families of the workforce at Cardington and Shortstown …

Clare Knox Interview

CS: Interviewer, Carmela Semeraro.

CK: Informant interviewee, Clare Knox (née Appleby), Female. Memories of airships at Cardington in the 1920s.

CS When and where were you born?
CK 29.9.1917 in Bedford.
CS Was your family from Bedford?
CK No, my mother was from Hampshire, my father was from Grantham, near Peterborough.
CS How come they were in Bedford then?
CK Well, he was a trained engineer and my mother moved to Bedford and they met there.
CS Do you remember living in Bedford?
CK No, because I was, I suppose I was about 2½ when I came here.
CS That was in Shortstown?
CK Into Shortstown, yes.
CS Is it because your Dad came to work for the building of the (air)ship then?
CK Yes. He worked on the engines, he was a test engineer and he also helped build them. He read from the drawings and helped build them up.
CS Tell me a bit more about your family because both parents came from somewhere else. Did you see your grandparents? Did they live near?
CK No, I only remember my mother's father for a short time he lived in Bedford. It was off Tavistock Street I think and I just faintly remember walking along with him and holding his hand; he was a very tall man and he died soon after and I suppose I must have been about 3½, 4. That's all I remember of him.
CS What did he do, do you know?
CK I don't know.
CS Did you have any brothers and sisters?
CK Yes, I had a lot of brothers and sisters but at the time we lived here when the airship went down there were four of us; four children when the airship went down.
CS So what is your first memory, what is the first thing you remember of the place?
CK My first memories were, we lived in 14 Greycote and of my father coming home and talking about the work and the airship and I remember he came home one day and, of course, when you are children you are all ears, you listen to things you shouldn't listen I suppose. He was complaining about the way the airship was progressing and what was happening. He was concerned because they decided to cut the airship in half and make it larger and he said it will never make it, it will never do, it's weakening it. I also heard him talk about the dust [gas?] bags being porous and because they were hanging around so long while the other part of the airship was being built and then I also remember it was a small estate here, just people who were employed by Short Brothers were the ones who lived here, otherwise you couldn't live here. They used to sound a hooter and tell us that for the next 12 or 24 hours the test engines would go and there was a test bay over there opposite where ... and the engines used to go day and night; it was a roaring sound rather like the jets coming over now but you just had to put up with it and that's how they tested the engines.
CS These tests as you described it, was it anywhere near the hangars?
CK Yes.
CS In the hangar itself?
CK No not in the hangars. There was a special test bay further back level with the hangars but outside.
CS Tell me a bit more about the village because you told me before that only people that worked for Short Brothers could live here. How many houses were there and what was it like then?
CK Well, of course, it was all modern and new and there was Greycote at the back which were flats, then at the end of Greycote there was East End which was a half-moon block of houses at the other end of Greycote was Central Avenue and then we had North Drive and South Drive and then we had the Crescent. The hierarchy lived in the Crescent - only just the managers and governors. And the Highway.
CS So where did you say you lived?
CK We lived in Greycote and then as the family got larger we moved into Central Avenue and we lived there. Do you want me to go back to memories or go on?
CS No, tell me about your memories.
CK So I remember very vividly, we were children, the children here of the people who worked on the airship either went to Cotton End School or Cardington School and it was a great event when we knew the airship was coming out. Our fathers would say, "Oh, it's a nice day and they are going to bring the airship out. They are going to test it." I remember going to school and I was in the Infants at Cardington and we were taken out the whole school was taken out to see the launching of the airship and then they would take it out for a test and take it back again. I also remember the second shed being built and I remember that the people came from Pulham and Howden and they were *R100* people and so they added to the mixture of people living here. I can remember some of their names and Lily remembers their names as well. We had memories of the airship coming in and going out and tests and I can remember my father talking about the *R38*, which was before the *R100* and *101*.

CS So when he first came to work there was just one shed built and then after a while you remember the other one being built?

CK Yes, they built the second shed for the *R100* and they bought the people with them to work on it. They decided that they had been experimenting and building small blimps and things at Pulham but they decided that it would all be here and that's why they built the second shed.

CS What did your father tell you about the R38.

CK He said he had been working on it and it was going up to would it be Howden I think? At the river. And he had been working on it and he had the opportunity to travel up with it. I don't know exactly where it was going to stay or land or whatever but I remember him coming into the house and saying, "Oh great catastrophe, the nose of the airship has broken off, part of the nose has broken and it had gone down near the river but they had rescued it and rescued the people and so I just remember that. I don't remember any other detail but what stands out in my mind is the night before the airship [*R101*]went away and the day after I can still in my mind hear the screams of the people who, and the wives who had lost their husbands. Would you like to hear a little bit about that? Well, the night before the airship was ready to take off of course there was all the farewell dos and all the hierarchy and the officers had a party at the Swan Hotel and the crew and the second crew had all their new uniforms on and I stood in Greycote in the garden with my parents. Of course everybody, there were no fences round the garden then and everybody knew everybody else and I stood there with them and Mr Taylor, his name was Cecil Taylor, he was a handsome man, he was only about 38 or something and he had four children and he stood on the doorstep in his new uniform and my father said to him, "What are you doing, what have you got there," and he said he had got a piece of rope, I saw him do it, a piece of string, strong string and he had got a knife hanging in it.

CS He had the piece of rope around his waist you mean?

CK Yes, it was round his waist and my father said to him, "What are you doing with that knife?" He said, "Well I've been into Bedford to get it. I have a feeling when I go on this ship tonight I may need it to cut my way out" and those words stuck in my memory all these years. However, he stood there with his wife and four children and then there were the farewells and all the crew went down to the mooring mast and the ship took off. And when the ship took off we stood there and all the black clouds came over (you agree with me?) and it started to rain and it started to blow and I thought the ship was coming, it was so low, I thought it was coming down on the houses here I was quite scared because I was about 9 or 10 then.

CS Did your Dad go with it?

CK No, he was an engineer, he worked on it.

CS Not many engineers went?

CK Well the crew did, two crews went. He wasn't on a crew you see. Anyway the airship took off and the last we saw it, it circled Bedford and went out over the hills over Wilstead towards London and that was the last we saw of it. It was going like this.

CS With its nose high.

CK It had ever such a job and the prevailing winds were against it and it was going like that and we stood and watched it and of course everybody was out children and everybody, families and then the next morning, we lived in 14 Greycote, next door to Mr and Mrs Taylor. My father always cooked the Sunday breakfast and I can remember him cooking egg and tomatoes and bacon, nobody ever ate it, nobody ever finished it because all of a sudden there were these terrible screams and my mother and father went out into the street through the front door followed by us. We said whatever's the matter? And the men in uniform as I remember them, I don't know exactly who they would be but they had come from the Camp and they were going round telling the various families the ship has gone down and Mrs Taylor was left with four children and she just screamed and screamed.

CS Tell me what it was like before these dreadful things happened?

CK Well, there was a small social club here, it was here in this place where we are now, on this site. It was a long, narrow wooden building painted black and you went in from the main road here into double doors and there was a little hallway and each side was a Ladies and Gentlemen's Cloakroom with Toilets, then you went into the main hall which was long and at the end was a small stage. Before you got to the stage on the left hand side was a door and that led into a small bar where drinks and coffee and beer and everything could be served. Each Christmas we would have a big tree there and as I say there was a small social section and I can now see, as children, by the stage this Christmas Tree reaching almost to the ceiling and everybody had a gift. And then somebody, I think it was Freddie Mann and his brother and various other people who were, sort of, I suppose they might have been in their twenties or twenty five - that sort of age - they gave a concert. They used to entertain us. I always remember magic lanterns and entertainers coming from Bedford. Well, first of all they gave a speech and we were bored to tears. Who we wanted was the comedian to come on and tell funny jokes, or, watch the magic lantern. I remember going with my mother and two or three of the children and we were at this concert and this man came in and apparently he was a singer from Bedford and he had the old fashioned stiff collar - like a penguin - and he came in and we thought "Oh, no, we hadn't got to listen to this had we?" And I always remember it because we all mimicked him afterwards, the children did, outside. He sang 'Come into the Garden, Maud' which was lovely for children (said sarcastically). So that was one of the things. The other thing I remember is as we got a bit older there was Mr & Mrs Phean, Mr & Mrs Ramsey, two or three other couples and they ran an old time dancing here and they did old time dancing and they taught. They first started off in their sitting room at the bottom of South Drive and then they enlarged it and they used to have dances here. And the younger... I used to because I was a friend of Nina Phean and Joyce the daughters of Mr & Mrs Phean I would be invited and I thought it was wonderful. I was about 10 or 11 years of age and we learnt to do all the old time dancing from that age. I belonged to .. we went to the chapel at the bottom of the hill when we were very little, it was a Methodist Chapel. We went to Sunday School but before then I must have been about 5 and in the Crescent lived Mr Durstan. Do you remember Mr Durstan? (Female voice says "Yes, yes" in the background.) He had quite an important job in Accounts I think but he was also a Methodist and he had a small Sunday School and about 8 or 10 of used to sit round on his sitting room floor until we got old enough to walk to the Chapel at the bottom of the hill. From then on we went to Cardington. Now Cardington and Cardington Church played a great part ... how do I put it?

CS They were very important?

CK They were important in Shortstown.

CS How many houses were there then, more or less?

CK About a 100 and something? (Second voice ~ female, says "Yeah")

CS There was no school here then?

CK No there was no school we either went to Cardington or Cotton End.

CS Was there a pub here?

CK No, there was just the club. You had to go down to Old Harrowden if you wanted to go to the Gate (pub) or Cardington. But I am talking about Mr and Mrs Phean, Mr and Mrs Ramsey, they had children. They were employed over here, they had children and because their father worked here and we sang. We joined the choir at, I have got photographs of this, at Cardington. We were members of the choir there but also for the children we had a small social club and we learnt to sing and dance and give a concert, a small concert of our own. That was Mr Davies and he lived in 1 Central Avenue. Mr and Mrs Davies and Gwen Davies. Mrs Bear lived in Greycote and we used to go round to 1 Central Avenue and they had a piano and they cleared all the furniture back and give a concert. And one year they entered eight of us into the Eisteddfod in Bedford. I got the Certificate, it was 1929 and we sang 'Caller Herring' and we had bare feet and legs and we had little skirts made for us and Mr Hardy was one of the head painters over here and he carved out and made us fish and painted them and we had these small coral baskets slung over here and we did a little... we sang 'Caller Herring' three verses, we sang, this was in the Conservative Hall in Bedford, St Peter's. They didn't do it in the Corn Exchange then and we sang there and we got first prize and so we had quite a party in the little club here to celebrate. You know, it was wonderful to think the children here had done this. So that's really what we did. We either belonged to a small social club like that or we belonged to the choir and I remember doing that.

CS Tell me a little bit more about, you mentioned Short Brothers before, what did you know about that?

CK Well I don't remember really. When the airship went down Short Brothers decided that they would go to Ireland, they went to Ireland and I think they did ship building there as well but they gave this up. It was disastrous here because apart from the crew being killed and going down and people hadn't any work. Everybody lost their jobs.

CS Tell me more about before that because it seems quite a strange situation that only the people that worked on the airships could live here. So did that mean that everybody came from somewhere else? Was there any local person as far as you know? Did you know anybody that was sort of local from Shortstown?

CK People from Bedford.

CS Bedford or Cardington.

CK I suppose people came from Bedford and Cardington but I don't remember who they were. Of course I remember the names of some of the crew like you do. I mean there was Mr Hunt and... (Second female voice says, "It's a pity Albert wasn't here.") Albert had died, his son died a few years ago.

CS So the people living next door to you particularly.

CK We all lived here. We all lived around. A lot of the crew lived here didn't they?

CS So what happened to your family then after you heard this dreadful news and there were tears and ... the world changed for ..

CK It did for everybody. Well, my father got a job at, because he was a trained engineer, and had trained for 7 years apprenticeship and the rest of it, he was able to get work. I think, I am not sure if he went to Allen's or if he went to Luton. I know he worked at the Vauxhall some years later but I think that's where he went.

CS But you stayed in Shortstown?

CK But we stayed in Shortstown and then I remember the new huts being built ready for the airmen coming. The first airmen came from Henlow and they used to travel backwards and forwards and then they built the married quarters here and the huts and of course the whole camp was built up and the (Second World) War came along and during the War I worked at a Station Office over here for about 18 months where all the recruits came in and we had to do all their paperwork. They went through to the various regiments or whatever and then I worked in the BDE Office in those offices at the front. This was from 1943 to 45 when the War ended.

CS But before that you describe kind of an idyllic place to live in before the disaster happened. Tell me a bit more about that time when there was still this idyllic place here. What sort, you describe the social things that there were around like the music and things going on ... what about in the village? What else was there? Because the people came from all sorts of different places was there friendliness amongst neighbours?

CK Yes, it was very close.

CS So children used to play with each other in the street?

CK Everybody played with each other and if ... there was one telephone in Shortstown then.

CS Where was that then?

CK One was at the Camp gates where the guards were guarding going in and out and the other one was at the top of the hill at Shortstown. Nobody had telephones and of course, really, nobody in the early days had radios. So all our information came from here or newspapers or Bedford. I mean I am going back a long way when I say that.

CS I gather that, before the War obviously? What about traffic on the road?

CK Well, I could remember the sheep (second female voice says 'Horse and cart') being driven into Bedford Market from Cotton End all down the road in the middle of the road and they had horse and carts and there were three farms in Old Harrowden. There was Milmey's Farm, there was Hall and Potters and there was Mr Ayres. Now their son, Henry Ayres, has a house in Mile Road in Bedford and his house is stacked with papers about the airship. What he doesn't know; well, he's a historian himself I think. He knows far more than Lily or I. (second voice says "Oh, yes"). Daisy knew ... Henry was the farmer's son. He used to come up with his father when he was a boy every day to Shortstown on this milk float. They had these huge things at the back of this milk float and you went out with your jug, got the milk. Churns, that's right.

CS Did you used to go and walk in the countryside? What was it like then? You say there were three farmers but was it very much different than it is now?

CK Oh yes. Beyond Greycote were corn fields, beautiful corn fields and there were high hedges around with blackberries and leading down to the... we used to go black-berrying and along the top of Shortstown looking down into what we termed the Back Field down into Harrowden, there were a whole row of ancient oak, no elm trees and they all had to be cut down because of the elm disease. We used to play there and we used to play cricket in the field there. Beyond

the corn field was a field they had mowing grass in it and the two farmers used to go round on a horse and if my brothers or any of the boys were near the mowing field he would chase them with a gun on horse back.

CS Really?

CK Well if you trampled on mowing grass it wasn't any good for the animals, they couldn't cut it. It was animal feed if you remember. Now beyond Central Avenue was a huge field and we called it the Mushroom Field. Well we used to gather mushrooms there and all across by the aerodrome you had huge mushrooms. Well, once a year some holiday time they used to cut this grass, it would be about that high.

CS What about 2 feet high.

CK And then it would be cleared and every year, in July, we had a sports day here. There were two large tents and they had races for different children and they had a tea tent and a lemonade tent and the men who lived here had tug of war and they had prizes for all these things and it was a great event because we all used to run hoping we might get sixpence or nine pence for winning the race. Which was pocket money. Do you remember that? (Second voice "Yes.") Now I remember one particular race, one particular thing we had to do, we had to stand and thread a needle and then run 20 or 30 yards and whoever threaded the needle first and ran the race got the prize. Now who should I be standing next to but Lily and she was very good at that, she was very good at sewing and other things and I was so intent on watching her thread her needle first that I was last. She was first, I … … [*Tape runs out. New tape started.*]

CS Do you remember you were talking to me before about the landscape around here, you described about farming. You described one part of it, what about the other side?

CK Well, we were surrounded by fields as I said and beyond Central Avenue was a huge field which we called the mushroom field and where we had Sports Days and beyond that to the right was a mowing field and then continuing down to Old Harrowden there were three farms, Ayres Farm, Minnie's Farm and Hall's Farm and there was also a huge old apple orchard there which was a great temptation to the local children including me.

CS You went scrumping did you?

CK Yes. Then with coming back round by ... at the back of East Square there was a huge field there and we called it the Back Field and we used to play in there and go black-berrying and roaming and we used to play cricket at the top. Then the other side of the road was another field and it had a huge Manor House in it. The house still stands there and I think did Seftan Blake [*Sir Sefton Brancker?*] live there at one time? Somebody in charge of the Airship lived there one time. Then continuing round you crossed the road from there, no we crossed the road and there was the house in the field and further over there were old buildings. I am talking about before ..

CS Before the War?

CK before the camp was built and we used to call them the Naval Quarters. They were old brick buildings where, I think it was from the World War and it was great fun exploring those and jumping in and out of broken windows and being chased by the guards from the camp. Anyway and then you continued round and there were huge fields which went down as far as Cardington and Cardington Lane and there were farms there and you went round the back of the sheds and then you came into the huge airfield and then there was Cotton End and then you, if you crossed the road you then came back to the farmland and what we termed the Mushroom Field so I have taken you in a complete circle.

CS So you could roam around all those places? You were free to ..

CK Yes, as long as we didn't do any damage we were free to roam everywhere, weren't we? (Second female voice agrees in background.) We were restricted on the camp in certain places you could only go in certain places there but we knew where to go and where not to go.

CS You know you said before that when there was ship testing you were allowed from the school to come and have a look. Were you ever allowed to go into the shed with your father say?

CK No.

CS You never went there with your father?

CK We did go. Oh I had forgotten about that. When the airship came out everybody, all the men folk in Shortstown went out to hold onto the ropes, the guide ropes including my father. Everybody, it didn't matter who you went and you held it down and steadied it coming out of the shed so I remember running across the fields and watching that as you would. Another think I remember too the Zeppelin coming.

CS Tell me about that.

CK Now the Zeppelin came over, it was a most wonderful airship.

CS Why was it wonderful? Why was it different from the other ones?

CK Well it was manoeuvrable, it did so many things. It went to America two or three times and it flew around and there was always was a sort of sense of excitement. I remember them saying the Zeppelin is coming. So we went out and down the road towards Cotton End and the Zeppelin came over, from London across the hills at the back and it did a half circle and we thought it was wonderful because it was able to come down and land by the shed without having to moor on the masts. You see all our airships had to go to and from the mooring mast but the Zeppelin came down and it came like that and because my father was there like other fathers we were allowed to go and I remember running across and going underneath the Zeppelin and jumping up and touching the gondola. And I thought, 'Oh, I'm touching it'. It was here for some time and then we were held back. I suppose they were celebrating and meeting people and having meetings, I don't know. Then I was there to see it take off again.

CS How did it take off then?

CK They guided it round and it took off into the wind and off it went. It just glided off no problem at all.

CS Not like an aeroplane sort of sliding across?

CK No it just lifted off. It didn't lift straight off it went along and then it took off.

CS It must have been quite beautiful to see.

CK It was a beautiful airship, I remember that. (To second woman - Do you remember. What happened to you on that day, did you go in there?) Second voice replies 'No'. (to second woman - I was a bit older than you you see...)

CS So what colour was the Zeppelin then?

CK Well it was the same colour as ours.

CS Did you father ever used to say, 'Come on I'll show you what I am doing?'

CK No.

CS You were not allowed to go? Children were not allowed?

CK No a lot of it was secretive you know. He would come home and talk to my mother and he would have drawings

and things but you couldn't, you weren't allowed to see them.

CS Tell me what happened to your father. Obviously he was upset when the disaster happened. He was without work as well, wasn't he?

CK Yes. I think he either went to Allen' s and then later on he went to the Vauxhalls.

CS Yes, but you stayed in the village then?

CK Yes we stayed here in Shortstown and then we moved down to Bedford. Then of course time went on then and I was a teenager and then I got married. I was married when I was 20.

CS Tell me a bit more about life here as a teenager. What was it like? Was there any dancing going on then?

CK Oh yes. I used to go to all the dances.

CS Where was the dancing, in this place?

CK Well they used to have occasional ones in.. but this club was very small. This club is twice or three times... it was through there. During the War it was very popular because Shortstown had a football team and the football business and everything used to be run from here. If they won they celebrated here. Yes, during the War there were dances all the time on the camp in the big building at the front.

CS Who organised those then?

CK Well, the RAF organised them. Squadron Leader Harris was the ....

CS The club used to organise them?

CK Yes.

CS Were there bands that played?

CK Yes, we had wonderful bands (second voices agrees). We had the 'Squadronaires' and ... it was beautiful music and the dance hall would hold about 200 people or more and they also had cinema here during the War and Gracie Fields came here once, didn't she. Some of the big names. Then there were the Gang Shows, they were funny. ♣

The recordings are available via Bedfordshire & Luton Archives (**www.bedford.gov.uk/archive**) and The Higgins Museum, Bedford. Transcripts and summaries are held by Bedford Central Library, and Bedfordshire & Luton Archives (BLARS).
Summaries are available online through the archives service catalogue **http://bedsarchivescat.bedford.gov.uk/** by searching for reference Z1205.

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MY EXPERIENCES AT CARDINGTON

By *R101* survivor Arthur Bell

This was compiled by Arthur Bell to assist in a history of Cardington. Circa 1949.
Submitted by Den Burchmore

My arrival [at Cardington] on August 18, 1921, was a rather spectacular affair, as it was by *H.M. Airship No R33*, but within a very few days after this a gloom was thrown over the establishment by the sad news of the loss of the Cardington-built ship over the river Humber of *H.M.A R38*. Constructional work ceased and I remained as one of the care and maintenance party on airships *R33* and *R37* until early 1923.

The year 1924, found me once more at Cardington, this time to take part in certain trials with *H.M. R33*, to collect data for incorporation in the building of much bigger airships than had ever been attempted before, namely *H.M.A. R100* and *H.M.A. R101*. The former to be built at Howden in Yorkshire, the latter's base at Cardington.

Early in 1925, *R33* was flown to Pulham in Norfolk (an out station of Cardington) from whence the trials could be carried out, on the morning of April 16, 1925, during a very high wind of somewhere around 70 m.p.h. she broke away from the mooring mast and was blown backwards, (stern first) across the North Sea. However, after this unscheduled trip through the night to Holland we managed to arrive back at Pulham under our own power, but the damage sustained meant much more delay to the experimental flights, it also meant a lot of workmen and technicians from Cardington to make good the seriously damaged nose of the ship. The repairs finished, flying was resumed and the trials came to an end in the Spring of 1926 and so back to Cardington, airship and all. Work had already begun preparing the lay out of *H.M.A. R101*.

No.1 Shed had to be enlarged, stands had to be erected to test the engines which by the way were diesels built by Beardmore of Glasgow. Work was pushed ahead and in 1929 came trials of *H.M.A R101*. It was soon discovered she was too heavy and it was decided to cut her in two and add another section to give the ship more lift. Whilst this work was being carried out, *H.M.A. R100* was being prepared for her first flight across the Atlantic to Canada and by end of 1930 was away from Cardington and after a stay of about two weeks she returned to Cardington covered in glory, after her achievement.

By September of this year (1930) *R101* was ready for further trials once more, on October 4th we left for India, but crashed in France with a heavy loss of life, and again the cream of the airship service. After this came a very quite time for Cardington, *R100* was berthed in *No.1 Shed* and those of us who were left were employed overhauling transport for Royal Air Force. Late in 1931 this ship was sold for scrap and broken up in *No.1 Shed*, this put an end to airships in this country.

From this stage we began carrying out experiments with balloons which were flying at 20,000 ft or over. During the year 1933, the station became busy, this time with aircraft. It was said at one time there were more of these airframes here than anywhere else in the country.

In 1937 we started preparing for balloon barrage, we carried out impact trials at Portland Island and other open spaces in the country.

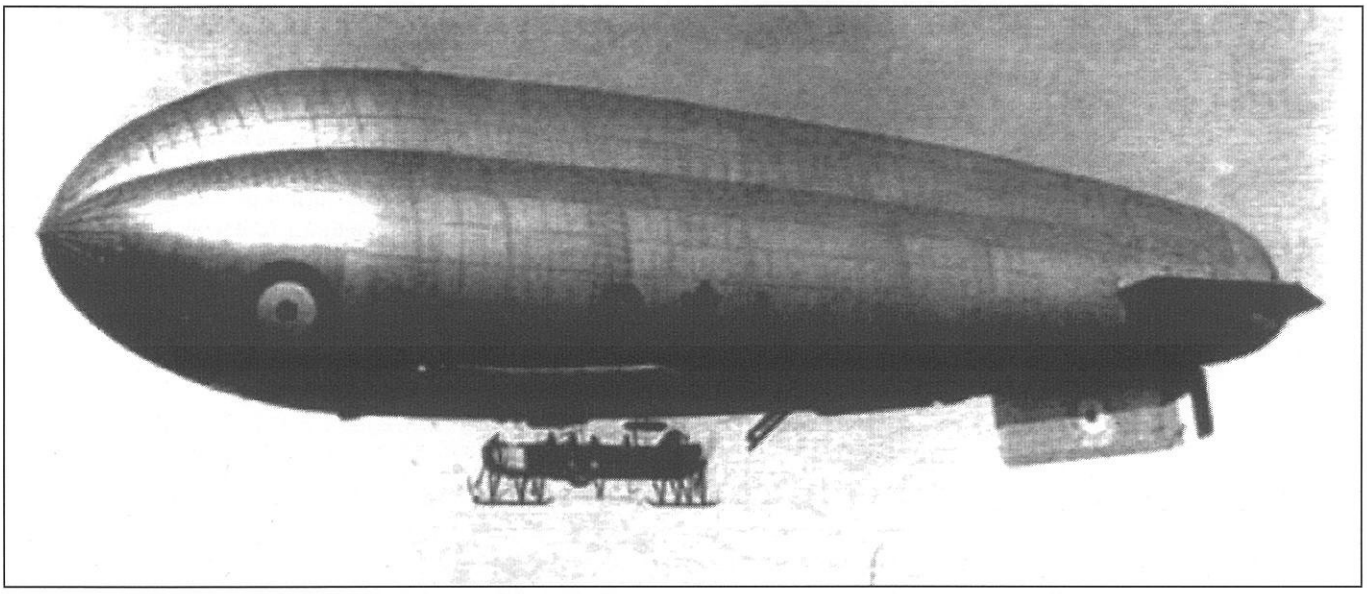
In 1939 the aeroplanes left Cardington and balloons took over in a big way, the station became the home of balloon training and it was here that operators both male and female were trained for service with the balloon barrage all over England. Of course this was the year when war came and we became the Balloon Development Establishment carrying out experiments on balloons of all types with parties of men all over the country and at sea engaged in all kinds of jobs. At the latter part of the war, when the enemy was sending over the flying bombs a further demand for balloons was made and this department made all the gear for attaching to the balloons to catch the flying bombs and we were told that we had put up a good show.

Towards the end of the war we had great hopes of seeing another airship at this station, brought and manned by Americans for submarine spotting. *No.1 Shed* was prepared for this reception but the war ended and we did not get our airships. These ships flew from the U.S.A. via the Azores. Went to North Africa and Italy. The war ended and so they never flew on to the UK. ♣

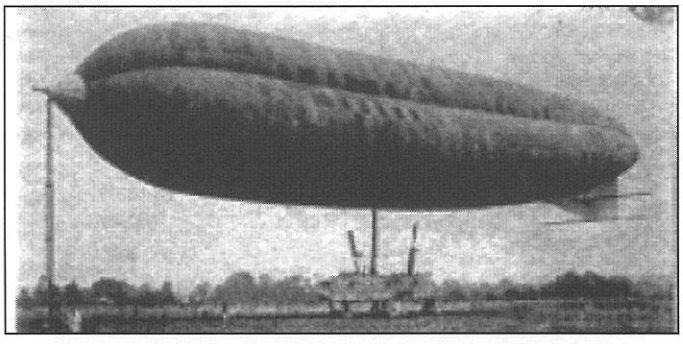
UNITED KINGDOM NON-RIGID AIRSHIPS IN WORLD WAR I

By Donald. M. Layton, Dr. Sc.

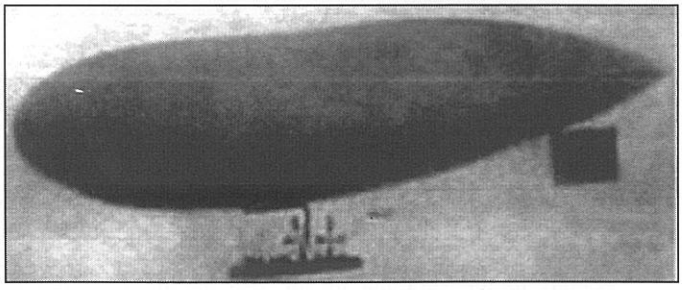
Reprinted from The US Naval Airship Assoc. Journal (*Noon Balloon*) No.103 Fall 2014



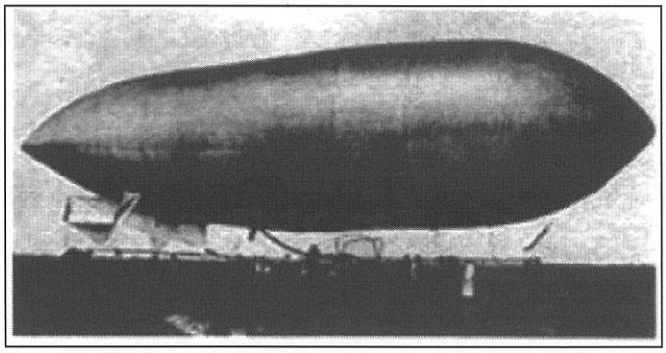
If one wanted to postulate a case study about the development of a system that was created to meet an urgent need with the system being conceived, constructed and operated in an expeditious and efficient manner, one need look no further than the United Kingdom's *Sea Scout* airships [of World War 1]. German submarines were raiding almost at will along the English coast, in addition to transiting the English Channel to reach targets in the Atlantic Ocean. There was an insufficient number of United Kingdom surface ships to protect even a small portion of the shipping, and the lead time and expense that would have been involved in an increase in the size of the anti-submarine warfare surface fleet made this a no-option. Although airplanes were continually improving in their reconnaissance and bombing skills, they lacked the endurance to stay with a moving ship or convoy. Their speed, which was a positive factor in getting on site from their land bases, was a severe deterrent once they were on-station due to the fact that they could not stay with the slow merchantmen. A solution of the problem was to use airships, but even though the United Kingdom stood foremost in the field of non-rigid, pressure airships, the Royal Naval Air Service entered the war with but seven non-rigid airships, none of which was suitable for anti-submarine patrols.



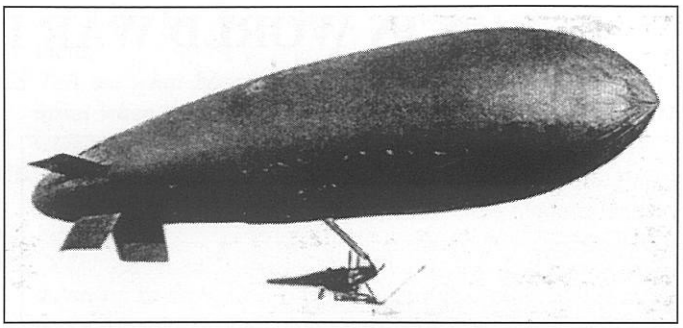
Two of these airships had been purchased from Astra-Torres of France and modified by the United Kingdom (above), and four had been obtained from Parseval of Germany (below).



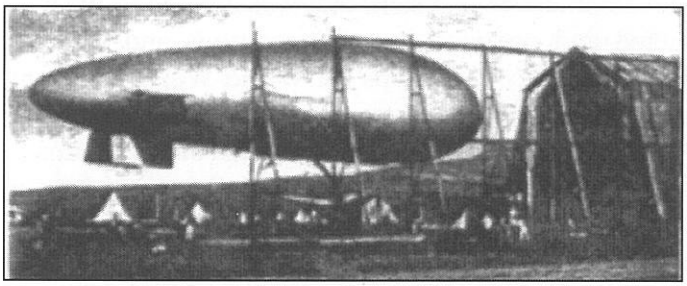
The seventh had been built by Willows & Company of the United Kingdom (below). The smallest of these was the *Willows* that had a gas capacity of but 20,000 cubic feet.



When one considers that the gross lift of pure hydrogen is approximately sixty five pounds per one thousand cubic feet, this airship had a gross lift of 1,300 pounds and that lift had to support the envelope, controls, car, engine, fuel, rigging and pilot. A solution to the problem was found in the design and manufacture of the *Sea Scout* a small, hydrogen-filled airship (below). If one were to draw an analogy with a World War II system development, it would be with the design and construction of the Liberty Ship merchantmen.

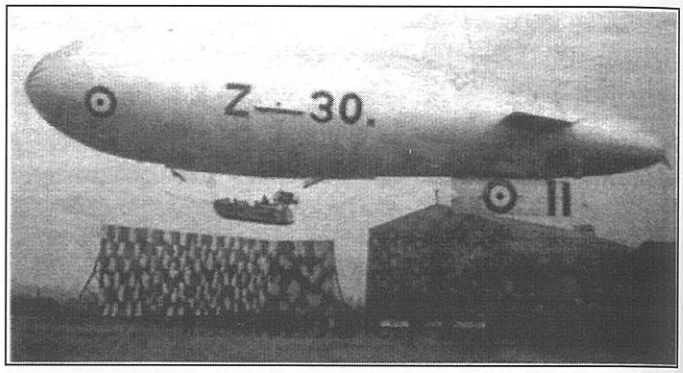


The *SS* envelope was copied from the already tested *Willows* airship. Rather than take the time to design and fabricate a control car, it was decided to use a *B.E.2c* aircraft fuselage, minus the wings and control surfaces. The landing gear was also omitted and was replaced by a skid. This car could hold two people - the pilot and an observer/gunner. The enlarged envelope of 60,000 cubic feet was small enough to be readily manufactured, yet large enough to carry the car, the crew, a single engine and enough fuel for an eight hour flight. The maximum speed was forty eight miles per hour which permitted the airship to move with some rapidity between sites, but a most important facet of the speed was that the *Sea Scout* could fly slowly enough to stay with the merchant ships.



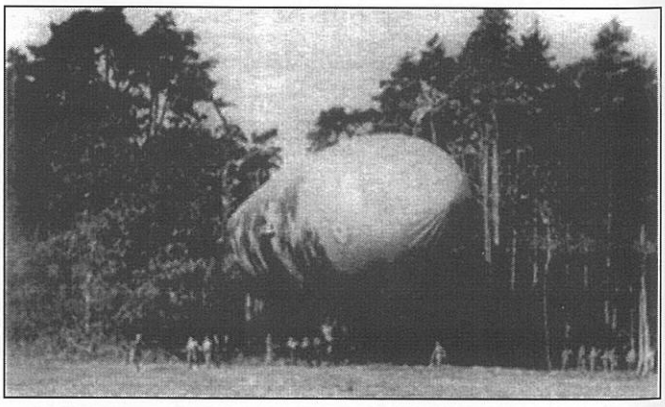
A great deal of thought was put into the design of the *Sea Scout* airships. A team headed by Wing Commander T. R. Cave-Browne-Cave, an engineering officer, and Wing Commander Neville F. Usbourne, a pilot with experience patrolling the Dover area with *Astra* airships, was determined to develop an airship with all of the requisite qualities for submarine hunting but with simplicity in design, construction and operation. Rather than having swivelling propellers, which added a degree of manoeuvrability, it was decided to have a standard engine and propeller which could be produced with less delay and could be operated and maintained with far less effort. A blower tube was added that used the dynamic pressure head from the propeller stream to pressurize the ballonets in order to maintain a pressure greater than the air pressure on the nose at maximum speed. Bow reinforcements (battens) were also used to assist in preventing the nose from 'oil canning' in forward flight. Later versions of the *Sea Scout* used *Maurice Farman* and *Armstrong (FK)* fuselages (below) instead of that of the *B.E.2c*.

The use of a modified airplane fuselage as the control car simplified the manufacturing process, but there was still the problem of obtaining a sufficient number of envelopes to develop the desired fleet. The United Kingdom's other airships had their envelopes manufactured at the Royal Aircraft Factory, but the amount of airplane construction at this facility rendered them incapable of producing the quantity of envelopes that were required, and as a result, companies that had experience in making water-proof garments were trained in the intricacies of envelope manufacture. Sixty *Sea Scout* airships were built. The Air Service did not wait until they had it perfect; instead, they acted to obtain a system that could be fielded ("aired"?) in a minimum time with a minimum expenditure of resources.



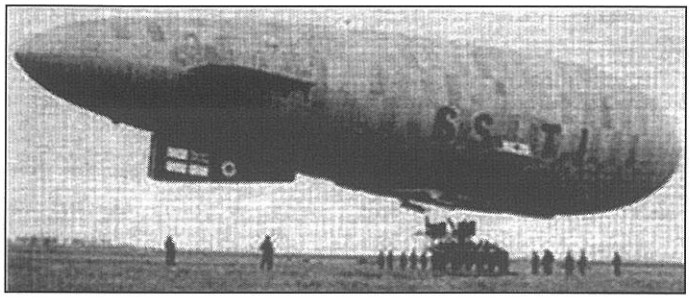
And even as the *Sea Scout* was being designed and entering into production, work was underway for an improved version. After several *Sea Scouts* were built and were in use, operational experience indicated that a specifically designed car would be an advantage and such a car was designed with a pusher propeller. The car was designed to float like a boat and water landings were not an infrequent occurrence. The engine was a 75 hp *Rolls-Royce* and a maximum speed of 56 miles per hour could be attained. Seventy-one of these 70,500 cubic feet airships, designated as *Sea Scout Zero* (SSZ) (above), were built. This model had a crew of three and a flight duration of 12 hours at a velocity of 48 mph.

The *SS* airships were sometimes towed from the coast to their operating area by naval vessels in order to save fuel and increase the operating range. New bases were literally cut out of forested plains and hangars, when built, were constructed out of wood and just large enough to hold one airship. These small "basettes" contained just enough facilities for routine maintenance and minor repair. In South-East England alone, there were 81 of these small air bases. For more difficult tasks, the airships were flown to a larger base. One of the advantages of a non-rigid airship was that it could be deflated, then stored or moved. This was also a positive factor in recovering (and re-using) airships that had been involved in an accident.

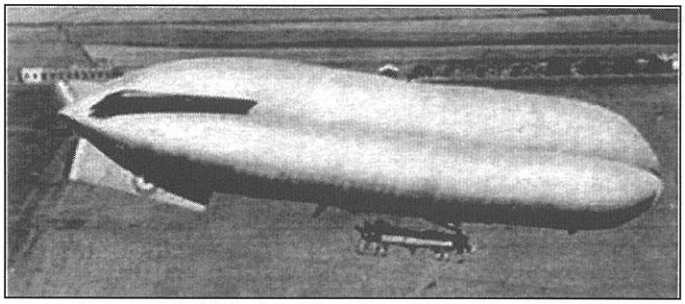


Later, larger versions of the *Sea Scout* had 100,000 cubic foot gasbags and twin *Rolls Royce* engines. Fourteen *Sea*

Scout Twin airships (*SST*) (below) were produced, three of which were purchased by the US Navy.



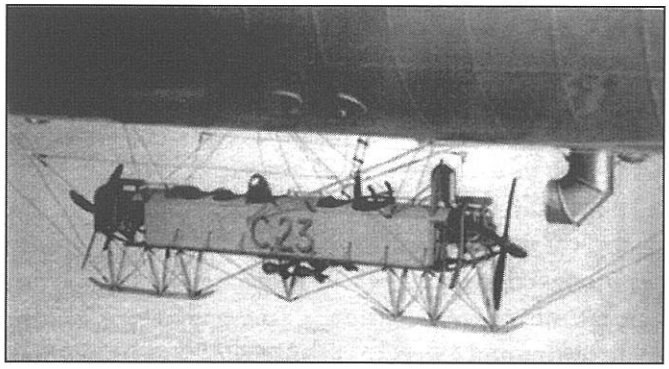
The *SST* used a 100,000 cubic feet envelope, larger than any of the other SS class types, and was equipped with a streamlined and waterproofed car that could accommodate a crew of five. Two 100 hp *Sunbeam* or 75 hp *Rolls-Royce Hawk* engines were each mounted on a gantry either side of the car, and drove 9-foot diameter four-bladed propellers in a pusher configuration. At 57 mph, the *SST*s had a greater top speed than all other *SS class* types, had the highest useful lift, and could stay airborne for up to two days. They were also cheaper to produce and easier to handle than the later *C-Star class* airships. Experiments involving *SST*s were carried out at the end of the war; one notable example being *SSE.3* (*SS Experimental*) that had an envelope design known as shape "U.271", the shape from which the hulls of both the *R.100* and *R.101* rigid airships were derived. The progression from *Sea Scout*, to *Sea Scout Zero*, to *Sea Scout Twin*, to *Coastal*, to *Coastal Star* and, finally, to the *North Sea class* ensured that lessons learned were applied and that advantage was taken in improvements in the fast-changing world of lighter-than-air vehicles.



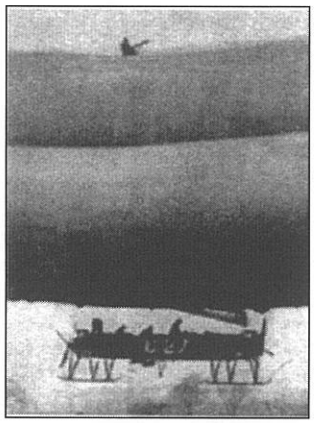
The next progression was an even larger, 170,000 cubic foot, twin engine *Coastal class* airship with a crew of four. The *Coastal* (above) had flight duration of 11 hours at 42 miles per hour. At cruise speed, 31½ mph, endurance was nearly 16 hours.

The envelope had a tri-lobe shape in which the two lower lobes were situated side-by-side, and the third was positioned centrally above them. On all previous classes, patches glued and sewn to the envelope were used to attach the cables that supported the gondola as well as the ground handling lines. The *SS* cars had to be suspended at a considerable distance below the envelope. On the *Coastal* airships, the principal load-bearing cables were attached inside the lower lobes of the envelope. This permitted the car to be slung closer to the bottom of the envelope, thereby reducing the overall height of the airship. The use of internal suspension cables on the *Coastal class* airships was a first for the United Kingdom.

Ten main internally mounted suspensions were incorporated in the *Coastal* envelope, of which seven supported the weight of the gondola, and the remaining three took the guys that allowed the 196 foot-long airships to be handled on the ground. Four ballonets, two in each of the two lower lobes, were used to maintain the envelope's shape and pressure. These were kept inflated by a metal air scoop mounted in the slipstream of the forward propeller on earlier production models and at the rear on later versions. Three tail fins were used. The two upper ones were mounted in a shallow V-tail configuration carrying the elevators, while the single vertical fin below the envelope incorporated a rudder.



The first *Coastal Class* (*C-Class*) airship was made using the envelope from an earlier *Astra-Torres* airship and a gondola built using the front sections of two *Avro* seaplane fuselages joined back-to-back to provide one pusher and one tractor propeller. No landing gear was fitted, apart from two wooden skids at either end of the gondola. These also served as a protection for the propellers. A 1.5 horsepower *ABC* engine was mounted in the gondola of the *Coastal* airships. This drove a dynamo to power the radio and, if needed, an auxiliary ballonet blower. This was the first use of an auxiliary blower for the ballonets.



The armament for the Coastal airships usually consisted of two machine guns mounted on the gondola and a third gun on the top of the envelope to assist in defence against attacking aircraft. The top gun mount was reached by climbing up a rope or wooden ladder inside a tube running up inside the hydrogen-filled envelope (right).

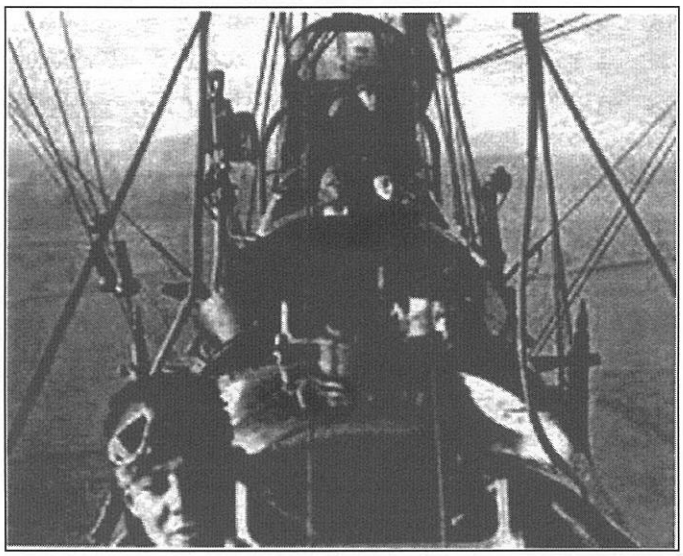
The United Kingdom airships had to rely on visual sightings of German submarines inasmuch as no equipment (such as MAD or sonar) existed. It was sometimes possible to make out the wake of a submerged submarine's periscope poking above the surface, or even the faint outline of the submarine itself if it was running just below the surface. The more reliable method was to search for a light oil slick on the surface that came from external devices on the submarine. The airship crew would follow this trail until they reached the end of the slick, where it could be assumed the *U-Boat* was. When a submarine attacked a surface ship, the release of air from the firing of the torpedo and wake of the torpedo would betray the submarine's position.

It is ironic that although synchronization between the airships and the surface ships was high, in the early part of the war, coordination between airship crews was almost non-existent. At most of the airship bases, two or three airships operated almost independently of the airships at other bases. There was minimal management of operating assignments and practically no sharing of lessons learned. It was not until the latter half of the war that Wing Staffs were developed and the airships began to operate as one organization.

In April 1917, the United Kingdom started using the convoy system, where all ships entering the danger zones were collected at appointed rendezvous points and escorted by destroyers and patrol boats. The airship was singularly suitable to assist in these operations. With the ability to reduce speed to whatever was required, the airship could maintain a position ahead or abeam of the convoy, as necessary, and from its altitude was able to maintain a lookout for a far greater distance than was possible from the bridge of a destroyer. The airship could also sweep the surface ahead of the convoy for mines and warn the surface ships by radio or Aldis lamp of the presence of submarines or mines.

Thanks to the number and location of airship base stations, it was possible for a convoy to be escorted through the entire Channel. The main shipping routes on the East Coast and the Irish Sea were also under constant observation. The Mail steamers between England and Ireland and transports between England and France were always escorted whenever flying conditions permitted.

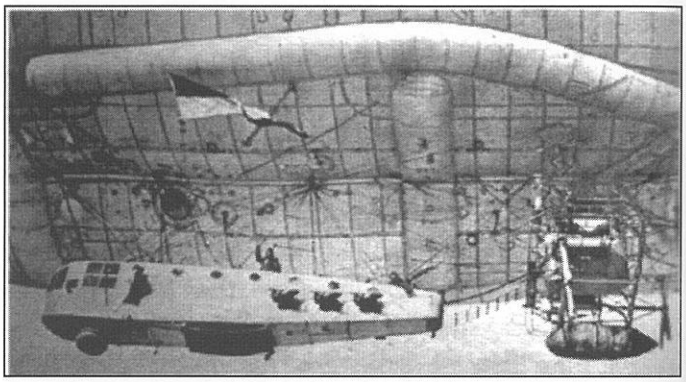
The [*Coastal*] *C-9* airship had one confirmed and three probable "kills" during its long career. She entered service in June 1916 and was struck off on 14 September 1918, after completing 3,720 hours of flying, covering 68,200 miles. It was claimed that in her 805 days of service she had never missed an assigned patrol. In July 1917 *C-24* set a new world record for airborne endurance when she mounted a patrol that lasted for 24 hours, 15 minutes.



In 1918, an improvement in the *Coastal class* was launched with the *Coastal Star* (*C**) that had a volume of 210,000 cubic feet and with two engines - a 260 horsepower *Fiat* and a 110 horsepower *Berliet-Ford*. The *C** (photo, opening this article) had a three-lobed envelope, like the *Astra-Torres* designs. Four ballonets were fitted with two in each of the two lower lobes. These were kept inflated by a metal air scoop mounted in the slipstream of the forward propeller on earlier models. However, this location interfered with the vision field of the pilot, so the air scoop was relocated to a position aft of the rear engine propeller on later versions. Three tail fins were used. The two upper ones, carrying the elevators, were mounted in a shallow Vee configuration while the single vertical fin below the envelope incorporated the rudder. Both the *Coastal* and the *C** airships were built by the Royal Aircraft Factory under the authority of the British Admiralty.

Late in the War, a class of larger airships was designed and built for North Sea operations where travel distances between the base and the operating area was greater. In addition, it was desired to increase the size of the bombs that were carried from 65 pounds and 110 pounds to at least 230 pounds. *The North Sea* (*NS*) airships were almost twice the size of the *Coastal* and *C** airships and carried a crew of ten. The increase in volume provided disposable lift that was more than six times greater than the *Sea Scout*. Like the *Coastal* and *C**, the *NS* had a three-lobed envelope and internal suspensions. Because of their increased size, the *North Sea* airships could carry extra fuel which permitted flights of a longer duration, e.g., 24 hours at speeds of up to 60 knots. The larger size also provided space for a relief crew on the long endurance flights.

The operation of a *North Sea* airship was similar to that of a surface ship. The crew consisted of a Captain and a second pilot, a coxswain and a second coxswain, two engineers, two wireless operators and two air gunners. The Captain was in charge of the airship and the second pilot maintained the height of the airship with the elevator wheel, controlled the gas pressure inside the envelope and did the navigation. The coxswain was in charge of the enlisted crew and the rigging of the airship. The first or second coxswain steered the airship with the rudder wheel. The engineers manipulated the engines to obtain the number of revolutions ordered by the Captain on the engine room telegraph.



The two 250 hp *Rolls-Royce* engines on the *North Sea* airships provided an increase in reliability over the engines on the smaller craft. Historically, the engines on all of the airships were prone to failure, regardless of the type used. This was mainly due to the extended duration of the patrols, which could reach 20 hours in length. The engines were run at virtually full speed all this time, leading to many units simply wearing out, and RNAS station maintenance crews became skilled at rapidly overhauling the engines.

For escort duties involving long flying hours, the *Coastal* and *C** types were particularly suitable and, at a later date, the *North Sea* airships could accompany a convoy for the entire length of Scotland.

The airships constructed during the war includes 60 *Sea Scouts*. 71 *Sea Scout Zeros*, 14 *Sea Scout Twins*, 35 *Coastals*, 10 *Coastal Stars* and 14 *North Seas* for a total of 204 airships. As an offer of proof that the United Kingdom airship program was successful, no convoy escorted by a United Kingdom airship was attacked by a German submarine. ♣

AN AUSSIE IN THE RNAS (Part 2)

The Wartime Experiences of Sir Lionel Hooke

by Eric Watson

Found online by Rob Knotts in The Australian Society of World War 1 Aero Historians Inc. *The 1418 Journal (1975-76)*
(www.ww1aero.org.au/shop/index.php?_a=product&productId=35&product_id=35)

As there were no landmarks on the ocean, or stars to sight during daylight hours, most of our navigation was done by dead reckoning. This kept us on the alert, particularly when engaged in escorting a convoy that was constantly zig-zagging about a mean course. Furthermore, we had to make allowance for all of the fussing about that we had to do, so you can appreciate that, although our task was sometimes tiring, it was never dull.

I had a little trick that I often employed to cut down on a lot of navigational work. Early in an escort patrol, I would signal each of the ships in the convoy and ask them to indicate their exact position. There were often some wide discrepancies between these, but we always managed to find one or two ships with navigators who were on the ball! Before we parted company with the convoy, I would simply signal one of these reliable ships and again "check" her position, then use the information obtained for plotting our course back to base. This may have been cheating a bit but it saved me an awful lot of work and always proved effective!

During my term of service I commanded both *S.S. Zero* and *Coastal class* airships, but cannot recall now whether or not I ever flew in any of the *C star class*. As the *S.S. Zero* cost only about one-third of the *Coastal* to build and operate, they were constructed and used in considerably larger numbers. Each *S.S. Zero* carried a crew of three - the pilot, who controlled the ship from the central cockpit, the signaller/wireless operator, who sat forward of him and the mechanic, who occupied the aft cockpit.

Most *S.S. Zero*s were powered by a *Rolls Royce Hawk* aero engine, mounted on sturdy bearers above the rear decking of the control car. This was an extremely reliable power unit and I cannot recall ever having any serious trouble with an engine of this type. Unlike the larger *Coastals*, the engine was not readily accessible during flight, so there wasn't a great deal that could be done in the way of running repairs. In the event of a complete engine failure, it was considered best to radio for assistance and drop a drogue type sea-anchor in order to hold your position against the drift of the prevailing wind. I recall one unfortunate incident of this kind when the airship commander called up a nearby destroyer to obtain a tow back to his base. In manoeuvring to pick up the tow-line, the destroyer approached him on the lee side and the airship was blown over the top of the ship's funnels - causing it to explode and become a total loss.

If we lost engine power over land it was possible to make an emergency descent by releasing the buoyant hydrogen gas through a ripping panel in the airship's envelope. This procedure was not adopted when flying over water because of the obvious danger of the envelope falling on top of the control-car. There was also a twin-engined version of the *S.S. Zero* which, if my memory serves me correctly, was developed at Mullion by an Engineering Officer named Leeds. We called it the "*Mullion Twin*" but I believe that it later became more generally known as the *S.S. Twin*.

There weren't a great number of them constructed and the one at Mullion never got into regular service because of numerous problems they had with it. On one occasion the exhaust manifold came adrift and was thrown, by the propeller, up into the envelope, causing considerable damage.

The *Coastal* and *C Star class* airships were usually commanded by the more experienced senior pilots. They were considerably larger and much more comfortable than the *S.S. Zeros*. The *Coastals* usually had a 180 HP *Beardmore* or *Green* engine at the front of the control car and a 350 HP *Sunbeam* engine astern. Some of them were fitted with *Rolls Royce* engines instead of the *Sunbeams*, while a few of the earlier types had air-cooled *Renault* engines, but these were found to be rather unreliable.

Unlike the *S.S. Zero*, in which you had to do all your own flying, the C.O. of a *Coastal* type had a coxswain in his crew to attend to the actual steering and control of the airship. This was most advantageous when making a landing, because it freed him to give his full attention to the job and also enabled him to relay appropriate signals to the ground handling party.

Each *Coastal class* airship carried a crew of five, comprised of the Commanding Officer, Navigator, Coxswain, Mechanic and Wireless Operator. As far as I can recall, the wireless operator sat at the front of the control car, with the navigator immediately behind him. Even though we had two pilots on board, the flying controls were not duplicated and it was therefore necessary, when changing places at the controls, to climb out of the cockpit and walk along the handling rails which were mounted outboard of the control car.

Some of the earlier *Coastals* had a machine gun mounted on top of the envelope as a means of self-protection against enemy air attack. This was reached by climbing through a tunnel which ran vertically up through the envelope itself. The idea was abandoned on later models, which was a great pity because I found it to be an excellent spot for making navigational readings with the sextant. Such readings were most difficult to make from the control car because the envelope usually masked off our direct view of the sun and we were then forced to rely upon dead reckoning for our navigation. When it was possible to use the sextant I would take horizontal angle fixes from known coastal features, as I found this method to be more reliable than using a compass to determine our position and ground speed.

Communications within the control car were made by means of speaking tubes - most necessary because of the deafening noise of the engines. The wireless operator used radiotelegraphy for external communications. Even if radio-telephony had been available then, I doubt whether it would have been of much use, with so much noise going on in close proximity to the operator. I believe there was a direction-finding radio installation at the Lizard but, as that technique was far from fully developed at the time, we made very little use of it and relied upon the more conventional methods of navigation to establish our bearings.

The mechanic's duties involved keeping a careful watch on the engine oil pressure, petrol consumption, water temperature etc. He was responsible for advising the commander on engine performance, petrol reserves and the like. He could change spark-plugs and undertake minor repairs whilst in flight, but there were definite limits to the nature of the repairs that could be undertaken once we were airborne. The mechanic, incidentally, doubled as the machine gunner and he also operated the little 3½ HP *A.B.C. twin-cylinder* engine that drove the blower unit of the air compressor for the ballonets. Normally the ballonets were force-fed with air

ducted from the slipstream of the after engine, so this small auxiliary unit was only brought into operation when the main after engine was shut down.

It was quite a common practice to shut down the after engine when we were engaged on lengthy slow-speed patrols, such as convoy escort work. This could be restarted in flight by means of a hand-cranked "ML" magneto. The *Sunbeam* 350 HP engine was fitted with a compressed air starter and we usually managed to get three or four starts from each compressed air cylinder. Both these methods of starting up were also employed when on the ground, as those high compression engines would have been extremely difficult to start by hand-swinging the propeller.

Coastal class airships could be flown about 200 lbs. "heavy" and landed at least 200 lbs. "light" by dynamic control with the engines. We always left on a patrol about 200 lbs. heavy because we carried the maximum patrol load and knew that our static lift capability would improve once we gained sufficient altitude for the gas in the envelope to fully expand. The only risk attendant to this procedure was that of total engine failure before gaining a safe altitude. It must be understood, too, that an airship cannot actually hover in still air but must always maintain some forward way to provide steering control and dynamic lift for height control.

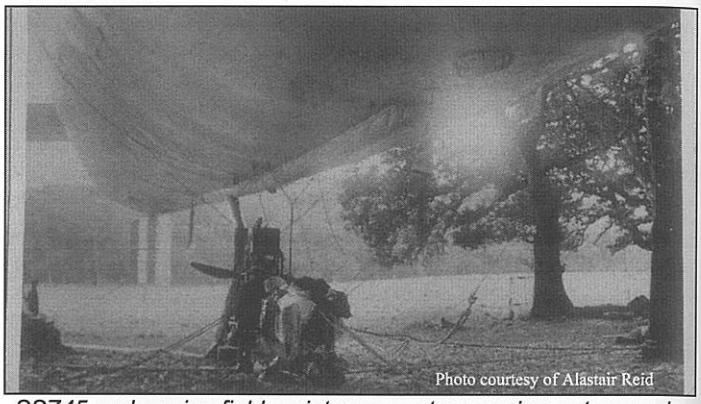
Another point that few people realise is that an airship could climb at a much faster rate than any of the heavier-than-air machines of that time. By dropping ballast it was possible to ascend at a most alarming speed, but this sort of thing was not done except in an emergency because one always had to keep in mind that, sooner or later, you had to get down again!

Being relatively smaller in size, the *S.S. Zero* airships were also more manoeuvrable than the *Coastal class* ships. This fact was particularly noticeable when flying over land masses where unstable air conditions were more often encountered. The big *Coastals* were much slower at answering the helm, so one always had to avoid getting too close to anything that was likely to endanger the safety of the ship.

The *S.S. Zeros* were fitted with external rigging lines, attached to the envelope by "Eta" patches, whereas the rigging of the *Coastals* was of the *Astra-Torres* type, inside the envelope itself. This rigging was carefully checked over each day by the riggers to ensure that it was always in first class condition. Before every patrol, each of the airships was subjected to a most thorough inspection by the ground crew. In addition to checking the rigging and the envelope, the spark-plugs were removed, cleaned and reset and the hydrogen lifting gas was topped up to normal capacity. This hydrogen was manufactured in the gas production plant at Mullion and transported to the sub-stations in high-pressure cylinders. Large banks of these cylinders were required to inflate the airships, the hydrogen being piped into the envelope through a pressure reduction valve. Naturally, considerable precautions were taken to ensure that all nozzles and fittings were scrupulously clean, as a safeguard against the high risk of fire and explosion.

At fairly regular intervals a rigger went over the entire envelope of each ship to inspect it for gas leaks. He also used a device, called a *Schilling Meter*, to check the purity of the lifting gas. As you may know, 100% pure hydrogen is not explosive, but once the purity level falls below about 98% it becomes jolly dangerous stuff. Whenever the purity of the hydrogen was found to have dropped below a safe level the airship was completely deflated and refilled with fresh, pure hydrogen.

I remember a dreadful accident occurring at the airship station near Milford during the war. Early one morning, one of the wireless operators went into the hangar, containing two *Coastals* and an *S.S. Zero*, to check over his equipment before going out on patrol. Apparently one of the airships had developed a very bad gas leak during the night and a spark from his Morse key set off a tremendous explosion which destroyed all three airships and demolished the hangar. I cannot recall how many lives were lost, but the death toll must have been high because quite a number of the maintenance crew would be in the hangar at that time of the morning. Shortly afterwards I flew over the station and was appalled by the devastation that had resulted. A rather terse signal was sent from Naval Headquarters that morning. It simply stated "*No flying from Milford today.*"



SSZ45 undergoing field maintenance at a mooring-out ground

In normal circumstances, the airship could be deflated by means of a hand-operated valve, mounted in the top of the envelope. As I have previously mentioned a ripping panel was also provided for emergency use. A great deal of attention had to be given, at all times, to the gas pressure within the envelope as this was constantly expanding and contracting in relation to the external air pressure and temperature. Prevailing weather conditions also had their effect upon the gas pressure, both when the airship was on the ground and flying at some altitude. The warmth of the sun, shining upon the vast expanse of the ship's envelope, caused considerable expansion of the hydrogen which, in turn, affected the internal gas pressure.

Despite all of these complexities, it was considered a most dreadful offence to valve off gas unnecessarily. However, we often had no alternative but to do so in order to remain at optimum patrol height, or when making a landing in a very light condition. Naturally, we would valve air from the ballonets in an effort to achieve the desired result, but this procedure was rarely found to be sufficiently effective.

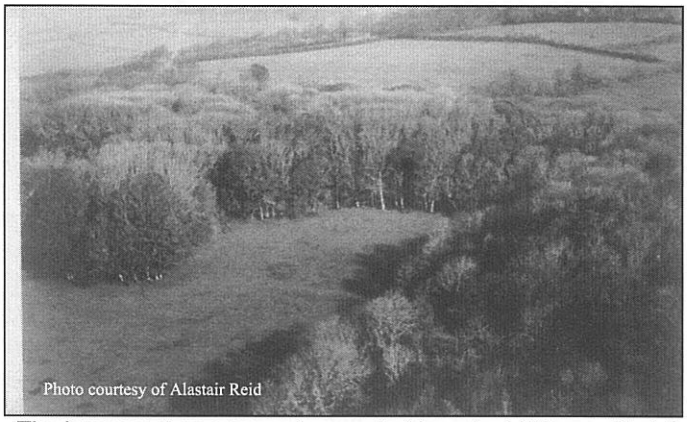
Landing an airship required considerable concentration by the commander and a well coordinated ground handling party. In calm conditions the *S.S. Zeros* could be hauled down by a few strong men, but the big Coastals were usually hauled down with the aid of a mechanical winch. A ground crew of at least twelve (and preferably more) men was needed to manoeuvre them safely on the ground. The landing approach had to be made into wind, so as to reduce the way on the ship. When at about 200 feet, landing ropes were dropped to the landing party and the airship gradually hauled down until it was possible to "walk" it to its mooring spot, or into the hangar. During this operation a number of side-ropes were also used to maintain lateral stability of the ship.

One of the hazards of a light landing was the possibility that members of the ground crew could be carried aloft if the ship suddenly rose into the air again. It was, therefore, imperative for all members of the ground crew to keep a sharp eye on the C.P.O. in charge. Every man followed the rule that, if he could not see anyone else holding on, he immediately released his own hold on the landing rope. This is just one of

the reasons why it was important to have properly trained and experienced men in the ground handling parties.

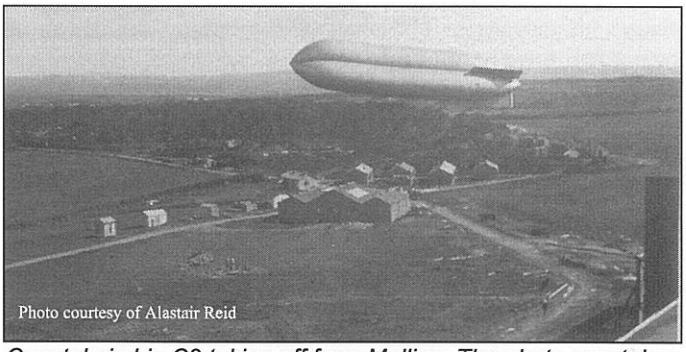
Harking back, for a moment, to my training days at Cranwell, I remember one of our instructors always made a great issue of the safety precautions necessary to avoid being carried aloft. Strangely enough, he was later killed when he failed to observe these precautions himself and fell from a considerable height.

Because of our lengthy patrols we sometimes had to make a landing after dark. This was not such a difficult operation at Mullion as, once you had safely negotiated the steep cliffs on shore, there was clear, level country for landing. However, at Bude things were a bit trickier because of the trees. Aldis lamps were put to good use, both for signalling to and from the ground and for illuminating the landing area.



The 'proposed mooring out ground at Langford Hill near Bude'

At Bude we used the three-point system of mooring the airship, with guy-ropes anchored by sandbags. This was a satisfactory method provided that sufficient care was taken to ensure the keel of the control car remained in firm contact with the ground by placing plenty of weights within the car itself. Otherwise ground winds could buffet the car against the ground and cause considerable structural damage. It was also important to see that the nose of the ship was kept well down to guard against up-draughts getting beneath it and placing undue strain on the mooring ropes and anchors.



Coastal airship C9 taking off from Mullion. The photo was taken from the top of No1 shed, with the MT (motor transport) section and ratings quarters in the background.

So far as I can recall, only the *S.S Zeros* were moored in this manner. At Mullion, where we had both *S.S. Zeros* and *Coastals*, all of the airships were housed in hangars, which were double-ended. This enabled the ships to be taken in and out without the risk of structural damage caused by adverse winds. End screens were also fitted to the hangars to deflect any eddies or side-winds, as these could be particularly dangerous at the critical moments when the ships were entering or leaving the sheds. A sudden gust of wind from one side could easily blow the airship against the edge of the hangar door and cause severe damage.

Although most airships had an operational ceiling of around 10,000 feet, we rarely flew at heights much above 2,000 feet, as this was the most favourable height for both surface and sub-surface visibility. The air temperature at this low altitude was not terribly cold, but all airship crews were fitted out with knee-length jackets, fleece-lined leather trousers, helmets and gloves. Many of the crews made small ovens, heated by the engine exhaust, which they used to warm up food and coffee while on patrol. These "home comforts" were most welcome - particularly during the long winter patrols.

We usually "stoked up" with a hearty breakfast before leaving the base and took enough food with us for at least one meal while we were out on patrol. Regardless of the time that we arrived back in the evening, we could always be sure of getting a good square meal in the mess - although the cook scowled a bit when we occasionally returned as late as 10 p.m.

No doubt you have wondered about how we attended to the human "necessities" during those long patrol flights. "Minor" jobs presented no difficulties as the control car was equipped with a pipe system for such purposes. It was, of course, important for us to watch our diet carefully and avoid any food that might give us stomach trouble - particularly cheese. However, when nature called, we simply hopped over the side of the control car and hung from the handling rails in mid-air. Practical, if not very elegant!

I hope you will forgive me if I tell of a somewhat amusing incident which happened when we were on patrol in one of the *Coastal class* airships. I had spotted a large steamer in the distance and flew over to identify and inspect it. It turned out to be a passenger liner, so I dropped down to about 300 feet and steered a circular course right around it. As usual, most of the passengers rushed out on deck to look at us, but I took little notice of this as we always attracted a great deal of interest and curiosity. Suddenly I became aware of someone yelling at me from behind and when I turned around I came in for some good-natured abuse from my First Officer. Unbeknown to me, he had been engaged in attending to a "call of nature" which, thanks to my skilled piloting, had been closely observed by everyone on board that ship!

For our efforts, we airship commanders received Risk Pay of 8/- per day, irrespective of the number of hours flown. This was, of course, additional to our normal rates of pay. There was no such thing as Flying Pay in the R.N.A.S. and our Risk Pay was stopped after about one week of non-operational duty, so we were on short money whenever we went on leave for more than a few days. Navigators got about 4/-per day Risk Pay and the other crew members proportionally less - even though they took exactly the same risks as we did!

Anyway, to get back to my own personal story - after serving for some time at Bude, I was posted to Mullion and it was from there that I made my last patrol of the war, in September of 1918. I was in command of an *S.S. Zero*, carrying out a routine patrol in the vicinity of the Lizard. We located a mine and I called up one of the mine sweepers operating nearby, to dispose of it by shell-fire. I dropped a marker buoy to assist them in locating the mine and commenced to circle around the spot at a height of about 400 feet. There was a fair amount of swell on the surface of the water that day and this probably caused an unexpected elevation of the sweeper's six-pounder gun just as they fired off a round at the mine. The shell scored a bulls-eye alright, but not on the mine! It passed, instead, through the envelope of my airship and, as a result of the rapid deflation of the envelope, we crashed quite heavily into the sea - fortunately without catching fire in the process.

I was injured in the crash and it seemed an eternity before we were picked up by the sweeper's crew. We were eventually landed back at the Lizard and I was taken off to a hospital in Exeter, where I subsequently contracted pneumonia. So I was destined to spend the last few weeks of hostilities languishing in a hospital bed.

By the time I got out of hospital the Armistice had been signed and I was sent down to the Scilly Isles to supervise the cleaning up of a partly-constructed aerodrome near St. Marys. After completing this task I stayed on in England for a short time, awaiting my repatriation to Australia. I eventually got passage aboard an ex-German ship, the *S.S. Helvan*, and shared a cabin with "Bunny" Hammond and a chap named Gates, both of whom were also being repatriated. It was normal procedure, at that time, to set the official discharge date at 8 weeks from the date of departure from England; this being the usual time taken for the voyage to Australia. In our case, however, the ship broke down and it took nearly twelve weeks to get back home. Consequently, I became a civilian once again while we were still on the high seas.

I settled back into civilian life fairly quickly and rejoined A.W.A., remaining with the company for the past fifty odd years. I was appointed the Melbourne Manager and subsequently promoted to Assistant General Manager. In 1962 I was elected Chairman of A.W.A. and have retained that position ever since. (See postscript.)

I thought that I had permanently severed my association with lighter-than-air flying until, some years after the war - around 1925 I think - I received a phone call from the (then) Director of Civil Aviation, Colonel Brinsmead. Having no L.T.A. experts on his staff, he rang me to ask if I would do him a favour by investigating a report concerning an "airship" at Mascot Aerodrome. If I considered the thing to be unworthy, or the pilot incapable of handling it safely, I had his verbal authority to "ground" both of them. I arrived out there to discover that the "airship" was, in fact, a kite balloon which the "pilot" proposed to fly as a dirigible. Just how he intended to accomplish such an amazing feat, I have no idea! After speaking with him it became quite obvious that he did not know the first thing about lighter-than-air flying and so I exercised my temporary authority and grounded both him and his "airship" forthwith.

On a final note, you might be interested to know that, during World War II, some serious consideration was given to the building of a fleet of small airships, similar to the *S.S. Zeros*, for patrol work in Australian coastal waters. This scheme did not eventuate, but I believe that it was a good idea and would have proven successful - as evidenced by the success of the U.S. Navy Blimps around the American coastline. ♣

POSTSCRIPT: A few weeks after this interview was recorded, Sir Lionel Hooke suffered a heart-attack and died on 17th February, 1974. Unfortunately, it was not possible for him to examine the transcript or clarify some of the points that I had hoped to discuss with him in more detail. I wish to express my sincere thanks to his son, Mr John Hooke, who has kindly provided additional information and material, necessary for the completion of this article. E.A.W.

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TWO ACCOUNTS OF ZEPPELIN RAIDS

Found in *The Daily Telegraph* and submitted by Arnold Nayler

The Telegraph's coverage of the First World War can be found at: **telegraph.co.uk/news/ww1-archive**

LONDON, TUESDAY APRIL 4, 1916

ZEPPELIN BOMBS ON THE HOMES OF THE POOR

THE FLYING DEATH

The first intimation of approaching danger from Zeppelins reached the inhabitants on the East coast of Scotland shortly after nine o'clock, and all the pre-arranged precautions were promptly taken.

Lights were obscured everywhere, and traffic on the railway and in the streets was suspended. About 11.30 the whirr of propellers overhead was distinctly heard, and recognised even by those who had no previous acquaintance with Zeppelins. The night was beautifully calm. The streets of the towns were thronged with citizens who gazed skywards in a vain attempt to locate the impending danger.

About ten minutes to twelve the first detonation was heard from the direction of the sea, an incendiary bomb igniting a building which blazed up quickly, with the result that the landscape must have been revealed to the Germans. Only one machine apparently participated in the bombardment, and its subsequent movement suggested that in the glare it had determined its location.

Bombs continued to fall in quick succession, and several missed prominent buildings narrowly. A second incendiary bomb fell on the roadway a few yards from a building, and harmlessly burned itself out. Some of the spectators could make out the shape of the Zeppelin like a pencil in the sky flying at a great height.

By 12.30 the attack was over, though the whirring of the motor continued to be heard for some time. The impression formed was that the district was circled at least three times.

Some property was destroyed, but it was mainly of a residential kind, in the working-class districts. Several bombs landed in open spaces, and did no harm beyond tearing up the turf.

With so many persons on the streets it was not surprising that there were casualties from flying debris, and some curious things happened. Broken glass was borne an incredible distance, and one boy who, with two companions, was watching the sky was killed outright, although a very considerable distance from the scene of the explosion.

Several hairbreadth escapes are recorded. The roof fell in on a young girl in bed, and left her unhurt. A bomb also passed through four floors of a tenement without injuring anyone. Another tenement which was seriously damaged had been marked out by the municipality for demolition, and, consequently, was untenanted.

The arrangements of the authorities worked satisfactorily. Special constables and first-aid contingents were at their posts, and the injured were succoured with promptitude. There was no sign of a panic, but a subdued curiosity seemed to actuate the crowds. A commercial hotel of modest dimensions, in the centre of the city, was bombed, and practically every window in the place was smashed to atoms, while the windows in adjoining shops were badly splintered.

In another district a working-class tenement in a court had a marvellous escape. A bomb fell into the court upon practically the only place where it could land without taking life. It smashed the rear part of a laundry, and the concussion destroyed every pane of glass within a radius of 200 yards. A woman running to her window to see what was happening was badly cut by falling glass. ♣

The Daily Telegraph.

LONDON, APRIL, 1916

TWO AIR RAIDS OVER EAST COAST

59 KILLED: 166 INJURED

Friday night's Zeppelin raid on the Eastern Counties and North-East Coast was followed by another visitation of the North-East Coast on Saturday, and up to the present the casualty lists for the two nights are 59 killed and 166 injured.

Against this loss of life has to be set the fact that one of the raiders was brought down by gunfire. The crippled Zeppelin, the *L15*, dropped into the sea off the mouth of the Thames, and the crew surrendered to one of our patrol vessels. The airship was taken in tow, but she subsequently broke in two and sank.

Lieutenant Brandon, R.F.C., was the hero of a thrilling exploit. Ascending in his aeroplane to a height of 6,000 ft, he saw a Zeppelin 3,000 ft above him. He got over it, and dropped several bombs, three of which he believes took effect. A quarter of an hour later he had another encounter with the raider, and let off two more bombs over her nose. His own machine was hit many times by machine-gun bullets. Whether the Zeppelin he assailed is the one which was found in the water is not known.

Grotesque claims are set out in the official German report of the raid. For instance, the enemy informs the world that bombs were dropped between Tower Bridge and London docks. Apparently the one true statement in the report is that *L15* has not returned.

FLYING OFFICER'S STORY

A vivid story of the last moments of the L15 has been supplied to a special correspondent of the Central News by a young flight lieutenant. "*The atmospheric conditions were ideal for a raid,*" he said. "*There was no wind, the night was fairly clear but dark, and the sea was smooth. We first caught sight of two Zeppelins at nine o'clock. They were flying very rapidly at a height of about 10,000 ft. Three others quickly followed. We signalled the land batteries, and got out of the zone of fire ourselves.*

"*Three of the Zeppelins got a terrible punishment. We saw one distinctly drop its tail, and shoot upwards. One of the ballonettes had caught fire, and the commander, shutting off his light, sent the airship upwards until it disappeared from view.*

"*Then Lieutenant Brandon got over one of the Zeppelins. He dropped several bombs, which did not appear to have any effect, but, making a swift dive downwards, he dropped three more bombs, and believes he smashed the back of the Zeppelin. The commander of the airship, realising his predicament, dropped a little, and though his craft was not working well he managed to get clear of Lieutenant Brandon's fire.*

"*I cannot say for certain whether Ll5 fell into the water, or whether her commander was able to let her down. We immediately signalled to destroyers and patrols, and got down ourselves to within 200 yards of the derelict airship, ready to finish her off with our remaining bombs if occasion demanded. As it was, however, the enemy surrendered when our vessels came up.*"

Lieutenant Brandon, it is understood, is a New Zealander. At the outbreak of war he sacrificed a good position in New Zealand, and came to this country. He received his commission in December last, but only gained his "wings" three weeks ago.

SHELLING THE AIRSHIP

One of the most vivid accounts of how a Zeppelin was hit comes to be furnished through the decision of a family that it would not be so lucky to move into their new home on April 1st. They were moving from one town on the Great Eastern Railway to another. The hour was late for undertaking such an event of domestic importance, but the journey was short, and they started with the hope that by ten o'clock on Friday night they would have arrived in what was to be a new sphere of their life.

Suddenly, when they had halted at a small station all was plunged in darkness. Then followed minutes of waiting, which dragged as if they were hours. They felt hopeless and lost in the midst of an inky blackness which was suddenly pierced by a strange signal. It was probably about a quarter-past nine when three times a patch of light as "*big as a soup-plate*" "*winked*" against the sky and vanished. Faintly a "*humming*" sound from the far distance could be heard.

Slowly it swelled in volume till it seemed to the ear like the noise of an immense boiler overcharged with steam. Just when the nerve strain upon the passengers was becoming intense, unsuspected searchlights rent the gloom with their overpowering beams, and the raider appeared, surrounded by a hurricane of shells. Probably in the darkness it had mistaken its altitude. It may have been groping for landmarks in what it believed was an inoffensive countryside.

IN DESPERATE STRAITS

The head of the marooned family did not talk of it as a "cigar in the sky," but as appearing about a couple of yards or so in length. Then, in a dramatic moment, a shell burst with exceptional brilliance apparently right against the centre of the aircraft. Previously the Germans had been frantically endeavouring to escape from their terrible plight. They had dropped twenty bombs in twenty seconds. The time had come for them to put into operation the manoeuvre by which they had, on the occasion of the last successful raid against Paris, avoided the fury of the French guns. Steadily the nose of the Zeppelin rose in the air, and before the astonished spectators could assure themselves of the evidence of their senses the airship was actually in a vertical position. It was sitting on its rudders when it shot - there is no other word for it - into the darkness of the heavens.

But our men knew of the uses of the additional propeller with which the new Zeppelins are fitted. Jumping-jack tactics did not take them by surprise. Twice the searchlights found the air monster, and twice it was the centre of exploding shells. But, much to the disappointment of eye-witnesses, the airship did not catch fire. There was no grand and terrifying climax, as when the French gunners brought their Zeppelin to earth like a blazing torch. Instead, there was darkness, and the torturing thought that after all the enemy might have escaped. ♣

TERROR ZEPPELIN RAID ON GUILDFORD 100 YEARS AGO

From *The Guildford Dragon News*

www.guildford-dragon.com/2015/10/13/terror-zeppelin-raid-on-guildford-was-100-years-ago-tonight/

One hundred years ago today (October 13) Guildford suffered its 'night of terror' when a German Zeppelin airship circled over the town and dropped twelve bombs, which fell in and around the St Catherine's area. ... With the story now being told once again there is growing interest to have a plaque placed at a suitable location in St Catherine's that records the event and that gives some details of what happened. ... Here's what actually happened and why, republished from David Rose's latest book *Great War Britain Guildford Remembering 1914-18* (published by The History Press at £12.99).

Guildford's most infamous night during the First World War was on Wednesday 13 October 1915 when a Zeppelin airship of Germany's Imperial Navy circled over Guildford dropping twelve bombs on St Catherine's Village and Shalford Park. This was Guildford's night of terror, and one that anyone who witnessed the events would not have forgotten for the rest of their lives.

That afternoon five airships left their German bases at Nordholtz and Hage. Their aim was to fly over the Norfolk coast and attack London from the north. One airship got lost over Norfolk and headed for home, the others continued and dropped bombs in the London area, but in most cases not near their intended targets. The blackout in force across Britain made navigation extremely difficult.

The commander of the *L13* Zeppelin, Heinrich Mathy, was in charge of the whole raid. This experienced and heroic commander and his crew dropped bombs over the site of an anti-aircraft gun near Hatfield in Hertfordshire and then picked up the Thames on their way to attempt to bomb the waterworks at Hampton. It appears that while over Weybridge, Mathy missed a vital bend in the Thames and headed down the River Wey instead, passing places such as Newark and Send.

The *L13* reached Guildford at about 10pm, where it circled for a time then flying off in the direction of Wood Street before returning to Guildford and St Catherine's Village. Once there, a brilliant blue flare was dropped from the airship. At 10.25pm another flare was dropped that also lit up the sky. Then its bombs were released.

The *L13* made off in an easterly direction towards Redhill. It turned towards London again and dropped further bombs on Woolwich Arsenal, mistaking it for the Victoria Docks. Mathy and his crew finally got back to their base the next morning.

The other Zeppelins in the raid dropped their bombs in a variety of locations and caused a good deal of damage. In all they dropped 102 explosive bombs, eighty-seven incendiary bombs, killing seventy-one people and injuring 128. In Croydon alone, fifty-three people died.

It would have been the sound of the airship's droning engines that people in Guildford would have first heard when the *L13* Zeppelin was overhead on that infamous night. Some people may have seen the flares dropped by the Zeppelin's crew – but just about everybody would have heard the bombs exploding. Those who ventured outdoors would certainly have caught a glimpse of the airship. And the following day, many people went to St Catherine's to see what had happened.

Mercifully, no one died, but there was a lot of damage to buildings – such as windows smashed and walls that had collapsed, and the main railway was damaged between the two tunnels. But many people would have been suffering from shock – especially those living in St Catherine's.

The Guildford police constabulary report noted where each bomb fell and the damage done.

- Bomb 1: fell in the garden of Little Croft, Guildown Road. It uprooted a large tree and made a crater three feet deep and twenty feet wide. One hundred and forty-six panes of glass were broken and a garden gate was blown away.
- Bomb 2: fell in a field belonging to Braboeuf Farm. It made a hole three feet deep and ten feet wide.
- Bomb 3: fell in Chestnut Avenue at the rear of Guildown Grange. It made a hole in the roadway three feet deep and eight feet wide. A wall eight feet high and twenty-one feet long was knocked down. Much damage was done to a greenhouse.
- Bomb 4: also fell in Chestnut Avenue, making a hole three feet deep and ten feet in diameter. Thirty yards of garden fencing was blown away.
- Bomb 5: fell in garden of St Catherine's Cottage making a hole three feet deep and twenty feet in diameter. Twenty-two panes of glass were broken in a greenhouse. The roof of the house was badly damaged. At nearby Montague House, seventy-four panes of glass were broken. Blast from this bomb also caused damage to Langton Priory (sixty-two panes of glass), and the *Anchor and Hope* pub where 105 panes of glass were smashed.
- Bomb 6: fell at the up side of the railway line about 120 yards from the chalk tunnel. It made a large hole in the ground and cut pieces out of the rails. A signal post was also damaged.
- Bomb 7: fell in a chicken run belonging to a Mr Hudson of The Beacon. Seventeen fowls were killed.
- Bomb 8: fell at the bottom of the chicken run making a hole about four feet deep and ten feet in diameter. Twenty feet of brick and stone walling were blown away. The gap in the wall beside the towpath of the River Wey can be seen to this day.

Damage done to a wall by the blast of bomb number 8 can still be seen today

- Bomb 9: fell on the east side of the River Wey breaking telephone wires and damaging the riverbank.

- Bomb 10: fell about sixty yards on the same side of the river towards Guildford. It brought down a telephone post and wire and killed a swan.
- Bombs 11 and 12: fell in Shalford Park – then a nine-hole golf course. One fell on the seventh green and the other about fifty yards away, both making large holes. It's believed a fragment of the last bomb struck the shutter of Tollgate Cottage on the Shalford Road.

Telephone inquiries were soon coming through to Guildford from Oxford, Reading and other places asking the whereabouts of the Zeppelin.

At the Royal Surrey County Hospital in Farnham Road all the lights were switched off and there was alarm among the civilian patients, while it was later reported that the soldier patients took the visit of the Zeppelin more philosophically, and even joked about it. A Charles Hodgson who lived at Shamley Green told William Oakley, the then editor of the *Surrey Advertiser*, that no bombs would have been dropped on Guildford had the Zeppelin not been alerted by the 'popguns' firing at it from the Chilworth gunpowder works.

A William Harvey told the *Surrey Advertiser* that the Zeppelin was quite low when it first appeared over the town, but rose rapidly to a great height after it had dropped the first flare. In the brilliant light of the flare he said he could see the windows of the airship and what he believed to be faces looking out.

Such were the reporting restrictions in place at the time, none of Guildford's local newspapers were permitted to report the event – it was the biggest story they had probably had in living memory.

In 1983, the then curator of Guildford Museum, Matthew Alexander, interviewed Ernest Yates, who was born in Guildford in 1906, and who recalled the Zeppelin raid. He said: '*It was a clear moonlit night and I awoke suddenly to the sound of loud, excited voices, some raised in anger, in the road outside our house.*

'*Many families were there clothed in a sketchy fashion, all of them gazing upwards. The cause of all this uproar was the unmistakable shape of a Zeppelin silhouetted in the moonlight like a cigar suspended in space. Its movement appeared slow at such an altitude. Everyone was wondering what might happen, when argument was translated into action. Our next-door neighbour shinned up a lamp-post with the intention of putting out the gaslight. After much puffing and blowing, this burly middle-aged man achieved his object, to the applause of those below.*'

Tom Parsons, a St Catherine's resident, remembers shrapnel from the raid being embedded in the boiler house and potting shed building in the south-east corner of St Catherine's Nursery (where Turnham Close now exists). The shrapnel was still there until the buildings were taken down when Coombs Garage bought it in the 1980s.

A story has passed down the descendants of a Mr Rowlands, who was the landlord of the Anchor and Hope pub. When the raid took place his wife was sitting on the outside toilet. She sat tight as the bombs began to explode until the blast of the fifth bomb, exploding just across the Portsmouth Road, took down the walls of the outhouse leaving the poor woman exposed and terrified!

Blast from what is believed to have been the sixth bomb caused damage to some of the cottages in The Valley breaking tiles and windows. A long-term effect was caused by the collapse of some of the lime plaster ceilings inside several of those cottages.

During the repair work, the collapsed plaster was spread on the shared walkways around the cottages. A former resident, Elsie Oldroyd, used to complain that even after the Second World War her children would walk it into the house when it had been wet outside.

The Chilworth Gunpowder Mills were guarded by a detachment of the 2/5th Battalion of The Queen's (Royal West Surrey) Regiment. Captain James Ness of No. 3 Supernumerary Company of The Queen's wrote to the Commander in Chief, Eastern Command, at Horse Guards in London. '*I report that at 10.05pm last night an airship was heard approaching, and was shortly discerned at a great height approaching from the east and moving directly over the factory. It moved and made a circle over the factory then continued its journey west. The airship returned to the western boundary then turned again west, and shortly afterwards we heard some ten or twelve explosions in the direction of Guildford. The airship again returned to the factory, flew over the western position and disappeared in a south-easterly direction. As soon as the airship was seen, I ordered all lights out at the factory and work ceased. I at once telephoned the Royal Flying Corps at Farnborough. Later on I tried to telephone elsewhere, but found I could not get through, the wires being down between Chilworth and Guildford [having been destroyed by the explosions]. I sent a messenger by bicycle into Guildford and am pleased to be able to report that nobody had been hurt, although a certain amount of material damage was done. Some of the soldiers guarding the gunpowder works fired their rifles at the airship as did the anti-aircraft detachment that was also stationed there.*'

In its official report it seems as if its commander was trying to make out his gunners were unlucky not to have brought the airship down.

Captain James Ness continued: '*Rapid fire was continued until she was obscured. It is thought that she was hit at least once, as a shower of fire was seen near her. We fired 77 rounds and were much handicapped by having no night tracers nor searchlights.*'

A letter written by a Jack Featherstonehaugh of Guildown House two days after the raid, notes that he had just got his mother into bed when the first bomb fell in a garden at the end of his lawn, blowing his windows in.

Evidently, his mother was 'splendid' as the bombs fell and the house rocked. He then filled the bath with water and watched what he thought were two Zeppelins passing over his house. There was only ever one.

He continued his letter explaining where the bombs fell and that his mother then had a 'heart attack' – so he gave her a tablet and '*watched the Zepps on their way home*'.

But why bomb Guildford? It has been suggested that the *L13*'s commander, Heinrich Mathy, knew about the Chilworth Gunpowder Mills and was trying to bomb them.

As previously stated, when the gunners at Chilworth saw the airship that night they opened fire. This would have alerted Mathy and his crew, indicating to them that they were over a target of some importance, and is surely why flares and the twelve bombs were dropped.

However, in his log written shortly after the raid, Mathy reported that he had bombed the waterworks at Hampton on the Thames. It is therefore almost certain that he was completely lost. ♣

The L13's commander Heinrich Mathy

PIECES OF HISTORY

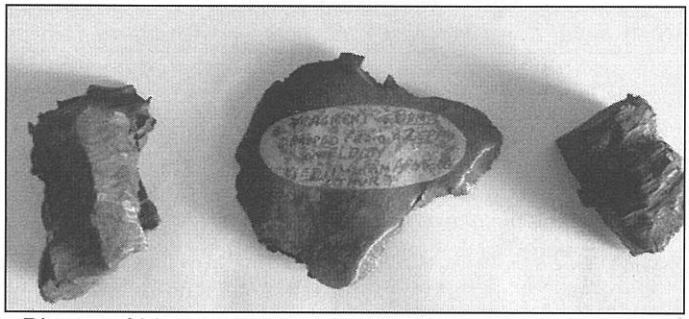
From *The Northern Echo*

www.thenorthernecho.co.uk/history/14413712.Pieces_of_history/?ref=erec

Last week, *Memories* told of death by dirigible – how, a few minutes after midnight on April 6, 1916, a Zeppelin airship came over the villages of the Dene Valley, to the east of Bishop Auckland, and dropped bombs on the civilians below. Partly because of the amateurish nature of the raid and partly because of the rural nature of the Dene Valley, only one person was killed – Robert Moyle, nine, whose family home at 21 Halls Row, Close House, was destroyed.

During the 15-minute raid, the airship dropped 27 bombs, destroying six houses, seriously damaging 13 more and blowing out the windows in another 48 before it passed over Old Eldon at the head of the valley and flew for home.

"*I was fascinated by your story because my brother, Ian, lives in Old Eldon, and a few years ago he was given a few pieces of a bomb from that raid,*" says Geoff Carr of Aycliffe. "*We can't be sure of their provenance, but a handwritten label on one of them looks to have been there for a hundred years – it's almost embedded itself into the metal.*"



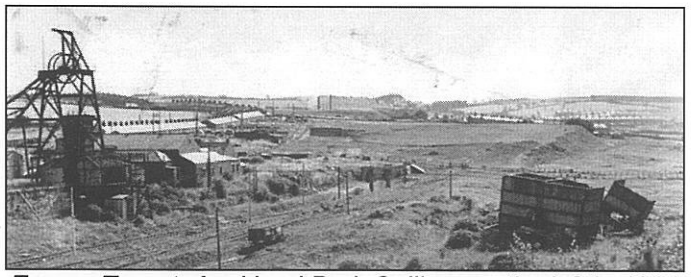
Pieces of history: Fragments of a bomb dropped by the Zeppelin on Old Eldon on the night of April 5-6 1916

The label reads: "*Fragment of bomb dropped from a Zepp on Eldon. Wed 12.20am Apr 5/6 (Thur).*" Whoever wrote it was factually correct: the raid took place on the night of Wednesday, April 5 going into Thursday, April 6.

It is an extraordinary souvenir – a very heavy one, for its size – of an extraordinary night in south Durham's history.

The theory in 1916 was that the Zeppelin was looking to bomb coalmines, and from a couple of thousand feet in the air, the burning pit-heaps would have been visible in a way that the blacked-out houses were not.

The Zeppelin flew over the south of Bishop Auckland as if on a reconnaissance run. The furthest west it got was Railey Fell, which is above the villages of Ramshaw and Evenwood. Coal had been mined on the fell since medieval times – there are records as far back as 1379 and 1383 – and when it came under attack 100 years ago, about 250 men were employed up there.

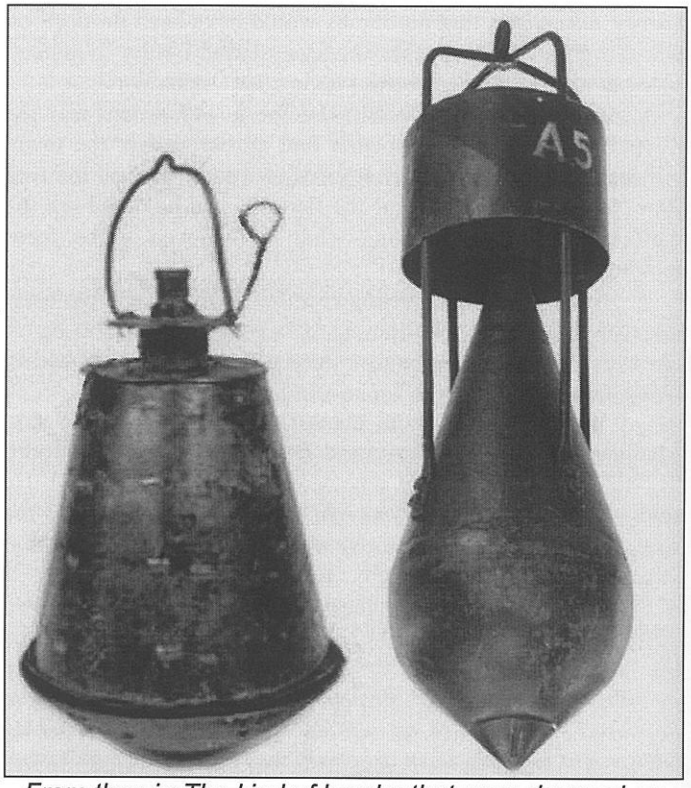


Enemy Target: Auckland Park Colliery on the left in 1961 with the terraces of the Dene Valley in the distance

Because there were no air raid sirens and no telephones in 1916, a policeman on a bicycle was despatched from Bishop Auckland to warn the men of the danger.

However, the Zeppelin turned round over Railey Fell and began its bombing run – passing over the head of the policeman as he pedalled out towards the colliery.

"*Railey Fell colliery was at the north end of Ramshaw,*" says Colin Bennett. "*My mother was eight years old at the time and attended Ramshaw school, and she used to say that the school windows were blown out that night.*"



From the air: The kind of bombs that were dropped on south Durham by the Zeppelin: an incendiary bomb, left, and a high explosive. Picture from Colin Turner of Eldon

After Ramshaw, the Zeppelin's attention was drawn by Randolph Colliery at Evenwood and it dropped 23 bombs, destroying 15 houses and damaging 70 more, before moving eastwards to the Dene Valley, where its target may have been the giant Auckland Park complex.

Colin takes us back to Railey Fell. He says: "*The colliery was owned by Stobarts and consisted of a series of drift mines. It was connected to the rail network by a short spur which ran behind the houses at Ramshaw to the Haggerleases branch. Bricks with the Stobart name on them can still be quite often seen lying in the Gaunless riverbed along with some with the Pease name.*"

"*I have also seen bricks in the river with the name John Hogg impressed in them – Hogg is a West Auckland name but who John Hogg was I have no idea.*"

Can anyone help us out with information about John Hogg, and any more stories from the Zeppelin raid? ♣

Chris Lloyd, Deputy Editor

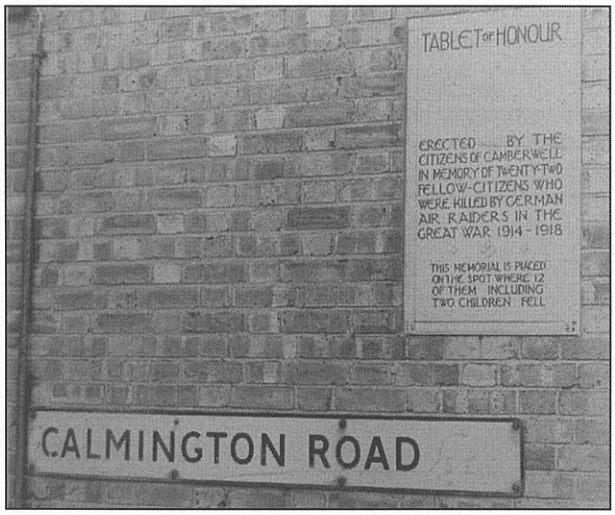
CAMBERWELL'S ZEPPELIN MEMORIAL

By Christine Camplin

Reprinted from Peckham Society News - No.144 Spring 2016

The last Zeppelin raid on London in the First World War took place on the night of 19-20 October 1917. The intended target was Sheffield but heavy winds blew *Navy Zeppelin L45* off course. After bombing Hendon and Piccadilly Circus, it passed over Elephant and Castle and dropped a 300kg (660lb) bomb on Calmington Road at the junction of Albany Road, Camberwell. Three four-storey houses at 101 and 103 Albany Road and 1 Calmington Road were demolished and a further twelve seriously damaged including a fishmonger and a Doctor's Surgery. Despite taking shelter in the cellars, ten people were killed and a further 23 or 24 injured. The victims included four members of the Glass family: mother Emma (53) and children Alice (21), Stephen (20) and Emily (8). *L45* continued south-east, crossed Queens Road, [Peckham] at the junction with Pomeroy Street, and dropped its final bomb on Glenview Road, Hither Green, destroying three houses and killing fifteen more people. This was the last bomb dropped on London by a Zeppelin.

The Borough of Camberwell, which at that date included Peckham and Dulwich, commemorated the event with a memorial stone built into the wall of the building that replaced the one destroyed.

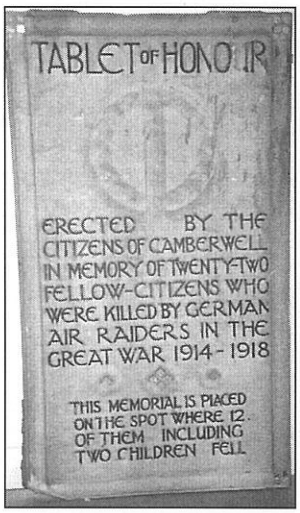


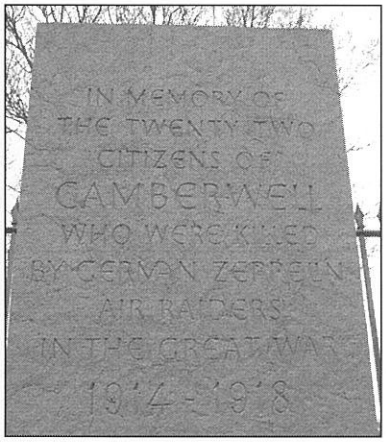
After the Second World War Calmington Road itself disappeared under the new Burgess Park and the plaque was moved to the Southwark Council offices in Chumleigh Gardens. I last saw it there on an open day in July 2003, propped up against an inside wall.

On 11 February this year *Southwark News* featured an article stating that the memorial had gone missing and Stephen Bourne called upon Southwark Council to replace it. Cllr Peter John, Leader of Southwark Council said: '*We are still planning for a rededication of an appropriate memorial, to replace the one moved from Calmington Road, as close as possible to the original location and in time to commemorate the centenary of the bombing in October 2017.*' It would honour the 'twelve' victims and also three local policemen who risked their lives entering the burning buildings to rescue survivors.

A few weeks later on 3 March the newspaper reported that Stephen Bourne had found the memorial standing in a flowerbed in Chumleigh Gardens and implied that the campaign was therefore concluded. However, this is not the original plaque. The original '*was damaged a few years ago during an event in Chumleigh Gardens*' and a replacement was subsequently created. The text on the new plaque states simply: '*In memory of the twenty two citizens of Camberwell who were killed by German Zeppelin air raiders in the Great War 1914-1918*'. As you can seen from the photograph, the original text specifically mentions the Calmington Road raid.

Intriguingly, both plaques contain errors: ten people, not twelve, died at Calmington Road – and this was the only Zeppelin raid on Camberwell; the other victims were killed as a result of bombs dropped from aircraft.



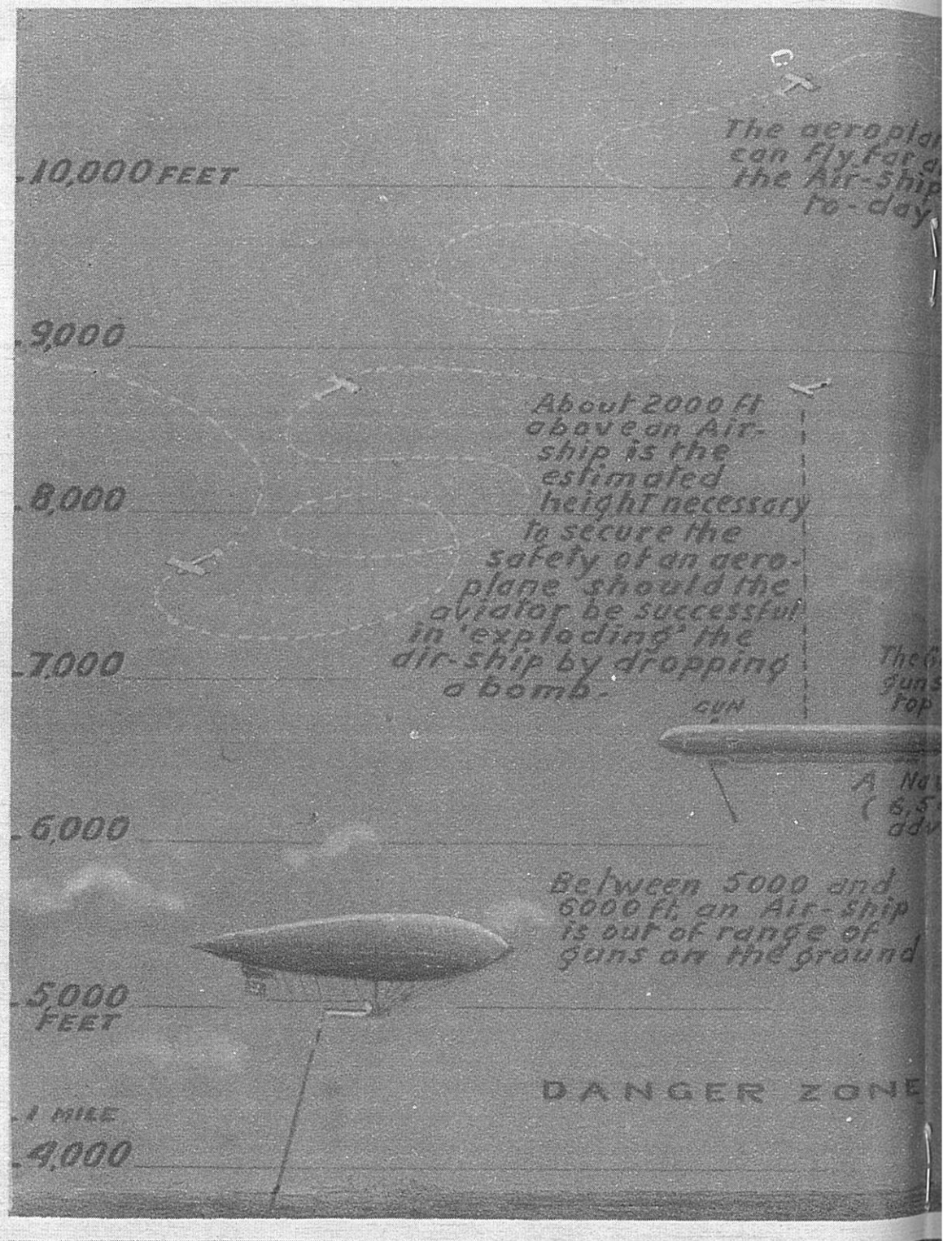


Left - Plaque in 2003
Above – Plaque in 2016

There is a further monument in Camberwell Old Cemetery, unveiled 2 November 1918, which lists 21 names of Camberwell Borough civilians killed in the First World War. The additional five from the Zeppelin raid are: brothers Edwin (3) and Reginald Balls (5), Ivy Makemson Brame (19), Jessie Martin (22) Stephen Skelton (15) and Alfred Ledsham Fowler (25). Stephen Glass and Alfred Fowler were shipmates, home on leave from the patrol boat *HMS P14*.

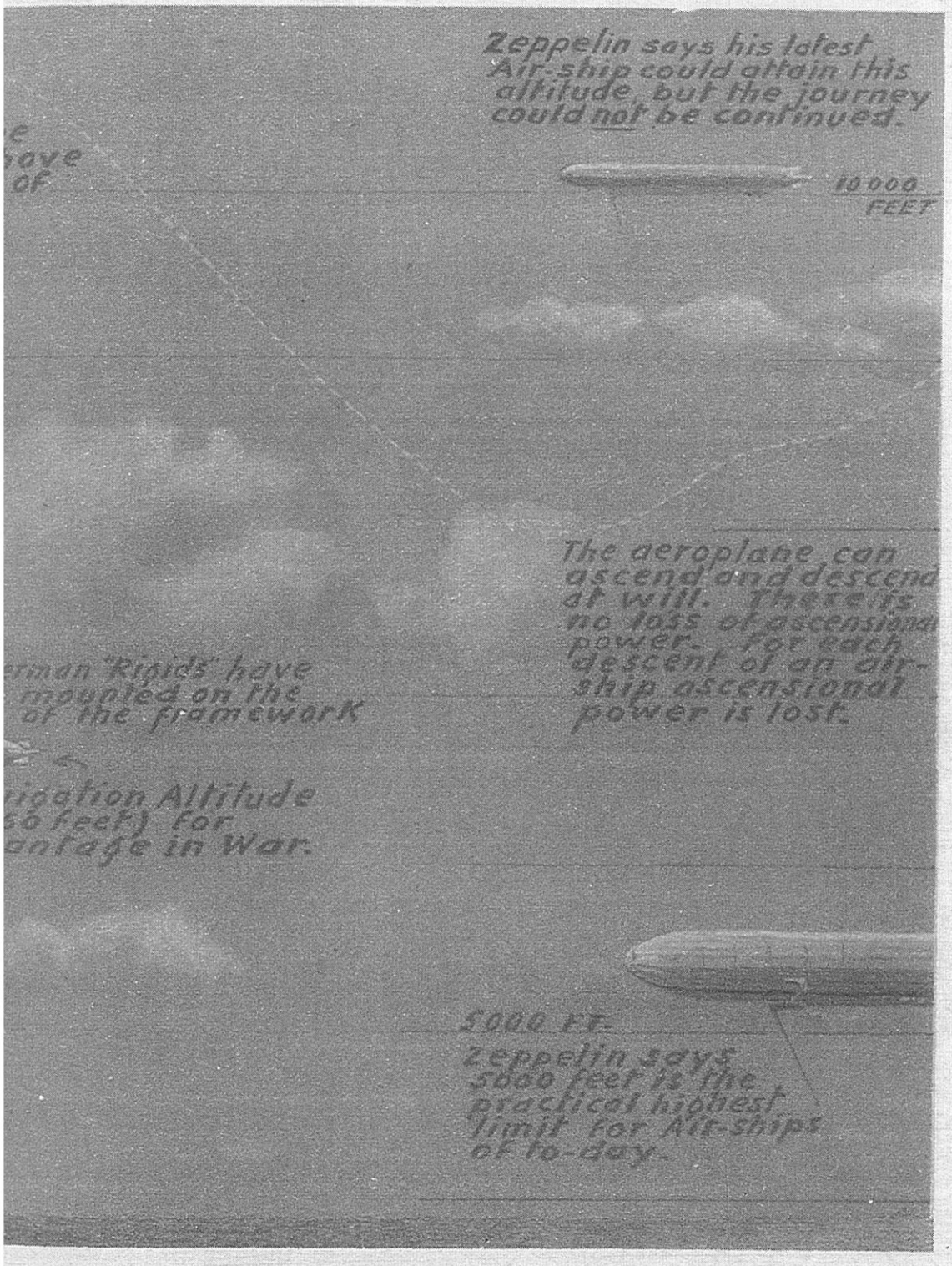
If you know where and when other bombs fell on Camberwell, Dulwich or Peckham during WW1, please do contact the [Peckham Society] editorial team. ♣

Sources:
London 1914-1917: The Zeppelin Menace, Ian Castle, (Osprey Publishing, 2008)
Southwark News, 11 February 2016 (http://bit.ly/PSN144p13)
Southwark News, 3 March 2016 (http://bit.ly/PSNp13a)



THE MENACE OF THE ZEPPELINS: ALTITUDES AT WHICH DIRI

The possibility of Zeppelin raids over this country and over the Fleet at sea has been so much discussed that the question of the conditions attending war operations in the air has become one of great importance. As the above diagram shows, an aeroplane can rise higher than an air-ship, and is not subject to that loss of ascensional power which an air-ship suffers by each descent it makes. The



GIBLES ARE EXPOSED TO GUN-FIRE OR AEROPLANE ATTACK.

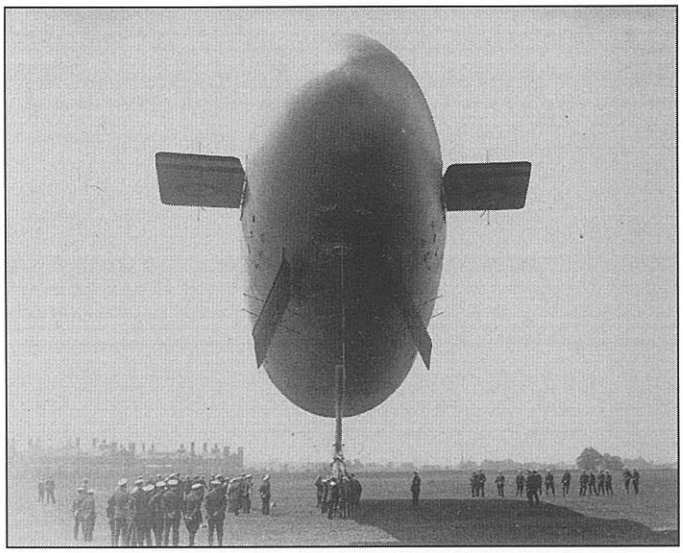
danger zone for air-craft from gun-fire from below is anything up to 5000 feet, but the difficulty of hitting them is considerable. It is generally thought that air-ships could be more successfully attacked by means of aeroplanes dropping bombs on them from above. Some of the Zeppelins have a gun on top to defend themselves against such attack.—[*Drawn by W. B. Robinson.*]

THE CRASH OF *SUBMARINE SCOUT 44*

Compiled by The Editor

In March 2013 the Trust's Curatorial Adviser, Peter Davison, sent me an email message that contained some dramatic pictures of an airship crash. With them he wrote: "*Received these RNAS images ... uncaptioned ... all in one envelope; marked 'SS crash', though the intact vessel looks to be at Wormwood Scrubs. Nothing in 'Battlebags' mentions one hitting a house and the fins appear less than rectangular.*" Intrigued by these and curious to learn more, I followed my usual practice and forwarded the four pictures (below and opposite) to the man who probably knows more than anyone about the Royal Naval Air Service airships of the First World War, Brian Turpin. Brian checked his records and reported back:

"The ship that fits for this one is SS 44, an [Armstrong-Whitworth] SS which was first flown at Wormwood Scrubs on 11th May, 1916. The first photo (below) shows the ship on the airfield with the famous prison in the background.



There are no underslung fuel tanks but it is undoubtedly an AW SS because of the large radiator and design of undercarriage which can be seen in the crash site photos. Only the AW SS ships had water-cooled engines."

Brian added: "*The other photos would seem to show the event which followed a flight on 29th May, 1916. I quote from the official report: On 29th May, one flight. No times given. Capt. Denti, Italian Navy with Lt Baldwin. Instructional flight.*

"After making one complete circle in the air, the airship crashed into a fence and small tree at a considerable speed. Lt Baldwin was tipped out and only sustained bruises; Capt. Denti was imprisoned in the wreckage of the car and carried up to a great height. The envelope was undamaged and eventually came down at Walthamstow, whence Capt. Denti was taken to the London Hospital suffering from a broken arm and from having been held head-downward for about one hour. The airship parts were removed to Wormwood Scrubs. The cause of the accident is being investigated."

Brian concluded his report: "*Wind WSW. Fine and sunny. Capitano di Vascello Denti (later Vice Admiral) became C/O of the Italian Airship Service. I have no record of the ship being repaired or subsequent history.*"

This report reminded me of a story I read in a book[1] so I dug it out and found it gave another view of the same event: "*We saw a nearly fatal example of this rapid style of operating when I was training at the Wormwood Scrubs Station early in 1916. We had a visit from a delegation from the Italian Airship Service. The leader was a senior officer, very smartly dressed, and he was to be given a flight in a new type of SS built experimentally by Messrs. Armstrong Whitworth.*

The Italian flying officer was offered a preliminary trip with a British pilot, but said that he was familiar with this type of airship and could manage very well. He handed us his beautiful cap and gold mounted cane and climbed on board while the mechanic swung the propeller to start the engine, after the ship had been ballasted up. In the meantime we young bloods stood by and heartlessly apportioned his belongings as mementos; I claimed the gold mounted stick which had been handed to me. We were soon shocked at our behaviour.

The ship took off at full throttle straight from the ground, swung to the right at full starboard rudder and struck the railings enclosing the aerodrome.

Our Engineer Officer, F.A. Baldwin, who was in the fore cockpit, was thrown out, luckily not very badly hurt. The fuselage was telescoped by the impact, the engine stopping fortunately at once. Some of the suspensions carried away and the shattered airship then ballooned up, with the pilot hanging head downwards, pinned by his legs in the middle of the collapsed nacelle. The envelope appeared not to be much damaged and in any case the lower gas valve would blow at about 30 mm pressure so the ship would not travel far. Vehicles were hastily got out and the wreck was chased across London. It came down in Stepney, the envelope bridging across two rows of houses in a street. The poor battered body was lowered into waiting arms. I believe the pilot lived, but that he never flew again.

We learned about life from that." ♣

1 Williams, T.B. (1974) *Airship Pilot No.28* (London : Wm. Kimber) p100

The wreckage of *SS44* somewhere in Stepney or Walthamstow?

Matters Arising

From Previously Published Editions

RE: THE DURABILITY OF MISINFORMATION

(*Editorial; Dirigible 77*)

I have been looking at the comparative figures for disposable lift for the *23 Class* in your leader under the above title and fear that you have inadvertently added to the sum total of such misinformation.

The original specification for the *23 Class* called for a disposable lift of 8 tons, but during the building of *No.23* it soon became apparent that this was not going to be met on account of the increasing weight of the machinery. The specification was therefore modified to 6 tons but this was missed by the first three ships as despite every effort the weight of the machinery continued to increase.

According to the *Handbook on Rigid Class 23*, the first lift and trim test for *No.23* on 23 Aug 1917 gave a disposable lift of 5.86 tons and a second on 31 Aug gave a similar result. Drastic alterations were put in hand, a number of items being removed from the ship which reduced the weight enough to allow flight testing to begin on 19 Sept 1917. *No.23* was accepted by the Admiralty on condition that further weight-saving modifications would be made later.

The next ship to fly was *No.25*. The first lift and trim test was made on 1 Oct 1917 and produced a disposable lift of 5.78 tons, slightly worse than *No.23*. However, the ship was flown on 5 Oct and delivered to Howden, just down the road from Barlow, with the promise that modifications would be put in hand to bring the disposable lift up to the 6 tons specification. Armstrong Whitworth wanted *No.25* out of the way so that they could press on with *R29* and *R33*.

Next up was *No.24*. The lift and trim test for this ship took place on 18 Oct and produced a disastrous disposable lift of 5.08 tons, three-quarters of a ton less than the two previous ships. There was no immediately apparent reason for this, as *No.24* was virtually identical in all respects to her sister ships, the final conclusion being that the increase in weight was the sum total of many small increases which had occurred during manufacture. However, the firm had no Inspection Department and in the later stages of construction no attempt was made to keep a record of weights and very little care was taken to prevent excess weights being put into the ship.

Among the small changes were the use of longer rivets, which alone accounted for an increase of several hundreds of pounds, heavier hull details such as links and stiffeners, the strengthening of the propeller brackets for the midship car and weightier junction pieces. There was also an increase caused by the different method of securing the outer cover, using Zeppelin practice rather than scalloped lacing, which doubled the length of lacing cord used. Also, after arriving at East Fortune, an inspection by the ship's officers revealed that 13½ gross of steel nuts and bolts had been fitted when duralumin ones should have been used - and this was only an initial estimate!

To get the ship away from Inchinnan so that work could proceed on *R27* and *R34* drastic action was taken. All the machinery, engine and swivelling propellers, were removed from the after car, making *No.24* a three-engined ship and in that condition of very little use to the Navy. After all the weight saving measures had been completed it was found that the disposable lift was 6.17 tons and the ship was packed off to East Fortune on 28 Oct 1917. The ship was useless as she was and spent most of her time in the shed, only venturing out in fine weather, and then never very far from home, awaiting vital modifications which never came.

As a result of all the ships being overweight, further modifications were planned, all of which were applied to *R26*. The most important was the substitution of the after engine car with an *R33* wing car. The *R26* lift and trim test on 10 Mar 1918 produced a disposable lift of 6.1 tons. After her first flight on 20 Mar further modifications improved the disposable lift to 6.282 tons. The total lift was 29.68 tons.

It was planned to modify all the *23 Class* ships up to *R26* standard and Vickers set to make sufficient *R33* wing cars. These were fitted to *No.23* and *No.25* but for some reason the ship that needed this modification the most, *No.24*, was never so fitted and soon found itself at Pulham on high mooring mast trials. *No.24* was the lightest but only because she had been rendered useless as a three-engined ship. Hence the low total flying hours.

The *23 Class* of rigid airships suffered from the fact that Britain lacked experience in airship design and construction, and was caught out in performance terms by errors made with *HMA No.9* on which they were closely based. Nevertheless, it was unfortunate to say the least that the Admiralty decided to relegate these four ships to training and experimental duties after they had been in service for such a short time. Although unsuitable for their original task of acting as escorts to the Grand Fleet in operations far out into the North Sea, the long flights of over 40 hours made by *No.23* and *R26* showed what these ship were capable of when given the opportunity to make war patrols. *R26* in particular would have been a very useful craft on convoy escort duties, flying for long periods on the after engine alone but still able to keep station with the slow moving surface ships.

Of the four ships: *No.23* spent the first six months of 1918 making instructional and 'experimental flights' out of Pulham before she was allowed to make the first of only five War Patrols for a total of just under 38 hours; *No.24* started patrols in Apr 1918 and managed seven for 97 hours before being relegated to experimental work; *No.25* began well in Mar 1918 but was diverted to training duties for six months at Cranwell and only managed 9 patrols for 64 hours in her entire career; even *R26*, the most capable of the four, made only eleven patrols for a total of 134 hours, before being taken away to Pulham in Aug 1918 for experimental work. These were all totally wasted opportunities.

If all four ships had been brought up to the standard of *R26*, once they had been fitted with the *R33*-type wing car aft, some very useful patrol work could have been performed during the summer and autumn months of 1918. In the event,

the huge technical, financial and human effort that was expended on their creation was to a large extent simply wasted, at a time when there was an acute shortage of suitable aircraft for anti-submarine and convoy escort duties over the coastal waters of the United Kingdom.

Whether an airship is light or heavy is only part of the story. There may be a host of hidden reasons why, as in the case of *No.24*, a light ship is not flown as much as a heavier one of the same Class.

Brian Turpin, Saffron Walden

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RE: THEORY TO EXPLAIN THE *R101* CRASH – part 2

(*Response by Tim Meager; Dirigible 77 p26*)

While there is an analogy to be drawn between airships and submarines, I believe that Tim's thoughts about submarines being kept at equilibrium while submerged is in error. Perhaps a RN reader can deal with the submarine procedure aspect?

The ocean is to a submarine as the atmosphere is to an airship. Both are unstable. The air is more unstable and such factors as temperature, air pressure, and humidity modify the density of the air displaced by the lifting gas almost constantly. Temperature and purity of the lifting gas are also variables. There are others as well but the point is made.

As for dirigibles, "*whenever possible they always flew in equilibrium*" is clearly misleading! Whenever possible it was standard procedure to fly a rigid airship "in trim" (balanced fore and aft without regard to being 'heavy' or 'light'). Both ballast and fuel are distributed from fore to aft so that 'trim' can be calculated and maintained in flight. In the USN, this was the responsibility of a CPO who, in the case of the *Macon* crash inquiry, was able to testify precisely as to the trim of the ship just prior to the structural failure. I do not know who performed this duty in *R100* and *R101*.

It might be said that rigid airships typically flew in equilibrium plus or minus several tons. To cite a few examples: Flt. Lt. Pritchard comments on Major Scott's paper* following *R34*'s Trans-Atlantic flights. "*The problem ... was the excessive super-heating over the ice floes of Newfoundland. This was the first time that an airship had flown over an ice floe and encountered the extraordinarily marked inversion temperature effect which, under certain circumstances, was experienced. If Major Scott had not solved this new and unexpected problem correctly, R34 would, on the ensuing night, have become so heavy, due to the dissipation of false lift, that it would have been necessary to burn so much petrol to keep her in the air that she would not have been able to reach her landing ground in America.*"

Per Captain George Meager,** when leaving a mooring mast, a ship was weighed off to within ¼ ton plus or minus equilibrium, the order to slip was given and a ½ ton of ballast was dropped to assure that lift was adequate to clear the mast. On the morning of 12 Oct 29, *R101* was brought out of Shed 1 for the first time. It was, no doubt, 'weighed off' close to equilibrium when the exiting began. It became lighter and hydrogen had to be valved as it was walked to the mast. The mooring lines were let out and attached. "*When this picture was taken at around 0730 hrs. she was about 200 ft. up and had hit an inversion, a layer of warm air above the cold air at airfield level, which reduced her buoyancy. Two tons of water had to be discharged.*"*** (to get her to rise into the inversion).

On 16 Jan 30, *R100* undertook its first full speed trial. Major Scott found weather conditions of bright sun light over a fog bank. *R100* settled at the boundary between where it was lighter below and heavier above such that equilibrium was as perfect as God and man could achieve and a 20 min full speed trial was taken under almost ideal, rather unusual, conditions.

To reconcile, an airship in flight rarely finds itself in perfect equilibrium and often has to carry a substantial amount of lightness, or heaviness, rather than squander either ballast, or lifting gas which may be needed later. A hydrogen-inflated airship typically leaves the ground 'light' rather than in equilibrium. In the instance cited, *R101* could not be taken the short distance from hangar to mast in a constant state of equilibrium. Through a combination of knowledge and good fortune, Major Scott was able to find perfect conditions to allow *R100*'s speed trial while in equilibrium.

Although I question several things found in the *Report of the R101 Inquiry*, I have no reason to doubt the dynamic lift figures cited. *Graf Zeppelin* (*LZ-127*) roughly same length, number of engines, and approximately equal h.p., is cited as able to sustain a maximum 14 tons by dynamic lift in the air. If *R100* and *R101* were "*...not designed for it.*", why was each originally (1924) announced to be equipped with 7 x 700 b.h.p. engines? Answer: Experience of *L59* over Africa, experience of *R34* over the Atlantic, recognition that in the tropics they would encounter extreme atmospheric conditions requiring substantial dynamic lift to stay airborne and horse power = air speed = greater dynamic lift at a lesser angle of attack resulting in less passenger discomfort and superior aerodynamic control. I know that Barnes Wallis said what Tim Meager paraphrases, "*it was not designed for it*"; it does not make it so and once again, in the case of Wallis, "*I decline to believe that ignorance is the reason for the comment.*"

"*After Hendon and Luton ...*" the testimony by Captain Meager, both at the Inquiry and in *My Airship Flights 1915 - 1930* is inconsistent and makes no sense to me. That said the notion that "*they had to drop ten tons just to get up to the mast.*" is a misinterpretation. Two tons of fuel were burned during the flight. Some ballast was dropped during the flight and most of what remained was dropped during the weigh off and mooring procedure. While my estimate, of *R101* being able to sustain five tons of heaviness at 40 knots air speed, is an estimate (and I invite correction, either by calculation, or by historic record); the *R101* could not have approached the mooring mast at a safe speed while sustaining eight or ten tons of heaviness. Sir Peter Masefield reports that, on this occasion, 33,000 cubic feet of hydrogen was pumped into the *R101* as soon as it was moored. This is a miniscule amount for a ship that had 'lost' 12 tons of lift in flight? Because Captain Meager's Luton testimony makes no sense, it cannot be accepted as an analogy to the final crash (my original point) and thus, we agree, is of academic interest only.

If *R101* was losing hydrogen from its gasbags due to rough weather, the loss was gradual and the ship should have been slowing as it required an ever greater nose up attitude in order to generate ever greater dynamic lift. Sir Peter Masefield demonstrated that this was not the case. The *R101* was flying 'heavy' and steadily enough that a table, glassware and siphon were untended in the smoking room. It is possible that wind over the rough terrain at Beauvais (a "wave" if one likes) disrupted this state of affairs though other explanations seem equally plausible. The wave is not the only explanation "*that fits the reported facts.*"

* *Airship Piloting* by Maj. G. H. Scott, presented to 56th Session, Royal Aeronautical Society. Recorded comment following the presentation by Flt. Lt. J.E.M. Pritchard.

** *My Airship Flights 1915-1930* by Capt. G. Meager

*** *R101 a Pictorial History* by Nick Le Neve Walmsley, pp 76-7

C.P. Hall, Brookfield, IL. USA

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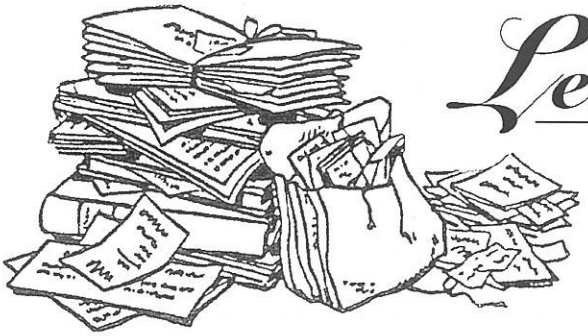

Letters Pages

Welcome to the AHT members letters and email page

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Email – 11 August 2014

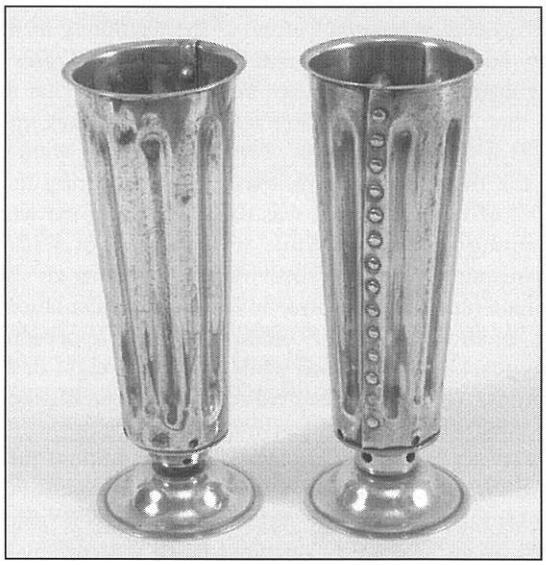
_R29_'s Surviving Scraps

Some vases were made from scrap framework of the *R29* and they have made their way to the Imperial War Museum. Please note the discovery at this link: **www.iwm.org.uk/collections/item/object/30083667**

The IWM site also refers to an *R29* Engine Telegraph and Control Column and Steering Wheel, but provides no photographs.

In my paper on the *R23X class* ships serialised in recent *Dirigibles* I describe components of the *R29* on display at the museum in East Fortune. So more of the *R29* appears to have survived than we knew. I am sure there are also ashtrays and other forgotten souvenirs hidden in attics around Edinburgh and East Fortune.

Kent O'Grady, Saskatoon, Canada



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Email – 26 October 2015

Researching Reginald Bance

My name is Peter Chapman and I am the Journal Editor for the Australian Society of World War 1 Aero Historians, an amateur group based mostly in Australia who undertake research into the First Air War in all its forms. We publish a six-monthly journal, *The '14 -'18 Journal*, in May and November, which is distributed to members only.

Being one of the few who has even a passing interest in lighter-than-air matters from that conflict, particularly the much under-appreciated kite balloon men, I am always on the lookout for more information on these as well as the men who served on airships.

Recently, I came across an internet auction for the medals of the late Mr Reginald Bance, who flew as a Corporal Mechanic in airships for the RNAS, and was awarded not only a Mention in Despatches but also the Air Force Medal, a much rarer decoration than the officer class Air Force Cross. In the auctioneers web site they mentioned that there was an interview done with Mr Bance in 1994 when he was aged 96, which subsequently appeared in your *Dirigible* magazine in two articles. I've looked on your web site and can't seem to find any mention of this so I assume this issue or issues are long since out-of-print?

I'm writing therefore in the hope I can obtain a copy of these articles from your organisation, as I am always keen to read more on the airshipmen from all nations. If you can help I'd be most grateful as my other attempts to find out more about Mr Bance have been singularly unsuccessful!

Peter Chapman, Editor of *The '14 -'18 Journal* for the Australian Society of World War 1 Aero Historians (**www.ww1aero.org.au**)

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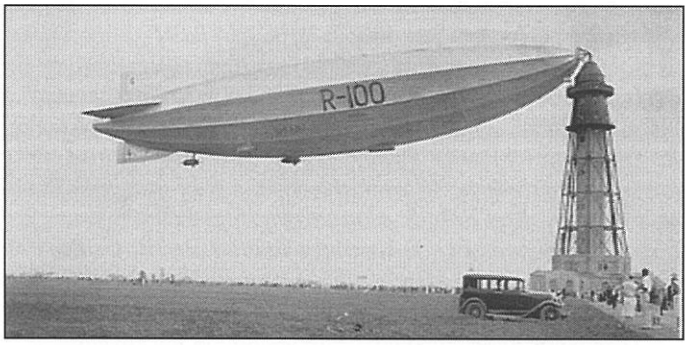
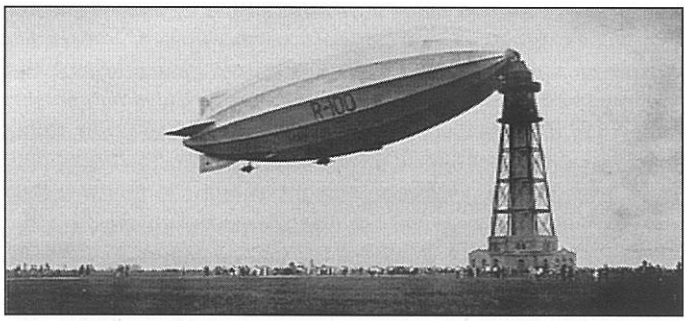
Email – 01 December 2015

Three Photos of _R100_ at St Hubert

I have three photos of the *R100* while moored in Saint-Hubert, Montreal, Quebec in 1930. Would these be of interest for preservation/historical reasons? John





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Email – 09 December 2015

In Search of *Sunbeams*

I live in Australia and I am looking for any information on *Sunbeam-Coatalen Dyak* engines. These were fitted on 2 Imperial Japanese Navy airships and an unknown number of British *SST airships*. They were also fitted to *Avro 504K trainers*, most of which ended up in Australia.

I have a number of significant parts of a *Dyak* engine, but not the engine block (That's fairly significant I hear you say). I want to restore this rare engine but, obviously, need to find or copy a block.

There is little, but often conflicting, information out there. I'm not even sure how many engines were produced. Everyone says I've got better odds of "winning the pools" than finding a *Dyak* - but I'm an optimist.

Of course, I am happy to share any information I have with you, although it is focused on *Sunbeam* engines - not airships or airframes. I have tried to contact Peter Starkings [who] seems to be the expert on Japanese airships.

My interest is to find out:

- How many *Sunbeam Dyak* engines were fitted to airships - and what became of each one?
- How many with Dyak engines were sold to the USA? (3 *SST*s but did they have Dyak or R-R engines?)
- Is there anyone I can contact regarding US airships?
- Were the Japanese engines destroyed in crashes or in the post-war demilitarisation of Japan - or could they possibly still exist?
- Is there anyone I can contact regarding Japanese airships? (I have a Japanese friend to assist with communications.)
- Were any *SST*s made for the UK fitted with Dyaks?
- Are any parts remaining in Australia or Norway?

That's a lot of questions but any help would be greatly appreciated.

Phil Guilfoyle, Crows Nest, NSW Australia

Paul Ross took up the challenge:

I've looked in my books on *Sunbeam* aero engines and they suggest that, of the 160 *Dyaks* ordered at the end of the Great War, none had been delivered by the Armistice. Apart from evidence that one *SST* airship in the UK (*SST-13*) was fitted with Dyaks (but see note below!), the only other known airship applications were the two Japanese Navy non-rigids Nos. 1 and 4. I can't find any references to Dyak-engined *SST*s being exported to the USA.

A *Dyak* was fitted to one of Sunbeam's own *Avro 504K*s (they built 182) but the increased weight resulted in a reduced payload and no further conversions were carried out for use in the UK. However, Dyaks were fitted to two *Avro 504*s for the Norwegian Army Air Force (Nos.103 and 105). The fate of 103 is not recorded but 105 crashed at Kjeller on 29th October 1923. The Dyak installation found more favour in Australia where a total of eight conversions took place from 1921. These were carried out by Harry Broadsmith's Australian Aircraft & Engineering Co at Mascot, Sydney.

It's interesting that by January 1922, Sunbeam were advertising brand-new Dyaks for £295, compared with a list price of £950! This suggests that they couldn't get rid of them, which in turn suggests that not many ended-up in aircraft, airships – or anything else. The only surviving Dyak listed in Alec Brew's book *Sunbeam Aero-Engines* (published by Airlife in 1998 – and from which most of this information has been gleaned) is in the Stockman's Hall of Fame Museum in Queensland where it was installed in a replica of the first *Avro 504* owned by Qantas.

As for the airships themselves, both Patrick Abbott's *British Airships at War, 1914-1918* and Ces Mowthorpe's *Battlebags* state that there was no *SST-13*! There were 13 built – but numbered *SST-1 - 14*. Both books say that three *SST*s (*SST-9*, *11* and *12* – according to Mowthorpe) were sold to the USA in 1919 but no indication that they had *Dyaks*. Assuming (always dangerous!) that the reference to *SST-13* actually means *SST-14*, this was deflated on 13 June 1919 but is listed as having new top planes fitted on 30 February 1920 – which suggests that the official records for this ship are unreliable.

Japanese *Naval Airship No.1* was built by Vickers in 1920 but was destroyed by fire in its shed in Japan on 10 July 1922. *Naval Airship No.4* appears to have remained in service until 1932. I doubt that the engines from these two airships survived – but who knows?

... The Vintage Aviator Ltd (TVAL) in New Zealand (**www.thevintageaviator.co.nz**) have successfully re-engineered several WW1 aero-engines (e.g. *Royal Aircraft Factory 1A* and *4A, Beardmore, Mercedes* and *Oberursel*). They might know something about the Dyak.

Phil Guilfoyle responded:

My understanding of the existing Dyak population is: The *Avro 504K* at the Qantas Founders Museum is a replica with a dummy crankcase to mount a propeller. It does not have a Dyak engine fitted. The *Avro 504K* "G-AUBG" at the Qantas Terminal at Sydney Domestic Airport has a genuine Dyak engine fitted but airframe is a replica. Qantas had the two replica airframes made, ... Norsk Luftfartsmuseum has *Avro 504K 103* with Dyak engine on display, one of two made by Sunbeam for Norwegian Airforce. The other, *105*, was destroyed in a crash. Another Dyak was in the RAAF Museum in Western Australia but has since moved. I have parts of another Dyak engine.

I did successfully get in contact with Peter Starkings. No additional information on Dyaks but you may find other info in the email interesting. See below.

From: Peter Starkings to Phil Guilfoyle:

... I am always pleased to know that there are others in the world trying to throw light on off-beat aeronautical subjects!

I wrote my Japanese airship article way back in 2004 in an effort to make some sense of IJA and IJN interest in and use of airships as very little has been written about them in the English language. I'm afraid I was not particularly interested in pursuing more detailed descriptions of components such as engines other than what I related in the article.

However, after referring back now to one Japanese book reference (*Model Art #327, Handbook of Japanese Aircraft 1910-1945*) I can confirm that of the four 100hp *Sunbeam* engines purchased for the Japanese Navy two were used for the Yokosuka built *Vickers SS3* replica and two for the Fujikura Navy Type *1Kai*. The former exploded in mid-air and was destroyed; I do not know what happened to the latter or, indeed, its two engines.

As it happens I have been researching the Japanese aero-engine industry and its products up to 1945 during the past several years, including the many specific foreign engines for which they obtained manufacturing licenses, and I have to say that I have not come across any reference to Sunbeam engines. That is not to say that they wouldn't have examined any other imported aero-engines (i.e. on imported foreign aircraft or for Japanese aircraft) pretty thoroughly, but I have only found one reference to Sunbeam in that regard, namely a 225hp *Sunbeam V12* in 1916. Nothing came of it.

Regarding a possible Japanese contact, my Japanese engine Guru unfortunately died earlier this year, so I am up the same creek there as you ...

As for the other points you mention, I am really sorry I can't help as I know nothing else about Dyak engines. Best wishes for your continuing research.

And finally, Peter Elliott, Head of Archives at the Royal Air Force Museum, Hendon added:

There's not much we can tell you about the *Dyak*. Apparently a contract for 160 engines was placed but suspended before deliveries took place. Nevertheless, the Aircraft Disposal Board published a list of aero-engines for sale, which included the Dyak. The Japanese bought four, for fitment to two airships (*Nos.1* and *4* – the latter reported as still flying in 1932) but tracing further information would probably be very difficult. The attached picture is from Alec Brew's book *Sunbeam Aero-engines* published in 1998 by Airlife.

We have an RAF manual for the Dyak and can arrange to copy it for you; we don't have an example of the engine in our collection.

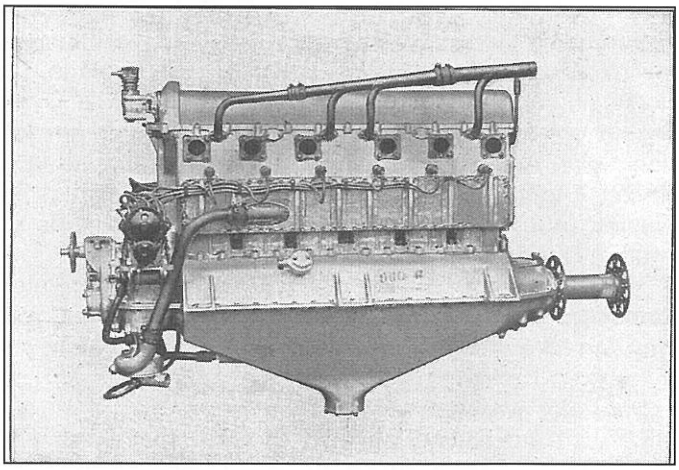

Fig.1 Exhaust side view of Dyak Aero Engine

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Email – 21 January 2016

R101 Scrap Metal Propeller

Following on from my call today I enclose a photo of the above. It weighs 11 ounces and is approx 16 inches tip to tip. It was passed onto me by my grandmother.

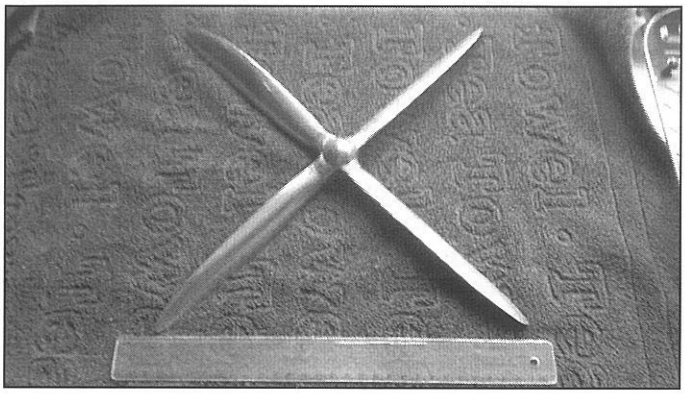
As mentioned this imitation prop was my grandfathers, Willis Greenhalgh, who was a flying enthusiast had access to his own plane and had several businesses rewinding magnetos. One business was located at Speke airport during the inter war years in the 1930's.

The only information I have is from my grandmother who always said it was from the *R101* which her husband Willis had made from a piece of scrap from the *R101*. That is the only information I have.

It would be useful if there is some way that this could be tested ...

I look forward to hearing any information.

Don Greenhalgh



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Email – 25 January 2016

Triangular Girders Resurrected

Yesterday, my wife was sorting out magazines for disposal and found ... *Scientific American November 1999* which contained three LTA articles: two on stratospheric free balloons and one titled, *A Zeppelin for the 21st Century* by Klaus G. Hagenlocher ... "chief engineer for development of *Zeppelin NT*".

There are two reasons that I bring this up. The first is the choice of a photo comparing an old rigid airship structure with the new ... The second is the description of the *NT* frame and accompanying illustrations. "*RIGID INTERIOR of the new zeppelin comprises a series of triangular, carbon fiber composite girders, attached to three aluminum alloy longerons, which extend the length of the ship.*"

This description is accompanied by a drawing which can be confusing to the casual observer and is somewhat lacking in detail (p106-7). Page 109 has a photo of the frame being assembled which confirms a most interesting detail. Both types of girders are triangular in cross-section, a tube at each corner, these three tubes being held by other tubes cross-bracing the structure. I have read elsewhere that the aluminum tubes are welded. I do not know how the carbon fiber tubes are secured to each other.

That which is of interest is that, at each end of each carbon fiber girder, the three length-wise tubes are drawn together into a single fitting or joint. Apparently that joint is the connection to the aluminum longeron.

I bring this up to note a few striking similarities. The longerons of *NT* appear similar to the longitudinals of *R101*. The *NT*'s are of aluminum alloy; *R101*'s were of stainless steel.The carbon fiber composite girders perform the same structural function for *NT* that deep frame transverse rings did for *R101*.

The *R101* deep rings were three rings of girders, triangular in cross-section, made of stainless steel tubes riveted to duralumin "webbing". The three rings were joined together by triangular, in cross-section, bracing girders made of three duralumin tubes riveted to duralumin webbing. The interesting point is that, at the ends of these bracing girders, the three tubes came together into a single joint which was the attachment to the transverse rings at the points of junction where

transverse rings meet longitudinal girders and at intermediate locations.

I have always considered drawing the tubes together into a single joint to be a questionable design choice. The vintage German girder joints were more complex, likely heavier, but the loads were spread, instead of focused, and load spreading, or sharing, was an important consideration in a lightweight structure. It also goes without saying that the junctions of these girders in *R101* were the "pin joints" so highly regarded for simplification of calculation, so detrimental to gasbag integrity.

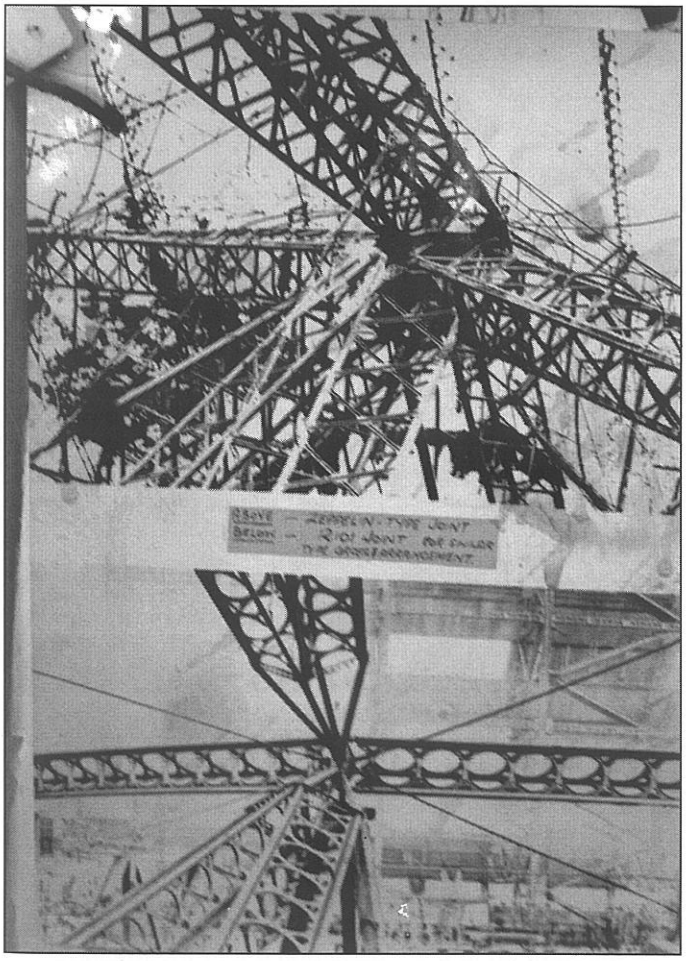
I presume that we could pull out photographs and debate whether all of these girders look more like *R100* girders or *R101* girders. A case could be made for either and both would be imperfect, however, it is interesting that the *NT* girders are deviations from the standard Zeppelin girder design.

Presumably the answer is the same for *NT* as it was in the 1920s UK, the engineering solution of choice is to build a craft with fewer, stronger, bulkier girders creating a more reliable structure in the most extreme cases of aerodynamic stress?

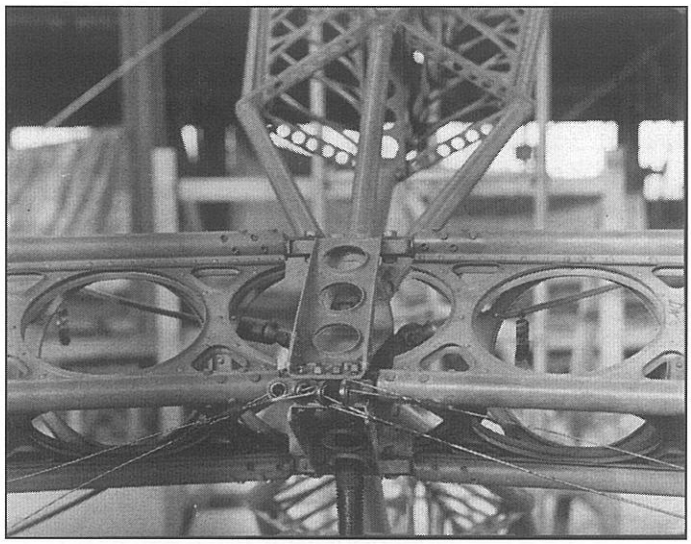
... I have attached a photo captioned, "*Typical Zeppelin joint -- distorted*"(sic)(?) which I believe illustrates the comparison made. As a matter of full disclosure, the photo is also labeled "*Crown Copyright reserved*" therefore it is likely actually a photo of an *R33 class* girder joint or one of the modifications of that series. I found the photo in Mr. Spanner's *Gentlemen prefer Aeroplanes!* opposite p227.

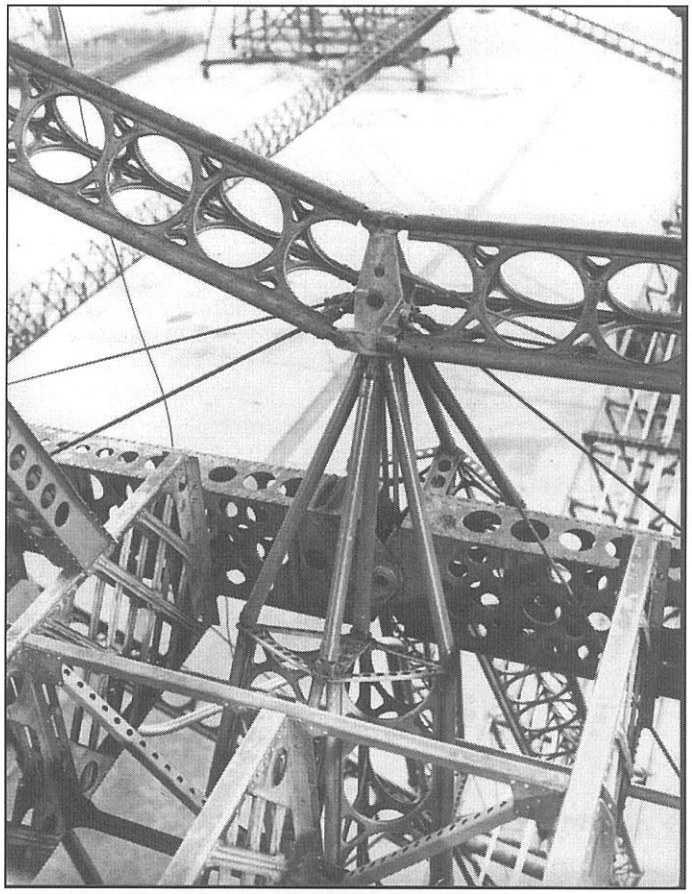
C.P. Hall II, Brookfield, IL. USA

Dirigible found a better quality copy of the same image in our photo archive conjoined with an R101 example:



Here are two further examples of R101's girder joints:





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Email – 26 January 2016

Witness to Shooting Down of Schütte-Lanz

Amazing woman - country's oldest - saw Schütte-Lanz airship shot down. (see attached) Living history and a better memory than I have!

Arnold W L Nayler, Gerards Cross, Bucks.

UK's oldest person celebrates 113th birthday

By Jon Moreno - Monday, January 18, 2016

Record-breaking Isle of Wight woman Gladys Hooper — the UK's oldest person at 113 — has witnessed many historic moments in her long life but none more shocking than watching in awe as a Zeppelin airship got shot down.

Gladys celebrated her landmark birthday with family, friends and fellow residents at Highfield nursing home, Ryde, today (Monday) ...

The supercentenarian, who was born in Dulwich, London, on January 18, 1903, has had a full and active life as a concert pianist, a teacher, aviator and businesswoman.

… Gladys, … has many extraordinary memories.

It was during the First World War, when aged 13, she watched in awe as a British ace shot down a a *Schütte-Lanz 11* Zeppelin [*sic*] airship while staying with a friend in Potters Bar, Hertfordshire — ironically to escape the bombing in London for a while.

It was on the night of September 2-3, 1916, Royal Flying Corps pilot, Lt William Leefe-Robinson, became famous for being the first to shoot down a Zeppelin over Britain. The incident happened over Cuffley, three miles away. The airship crashed into a field killing all 16 crew.

Gladys went to the site with her friend in a horse and trap to look at the wreckage and found the area saturated with police and Army officials. She said: "*It lit the place up. It was a dreadful experience. It looked like pieces of rag falling to the ground.*"

Gladys was visited by the pilot's great nephew, Baron Igor Heyking, just before last Christmas, to interview her for a documentary he is making about Lt Leefe-Robinson, who won the Victoria Cross.

She was a friend of famous pioneering aviator, Amy Johnson, and established Autodrive, one of the first car hire companies in the country…

From *The Isle of Wight County Press Online*
www.iwcp.co.uk/news/news/uks-oldest-person-gladys-hooper-celebrates-113th-birthday-93747.aspx

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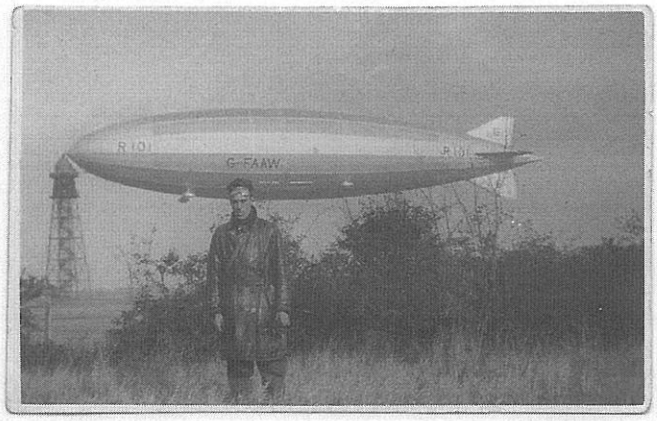
Email – 03 February 2016

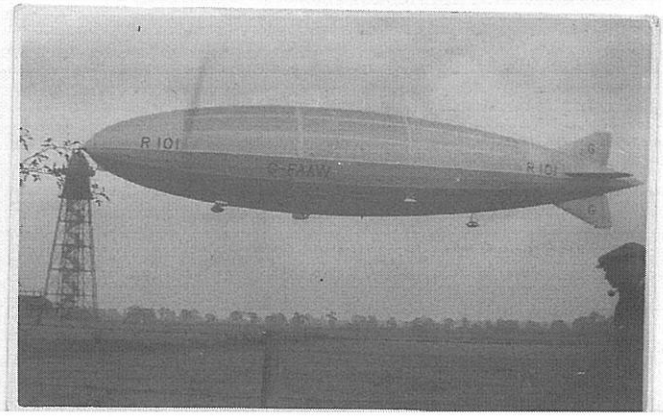
Who is this person?

Please find attached two postcards of the *R101* and a photo [*smaller but identical with first card – Ed.*]

I am trying to find out who this person is in the photo. Can you help at all please?

Valerie Webber





Dirigible sent the request to the usual suspects and Paul Ross responded:

I think that the picture was probably taken from the A600 between Cotton End and Shortstown. (There's a wire fence behind him.) On this basis, I think he was just a 1930s biker out for a Sunday run and probably nothing to do with the airship or Cardington.

+++++++

Email – 04 February 2016

Propeller of the *R101*

Please can you tell me how many propellers were on the *R101* and the size of a propeller?

Lt.Col. Richmond, designer of *R101* lived in Highams Park, E4 and was a pupil at Selwyn Avenue School (now Selwyn Primary School). After his death in the crash of the airship, a very large propeller from one of the airships from Cardington, said to have been from the *R101*, which had flown over Highams Park on its maiden flight, was presented to the school in his memory. From the early 1930s to about 1990-5, it hung on the end wall of the hall, which had been the boys' school.

For some reason, the propeller disappeared from the school before 2000 and now the school is to be demolished and rebuilt in a different design on the site.

As a local historian and published author, I have been trying to locate the propeller through past sales in Auctions, in case it has been sold on, to find out where it is now and get a picture of it for the head teacher and children of the school. I hope that it might then be used in some commemorative decoration in the new school.

One auction house had a sale of what was described as - one of the four 12 ft propellers from the *R101*, which was sold to someone in the USA.

I should be very grateful for your help.

Yours sincerely, M.L. Dunhill, (Mrs.)

Paul Ross answered:

A diameter of 16 feet is quoted in Masefield's *To Ride the Storm* (p69) for the wooden propellers. The same figure is also quoted in Nick Walmsley's book for the original variable pitch metal propellers.

Going back to our previous discussions regarding *R101*'s engines and propellers, it's confusing that two quotes from Masefield appear to contradict each other. One is a quote from the notes of a meeting held at the Royal Airship Works on 19th June 1929 when Cave-Brown-Cave told Thomson that the forward starboard (No.1) engine would be fitted with a "reverse thrust" propeller and the other is a quote from the press briefing on 2nd October 1929 when Richmond said that it was the forward port (No.2) engine that had the reverse-pitch propeller. I wonder which was correct?

Dirigible passed Paul's findings on along with some other information and Mrs Dunhill replied:

Thank you … at least I now know that the *R101* had five engines and that none of the propellers survived from the Beauvais fire.

… I found one picture of a propeller on the net which seemed too small but quite like the one that I remember. 'Ours' was a lovely rich-coloured wood and the ends of the blades were rounded.

You might be interested to know that my great uncle, Joseph Proctor Luttrell, worked in the office at Cardington after retiring from the Navy and lived in Officers' Row (I think that it was called that) near the mast, and he used to walk in the evenings with his wife and daughter on to the airfield and under the massive

R101. They saw it leave as it floated over Bedford at the start of its last journey, when its height was unusually low. Uncle Joe said there was concern about whether it was fit to go and, in other workers' opinions, too much drink had been loaded on to it.

The family knew all the staff who were killed on the last trip and described the stunned silence and sadness they felt when the list of all those who had perished was displayed at the entrance to the site.

But Paul Ross: ... remembered there was a wooden propeller said to have come from *R101* on display at the Shuttleworth Collection. I went there and photographed it. As you can see, it has lost part of one blade and it is said to have been damaged in *"a collision with the mooring mast."* I don't ever remember reading about the ship colliding with the mast but I do recall something somewhere about a ship fouling a mooring cable?

It certainly appears to be an *R101* propeller from the stamped markings on the side of the hub. A drawing number is shown (possibly with a capital letter I in front?) and a manufacture date of 'Sep/ 30'. Might the original drawing be held at the National Archives? I couldn't find any form of manufacturer's stamp. Were the propellers made at the RAW?

The other thing I wanted to do was to measure it. On the hub is the marking 'D 16 . 0' followed by 'P 10 . 4', which suggested a diameter of 16ft and a pitch of 10ft 4ins. All the references that I've seen say that all the *R101*'s propellers (metal and wood) were 18ft diameter.

With the help of a Shuttleworth engineer and a step ladder I was able to measure it and the distance from the top tip to the centre of the hub is exactly 8ft, confirming a diameter of 16ft. So where did the figure of 18ft come from? Or was the Shuttleworth propeller yet another test specimen – perhaps used when the reversible Tornados arrived in September 1930? As ever, more questions than answers!

Mrs Dunhill concluded:

Thank you very much ... the blades of the *R101* propellers were truly enormous. The wall at the end of the Selwyn School hall is high so it could have framed a very large propeller. It shows the fascination of the airship that we are still marvelling at it, even if it came to a very sticky end so long ago - so thanks again.

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Email – 24 February 2016

_R38_ Survivors and _R33_ Mascot

Reference Brian Turpin's Email of 28 October in *Dirigible 77* concerning *R38 survivors and R33's mascot* Brian is correct regarding Flt. LT. Wann being unable to testify at the Court of Inquiry. If Brian is interested in later testimony by Wann, he should refer to.

"AERONAUTICAL RESEARCH COMMITTEE - Reports and Memoranda - The Accidents Investigation Sub-Committee January 1922 - Report on the Accident to H. M. Airship R.38 R & M 775 (A.2) March 1922."

I believe that he will find reported what Wann eventually testified though he may not be satisfied with the conclusions drawn? I would certainly be interested in a second comment after he reads the *R & M 775 (A.2)*.

It is interesting to note that Irwin and Booth both held the rank of Flt. Lt. at the beginning of 1925. Irwin was listed as ship's Captain and Booth his First Officer when the *R33* was brought out of the hangar at Cardington and flown to Pulham. Booth was officer of the watch when *R33* pulled free of the mast in bad weather. (Both Scott and Irwin were at the base of the mast, preparing to board, when this occurred.) After Booth and crew brought damaged *R33* back to Pulham, there were awards all around to those on board, and Booth was promoted to Squadron Leader shortly thereafter. For the 1926 flights, Booth was listed as *R33*'s Captain. Irwin was still a Flt. Lt. when *R101* departed for India. This should not be taken as a negative reflection; promotions in the peace-time services can come quite slowly.

C.P. Hall II, Brookfield, IL. USA

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Email – 29 February 2016

Mombasa's Missing Mooring Mast

A recent photograph that came to light, attached, shows an airship mast, location unknown for sure but could be Mombasa, Kenya?

One was proposed for Mombasa and a map that I purchased from The National Archives in London shows a proposed site but not much else ... Cape Town had a mast ordered at the same time as Montreal but to reach the former an intermediary base would have been needed between Ismailia and Cape Town so was Mombasa's mast built first? ...

This I have learnt from your [web]sites (excellent, great reads!) and the map, which clearly shows a proposed site south of Kilindini port. The plan was drawn up in 1927, but there is no photo of a completed mast or written confirmation of one having ever been built that I can find so far. Two masts were proposed for Mombasa, for North and South bound airships.

Two masts were ordered at the same time in July 1927 from Babcock and Wilcox, to get a 2% discount, one for Montreal and the other for Cape Town, but in my opinion the Cape Town one may have gone to Mombasa when it was realised an intermediate fuelling point between Ismailia and Cape Town would have to be installed beforehand. Masts were built at Karachi and

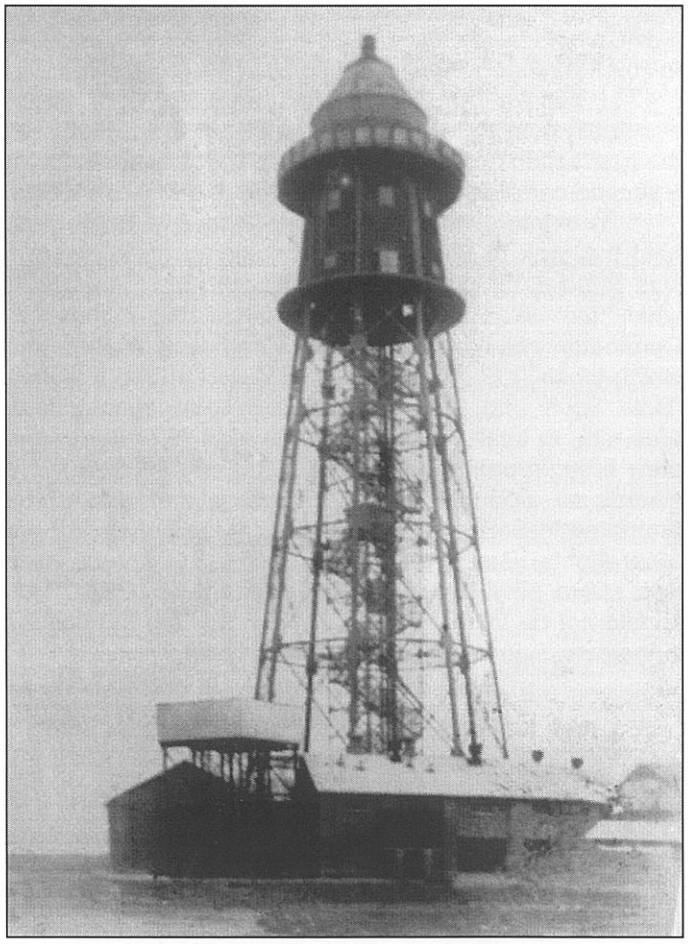
Ismailia with photos and details, also of course for Montreal and Cardington.

The photo has an inscription on the back "*taken before 1930*" by a relative of a person who built the water tank but there is no reference as to where it was taken, and of what it was until a reader identified it. This was all started off by a Mystery Photo Competition in a magazine called *Old Africa* published in Kenya …

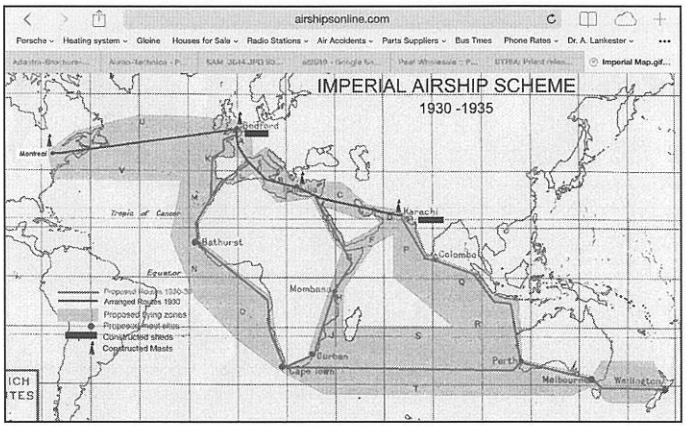
In one site I read "*the South African mast had gone missing*" and another one talks of someone seeing in the port "*mast equipment in Aden after WW2*"

Would you have any photos or extra information of a mast at Mombasa? It would be most interesting to know more! I have contacted a Alastair Lawson on this … I wonder if you have any ideas?

Best regards John Lankester Co. Wicklow Ireland



The Mystery Mast photo. Could it be Mombasa?



AHT website Imperial Airship Scheme route map showing sites for intended masts including Mombasa

Response from: Alastair Lawson

The picture and your email is quite fascinating. I'm intrigued as from what we "know" there was no mast actually completed. We hear rumors of mast head machinery being ordered and sent out as spare, or to Capetown. We know extra equipment was sent to Karachi and we have first hand reports from people who saw it in the late 1930's and 40's.

Your photo did make me blink, but I had a look at the pictures we have and it does look like the Karachi mast - **http://airshipsonline.com/sheds/images/Karachi.jpg**

The water tower is just on the right hand side on the roofline. I know that the Ismalia mast was almost identical to that of Cardington; Karachi and Montreal were different styles to suit the location.

I would have thought, and this is me just thinking, that if it was a "temporary stop" mast, then it would be more like the Ismalia mast. It is a very interesting idea …

Paul Ross wrote:

I wondered about Ismailia but when I looked at the photo on pp68/69 of Nick Walmsley's book, I saw that there were no buildings around the base of the tower – apart from a couple of sheds (like those at Cardington) which I imagine housed the winch gear, etc. …

Having looked at other photos of the Karachi mast, I think the picture may be of Karachi. The design of the buildings (window and door openings, for instance) look exactly like Karachi. The only thing that doesn't look quite right is the appearance and height of the water tank. The photo from John Lankester shows the tank standing above the roof line of the adjacent buildings but the others seem to show it at about the same height. I also haven't seen any other pictures showing roof vents on the ridge line.

I find it difficult to imagine that it is Mombasa as I wouldn't have thought the Air Ministry would have got so far advanced with plans for the African routes when they hadn't yet got a ship to India. However, the reference to the photo having been annotated by a relative of the person who built the tank does make one wonder!

Dirigible Editor added:

There is a photo of the base of the Ismalia mast in *Dirigible 47* on p5 and pictures of the Karachi mast in *Dirigible 77* on p30. Perhaps the photo was taken from a different height thus making the water tank appear higher or lower? Or perhaps the tank was moved?

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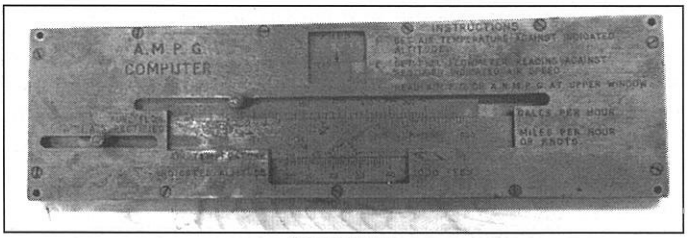
Email – 02 March 2016

Intrigued by an A.M.P.G "Computer"

I bought this from a local auction and I wonder if you recognise it? The story goes that it came from the estate of someone on the *R101* engineering team? Not sure how true - will try and get a name. Any ideas where I could find out more info on this instrument?

Rob Egan, New Romney, Kent



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Email – 03 March 2016

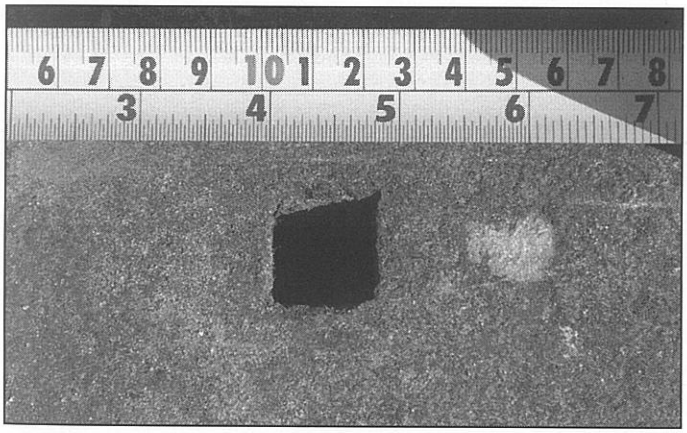
The Riddle of the Holes

I'm pleased to report that new turf has been laid around the tomb of the *R101* victims in Cardington Village Churchyard – a considerable improvement on what was there before.

On my visit I also took some photos of one of the curious square holes that appear in the centre of each of the four corner paving slabs. I also measured the holes and they are ¾ of an inch square. I probed them and three are pretty much full but in the fourth one, I could drop a stick down to a depth of 16 inches.

Does anyone know what they are for?

Paul Ross, Hemel Hempstead



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Email – 08 March 2016

Boxes made from the Mooring Mast

Lydia Saul, of the Higgins Art Gallery & Museum, Bedford, enquired in *Dirigible No77* about the rarity or otherwise of these wooden boxes.

I first saw one of these – strangely enough – in the Higgins Art Gallery & Museum! (Photo below). It was part of the special exhibition "*R100 & R101: Airships at Cardington*" held in 2010, marking the 80th anniversary of the *R101* disaster.

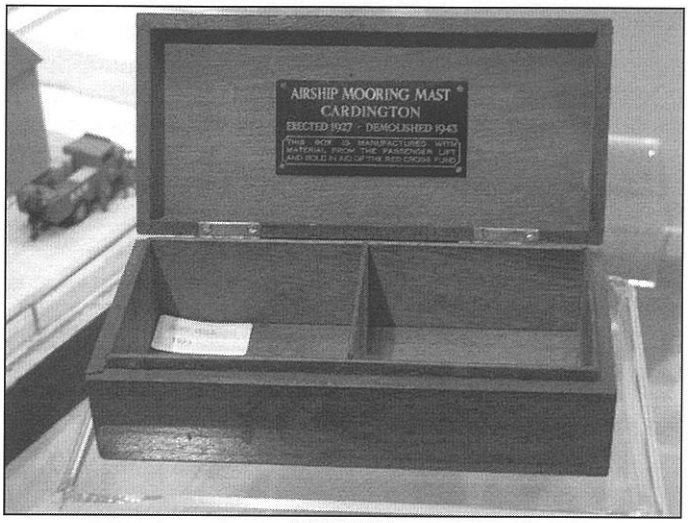
Since the exhibits were loaned from the Fleet Air Arm Museum, which had become the home of AHT's original collection, this box had presumably belonged initially to the AHT.

In 2011 I acquired my own box, by winning an eBay auction. There was keen bidding, and the final price was £140. In that same year an AHT member brought a further box to the Annual General Meeting.

These few experiences hardly qualify me to pronounce on the 'rare versus commonplace' question, but nonetheless it seems likely to me that they are not at either extreme, but somewhere in the middle. The Red Cross would be keen to sell as many as possible, but the supply of wood from the lift cabin walls would set a limit on the numbers produced.

Incidentally, the mast was demolished in 1943, not 1947 as quoted in Lydia Saul's letter.

Brian Hussey, Gravesend, Kent



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Via John Baker, archivist of the BBAC and BBM&L

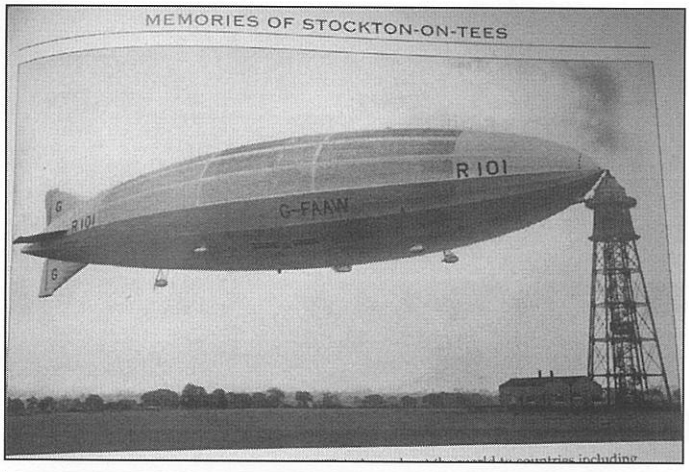
Email – 13 March 2016

***R101* Moored on Teeside**

I work in a charity shop some days and I run the book floor. This morning I got a big surprise when I found a photograph in a local history book of the *R101* moored somewhere on Teesside!

I was slightly dubious about it and when I had five minutes to read the book with a mug of tea the reason for it being in the book was explained. Pickerings Lifts are based in Stockton and they made the lifts for the towers.

Richard Bowater



Top: A mooring mast for the airships of the Empire Airship Service. The mooring masts were provided with Pickerings Passenger lifts to carry passengers up to the airships.

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Email – 24 March 2016

Shooting at Phantoms

Found by Christine Camplin online at:

airminded.org/page/86/?ywlyb=363238

The way in which rumours start and grow is shown by the following incident recorded by the *Daily Telegraph* correspondent at Harwich:

"It was rumoured in Harwich this evening that a Zeppelin had been seen flying on the North Sea to-day, surrounded by British destroyers. The story was brought into this port by members of the crew of the Great Eastern Railway Company's steamer Colchester, which arrived late in the afternoon from Rotterdam.

On enquiry I have ascertained that when within twenty-five miles of Harwich the crew of the Colchester saw a large object of a yellowish tint afloat on the water, with two destroyers near by. The weather was hazy, and it was difficult at a distance to determine precisely what the object was. One of the destroyers fired at it; the other steamed away.

The true explanation of the incident is now stated in naval circles to be that the supposed Zeppelin was merely a dead whale, and that the carcass was fired at with the object of sinking it.

"'Did it look like a whale?' I asked a member of the steamer's crew.

"'Oh, yes, it might have been,' he answered."

Source: *Flight*, 23 October 1914, 1065 (link).
Posted in 1910s, Periodicals, Phantom airships, mystery aeroplanes, and other panics, Rumours on 16 February 2009 by Brett Holman.

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Email – 25 March 2016

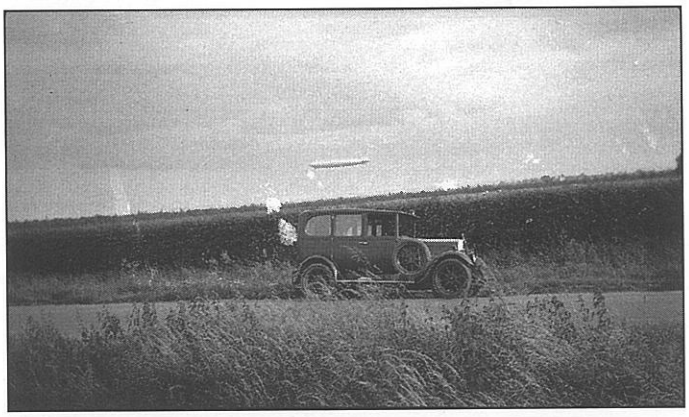
Which Airship?

I have recently stumbled upon a photographic negative that has me puzzled. The car in the picture is a *Morris Cowley Flatnose*, produced from 1926 to 1931. I can be certain that the location is somewhere close to Cambridge. I would guess the driver spotted the airship, pulled over and snapped it with his '*Box Brownie*.'

The picture has fascinated me since I discovered it. How many people have a picture of their car with an airship flying above it!?

But what about the airship in the sky above? If you have any ideas, I would be fascinated to know.

Regards Paul Watson



Alastair Lawson responded:

It's the *Graf Zeppelin* (*LZ127*) - possibly en route to or from Cardington in which case we can date it to the 26th of April 1930.

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Email – 19 April 2016

Beware the Flood of Fakes

Over the last two years we have noticed an extraordinary flooding of the collectors' market with relics claiming to be from various German airships.

Predominantly these relics profess to come from *Zeppelin L3* (the first to bomb England), *Schütte-Lanz 11* (the first airship shot down over mainland Britain) and the *Graf Zeppelin*, all iconic airships in their own right.

These relics have appeared in regional auction houses the length of the country, from Carlisle to Portsmouth, and regularly show up on the internet auction site, eBay.

All these relics have two things in common – they all have a neat label attached. The labels of brown card/thick paper are attached to the items by string and are stamped on one side with the words '*Whitehall Theatre of War – London War Museum*' and on the other side with a brief typed description of the relic.

The other thing they have in common is that they all appear to be rather non-descript - selections of odds and ends that look like the sweepings of a car mechanics workshop floor! No iconic, riveted Zeppelin girders - although there wouldn't be for [the wood-framed] *SL11*! In fact one section claiming to be part of the framework of *L3* was held together with nuts and bolts. We queried the provenance with one dealer on eBay who replied that he had bought the item in good faith at a regional auction house and didn't know any more about it.

The Whitehall Theatre of War was a short-lived enterprise created in 1983 by the one-time 'King of Porn' Paul Raymond, but Westminster Council closed it down in 1985 and his collection, which apparently included aircraft and tanks, was auctioned off.

The questions we would like to ask of readers of *Dirigible* is do they have any knowledge of the Theatre's collection? Did it contain Zeppelin relics? And, if it did, can anyone shed any light as to how items from the collection appeared at auction houses all over the country at more or less the same time?

The easy conclusion is that these are fakes, fashioned to cash in on the interest in Zeppelins, but is there more to it? We'd love to hear from anyone who can shed any light on the matter.

Ian Castle & David Marks

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Email – 30 April2016

***R101*'s Tail Surfaces**

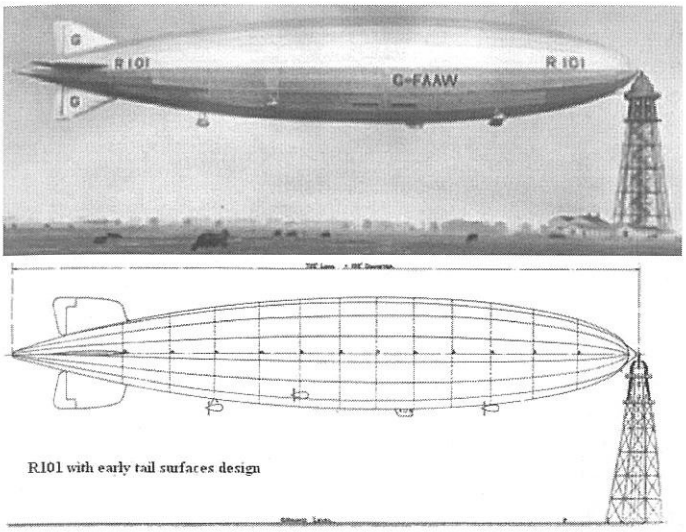
... while travelling around the UK recently, I popped in to see Harold Wingham. He is 92 now and fairing reasonably well ...

He related an alternative plausible reason for the *R101* crash, saying that it was more likely due to poor control from revised tail surfaces finally installed.

Take a look at the attachment, which shows the *R101* at the mast (as built/flown) and beneath, as drawn at an earlier time with different (bigger area) tail surfaces, more like those of Zeppelins. The drawing was scanned and cleaned up a little by me without design changes from a photocopied document that Harold gave me.

Harold's view is that, in a similar way to the *CargoLifter* fiasco, some bright spark (he mentioned Rope) thought it would be better to change from 'tried and tested' ways to the sleeker delta form installed - perhaps more stylish, but with considerably less surface area for stability and control purposes. This, he said, led

to inability to maintain attitude in turbulent weather, giving the helmsman a rather difficult time - who perhaps said nothing under the command system (which was a little high minded).



R101 with early tail surfaces design

Harold was aware that the tail surfaces operate in an area behind the main body that is subject to deep boundary layer flow effects, which negate their effectiveness. In fact, this is one of the reasons that HAV recently revised their [AirLander] tail surface arrangements, installing new surfaces with greater aspect ratio to grab clean air - needed in a turn, when the hull masks the empennage.

I think that Harold's reasoning is sound and should be given further consideration with perhaps CFD simulation ... to gain a better understanding of the *R101*'s stability and control aspects. This, in fact, could be a university undergraduate project, if there is sufficient interest. Charles Luffman, Staakow, Germany

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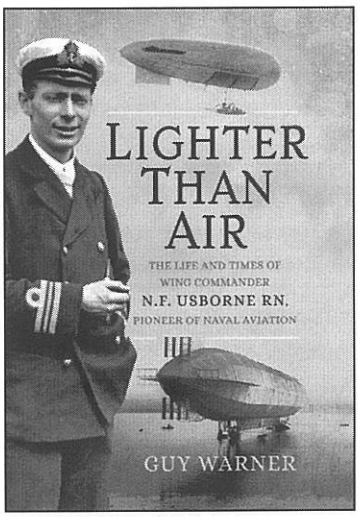
Email – 15 December 2015

De Marcay Klutymans

I attach a scan of a French postcard of the *De Marcay Klutymans* airship which I purchased a few months ago. You might like to use it as a follow-up to the item on page 24 of your latest issue. Obviously a very large scale model! Phil Jarrett, Dorking, Surrey

NON-FICTION



LIGHTER THAN AIR: The Life and Times of Wing Commander N.F. Usborne, RN

By Guy Warner

Published: April 2016
Hardcover: 310 Pages
Pen & Sword Aviation Books
47 Church Street, Barnsley,
South Yorkshire, S70 2AS
www.pen-and-sword.co.uk
ISBN: 9781473829022
RRP: £25.00

PRESS RELEASE

Neville Florian Usborne entered the Royal Navy as a cadet in 1897 and engaged in a huge number of endeavours in the years between him joining up and the outbreak of the First World War.

Praise and respect garnered in accordance with his achievements all of which helped to establish his reputation in later years as an 'irreplaceable' pioneer and a leading light of early British airship design.

His chief task during the Great War was to dream up new tactics and designs to combat the Zeppelin menace, and he was also deeply involved in the design of the very successful 'SS' and 'Coastal' Class airships.

This biography endeavours to shine a light on an overlooked pioneer of early aviation in an entertaining and reverential style.

"No one can talk of the early days of British airship design without mention of his name and work. A personality was lost on that February day which was irreplaceable."

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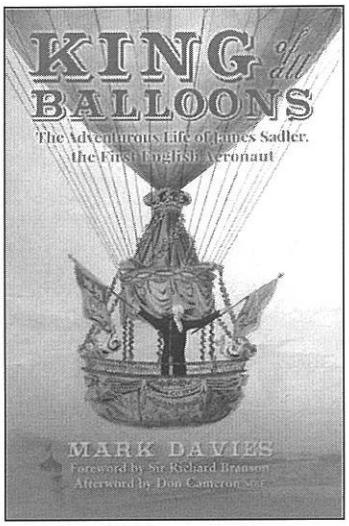

KING OF ALL BALLOONS: The Adventurous Life of James Sadler, The First English Aeronaut

By Mark Davies

Published: 15 Nov 2015
Hardcover: 336 pages
Publisher: Amberley Publishing Holdings Ltd. The Hill, Merrywalks, Stroud, Gloucestershire GL5 4EP
www.amberley-books.com
ISBN-13: 9781445653082
RRP: £20.00

PRESS RELEASE

The dramatic stories of the early balloonists have been strangely neglected. Their daring initial flights, the first steps on mankind's journey to the Moon and beyond, have featured only rarely in historical studies, and their names have been largely forgotten. This book is an attempt to redress that situation.

James Sadler was an extraordinary English pioneer who overcame many obstacles to achieve his dream of flying. Born the son of an Oxford pastry cook in 1753, he defied the constraints of his upbringing to become the first Englishman to build and fly a balloon.

When not flying he applied himself to engine design and the medical uses of gases, and also kept busy as a chemist to the Navy; he designed cannon praised by Nelson and royalty, firearms for the British East India Company and a prototype armoured car. Aged fifty-seven, he became the first person to cross the Bristol Channel by air.

Against the vivid backdrop of Georgian England, Mark Davies delves into the complex life of this astonishing adventurer, exploring the ups and the downs of his amazing career. These range from his first balloon ascent, to his support of the first Englishwoman to fly, ending with his death in impoverished anonymity.

Sadler's biography also encompasses the stories of his fellow aeronauts, be they courageous, inspired, risible or – occasionally – fatal. This fascinating account of the first Englishman to fly is a true homage to our national desire to reach for the skies.

Foreword by Sir Richard Branson
Afterword by Don Cameron

REVIEW:

The 18th-century balloon craze provoked 'soaring curiosity' in many while leaving others rather deflated.

One newspaper correspondent writing in the early 1780s, urged '*all men to laugh this new folly out of practice as speedily as possible*.'

James Sadler, the hero of this charming book, was never likely to follow such grumpy advice. He was something of a pioneer, becoming the first Englishman to mount a successful manned balloon flight, at Oxford in 1784. On that occasion he only managed to travel a few miles but, over the coming decades, he notched up some impressive distances: including 112 miles from Birmingham to Lincolnshire and 237 miles from Dublin to Liverpool.

Mark Davies laments the fact that Sadler has been '*virtually expunged from memory*' and sets out to show just how ingenious and daring this son of an Oxford pastry chef could be. ...

This account of his exploits does begin to run out of steam after a while (another year, another detailed account of another flight) but the pace quickens when Davies discusses, inter alia, the cultural context of ballooning or Sadler's other career highlights; from working on steam engines and cannons to serving as 'Chemist to the Board of Naval Works'.

The King of All Balloons will hold most appeal for aficionados – they will love all the technical detail – but as a slice of social history and an impassioned reminder of a neglected figure it deserves a wider readership.

This review was published in the March 2016 edition of Geographical Magazine

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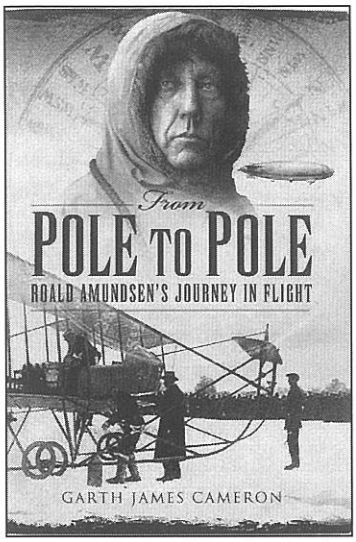

FROM POLE TO POLE: Roald Amundsen's Journey in Flight

By Garth James Cameron

Hardcover: 193 pages –17 Oct 2013
Publisher: Wizard's Tower Press
ISBN: 178159337-X
RRP UK £19.99

PRESS RELEASE

Roald Amundsen (1872-1928) was the most successful polar explorer of his era using sledges, dogs, ski and ships. He is mainly remembered for being the first man to reach the South Pole on 14 December 1911. What is less often remembered is that he was also the first man to reach the North Pole on 12 May 1926 as the leader of the Amundsen-Ellsworth-Nobile expedition in the airship 'Norge.'

His involvement in aviation from his experiments with man-lifting kites in 1909 to his death in 1928 while flying from Norway to Spitsbergen has not been the subject of a detailed study until now.

This book explores Amundsen's enthusiasm for flight from the moment he read about Bleriot's flight across the English Channel in an aeroplane on 25 July 1909 .... [and realised the] potential of aircraft to explore those portions of the globe which remained unexplored in the first quarter of the 20th century.

... He saw aeroplanes flying in America and Germany in 1913 and ... he passed his flight test on a Farman Longhorn biplane on 1 June 1914 and in mid-1915 was issued with the Federation Aeronautique Internationale (Norge) aeroplane pilot's certificate number one.

He bought a Farman biplane to take on an expedition to the North Polar Sea but the outbreak of the Great War stopped the Expedition and Amundsen gave his Farman to the Norwegian government. After the war he acquired a Curtiss Oriole biplane and two Junkers F13's then in 1925 he embarked on a flight, which he barely survived, to the North Pole in two Dornier Wal flying boats. 1926 brought long delayed success when the [airship] Norge flew to the Pole and on to Alaska.

On 18 June 1928 Amundsen and five companions took off ... on a search and rescue flight for the missing airship Italia and were never seen again. The only traces of the men and their aircraft were a tip float and an empty fuel tank which washed up on the coast of Northern Norway several months later. Searches of the sea-bed near Bear Island for the remains of the Latham 47 flying boat he was flying in took place in 2004 and 2009 and interest in the mystery of his disappearance remains high.

REVIEW:

Having a few books on the bookshelf regarding the *Italia*, and a copy of Nobiles' "*My five years with Soviet Airships,*" I spotted this book in a local discount book store and asked for it for Christmas.

I know the story of the *Norge* and of course the more publicised *Italia's* flight over the Pole, but told from one perspective. This book is an excellent insight into the other side of the story - revealing the expertise of Amundsen ... the rudimentary level of flight ... and what they were trying to achieve.

On airships, it covers areas not really looked at, for example, the construction of the airship shed at Spitzbergen. I knew of it, of course, but had no idea that it was constructed in darkness during the polar winter!

The flight of the *Norge* is well documented and there are some great photo's of the landing which I had not seen before. The *Italia* flight is also well described but from Amundsen's perspective and his involvement in the search.

I really enjoyed reading this on cold winter journey's home on the train, in the dark - it added to my appreciation of the effort and hardship these men had to endure.

ALASTAIR LAWSON

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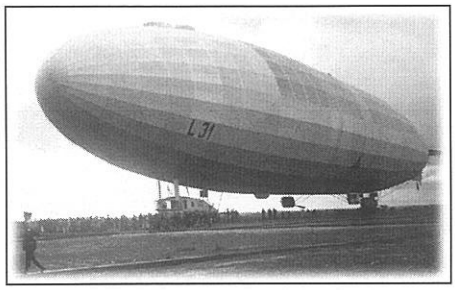

THE LAST FLIGHT OF THE *L31*: The true story of the Potters Bar Zeppelin

by Ray Rimell

To be published Summer 2016
*A4 format * 24 pages plus glossy laminated card covers * 52 photos and plates * Source notes, Appendices and Bibliography.*
ISBN 978-1-906798-47-5
Price: £10.00 from selected outlets and also direct from the publishers: Albatros Productions Ltd., 10 Long View, Berkhamsted, Herts, HP4 1BY
Tel: 01442 875838

PRESS RELEASE

100 years ago on 1 October 1916, the inhabitants of Potters Bar in Middlesex bore witness to the dramatic destruction of a raiding German Zeppelin that crashed in flames on the Oakmere Estate. All 19 crewmembers, including the airship's redoubtable commander Kapitän-leutnant Heinrich Mathy, perished.

Now this evocative century old event is commemorated in unprecedented detail by well-known WWI aviation author/illustrator Ray Rimell in a brand new book to be published this Summer to mark the centenary of L31's destruction.

With the aid of many contemporary eyewitness accounts, plus official military records and personal family archives, the author not only presents a fulsome account of the night's drama but also traces the wartime career of Heinrich Mathy as never before.

Including over 50 rare photos, together with specially-commissioned colour artwork and drawings, Ray's unique publication accurately records one of the most dramatic aerial encounters over British soil during 'The Great War'.

This Special Limited Edition, individually numbered and signed by the author , continues the highly-acclaimed series of Zeppelin titles from Albatros Productions ...

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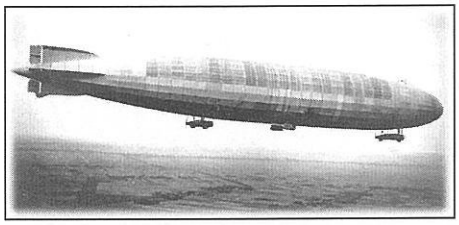

THE LAST FLIGHT OF THE *L32*: The true story of the Billericay Zeppelin

by Ray Rimell

To be published Summer 2016
*A4 format * 24 pages plus glossy laminated card covers * 55 photos and plates * Source notes, Appendices and Bibliography.*
ISBN 978-1-906798-48-2
Price: £10.00 from selected outlets and also direct from the publishers: Albatros Productions Ltd., 10 Long View, Berkhamsted, Herts, HP4 1BY Tel: 01442 875838

PRESS RELEASE:

On 24 September 1916 the residents of Billericay in Essex were witness to the dramatic demise of a raiding German Zeppelin that crashed in flames on the fields of Snail's Hall Farm. All 22 crew-members aboard, including the ship's commander Oberleutnant zur See Werner Peterson, were killed.

Now this evocative century-old story is commemorated as never before by well-known WWI aviation author/illustrator Ray Rimell in a brand new book to be published this Summer on the centenary of the event. With the aid of many eyewitness accounts, official records and personal family archives, the author describes the last flight of L32 and its destruction over Essex in unprecedented detail.

Including over 50 rare photos, together with specially-commissioned colour artwork and drawings, our unique publication accurately records one of the most dramatic events to occur over British soil during 'The Great War'.

This Special Limited Edition, individually numbered and signed by the author, continues the highly-acclaimed series of Zeppelin titles from Albatros Productions - World leaders in WWI aeronautical publishing. It will appeal to dedicated aviation enthusiasts as well as devotees of Essex local history.

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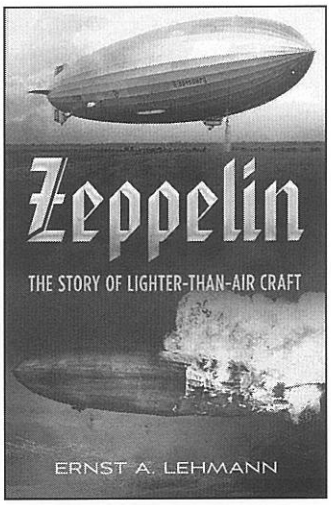

ZEPPELIN: The Story of Lighter-Than-Air Craft

by Ernst A. Lehmann
Edited with notes and illustrations by Alan Sutton
Introduction by Ian Castle

Hardcover: 352 pages - 11 Sep 2015
164 black-and-white photographs
Publisher: Fonthill Media Limited
ISBN10 1781550123
ISBN13 9781781550120
Price £20.00

PRESS RELEASE

The author, Ernst Lehmann, was close to the Zeppelin story from its early days and had great faith in the ever increasing success of the Zeppelin on international routes. It is sadly ironic that this talented man and strong advocate of the Zeppelin should die in the Hindenburg disaster [in May 1937] shortly after he had produced the draft for this book. ...

Lehmann was a Zeppelin commander during the First World War, bombing England on numerous occasions, and even met some of the supreme German commanders such as General Erich Ludendorff.

He was well acquainted with Count Zeppelin and all of the designers and management of the Zeppelin Company. After the war Lehmann worked for the Company under Hugo Eckener, who took over the management following Count Zeppelin's death in 1917.

Lehmann was closely involved in the voyages of the Graf Zeppelin, including the famous round the world voyage [1929], and he pioneered services to the United States and the regular service to South America.

Lehmann makes his Nazi sympathies quite clear, but tactfully does not touch upon his differences with Hugo Eckener regarding the use of the airships for Nazi electioneering — Eckener was strongly against it. Nor does he touch upon Göring's manoeuvring which broke up the Zeppelin Company, thereby leaving Eckener as an outsider ...

Lehmann served as commanding officer on more than 100 flights of the Graf Zeppelin between 1928 and 1936. In 1935, when Göring created the Deutsche Zeppelin Reederei to increase Nazi influence over Zeppelin operations, Captain Lehmann was named director of the new airline. In 1936, he commanded 10 round-trip flights to Lakehurst on the new Hindenburg.

The text is well-written, approachable, and provides a comprehensive account of the Zeppelin story until the 1937 disaster which cost the author his life.

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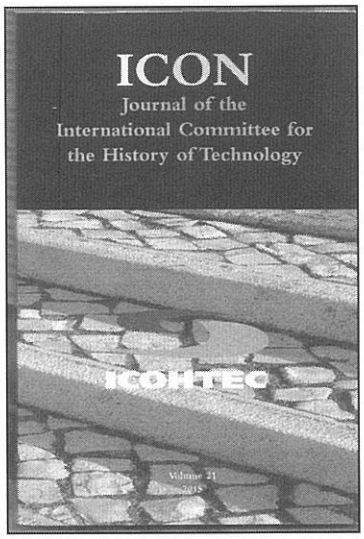

ICON: Journal of the International Committee for the History of Technology

ISSN: 1361-8113

ICON, founded in 1995, is the journal of record for the International Committee for the History of Technology (ICOHTEC), an international organization dedicated to the study of the history of technology. Published annually, ICON seeks to be a forum for broad discussion of issues related to technology's impact on social, economic, political, environmental and cultural issues in an international context. ICON's goal is to foster co-operation amongst scholars from all parts of the world by providing timely review and circulation of ideas to an

international audience of like-minded individuals. ICON ... welcomes submissions from non-ICOHTEC members, and particularly encourages submissions from authors for whom English is not their first language.

The aims of the organization are ... to establish close working relationships among specialists of different disciplines ... to foster international cooperation for the study and development of the history of technology. ... to promote the study of appropriate historical subjects ... [and] to facilitate research and documentation ... in all countries in the history of technology ...

ICON Volume 21 (2015) has just been published and it contains two airship-related papers. One co-authored by Prof. Francisco Gonzalez Redondo and Dr Giles Camplin on *The Controversial Origins of the Airship Mooring Mast*, and the other by Prof. Mark Kulikowski on the *Technology and Politics behind the Soviet Airship Progamme*.

More information at:

www.icohtec.org/

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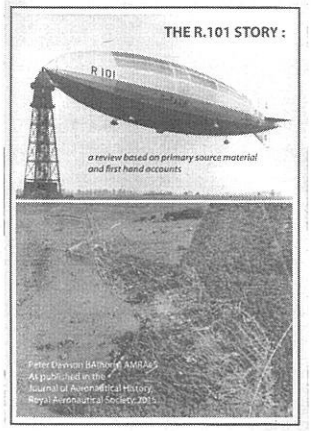

THE *R101* STORY

by Peter Davison

Publisher: Royal Aeronautical Society Historical Group (web-page) and The Airship Heritage Trust (paperback)
Available Free from the Royal Aeronautical Society's online, peer-reviewed, web-based Journal of Aeronautical History (JAH) at –
http://aerosociety.com/Assets/Docs/Publications/The%20Journal%20of%20Aeronautical%20History/2015-02R101_Davison.pdf
Or
As an A4 paperback - 126 pages
From The AHT
Price £10.00

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REVIEWS

THE AIRSHIPMEN
by David Dennington
Paperback: 637 pages – Pub. 2016
ISBN: 9781518642524
RRP UK £19.99

REVIEW:

Along with our *Dirigible* Editor, I had been in contact with David Dennington over the last couple of years, and had assisted with some details for this book. Finally ... it was ready to be published and my copy duly arrived. I would say '*through my letterbox*,' but the package from Amazon was too big to go through. I had completely underestimated the size of this work. It's a very big novel in every way.

Having read many non fiction books in my time, it was David who kept reminding me, "*It's a work of fiction*". I know the story, I know what happens, but in this book, David's eloquent narrative weaves you inside all of the characters you know from the Imperial Airship Scheme.

There have been a couple of smaller fiction books, written around the events of the *R101* tragedy, but this is the first one ever, which weaves you through the people and places you know so well. Lord Thomson's relationship with Princess Marthe Bibesco is wonderfully interwoven, with details which I had not really given much thought to, nor his true political standing at the time of the events.

The two main characters are fictional, but everyone else steps into the pages from history. The book is beautifully written and sets the scene so well with such detail ...

There are a couple of times I caught myself frowning at minor historical name "changes", but of course, this is totally allowed, as "it's fiction" ... I'd never come across a book of this calibre on our pet subject. It is extremely well written and perfectly paced with wonderfully rich characters, and the research on the subject is immaculately detailed.

David brings colour to a black and white subject. ... this is a unique book, the first of a genre of airship "fiction" based on extremely well researched facts.

ALASTAIR LAWSON

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REVIEW:

The Airshipmen tells the tale of the fictional Chief Petty Officer (and later Lieutenant) Lou Remington of the United States Navy who comes to England for the acceptance trials of the *R38* airship being purchased by the United States. Surviving the crash at Hull but seriously injured, he settles down to a quiet life with a Yorkshire lass, only to be recalled by the US Navy to be seconded to the British Air Ministry on the *R100* and *R101* programs.

He observes the construction and testing of the two ships, crosses the Atlantic on the *R100*, and survives the crash of the *R101*.

Lou is one of the few fictional characters to populate the story. The result of years of research by author David Dennington, we are taken deeply into the engineering and operations of the *R38*, *R100* and *R101*, and into the lives and struggles of Barnes Wallis, Nevil Shute Norway, Vincent Richmond ... and other .. historical participants, all ... subjected to the political machinations and personal ambitions of Lord Christopher Thomson, Major George Herbert Scott and Prime Minister Ramsay MacDonald.

Although substantial at 660 pages, the action, intrigue and mutual distaste between the participants of the two competing progams of the Imperial Airship Scheme are constant. Not a page is wasted, and this is very much a book that one cannot put down. **JOHN TAYLOR**

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REVIEW:

In one corner of a large cabinet I have a small section of a shelf dedicated to airship fiction. Several titles date back to the 1920s, some are older, a few are more recent. Not included are the likes of *The Hindenburg* by Michael Mooney - even though it might qualify and the movie surely does! Airship fiction is rare; I have reviewed but two examples of novels.

Here are offered thoughts on two recent examples:

THE AIRSHIPMEN
by David Dennington
ISBN-13 978-1518642524

And

FLIGHT OF DREAMS
by Ariel Lawhon
ISBN 978-0-385-54002-5

Both of these novels are loosely based upon actual events in aviation history. The climactic event in each case being the crash of the

largest, commercial rigid airship in existence: the *R101* in *The Airshipmen*; the *Hindenburg* in *Flight of Dreams*. In both novels, actual historical characters interact with fictional characters to advance the fictional plot line leading to the smashing conclusion. In both novels, though the airships and the principle characters are British and German respectively; each includes a key central, pivotal, character who is an American.

The Airshipmen covers a time frame from the crash of *R38* (1921) to the crash of *R101* (1930); *Flight of Dreams* covers but three days of time, the duration of the *Hindenburg*'s final flight.

The Airshipmen is the more airship-oriented story and, for the sharp-eyed reader contains the most technical errors. In ten years, Dennington goes much farther afield with flash-backs to the First World War, a visit to Depression Era Washington, D.C. and an encounter with the Ku Klux Klan in addition to airship building and flying. The knowledgeable reader will recognize familiar anecdotes, recycled from other sources, the use of which some may find questionable. However, for that knowledgeable reader, this character study of "*The Secretary of State for Air – Brigadier-General the Right Honorable Lord Thomson of Cardington, PC, CBE, DSO*" more than compensates for other shortcomings. This is neither Nevil Shute's version, Sir Peter G. Masefield's version, nor Sir Basil Liddell-Hart's obituary of Lord Thomson and, though fictional, it conveys a tone that rings close to believable.

David Dennington has written a novel based primarily upon what history has been written. He has created a number of fictional characters which allows him to fill in gaps in the known history from fictional, therefore unchallengeable perspectives. David describes it as "*a tale of love, betrayal and political intrigue.*"

The reader unfamiliar with the history will find this a fascinating story of interactions between political leaders, their subordinates and families, in the pressure cooker of international depression, affecting a government project, enmeshed in difficult circumstance, unlikely to result in success.

The reader familiar with the history will find he is alternately agreeing with, and conflicted by, David's fictional narrative.

Flight of Dreams offers the *Hindenburg*'s last flight as a backdrop for the interaction of the author's characters, both real and imagined.

There is little to criticize technically as there is little technical about *Hindenburg* to criticize. At one point there is a line about a Nazi luxury hotel - and it might as well have been. Am I to criticize airship officers being provided with Lugar pistols when a Walther would have been more discreet, or checking the cylinder of the stolen Lugar to be sure that it's loaded when a Luger has no cylinder?

I enjoyed the interaction between characters, both real and fictional, with the backdrop of threatened sabotage to hydrogen-filled *Hindenburg* being the true back-drop which has a contemporary analogy in the 21st Century.

Perhaps I am showing my age but I feel obligated to observe that both novels contain a level of sexual content that has become de rigueur in modern fiction. ... transferred to the American movie screen, both would likely receive an "R" rating ... I mention this only to suggest that adults buying either novel as a gift for a youngster may wish to read it themselves to ascertain its suitability for the recipient. **C.P.HALL**

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THE AIRSHIPMEN
by David Dennington
ISBN-13 978-1518642524

REVIEW:

I have to confess that I have struggled with this book largely because I find myself in the category of readers identifiied above by C.P.Hall as alternately in agreement and conflicted by it.

I am sad about this because, as Alastair says in his review, (p41), David has long been in contact with AHT during the gestation of his book so I am well aware of the extent of his research into airship history.

In fact I am truly amazed at his thoroughness and one of the most potentially valuable parts of the book is the Bibliography at the back, which may encourage newcomers to the subject to delve a little deeper.

With this I am in full agreement but my conflict arises from the book's subliminal strong reinforcement of the theory that '*R100 was all good and R101 was all bad*".

This can been seen in silly little things - for example, when fictional *R101* flies slowly, she "wallows" and when she flies low she does so "dangerously" - two strongly emotive words that are not applied to the fictional *R100.* As I say these are tiny irritations but they all add up and they linger in the mind of the reader.

I had hoped that some of the more pernicious fictions along these lines which were embedded deep in the public mind by *Slide Rule* had begun to be eroded in recent years. Indeed, as someone at the Nevil Shute Society Annual gathering last year said: "*Shute wrote 47 works of fiction and one of them was his auto-biography Slide Rule.*"

So what saddens me about *The Airshipmen* is that while it may attract many welcome newcomers to the subject they will come ready-primed with misconceptions that will take time and effort to correct.

GILES CAMPLIN

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A STING IN THE TAIL

My daughter is kind enough to purchase an occasional book for me, via the internet ... As a result she gets pop-up ads from Amazon ... Recently three books about airships popped up. At the bottom of one of them was a brief review (below) ...

Occasionally it has been suggested that my reviews can be a little harsh? ... I try to be honest and candid. ... I thought that you might be amused by a truly 'harsh' critique in the same vein offered briefly yet succinctly by someone else. One has to admire his way with words about a book I shall not be buying. C.P. Hall

THE GREAT AIRSHIPS OF COUNT ZEPPELIN
By Werner Behrends
ISBN-13: 9781329610187

REVIEW: This "book" is nothing but a print-on-demand re-hash of material taken directly from *Wikipedia*, with apparently no original content. Save your money and time, and just look there instead! Such so-called "books" are intellectual robbery, and Amazon should be ashamed of presenting them for sale. My copy is being returned for a refund.

FRANK BARRETT

Found at:
www.amazon.com/product-reviews/1329610180/ref=cm_cr_dp_syn_footer?k=The%20Great%20Airships%20of%20Count%20Zeppelin&showViewpoints=1

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ARRIVALS, TRANSFERS, DEPARTURES

(Or, for the less aeronautically obsessed - BIRTHS, MARRIAGES, DEATHS.)

DEPARTED

HERMAN F. VAN DYK SOEREWYN
1925 - 31st March 2016
Expert Draughtsman and Model-maker

Born in the Netherlands in Vlissingen in 1925, Herman Van Dyk was educated in Europe as an electrical engineer and was offered the ability by Wakefield based firm Transitron to immigrate to the United States along with his wife and two young daughters.

Over his career with multiple engineering firms he earned several published patents, fostered a life-long fascination with aeronautics and made a hobby of creating lifelike models of airships, including the Goodyear blimp and the Hindenburg, many of which can now be found at the National Smithsonian Institute in Washington, D.C. Many of his written articles were internationally published and have been cited in works re-published all over the world.

www.lyonsfuneral.com/obituaries/Herman-Van-Dyk-Soerewyn/#!/

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FORTHCOMING EVENTS

- **15th March 2016 - New *Gas Bags to Super Zeppelins* Exhibition** opened by Dr Fiona Spiers, director of the Heritage Lottery Fund at the Yorkshire Air Museum, Elvington, York
- **Saturday 11th June 2016 – The AHT Annual General Meeting** in the Castle Room at The Higgins Art Gallery and Museum, Castle Lane, Bedford, will be followed by an illustrated lecture by Tim Shields of the Transport Trust. He will talk about the restoration and operation of The London Transport Museum's genuine 1914 London General B-Type 'Battle Bus'. Meeting starts at 2.00 pm. Guests welcome.
- **Thursday 30th June 2016 – The Barnes Wallis Foundation Annual Public Meeting** will be at Howden School & Technology College, Derwent Road, Howden, Goole, DN14 7AL at 7pm. The Speaker will be John Anderson, President, of the Nevil Shute Norway Foundation, and his subject will be "*Barnes Wallis and Nevil Shute - Intersections and Influences.*" Free Admission - For further information contact: Gerry Carroll - 01757 638498 or Ken Deacon - 01430 431858
- **Saturday 3rd to Friday 9th September 2016** – ceremonies to commemorate the shooting down of Schütte-Lanz *SL11* by Captain William Leefe Robinson VC at Cuffley. Plans include laying of memorial paving stone, Exhibition of WW1 memorabilia and parts from crashed airship and operatic performance in Cuffley Hall. Contact Cllr Peter Dace at **peterdace@btinternet.com**
- **24 & 25 September 2016 – The ZEPFEST** commemorating the 100th anniversary of *Zeppelin L33* landing in Essex will be held in fields around Copt Hall, Little Wigborough, (CO5 7RD) and planned attractions include: Displays of Zeppelin memorabilia and photographs, WW1 aircraft, vehicles and artefacts, Flypast of WW1 planes (weather permitting), Music, Family fun, etc., Tickets available in July from the National Trust. For information: **www.zepfest.net/#home**

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MEMBERSHIP MATTERS

AHT Annual Subscriptions are due on the 1st of January each year

UK Membership : £25 per annum : Overseas Membership : £35 per annum
Subscribe via ***PayPal*** at the AHT website (**www.airshipsonline.com/members/**)
or
By Standing Order made payable to: "The Airship Heritage Trust" : Account Number : 31563866
Sort Code: 40-24-07 : HSBC Bank plc, Unit 2, Marlowes Centre, Hemel Hempstead, HP1 1DX
or
By cheque made payable to: **"The Airship Heritage Trust"**
Sent to: **The Membership Secretary**
Brian Harrison, 9 Quaggy Walk, Blackheath, London SE3 9EL
Enquiries: **membership@airshipsonline.com**

***AHT welcomes** : John D Binks; Louis Cunningham; Ian Dobson; Paul Fielden; Jens Schenkenberger; Paul van Daalen*

Air Raid Warning Poster issued by the Borough of Guildford after the raid of October 13, 1915 - See p18

Borough of Guildford.

RULES FOR THE

Safety of the General Public

IN CASE OF

AIR RAIDS.

To those who happen to be in the Street.

Take cover immediately. There is danger from bombs from aircraft, also from fragments of shells and bullets, etc., from guns used against aircraft. The assembly of crowds is very dangerous, and might prove fatal. The nearest basement would be the safest place. Any fragments of shells should be handed to the Police, for the purpose of being forwarded to the War Office for expert examination. Unexploded bombs must not be touched, but information respecting them should be given to the Police at once. Do not strike matches to light pipes, etc., nor use electric hand-lamps. Obey orders given by the Police quickly.

To those in Private Houses.

Stay there—preferably on the ground floor, but, should there be a cellar, in the cellar. Provide yourselves with matches, candles, or electric hand-lamps, and turn out lights. Be prepared for electricity being turned off at works. Should gas be turned off at the works, or should you turn off gas at meter, see all gas burner taps are properly turned off before the gas is turned on again. Stand away from walls lest they fall on you.

One thing NOT to do.

Do not rush out of the house to see what is going on.

SPECIAL WARNING TO ALL.

Read new Lighting Order of the 21st October, 1915, posted throughout the Borough, and act accordingly. **This Order will be strictly enforced.**

Expert opinion is against warning by blowing of syrens or ringing of bells in case of air raid. It has been decided to discontinue such warnings in Guildford in future.

C. S. ODLING-SMEE,
Mayor.

25th October, 1915.

MILLS & SONS, Printers, Castle Street, Guildford.

Source: www.guildford-dragon.com/2015/10/13/terror-zeppelin-raid-on-guildford-was-100-years-ago-tonight/guildford-063/