Spring 1931 - Lead Photo
AN AIR ROUTE SURVEY.

By Squadron-Leader C. H. Hilton Keith.

I was in 70 Squadron when Imperial Airways took over the Cairo-Baghdad Air Mail, and took from us the very desirable fortnightly trips to Egypt. It looked as though our days might become uncomfortably hum-drum. But then I heard that someone had gone to do down to the Persian Gulf to explore the possibilities of sending aircraft to India via the western shores.

The civil air route from Iraq to India had been fully surveyed years before, but this route traversed the Persian littoral, and difficulties arose with the Persians, who wanted to route this service so that they would derive the maximum benefit. Also it was patent that military reinforcements could not count upon using this route. So came about the idea of searching out an alternative route along the other shores, across Oman to Masqat, over the Gulf of Oman to Baluchistan, and thence, coastwise, to India. The territory to be flown over on such a route was not under any power which might prove obstructive, and so, though it had drawbacks, it might be a practical alternative.

It was specified that petrol facilities should be available every 200 to 250 miles. This meant selecting sites for landing grounds for re-fuelling not only at specified intervals, but also so placed that petrol could be dumped there without undue difficulty, that water was always available, and that there was a reasonable guarantee against molestation. Many other amenities occurred to us, but it was idle to hope for too much in or around the Persian Gulf. In addition, emergency landing grounds were to be available every five to thirty miles along the route, except, of course, on the sea crossing, which had to be at least 250 miles. For moving air forces the use of carriers as artificial islands along the sea crossing occurs to one as a possibility.

The survey was going to entail a lot of organized travelling, and I did not wish to upset the plans if I went sick, so I deemed it wise to ask for someone to go with me. F/O. Officer C. W. Switzer, also of 70 Squadron, was anxious to go, and A.H.Q. agreed to this. Throughout my travels my Indian bearer accompanied me, acting as interpreter. His unwavering devotion was an example of the service of which an Indian is capable.

Our relations not being very settled with Ibn Sa’ud when I left, it was decided not to touch the coastline of his kingdom but, as a preliminary, to endeavour to select sites along the coast between Bahrain Island and Masqat, leaving the interior of Oman until later.

The question of replenishing the petrol dumps restricted the areas in which the re-fuelling landing grounds could be sited, and before we started we knew there would have to be one somewhere about midway between Shiba and Bahrain, near Ras-as-Safaniyeh, but this could not yet be considered as it was within Ibn Sa’ud’s territory.

Bahrain was an obvious site, being a good port and a regular call for steamers.

Beyond this, Yas Island, for reasons of security in this region, appeared promising, and then Abu Dhabi would have to be another. When we could cross the Oman Peninsula to Sohar fuel must be available there, as it was too far to be sure of getting on to Masqat, or the prescribed 250 miles would be exceeded. Fuel at Masqat there must be, also at Jinni, the farther end of the sea crossing, in Western Baluchistan.

Bearing these sites in mind, we set out on March 23rd, 1937, in the s.s. Varvaria, from Basra, to join H.M.S. Triad at Jask.

It is impracticable and unwise to attempt to explore this country without preparation and a certain measure of security. The Political Resident, therefore, joined us at Bushire, and was with us to pacify the notables whenever it was necessary for us to wander ashore and seek sites. With much hard work, but without active opposition, suitable sites were selected at Masqat, Sohar, Abu Dhabi, Yas Island and Bahrain for the re-fuelling landing grounds, and at Sib, Kharburah and Doha for the prescribed emergency landing grounds. In addition, the possibility of suitable sites on Henjam Island and at Khassab, on opposite sides of the entrance of the Persian Gulf, were considered at the request of the Resident. It remained for us to select sites along the wild coast south of Yas Island and in the Oman hinterland, between Abu Dhabi and Sohar.

Having completed the preliminary surveys, from the Triad, I returned to Baghdad to report progress to A.H.Q., leaving Switzer at Bushire with the Resident. It was held to be essential that the country between Abu Dhabi and Sohar be explored, and Air-Commodore T. C. R. Higgins, then Chief Staff Officer, said I must attack myself to a trading caravan and do this journey. In the light of my subsequent experiences, I have often wondered whether he said this with his tongue in his cheek. It looks so simple on a small map.

On the advice of the Resident, I asked that an M.O. be allowed to accompany me. His ability to promote friendly relations with the tribes by treating their sick was considered to be of great value. Had an M.O. not accompanied me I doubt whether I should have been able to write these lines to-day. I was given F/Sgt. Leatt, T. V. O’Brien, and here and now let me say that he put up an exceptionally stout show.

I went to Bushire with O’Brien, and there we picked up Switzer and went on to Karachi to join H.M.S. Lapa, which was to attend us. From our
Depot at Karsaz I borrowed a portable W/T transmitter. I did not take a receiver, as accumulators could not be charged and dry cells would have swollen up and died in that heat. I wanted the transmitter so that I could broadcast the news to Lupin if our camels were lost.

We went to Masqat to prepare our plans for the journey, calling on the way to Sohar. There Capt. B. S. Thomas, O.B.E., the Waizir of the Sultan of Masqat, joined us; also the Political Agent of Masqat. It had been arranged that Thomas should make the journey with us. He was keen to go and I was delighted to have him with us, as his knowledge of the country and Arab tribes would be of great assistance to us.

He had arranged that the Shalahs of the tribes through whose country we should travel come in to Sohar to meet us. All were in, except Shalah Sayyid Salih, of the powerful Naim tribe which inhabits the oasis of Biremi. He had sent a wild nephew, out of whom we could get little except that his uncle was coming in. We did not wait for him, but went on to Masqat.

By now I had quite got the idea out of my head of joining up with a caravan, for the excellent reason that there was not one. Only armed parties move in that region. The journey we contemplated was first accomplished by Zweymer, an American missionary, in 1856, and next by Sir Percy Cox in 1902. Since then no white feet had made that journey. It only became manifest that we needed a good sum of money. With some misgiving I called A.H.O. for Rs10,000 credit on the Masqat State. I have since heard that the C.A. and F.A. nearly had heart failure, but I got the money the same day. On a hot, weary afternoon we sat in the ancient building serving as the Masqat treasury, and solemnly counted over Rs10,000 in coin.

Thomas was a tower of strength and his resource was boundless. He was on our way back to Sohar. En route we landed at Masqat and selected a site there, which I had to miss when in Trind. Arrived off Sohar, I felt sick and was seriously afraid I should have to abandon the trip. However, O'Brien took me in hand, and I returned to normal. It was owing to over-exertion at Masqat, and it gave me a useful lesson.

We landed ourselves and our gear, and half the Rs10,000 at Sohar, going through the thrill of surf running in the sea infected with sharks and water-serpents. We erected W/T and tried it out with Lupin, and I took a star sight, to see that my equipment was O.K. I had tried to get a telephex, but the only available one at Baghdad was suffering from smelie decay, so I decided to use my own sextant and to take ‘double-altitude’ sights in a mercury bath, to fix our position.

This fixing of position was desirable, as our maps were largely printed imagination. Certain difficulties had to be overcome, however. I could not use the sun, as, apart from its being dangerously hot by day, its altitude in those latitudes was too great. Humidity by night caused excessive refraction. I had found my chronograph would not settle down to a steady rate. This probable inaccuracy in time we got over by broadcasting our time to Lupin after taking a sight. I am told by the Royal Geographic Society that this reversal of the normal process of checking time is novel.

The tribesmen of our escorting shahids filled the small village of Sohar, and the bazaars were busy and noisy. The Wali gave a wonderful dinner. He is a half-brother of the Sultan, but Prince Hammed, elegant and charmingly soft-spoken as we found him, was not easy to deal with. The Naim shahid had not come in, so we decided to move off and meet him on the way, as our escort were, by now, ‘lured’ and a daily bill was accruing against Air Force funds. We moved off next afternoon to Al Aushi, and as we got going Lupin had his anchor up and set off to Abu Dhabi, naming us ‘Goodbye and good luck’ on her siren. When we came within sight of Lupin twenty-two weary days later, she was to us the most welcome sight in all that world.

At Al Aushi we were met by the shahid, a mild, pleasant old man, who had provided food for us to eat, and carpets. We sat and smoked after dinner, and it happened as the Resident had predicted: the shahid bashfully confessed that he had been taken onto himself a young woman aged about twenty-five years of age.

But he now felt he had been misled, and could our white ‘halabim’ (doctor) give him a tonic to put sparkle into his eyes and springiness into his footsteps, that he might not lose favour in his young wife’s eyes. And O’Brien rose to the occasion and sent him off a happy, happy man! That night our escort thought to improve the shining hour by looking the village, but were welcomed with rifle fire and I awoke to hear bullets whizzing amongst the palms.

Of crack of dawn, for we could only travel for a few early hours and for a few at dusk, when the sun had lost his power. By day we had to exist on dates and mutton, mutton being an universal saving grace. We planned to move up, through the mountains, along the dry bed of the wadi Jizil, as far as Najd, the pass which gives on to the rolling sand plains of the west, in which the oasis of Biremi lies. At first we moved over low, level, and arid ground, but soon we got into the mountains, following the wadi.

There was no sign of the Naim shahid, but the second day out we got evidence to the reason of his absence. Passing Shalat in single file along a narrow path with O’Brien leading and I following, we came abreast with an ancient camel—fort—which promptly opened fire on us. Shooting something in the air we were able to gape at the sight of the Ghilzai, which sounded unprintable. O’Brien came off his camel, 1-1-2, and I followed suit, putting the poor old camel between master’s body and the fort. A lot of shouting followed and no more shooting, so one of our escorting shahid came up and took the rifle口径, and I was able to obtain the camouflage of the fort.

O’Brien opened his surgery, and work was fast and furious—and foul. They brought in all their most unsavoury sick and he piled his trade with the aid of my bearer. Being Mahomedan, they would not take any anesthetic, so all the surgery was done in cold blood, and I must say those natives teach one how to handle pain. There it was we first drank the milk of cows and dried fish, and the taste thereof is novel.

On our way, next day, we ran into an ambush, cleverly posted on either side of a defile, but they were Hamdan’s men and he called them off. They were disgruntled and felt they had been done out of some fun and ought to shoot someone, so our escort all loaded up not to be out of things. For a while it looked as though Incaus smoothed matters over and we went on. Arrived at Hall, we decided we would wait there for the Naim shahid and sent ahead a messenger. The stout-hearted Suleiman-bib-Madhafer, Wall of Khabra, who always accompanies Thomas on his travels. He went off to Biremi to see how matters stood. All was peaceful for two days, and O’Brien gained much fame amongst the sick. Then, on the third night as we were asleep, the village turned out to see our throts. Our escort saved us, as they were getting a daily hire and felt we were more use to them alive than dead, and I had promised them more money when we reached Lupin.
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at Abu Dhabi. Thomas thought it would be more healthy to move, so we packed up and got under way at 0300. Mercifully it was moonlight.

Reaching the Najdi Pass later that morning, our escort got cold feet and refused to go on. They were scared of the Na'im tribe and said we had best return to Sohar. Madhaafar had not come back and they scented trouble. Thomas and I rode on for an hour or so, and left the rest in the pass, ready for the worst, with armed outposts to the surrounding hills. When we returned, we found that Madhaafar had got back, having missed us along a loop track. Stout-hearted man that he was, he said he knew she was not, I have seldom seen anyone so scared. He had ridden without stop back from Biremi, where he had been very roughly handled. Their Wali was out with an armed party, picketing the walls against us, and was then on his way towards us. This news quite settled our escort: they flatly refused to stay. But we flatly refused to go back. Then Hamdan, scenting the possibility of making some money, suggested we go south to his village of Kithnah, and find shelter there. Thomas considered it, and for want of a better plan we decided to adopt it. No time for rest or food—off we went under the sweltering noonday sun. Late that afternoon we rested in the dried bed of another wadi, and towards dusk rode into Kithnah, having again been sneaked from a wadi, and were then on the way, which evidently did not like the look of us. We were in terra incognita, as no white foot had ever entered Kithnah, and we were objects of extreme interest to the villagers. They surrounded us and sang in welcome, but their song sounded to me suspiciously like the spidery's to the fly. Next day Thomas and Switzer and I climbed a hill and found we were in a cul de sac, and there was no hope of beating a retreat to Shinas, on the coast south of Sohar.

Rested, we decided to send out further messengers and make another attempt to enter Biremah, and this time shahib Hamdan himself went, with instructions to show right through to Abu Dhabi and to get shahib Saqr bin Said of the Bani Yas tribe to send in a party to meet us.

Meanwhile, we waited, camping in the date gardens of Kithnah. Life was oppressive— the atmosphere being that of a Turkish bath.

At dawn we used to troop off to a little bathing pool we had dammed in the wadi. But the bathing was not ideal, as small green leeches came to seek our blood, and the first day one got home on O'Brien, he broadcast in his native tongue, till the mountains echoed. Then, curiosity to see white bodies led the women to frequent the high banks above the pool, and a laughing mock crowd gathered regularly at every dawn.

O'Brien's fame was now assured, and the halt and maimed were brought in from near and far. Hour after hour he toiled, cutting, scraping, bandaging and talking all the while, no word of which his patients understood. It was an unsavoury business. One day he was told that the women wanted to consult him, and he came and asked me what he should do about it. I gave him my blessing and off he went to the harem quarters, with his instruments in his hand and his heart in his mouth. Returned, late for dinner, he said some of them, unveiled as he had seen them, were beautiful—but we didn't believe him.

Four days and then came a smoothly worded message from the Na'im, which made it abundantly clear that we were not wanted. Then came word that the Wali of Biremi had reached Hail. It was asking for trouble to remain where we were, so Thomas managed to persuade Shaikh Salem Ibn Deyan, of the Bani Ka'ab tribe, our paramount shahid, to take us north to his home town of Mahadahh. This place lay almost exactly on the air line, Abu Dhabi to Sohar, and we thought to locate a landing ground site there.

At night we left and did an eight hours' forced march—or rather, too—for Mahadahh. That ride was a nightmare. Riding in single line, through a hot wind that made one's eyes sore so that it was difficult to keep them open, one had carefully to keep in sight the camel ahead for fear of losing the track and dropping out. All camel tracks run near the acacia bushes, from which the camel snatches a mouthful as he passes. By day one can strive to avoid them, but at night the first one knows is having the shoulder of one's shirt half torn away.

Arrived outside Mahadahh, we bivouacked, as it is most wise to enter any strange village after dark in that country. We remained in the village for a few days and tried to buy our way into Biremi, but without success. Thomas and Switzer and I climbed 4,000 feet up to the summit of Jebel Mahadahh early one day, and therefrom obtained an excellent view of the surrounding country, which was all rolling sand dunes to the westward. Clearly, through our glasses, we could see the forbidden oasis, and I expect that is all I may ever see of Biremi. I hope so. As we descended the rocks were so hot that they blistered our hands; and back in the village we fell exhausted into a little stream and lay soaking in our clothes.

Hopeless now of reaching Abu Dhabi, we selected a site for an emergency landing ground near Mahadahh, and prepared to move away north-east to strike the coast at Sharja. The country we now passed into was very different from that of the mountains, and the dull monotony of negotiating the endless sand hills was very trying. Our moves were from wells to wells, and twice we had to extend our marches to distant wells, as the ones we reached were foul or drying out. The nights were heavy with drenching dew, so that dawn found us wrapped in a heavy mist.

We had broadcast to Lupin our altered plans, and two days from the coast a party came out from Sharja to meet us. It was a great scene as we met our friends, in that unchangeable wilderness.

It was King George's birthday, and from where we were we could just see the tracks of Lupin, between which she had hung a tricolour with flags. It was a wonderful sight, when we reached Sharja we were welcomed by the Navy, who had most generously landed the Ward Room bar.

TO LITTERERS NEAR GRANWELL.

Why dost th' throw thy rubbish here,
Th' mucky loot?
Th' drinks th' beer.
And throws all th' bottles here aboot;
Th' ates th' grub
And leaves all th' paper lyin' here.
Hest th' nova gumpion?
Man canna scrub
Th' floors o' murrils and hills.
Hest th' nova sense.
With all th' toawy frills,
Mucky loot?
1.—WATERING OUR CAMELS AT BAHUTH.
3.—TIFFIN WITH OUR ESCORT.
2.—MASQUAT TOWN AND HARBOUR.
4.—THE WATI AT SOHAR.
Spring 1931 - Graduation Photos

THE PRIZE WINNERS—WINTER, 1930.

PASSING-OUT TERM—WINTER, 1930.

Standing—Bennett, Morison, Smith, Muir, Whitman, Munro, Dibden, Nicholas, Macdonald, Baker, Robinson, Cecil Wright

Sitting—Ford, Hector, Wallace, Collier, Gowan, Glen, Hughes, Holman, Connell, Pearson, Isbister
A REMINISCENCE OF LEIPZIG.

By Flight-Capt. A. McI.

At Taucha, near Leipzig, on October 20th, 1909, the unveiling of a memorial to Captain Richard Bogue, of the Rocket Troop of the Royal Horse Artillery, proved so interesting an echo of the Battle of Nations that I felt it to be well worthy of commemoration in our Journals.

Historians are vague about the part played by British troops in this famous battle; in some cases they deny the participation and dwell instead upon the exploits of Wellington in Portugal during the five years prior to 1813. Hence I should like to place it on record that in fact a detachment of the Royal Horse Artillery, known as the Rocket Troop, was a surprising and very effective factor in deciding the success of the Allied Army by its novel introduction of rockets into warfare.

From the beginning of the nineteenth century, Lieut.-Col. Cowper, having been experimenting with the rocket as a weapon of war, encouraged its success when employed against besieged fortresses and the inflammable battlements of that period. In 1811, a detachment of the Royal Horse Artillery, under the command of Capt. Bogue, was placed at his disposal for carrying out fuller experiments; but the results did not quite convince a committee of artillery officers formed in 1813 to deal with the question; they recommended that a further trial be made abroad under conditions of active service. Accordingly the Rocket Brigade was equipped, landed at Wiinsen in the province of Mecklenburg in August, 1813, and was attached to the Northern Army.

During the fatal day of October 18th, five battalions of General Blücher's Corps were retiring from a warm engagement at Pansdorf, when the Prince Royal of Sweden, through Sir Charles Stewart, directed Capt. Bogue to form the Rocket Brigade on the left of a Russian battery and open up on the retiring columns. The sprays of burning resin from Cowper's formidable weapons paralysed the enemy, who were "blown asunder like an ant-heap"; and a charge by cavalry completed the confusion. Sir Charles Stewart now directed Capt. Bogue to take up a position to the right of the enemy's line, but in the act of retiring the gallant captain received a stray rifle ball on the head and was killed. Lieut. Straugway took command and carried on; a further dose of the terrible fire and another cavalry charge ousted the panic-stricken remnants of the five battalions to lay down their arms in surrender.

Two days later, a sorrowful funeral procession of British soldiers, led Captain Bogue to rest in Taucha Cemetery.

The tomb was restored this year, and on the 175th anniversary a memorial was unveiled in the presence of a distinguished company, which included Col. Bolte, commanding Leipzig Garrison, Capt. Baron von Bectholsheim of the Reichswacht, officers of the 15th (Saxonian) Infantry Regiment, the Burgomaster of Taucha, Herr Vogel, the Curator of Taucha Heimat-Museum, and Lieuts. D. S. Hamilton, A. C. Matthew, and a trumpeter, of the Rocket Troop of the Royal Horse Artillery.

I take this opportunity of acknowledging our great indebtedness to Lieut. A. G. Matthew, R.H.A., for supplying our photographs and for procuring for our inspection some records of the Rocket Troop, and to Herr Vogel, Curator of the Taucha Heimat-Museum, who replied so promptly and so fully to our request for information. It is to be greatly regretted that space does not permit publishing in full his most interesting account of the ceremony: we shall, however, conclude by quoting the following excerpt:

GERMAN-ENGLISH PROCLAMATION AT THE GRAVE-SIDE OF AN ENGLISH OFFICER WHO FELL AT THE BATTLE OF LEIPZIG.

By Embard Vogel.

A modest but impressive heavy stone block bearing four plates inscribed in English and German relating the story of the deeds and the tragic death of the Commander of that peculiar troop of arms, the action of the Saxon troops on the side of the French, and the death of the brave Bogue at Leipzig on October 13th, 1813. This gave the Saxon troops on the side of the French, who were placed near Pansdorf and Sieberhausen, an opportunity of attaching themselves to the Allied forces, thus bringing about the famous victory of that memorable day. A simple stone still marks the position where the English Rocket Brigade had taken up its formation and where their young leader, Capt. Richard Bogue, who was 31 years old at the time, and whose valour and audacity are stressed in historical reports and documents, met his death for the mutual affair of Germany and her allies. A short time after his troops had taken part in the battle, Bogue was shot in the head by a French bullet and was buried on the same day alongside the grave of the Russian General at Taucha, the grave of General von Manteuffel, who was seriously wounded on the same day. This took place on October 20th, 1813. English merchants and relatives visiting his grave erected for him a monument of eternal memory in 1816. The pronounced classical style of the monument represents a valuable piece of art at its time; the artistic effect being increased by its simple geometrical structure at the place of his death. The growing tomb of time, 155 years, had left its mark on the monument and complete dilapidation would have ensued. At the right moment the newly founded Museum at Taucha gave instructions to the author to take steps for the maintenance of this valuable historical document. The collection which was started had little or no success. A few prominent associations subscribed small amounts. When, however, the British Embassy at Berlin was informed of the matter, a more rapid progress was clearly noticeable.

The British Royal Artillery Memorial Association must be credited for raising the high funds for the renovation of the monument in honour of one of their own countrymen. Thanks to the co-operation of the British Consulate at Leipzig and the supervision of the Heimat-Museum at Taucha, the renovation work was carried out quickly and faultlessly. On October 20th, 1965, the new monument was to be consecrated at a small celebration under the auspices of a representative of the British Royal Artillery Memorial Association and the British Consul at Leipzig. The celebration was conducted in such a manner as one had hardly expected. The Royal Horse Artillery had brought, from its Rocket Troop, which still keeps up the traditions of the Rocket Brigade, Lieut. D. S. Hamilton and Lieut. A. C. Matthew. The Reichswehr Ministry at Berlin was represented by Capt. Freiherr von Bectholsheim, further by the Commander of the 3rd Saxon Infantry Regiment in Dresden, Col. Bolte, and finally by the 2nd Saxon Infantry Regiment at Leipzig, the Captains von Steindorff, Böttcher and Helwig were present. Other well-known personalities were the Mayor of Taucha, Dr. von Heldorff, Dr. Uhlemann and Mr. Vogel from the Heimat-Museum, the three local military associations, the church authorities, the historical societies of Leipzig, and finally the British Consul, Mr. Beak, and the American Consul, Mr. Busser, as well as numerous Englishmen.
A REMINISCENCE OF LEIPZIG, OCTOBER 20th, 1930.
Autumn 1931 - Lead Article (1)

LIGHTER-THAN-AIR CRAFT.

By Major C. C. Turner, A.F.R.A.E.S.

In the matter of airships, Great Britain has been trying to run before she can walk. In 1924, after a period of stagnation, the Government decided on a programme providing for the building of two airships of unprecedented size, at the same time neglecting provision for keeping airship personnel in training. The reason for this was a necessity to restrict expenditure, but at the same time to experiment with ships of enormous hull capacity. With a small increase in linear dimensions there is a big increase in volume, and airship theory assumes that structural advances and increased useful load can thereby be secured.

There were many critics of this policy, but it was framed in consultation with airship experts, who, pointing out its one weakness, nevertheless were confident of a success which would vindicate lighter-than-air craft.

The disaster to the R1 in England, followed shortly by the loss of the “Shenandoah” in the United States, had made a deep impression on the public, and when the two biggest airships in the world, the R100 and the R1, were being prepared for their launching there was in existence in the public mind something like a “disaster complex,” and this had been further stimulated by the outspoken forebodings of Mr. E. E. Spamer. Even the friends of the airship feared that any slight mishap would have an extremely damaging effect, whilst a disaster of any magnitude might be expected to “kill airships for ever.”

In short, in this department there was a state of nervous tension, and at the same time an intense desire to vindicate airships by spectacular displays. The temptations contingent on this “atmosphere” were for long steadfastly resisted, but I think it is apparent that resistance gradually wore down. I do not propose to analyse this factor in the situation any more closely.

Yet I think it is essential to our proper understanding of a very important question that we should realize that, so far from British airship experts having been privileged by the opportunity given to them to realize their dreams of very big airships, in which could be embodied features upon which they placed the utmost reliance, they were, in point of fact, from the first labouring under handicaps and burdened by responsibilities which could only have been sustained by super-men. Under stress of financial straits, and grievously wounded by the disaster to R1 with its heavy toll of Americans and Britons, we vacillated, scrap ed airships, vacillated again, and allowed airship personnel to disperse; we then demanded of a small body of experts that they should bridge a great gulf by building airships twice as big as any ever made, and that without opportunity for operational practice they should navigate those ships. Thus a train of cause and effect was laid which bore its bitter fruit in the dreadful disaster to R1. Has this country taken the lesson to heart? Will it ever learn the lesson?

The airship is not dead. Despite disasters, more money is now being spent on airships than at any time except during the Great War. More scientific and engineering talent is being put into bigger ships than ever before. Are we to suppose that the United States and Germany are staking too much on a hopeless project? It stands out conspicuously that airships have at least a very plausible case. Great Britain failed by losing faith and courage in adversity eight and ten years ago. The danger is that she may be making the same mistake now, and whenever Britain is false to her tradition of indomitable and unswerving courage and resolution she pays a heavy penalty.

We have got to carry on with airships, and although the present programme of experiments and of resumed flights in R100 was the utmost that could be expected at the moment, the country must make up its mind, and that very soon indeed, that this is but a brief temporary measure and that more serious work on a larger scale must follow.

We cannot help ourselves. The United States and Germany are going ahead. If it were merely a matter of defence in the military sense we might, relying on a belief that there will be no more war, stand by, or make a gesture for peace. Very little is it a matter of defence, however, and very much is it a matter of commercial development which we cannot afford to neglect.

What I would urge then is that we regard the present programme as a brief temporary expedient, and that we prepare ourselves for a general advance after a few months, not waiting for our friendly rivals to get too far ahead, and very definitely not again imposing an impossible task on our airship personnel, expecting them to work miracles and retrieve a situation brought about by our lack of courage and spirit.

In this connection I am convinced that Capt. F. N. Boottby’s suggestions of an Airship School should immediately be adopted, to analyse the lessons to be learned and to ensure their application in the future. Such a school did, in effect, exist at Pulham at the time the late Air- Commodore Maithland was in control. It was ruthlessly and wastefully scrapped at a time of cowardly panic.

Under the burden of disasters we have lost sight of the fact that British airships have a very good record, and few people realize what a great amount of airship work was done during the war. The following figures of hours in the air and distance travelled by airships speak for themselves:

<table>
<thead>
<tr>
<th>Year</th>
<th>Hours</th>
<th>Miles Flown.</th>
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</thead>
<tbody>
<tr>
<td>1915</td>
<td>...</td>
<td>1,146</td>
</tr>
<tr>
<td>1916</td>
<td>2,395</td>
<td>31,675</td>
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<tr>
<td>1917</td>
<td>9,382</td>
<td>57,914</td>
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<tr>
<td>1918</td>
<td>55,836</td>
<td>1,195,753</td>
</tr>
</tbody>
</table>

That was in war time; and the casualty rate for that period, including losses due to enemy action, shows an average of one fatality for every 42,546 miles flown.

It is sometimes alleged that airships absorb a disproportionate amount of manhours and other wartime figures disprove this, and these figures would be greatly improved at the present time owing to the use of the mooring tower.

Men employed per hour flown:—Airships, 1.62; aeroplanes, 3.52.

Kerosene flown per man employed:—Airships, 1.04; aeroplanes, 0.40.

Average duration of patrol:—Airships, 6 hrs. 15 min.; aeroplanes, 2 hrs. 2 min.

Casualties to airship personnel:—530.

Fatalities due to enemy action and flying accidents:—48.

A great many more airships have been built and a great deal more work done with them than most people realize. But by comparison with aeroplanes, which are so much cheaper and easier to build, and which have a far more rapid developmental, airships represent a much more costly undertaking. The few disasters which have befallen them have been more terrible than any aeroplane accidents, and the resultant set-back the more
serious. It is not unnatural that many voices should be raised in protest. Many of us who have lost whole companies of friends in these disasters are tempted to heed these protests, to which weight is added by pressure to avoid the spending of money on anything which does not buy immediate necessities, although we are, as a nation, on our way to industrialism and the prospect of a busy industry are among our paramount necessities.

But we cannot evade our responsibilities in this matter. We cannot stand by idly or be foreclosed to the new opportunity which demands that something shall be done to compensate for cruiser shortage. So seriously has our cruiser programme been cut down that the Navy is faced by a situation in which it may no longer be able to carry outfitted vessels. It is acknowledged that aircraft must be brought into the breach, and there are solid grounds for believing that our airships serve many years, and possibly always, will be far more suited to such duties than flying boats.

It may be objected that airships have proved so vulnerable in war that they may safely be ignored. From this respect. Against that view it should be stated that such naval duties as those referred to would never expose an airship to aero plane attack, whilst peace-time naval activities, which are very important to civilization, to security on the high seas, and to the preservation of brigandage and piracy, are also to be considered. Surely, too, we cannot ignore the fact that the United States is building airships which, heavily armed, inflated with a non-combustible gas, and equipped as aero plane carriers, are designed as powerful instruments of war.

Where, then, do airships stand at the present time technically? What is the answer to the fear that every ship might be lost at any moment to go up in flames? It is claimed that the report on the disaster to R10 clearly shows there was no inherent fault in the design of the ship. Here I would like to remark that the finding of the Court of Inquiry, although presented in an almost conventional way, and although led up to by an investigation admirably conducted, does not settle beyond question the cause of the disaster. There are alternative possibilities, although these also would not condemn airships in principle.

One of the possibilities has been mentioned by Air Commodore A. A. Masterton, R.A.F. (Ret.), who refers to the incident on the day of the R.A.F. display last year, when R10 was compelled to discharge ten tons of ballast. Air Commodore Masterton questions the decision that the disaster at Beauvais was due to a loss of gas forward, but the Chief Coxswain went aft a few seconds before the final dive, and from this it may be inferred that the officers or deck crew were under the impression that the elevating power had failed. "Had the ship been of a loss of gas forward he would move everybody aft as quickly as possible so as to trim the ship." The opinion is expressed, therefore, that there was a repetition of the trouble which had occurred on Display day, and further that there is no conclusive evidence that the airship was not at the same time much lower than 1,000 to 1,500 feet.

Again, the assumption that the airship was down by the head is open to a possible explanation which may be of value, whether it applies in this case or not, to future airship operation. The instability which we now mention was, I believe, first explained by Mr. Griffith Brewer. To understand it we must consider the case of a very long airship making slow travel-speed with a heavy wind a-beam, compelled thereby to move in a crabwise manner like a ferryboat crossing a swift stream. Supposing in such a case the very long airship enters a region where there is a slight downward component in the wind over a limited fixed area the air is always moving, but the region where it has a downward component remaining constant. The down-draught need only be a very gentle one for the theory now being considered. It might be of slight character as to have been ignored by those examining the evidence for the loss. The effects of the region, however, would be felt in all the altitudes in the region. We know a certain amount about the behaviour of currents deflected by ground irregularities; that is to say, we know about the more definite and conspicuous currents, but it is by no means sure that we can at any moment draw an accurate chart of currents at all altitudes in a region, and we shall say, roughly north-east of Beauvais ridge and extending for four or five miles thereto. And there are other causes of downward currents than hills. Over wood and lakes balloonists always feel a tendency to descend.

Now a very long airship travelling south, but with her bows pointed S.W. by W., or approximately thereto, might easily for a considerable time have her nose in the down-draught while the rest of her was clear. The crew would have no knowledge of so slight a current, which, however, would hold the head of the ship down. She might be clear for a few seconds, or the control would operate and bring her level; but down by the head she would go again, giving the impression either of failure of elevator control or of loss of gas forward.

These doubts are mentioned not because they affect the main argument of this article, but because it is necessary that every possible condition of airship travel should be considered. By facing all possible and conceivable risks, success may eventually be attained. By ignoring any one of them disaster is courted. Thus, the rain trap on the hulls of the R10 and R11—a brilliant idea which will certainly increase the performance of airships by making it possible to take on board fresh ballast in the form of rain-water, so that on many occasions airships will go out of their way to get into a shower may in certain circumstances prove an embarrassment. In very heavy rain the weight of water which would be collected might amount to two or three tons in a few minutes. It is true that the apparatus provides for the retention of only the desired quantity of fresh ballast, whilst excess can be discharged through the usual water ballast-discharge vents. But it stands to reason that in such a case nice and instant adjustment is impossible, and that it would be difficult to avoid either a too rapid discharge of water or the reverse. Probably only experience is needed to perfect the operation of this excellent system. At present there have been very few occasions to put it into use.

R10 was heavily handicapped by the excessive weight of her engines, which averaged about 8½ lb. per h.p. This factor, together with the weight put into her structure, from the very first made it impossible for her to equal the Empire voyage except under ideal conditions. It led to the making of modifications which played a contributory part in the final disaster. For example, the space round the gas bags was reduced, and this increased the risk of chafing. Then on the attempted voyage to Egypt it was found necessary to keep below a certain altitude as long as possible in order that the amount of gas retained should be sufficient to ensure carrying the load long enough for the distance to be travelled.
Small arrows show direction of wind. Successive positions of Airship travelling in a strong cross-wind, like a ferry boat over a swift stream. Dotted area is a fixed local downward-trending current.
Both R10 and R100 had fabric trouble (as has also the Graf Zeppelin), and this is undoubtedly a besetting weakness of airships with fabric covering which will be even more difficult to guard against as speeds are increased. Fabric trouble, it must be remembered, may easily lead to disaster.

But saving of weight on the engines would enable designers to overcome both fabric and gas-bag trouble, and this saving could be achieved once and for all. The “Cotton” engine, with which the R100 is fitted, has already been adapted for heavy-oil compression-ignition at a weight of little more than 14 lb. per h.p. In the case of the R100 this would mean that on long voyages a very great saving in fuel-weight would be effected, whilst on the R100 it would have meant the lightening of the dead weight by no less than eight tons.

It must be admitted that the attainment of the great framework strength of R10 and R100 has involved a certain sacrifice, and although it cannot be doubted that the item weight could now be saved without sacrifice of strength, it cannot be claimed that either design is the best possible. There is no doubt that airships of such great size that any of the gas-bags entails a problem which has not to be faced in smaller or slenderer ships. In short, it is hardly too much to say that airship design is still in the melting-pot.

In the United States the interesting experiment of metal-sheeted airships is being made, and a small airship has carried out successful trials lasting about three years and comprising more than 300 huns of flying. The designers have made plans for a very big airship on the same lines, and if their calculations and assumptions are correct this may prove the solution of the difficulty. It is too early to say. Meanwhile the United States is committed to two airships of the rigid framework, fabric-covered class, each to have a capacity of 6,500,000 cubic feet. It stands out that one of the critical tests of these ships will relate to the durability of the outer covering.

Another outstanding problem is that of the kind of gas used for buoyancy. Quite obviously, unless an absolutely certain means for preventing fire break-out, and for securing immunity from explosion even in a badly damaged ship, be discovered, hydrogen must not be used. It is true that throughout the history of airships of all kinds, leaving out war conditions, those fires due to hydrogen have been due to explosion, but the disasters which have culminated in explosion have been so grave that the risk of another must not be run. We must remember that in R100 every conceivable fire risk and danger of short circuiting had, it was thought, been overcome. It was claimed that the airship could go through a thunderstorm with scarcely any danger; although, of course, an airship avoids thunderstorms, and does not go through them. The R100, driven down from some cause or another, would have been dammed in any case, but her complete destruction by explosion on landing was supposed to be impossible. After all, the Graf Zeppelin makes ground landings as a matter of course. Discharges of static electricity are secured safely in that ship as in our own. It is not so long ago that the Aeronautical Research Committee published a report in which it was claimed that the use of hydrogen in airships could be safeguarded in a completely satisfactory way.

Here, however, I ought to refer to a suggestion by Capt. F. N. Bogoly, R.N., who some years ago evolved a plan for surrounding the hydrogen in an airship by a sheath of non-combustible gas. This method deserves the very closest attention, for, although it would involve an extra load, it is claimed that the sacrifice of useful lift due to it would be far less than that incurred by inflating the airship with helium instead of hydrogen.

But the airship in helium, and the lift is less by about 7.4 per cent., a very serious drawback, which in the case of R100 would mean a reduction of the lift by about 10 tons, a reduction which would put that airship completely out of consideration as a commercial vehicle. The use of helium would, however, make it possible to dispense with some of the anti-fire provision and equipment, and would also permit of modifications in the design by which greater speed would be secured, and thereby fuel-saving.

Helium, however, is a very expensive gas, and must be conserved far more carefully in the operation of the airship than is hydrogen. Valuing must be reduced to a minimum. Considerable experience of its use has, however, been obtained in the United States, and it is enough to state that all future American airships are to be helium-filled.

The supplies of helium are sufficient, it is claimed, for 1,000 to 2,000 super-airships, whilst additional sources in various parts of the world are to be found. If we decide to use helium we should at present have to get it from the United States, and the quoted price is 40 dollars per 1,000 cubic feet, including cost of transport. That heavy cost, combined with its handicap in the matter of lift, is sufficient reason for examining very closely the idea of surrounding hydrogen with a sheath of non-combustible gas.

Airships are still very much in the picture. The shipping companies have for long given serious attention to them, for they suggest the employment of high-speed mail and passenger craft which would replace the very costly high-speed liner, and enable the companies to employ as surface craft vessels of moderate speed, which are highly profitable. At present the high-speed ocean liner is partly paid for out of the profits of the traffic which is content with moderate speed.

As compared with heavier-than-air craft, we must always remember that airships have the advantage of much greater range. They are the only class of aircraft with which regular ocean services can yet be contemplated, for it will be centuries before flying boats can undertake a regular service both ways across the North Atlantic, whilst no matter how successful the designs of big flying boats prove, it will always be an unavoidable circumstance of aircraft that a useful and paying load has to be sacrificed to range, and that for heavier-than-air aircraft 500 miles stages are likely always to be the maximum economical stages. Of course, craft can be built for very special services in which stages of 1,000 miles may be flown, extravagantly, yet in certain circumstances necessary; but such services will be exceptional, and if aviation is to depend upon them it will never be a great transport industry.

In short, the world needs airships very badly, and I rather think that that being the case it will, in the end, have them.
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THE R.A.E. CATAPULT FOR LAUNCHING AIRCRAFT.

BY P. SALOMON, M. M. BEM, M.A.C.

The use of catapults for launching aircraft from battleships and cruisers is becoming general with many of the navies of the world, and at the present time the largest ships of the U.S. Navy are equipped with one or two catapults. Other navies are not so well-equipped, but it is doubtful in the near future all battleships or cruisers will carry them.

The use of catapults on land is not general and the only one in the Royal Aircraft Establishment at Farnborough is primarily used for testing the suitability of particular aircraft for catapulting and other experimental work.

This catapult was designed to launch aircraft not exceeding 7,000 lb. in weight at a speed of 45 m.p.h. in three seconds, assuming a firm landing. The launch gear comprises a launching platform on which the aircraft may land, and a launching device for lifting the aircraft from the platform.

The launching platform is a rectangular, flat, steel plate, 12 ft. long by 8 ft. wide, and 4 in. thick, which is raised by hydraulic jacks to a height of 12 ft. above the ground level. The launching device is a hydraulic ram, which is actuated by a piston and cylinder, and is connected to a hydraulic power unit by a hose and hose fitting. The hose is run through a metal sheath to protect it from damage.

The launching device is operated by a hydraulic pump, which is driven by a motor. The pump delivers oil at a pressure of 1,000 lb. per square inch to the ram, which is connected to the piston by a rod. The piston is actuated by the oil pressure and is able to lift the aircraft from the platform.

When the aircraft is ready for launching, the operating rod is pulled down, and the aircraft is lifted by the hydraulic ram. The aircraft is then released, and the ram is allowed to return to its normal position. The aircraft is then able to move forward on its own power, and is launched from the platform.

This type of launching device is not suitable for use on land, as it is not capable of launching aircraft at a high speed. The launching device is not suitable for use on land, as it is not capable of launching aircraft at a high speed. The launching device is not suitable for use on land, as it is not capable of launching aircraft at a high speed.