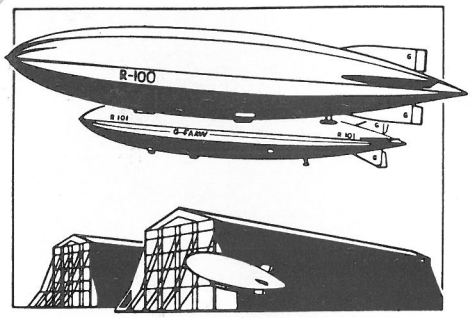

DIRIGIBLE

THE JOURNAL OF THE AIRSHIP MUSEUM

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DIRIGIBLE is the journal of the Airship Museum and is published by Friends of Cardington Airship Station. It is published quarterly and distributed free to all members and associate members of FOCAS and, through our close associations, to the Friends of the British Balloon Museum and Library.

■ The objects of **FOCAS** are to foster and promote the study of the history of airships in every aspect, and to present the results of such study to the public, and to stimulate public interest in the role of Cardington as an airship base and in the conservation of the principal buildings thereof, and in particular to promote and assist in the formation and operation of a museum and study centre devoted to the airship.

Full Membership of FOCAS is limited to persons who, having a particular interest in or knowledge of airships, are approved by the Governing Council, the Trustees, who are elected by members from among their number. There is also provision for Associate Membership, which is open to the public generally. Further information and application forms can be obtained from:

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NEWS BRIEF

New Editor for Dirigible:
A warm welcome to Paul Adams who has taken over as editor of 'Dirigible' and who will be pleased to receive any items of interest for publication. It is hoped that the publication of 'Dirigible' will be uninterrupted from now on.

Planning Appeal:
The appeal against the rejection of our application for planning permission to build the Museum on our own site on the Airfield has been entered.

Cataloguing:
Work is continuing cataloguing our holdings and to identify the most suitable computer system for the museum.

R 101 Model:
Richard Albone has given details of his 4ft model of the R 101 which is nearing completion and which he will make available for display by FOCAS.

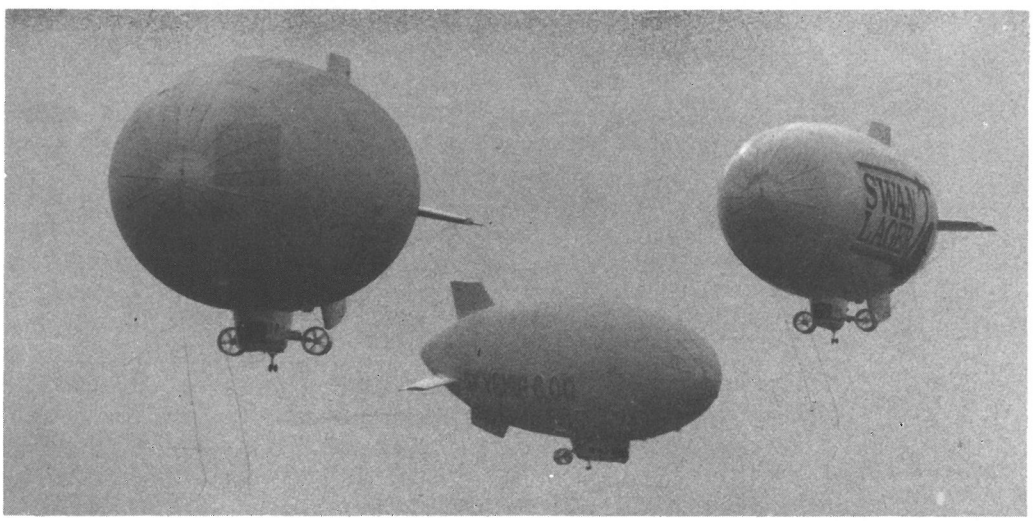
Happy Birthday:
The 90th Birthday of Lesley Murton, the youngest Coxswain on Non-Rigids in World War One and an Honorary Life Member, was marked with a Birthday Card from FOCAS signed by members of Council.

R 101 Commemorative Service

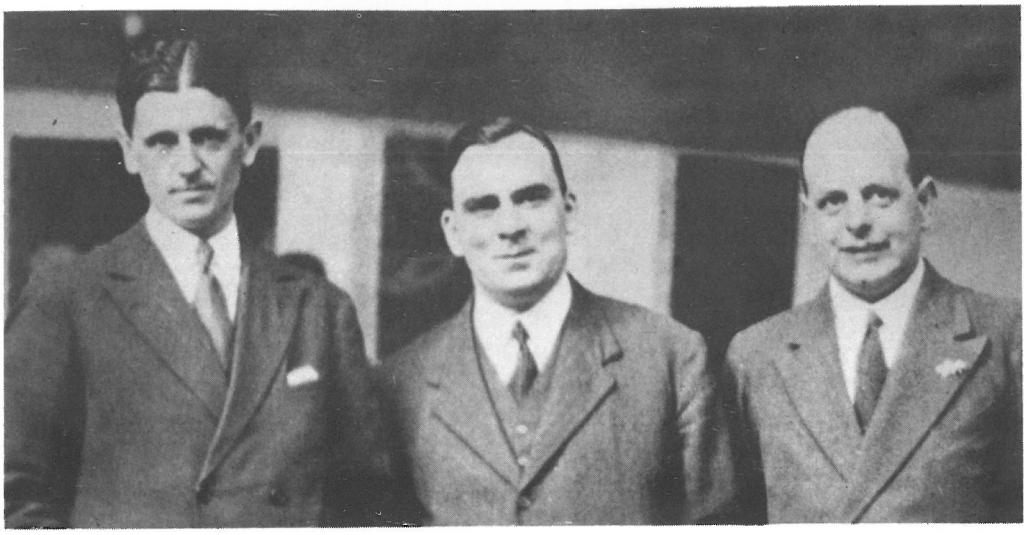
Cardington Church was nearly full on the 7th October for the service to commemorate the 60th Anniversary of the crash of HM Airship R 101. Sponsored by the RAOB, the service was taken by the Rev. K. Dixon who also gave the address. It was followed by the playing of the Last Post and Reveille. Amongst the many who attended, including the Mayor of Bedford and the Officer Commanding, RAF Cardington, was a group of 12 from FOCAS with Mrs. F. M. Rope and her Sister-in-Law, Mrs Irene Vaughan who, appropriately, will be 101 years old shortly.

Airship Industries Progress

As we closed for press the future of Airship Industries (UK) at Cardington was still unclear. The company ceased trading as of 28 September and most of it's employees made redundant. We understand that there are several parties interested in buying the assets of the company. Let us hope for a successful outcome of negotiations so Cardington may continue as an operational airship base.



A formation of Skyships at Cardington, September 1985. In the background is SK600-001, currently grounded in shed No. 1 awaiting a buyer.



Richmond of R101

E. A. JOHNSTON gives us a personal insight into the chief designer of R101

Vincent Richmond was a grave and courteous man. Despite a slight limp, he played a zestful, even hard, game of tennis; but in teaching me, aged ten, the game on his grass court he showed an infinite capacity for suffering foolish children gladly. I well remember the charming homes he and his wife Florence kept—in the early years in Bedford, and later in the Old Rectory at Odell with its tranquil view, framed by huge copper beeches, southward across the gentle valley of the Ouse. They were full of flowers and books and music and good company. One wall of his study was lined with bookshelves, and on the bottom shelf was a collection of airship manuals and books which I used to read voraciously. On his desk there was a stereoscope with a superb collection of photographs of the structure of R 101; his lucid, unpatronising explanations of the design philosophy and the mechanics have stuck in my mind ever since.

Richmond was in fact a structural engineer by training, a graduate of the Royal College of Science, whence he had taken up employment in a firm which built docks. In 1915, at the age of 22, he was given an RNVR commission as a Lieutenant and, being an unusual and highly intelligent man, found his way into the RNAS. He earned his nickname "Dope" at the RNAS factory at the White City, where the envelopes of the non-rigid airships were made, by devising a method of pre-doping the fabric so as to speed up the production of envelopes.

In the summer of 1919 the Inter-Allied Aeronautical Commission of Control (IAACC) was set up to enforce the air clauses of the Treaty of Versailles—effectively, to oversee the destruction of Germany's military avaiation capacity. It was headed by the airship pioneer, General E.A.D. Masterman, who brought in a number of bright technical people including "Dope" Richmond, whom he put into the Naval Sub-Commission for the Surrender of Airships. This was Richmond's "Road to Damascus". From the moment he first saw the "Bodensee", then operating a commercial air service between Friedrichshaven and Berlin, he was wholly converted to the cause of developing rigid airships for long-distance transport. He became obsessed. He was appalled by the determination of the Allies to demolish the activities and the sheds of the Zeppelin Company. His widow Florence told me how he suffered frequent nightmares, in which the old Countess von Zeppelin would attempt to suffocate him, until the influence of the United States brought about a reprieve for the Company in 1921.

Now possessed by a sense of mission, Richmond used his influence with General Maitland and Wing Commander Cave-Brown-Cave, who had been in charge of the design and construction on non-rigids and was now in charge of Airship Research in the Air Ministry, to obtain an appointment under the latter. Ostensibly he was in charge of research into fabric for airships, but a man of such determination, with such a combination of breadth of view and intellectual penetration, soon found his office extending to research into the whole field of rigid airship design and construction. At a time when the Air Ministry was seeking to rid itself of its airships, there was an immense amount of speculation about their possible uses for civilian purposes. Confident yet modest, a strong personality yet a good listener, an enthusiast yet capable of sound judgement, and possessed of a brain that could quickly absorb detail and still penetrate to the essence of the matter, Richmond soon found his place among the leaders at the centre of airship affairs—his Chief, Air Vice Marshal Sir Geoffrey Salmond, who was a member of the Sub Committees of the Imperial Defence Committee that was formulating airship policy, Reginald Colmore the senior airship staff officer after Maitland's death, Major Scott the country's leading airship operator,

Top: Richmond is flanked by Flight Lieutenant H. C. Irwin (left), Captain of R101, and Major G. H. Scott, Assistant Director of Airship Development

Opposite: R101 nears completion in September 1929.

Southwell the head of Aerodynamics at the National Physical Laboratory, Bairstow the structures king at the Imperial College of Science and Technology. He continued to maintain a link with Paul Jaray, the designer of the later Zeppelins. When Sir Dennistoun Burney burst into the airship scene, he wanted Richmond, together with Barnes Wallis, to join him in the ambitious "Burney Scheme" to build half a dozen very large rigids to operate services to the furthest outposts of the Empire. Wallis, although he was the most distinguished of the surviving airship designers, was at this period on the very periphery of things.

Richmond did not in fact join the Burney team, but played an official part in analysing and commenting on the propsals for the Air Ministry Advisory Panel of Airships until his Air Ministry appointment was terminated in 1923, when he became an inspiring lecturer on airship design and construction at the Imperial College of Science. Jointly with Major Scott he won the R38 Memorial Prize for a paper on the effect of meteorological conditions on airships. When it became evident that the Government was going to sponsor a major development programme, he wrote to Scott, in effect asking for a job. The Government's decision in 1924 to build its own ship at Cardington and let Burney's company build a second one at Howden seemed to overlook the fact that of the three experienced living airship designers, two—Wallis and Temple—were already committed to Burney's Company, while the third, Pratt, had decided to leave airships for ever. In the circumstances Richmond, an "insider" in the sense that Wallis never was, was the obvious, if not the only candidate to head the design and research department at Cardington.

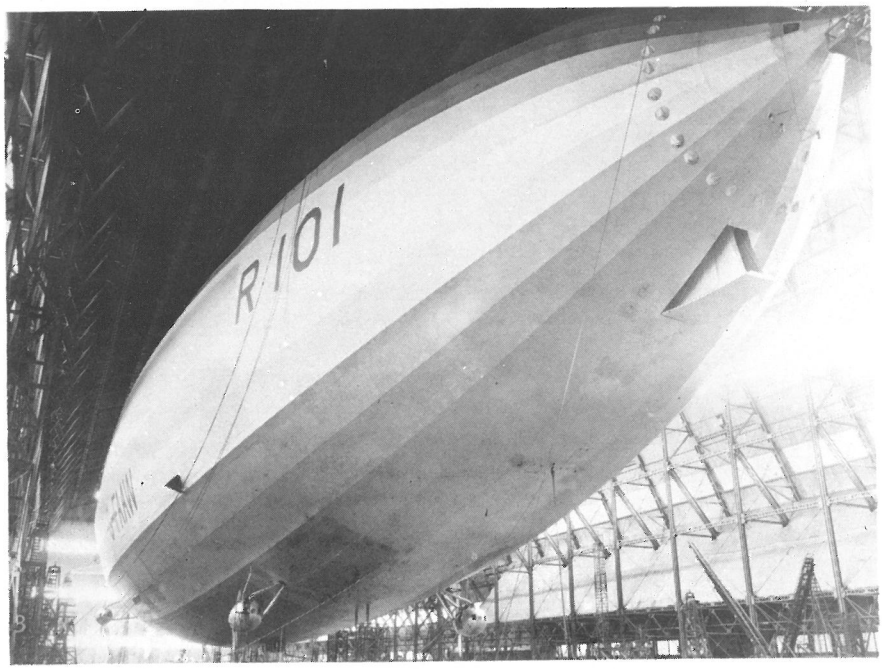
Under Sir Geoffrey Salmond's direction, Richmond together with Colmore and Cave-Brown-Cave wrote the specifications for the two airships. Explicitly the Government ship was to be highly innovative, while the second ship, as an insurance against failure, was to be a refinement of established airship practice. Neither was to have petrol engines. With remarkable courage that was matched only by self-assurance, Richmond thereupon set about a research, design and development programme aimed at producing as his first airship one that departed from all earlier practice in several fundamental ways; its shape would be as near as possible perfectly streamlined; its transverse mainframes would be unbraced and constructed mostly of stainless steel; its fins would be of high aspect ratio; its gasbag wiring for transmitting the lift from the gasbags to the ship's structure would be of revolutionary design, and so would its automatic gas valves; and it would be powered by compression-ignition engines, then almost unknown in aviation.

He certainly was not the brilliant design engineer that Wallis was. On the other hand he did have an exceptional grasp of the theoretical basis of airship design and construction, he was a first class administrator, he knew how to pick good subordinates and delegate. He chose his former boss, the greatly respected Wing Commander Tom Cave-Brown-Cave, to be in charge of the power plant installations; he delegated the detailed design work on girders to J. D. North, the Chief Designer of Boulton & Paul, a leading expert at making metal aeroplanes; he selected the brilliant Flight Lieutenant Michael Rope as his Principal Assistant; and among his juniors on the design staff were such as Miss Hilda Lyon, (Sir) Alfred Pugsley, J. F. (Lord) Baker and Harold Roxbee Cox (Lord King's Norton) who were to distinguish themselves later.

As a youngster I was very familiar with the naked lattice frames of R33 and R36, but they did not prepare me for the awesome first sight of the huge test bay of R101 erected in the shed at Cardington in 1926—the two deep framed transverse rings containing the fuel and ballast tanks, interconnected by a mere 15 slender longitudinals, and within the bay the gasbag bulging against its parachute wiring. R101 really was an exciting and original ship.

Much was written then and has been written since, denigrating both Richmond and his airship. "R101 was too heavy." In fact, her structure weight was much the same as that of R100. The trouble was that

"From the moment he first saw the 'Bodensee' he was wholly converted to the cause of rigid airships for long distance transport"



her diesel engines turned out to be twice the weight of the design requirement; but without them she would have been deemed unsafe to operate in the tropics; on the other hand, the much lighter petrol engines of R100, forced on her as a stop-gap

because the intended kerosene-hydrogen engines never materialised, simply inhibited her from fulfilling her primary design mission. Both ships suffered equally from serious trouble with their outer covers. But R100 did have the benefit of an extra five tons of lift due to her slightly larger volume, and this, coupled with the added payload arising from her lighter power installation, gave her a margin of performance that took the pressure off everyone concerned with her.

When the lift and trim trials of R101 confirmed that she simply was not up to the job of flying to India, the whole credibility of the airship programme hung on Richmond's ability to find a fix. He was not helped by Lord Thomson's public statement after her second flight in October 1929 that he hoped to fly in her to India that Christmas. Nevertheless, in her original flying form, R101 was a good ship which handled well and pleased her Officers and crew. It was only when the fixes were applied that things began to go wrong.

In 1930 Richmond, now 37 years old, came under enormous pressure. To the job of making R101 meet Lord Thomson's exacting timetable for the first flight to India was added that of working out in detail a five-year airship programme that involved not only the operation of enlarged R100 and R101 but also the design, construction and operation of two further airships half as big again. The man who had been a patient listener now began to treat opposing views with something approaching arrogance. His grand vision was taking shape in Lord Thomson's new programme. In September 1930 the Treasury authorised spending on the two new airships to be put in hand, pending a review of the full forward programme after the flight to India and in the light of any decisions reached by the Imperial Conference in October. The realisation of a dream hung on getting R101 to India before that Conference. A sort of vanity now seemed often to inform Richmond's professional judgements in regard to the preparation of R101 for her premature undertaking, but his undoubted errors of technical judgement have to be viewed by the light of these pressures. And he did stake his life on his decisions.

R 100 Memories

Left: FOCAS member Don Beattie stands with a propellor from R 100. Don is currently reassembling the propellor which had its blades cut off by an unknown previous owner. The propellor will eventually go on display in the museum.

Below: Two rare photographs of the R 100 emerging from No. 2 shed. The pictures were probably taken during January 1930 before the ship had her tail modified. These photographs are now part of the museum's extensive collection.