RAF COLLEGE CRANWELL
College Journal Extracts

March, June and November 1954

March 1954 - Lead Photo

Crews of No. 101 Squadron, first Royal Air Force squadron to convert to Canberras, being briefed by their squadron commander (holding map, pencil in hand). This unit provided the crews for the New Zealand Air Race Flight commanded by Wing Commander Hodges (1937). Flight Lieutenant Furze (1947)—seen here also holding map—contributes an account of his experiences in the actual race on page 28 of this issue.

March 1954 - 60 Entry Passing Out Parade (1)

The Passing Out of No. 60 Entry

The Chief of the Air Staff Reviews the Cadet Wing

AT the passing-out parade of No. 60 Entry, held on Tuesday, 15th December, 1953, the College welcomed as Reviewing Officer for the first time since his assumption of the post of Chief of the Air Staff, Air Chief Marshal Sir William F. Dickson, G.C.B., K.B.E., D.S.O., A.F.C.

Three squadrons, and not the customary four, were on parade on this occasion, a sign that the integration of the Equipment and Secretarial Wing had become an accomplished fact since the passing-out parade of No. 59 Entry and No. 10 (E. & S.) Entry in July. This involved a redisposition of the Sovereign's Squadron for the Inspection and the Advance in Review Order and, most appropriately, 'C' Squadron, Sovereign's Squadron for the autumn term, paraded to right and left of the Queen's Colour.

Turn-out was good, drill smart and parade standards were well maintained. The day itself was calm and almost cloudless. Underfoot, however, it was damp and the parade ground itself bore the marks of much rain earlier in the day. Nevertheless, the moisture brought its own reward for the spectator of the ceremony, for the roof of the College seemed to have taken on a hue of unusual greenness, a hue that was reflected clearly in the water that lay in patches on the parade ground. The day, otherwise, though cold, was not unpleasant.

The Address of the Chief of Staff

In his address, Air Chief Marshal Sir William Dickson said:

I would like first to congratulate you on a parade which is in keeping with the high standards of Cranwell. I would also congratulate No. 60 Entry on completing the first stage of your careers as permanent officers of the Royal Air Force.

You are, I think, fortunate to be going out into the Royal Air Force at this time. In the first place it is good for you to feel that the career you have chosen is important and worthwhile. You can know with all humility that it is upon the fighting capability and flying efficiency and the high morale of our Air Force, and those of our allies, that the peace of the world at this critical period of history primarily depends. To contribute to that end is certainly worthwhile.

You are also going out into a Service that, because of these responsibilities, offers a wide field of interest. At this time, it is a particularly wide field, and full of all the same kind of fascinating problems which has always made Air Force service such fun and so full of opportunity for the individual.

You are also lucky that throughout your whole career you will be leaders of a Service whose primary role will be the flying and directing of aircraft piloted by General Duties officers. The fact that aircraft are developing in capability just like ships did in the last century, and the fact that the Royal Air Force has new weapons like guided missiles to develop, so that they may be complementary to the operation of aircraft, are matters of added interest and opportunity in your future careers, and not otherwise. I feel confident that what has been built into your characters here at Cranwell will serve you and the Service in good stead in the future. In your very proper keenness and enjoyment of flying, do keep in the back of your minds that you have been given this unique training and opportunity to fit you to be leaders of men—leaders of airmen. Man is more important than the machine. So, quietly and unobtrusively, study the art of leading men; and do remember (however dull it may sound) that operational efficiency depends on very good administration and maintenance. It was not the tactics, but attention to the preparations which lay behind nearly every victory in the history of warfare.

My final word of advice is: Keep your Cranwell standards! All eyes will be on you out in the Service. There will be some envy. There will be many temptations to fall in with the stream. But, I am sure that with good manners — especially good manners — and tact, and with cheerfulness and keenness, you will survive and be respected. But let nothing destroy that aim which you have set yourself here. Much has been given to you, and much is expected.

I wish each of you of No. 60 Entry, individually, all success and happiness in your future lives.

The Chief of the Air Staff presents the Sword of Honour and Queen's Medal to Senior Under Officer L. A. Jones

The Presentation of Wings and Prizes

On the eve of the passing-out parade, at a ceremony in the College lecture hall, the Commandant presented wings and individual prizes to members of the senior entry.

In his address the Commandant congratulated the senior entry upon the successful completion of their course at Cranwell. For the General Duties flight cadets the moment of gaining their wings was a great one. He reminded them, however, that although they had flying speed, they had not yet reached their operational ceiling. Further training lay ahead of them before they became really first-class pilots worthy of flying the first-class machines with which the Royal Air Force was now being equipped. The Equipment and Secretarial flight cadets, in contrast, were leaving Cranwell to take up positions of trust and responsibility immediately. There would be wide scope for initiative for them and their duties would be no less exacting and no less responsible than those of their colleagues in the General Duties branch. Their training at Cranwell had been a joint training with the General Duties branch. 'Always remember in the future,' the Commandant said, 'that you are colleagues together.'

The Commandant then congratulated the prizewinners. Senior Under Officer Jones's record in prizes won, he said, was remarkable and constituted virtually a clean sweep. This showed an extremely wide range of ability in all types of technical subjects, flying skill and other aspects of College training.

The Sovereign's Squadron, for the second term running, was 'C' Squadron—a most creditable performance which surely called for redoubled efforts by the other squadrons to wrest the very privileged honour from a really good squadron.

Some words of advice then followed. The Commandant reminded the senior entry of the guidance which Air Chief Marshal Sir John

March 1954 - 60 Entry Passing Out Parade (2)

The Chief of the Air Staff in conversation with the College servants

Baker had offered on this occasion in the previous term. All the qualities that Sir John had enumerated were undoubtedly required by an officer who wished to make his mark. For himself he wished to project Sir John's theory slightly and remind the senior entry that there were less virtuous characteristics which might destroy any latent goodness. These were irresponsibility in word or deed, disregard for moral values, contempt for authority and lowering the standards that had been set up at Cranwell as a goal. These less virtuous characteristics had to be fought against if one was to become a good officer.

Mass loyalties, the Commandant continued, should not be developed at the expense of the development of individual character; he asked the senior entry to remember that personal example was one of the most important things in any officer in any Service. 'An officer's standard of behaviour, provided it achieves a right and good standard, can be followed with justification by any subordinate; but if it does not reach the required standard, then the subordinates, human nature being what it is, will always delight in taking the easy path to a breakdown in standards.' . . . Ultimately, personal example not only made or marred one's career, but also the reputation of the Service as a whole.

The Commandant concluded with these words. 'Tomorrow, gentlemen, after the parade, you will be marched off by the Senior Under Officer and as you go into the College you will see two flags flying from the College tower. The right-hand flag will be the R.A.F. Ensign. As you pass into the College . . . you will transfer your allegiance from the Standard of the College to the Ensign of the R.A.F. and from that moment you will have finally and irrevocably dedicated yourself to your Queen and your country. But having done that I would still like you to think of the College.'

Order of Merit

No. 60 ENTRY

General Duties

L. A. JONES, Senior Under Officer: Sword of Honour; Queen's Medal; The R.M. Groves Memorial Prize; The Dickson Trophy; The Abdy Gerrard Fellowes Memorial Prize; The J. A. Chance Memorial Prize; Rugby (Full Colours); Athletics (Captain, Full Colours).

W. E. CLOSE, Senior Under Officer: Cricket (Captain Full Colours); Rugby; Tennis.

J. E. MAITLAND, Senior Flight Cadet: The Air Ministry Prize for Imperial and War Studies; Rugby; Hockey; Angling (Captain).

N. R. MACNICOL, Senior Flight Cadet: Languages Award; Boxing (Captain, Full Colours); *Journal* (Committee and Editor).

P. J. ANSTEE, Senior Under Officer: The Phillip Sassoon Memorial Prize; The Royal United Services Institution Award; Rugby (Secretary, Half Colours); Debating.

T. S. B. BOYCE, Under Officer: Shooting (Full Colours).

A. S. J. WHITWAM, Under Officer: Athletics (Captain, Full Colours).

J. A. MORGAN, Under Officer: Association Football (Half Colours); Debating (President); *Journal* (Committee and Assistant Editor).

D. ALLISON, Senior Flight Cadet: Athletics (Full Colours); Rugby; Association Football; Bridge (President).

J. M. B. BOWES, Senior Flight Cadet: Languages Award; Fencing (Captain, Full Colours); Pentathlon; Dramatics (President).

T. J. GREENHILL-HOOPER, Under Officer: Shooting; Photography.

M. M. MARSH, Senior Flight Cadet: Hockey.

J. R. MCENTEGART, Senior Flight Cadet: Beagling (Flight Cadet Whip).

E. REYNOLDS, Senior Flight Cadet: Athletics; Sailing (Captain).

R. A. EDWARDS, Senior Flight Cadet: Cricket (Full Colours); Association Football (Secretary, Full Colours).

J. C. BROWN, Senior Flight Cadet: Rugby.

J. B. GRATTON, Senior Flight Cadet: Photography.

R. HOARE, Under Officer: Fencing; Debating.

M. H. KHAN, Under Officer: Hockey; Boxing; Dancing (Secretary).

J. A. TUCKER, Under Officer: Swimming (Captain, Full Colours); Boxing (Half Colours).

M. J. DINES, Senior Flight Cadet: Sailing (Secretary).

R. M. HANCOCK, Senior Flight Cadet: Athletics (Full Colours).

A. C. WHITSON, Senior Flight Cadet: Athletics.

E. M. MOORE, Senior Flight Cadet: Rugby; Cricket.

R. MCN. BROWN, Senior Flight Cadet: Camping.

R. J. CHIPPINDALE, Senior Flight Cadet: Rugby.

C. C. TAYLOR, Senior Flight Cadet: Hockey (Half Colours); Swimming; Gliding (Secretary).

A. K. COLEMAN, Senior Flight Cadet: Athletics (Full Colours).

J. M. DRUMMOND, Senior Flight Cadet: Engineering (President); Choral (President).

C. P. FIELD, Senior Flight Cadet: Cricket.

D. D. VICKERS, Senior Flight Cadet: Swimming (Half Colours); Chess (Captain).

Secretarial

R. B. PRINGLE, Under Officer: The Air Ministry Prize for Secretarial Studies; Hockey; Rowing; Rugby.

J. R. WATTS, Under Officer: Association Football (Full Colours); Cricket (Half Colours).

Equipment

D. J. WOODS, Senior Flight Cadet: The Air Ministry Prize for Equipment Studies; Cross Country; *Journal* (Committee and Assistant Editor); Dramatics.

A. BRIGHT, Senior Flight Cadet: Pot-holing.

March 1954 - 60 Entry (Dec 53)

THE SENIOR TERM : DECEMBER 1953

Snr Flt Cdt C. P. Field, Snr Flt Cdt J. C. Brown, Snr Flt Cdt E. H. Moors, Snr Flt Cdt M. J. Dines, Snr Flt Cdt J. E. Maitland, Snr Flt Cdt J. M. B. Bowes, Snr Flt Cdt J. B. Gratton, Snr Flt Cdt R. P. Edwards, U.O. T. S. B. Boyce, Snr Flt Cdt J. R. McEntegart

Snr Flt Cdt D. J. Woods, Snr Flt Cdt J. K. Drummond, Snr Flt Cdt D. Allison, Snr Flt Cdt R. J. Chippindale, Snr Flt Cdt B. D. Vickers, Snr Flt Cdt M. M. Marsh, Snr Flt Cdt A. C. Whitson, Snr Flt Cdt R. M. Hancock, Snr Flt Cdt A. Bright, Snr Flt Cdt N. R. MacNicol

U.O. M. H. Khan, U.O. J. R. Watts, U.O. T. J. Greenhill-Hooper, U.O. A. S. J. Whitwam, S.U.O. W. E. Close, S.U.O. L. A. Jones, S.U.O. P. J. Anstee, U.O. J. A. Morgan, U.O. R. Hoare, U.O. R. B. Pringle, U.O. J. A. Tucker

March 1954 - Lead Article (1)

The New Zealand Air Race, 1953

From London to Christchurch in One Day

By FLIGHT LIEUTENANT ROBERT FURZE

To Flight Lieutenant Furze, of No. 47 Entry, fell the signal good fortune of flying a Canberra P.R.3 in the England to New Zealand Air Race in October 1953. He, with his navigator, Flight Lieutenant Harper, after several strokes of ill fortune, secured third place, missing second place by only two minutes.

The total time for the journey from London to Christchurch was 24 hrs. 34 mins. and the total distance about 12,300 statute miles. The average speed was 500 m.p.h., or an average airborne speed of 545 m.p.h.

We should like to congratulate pilot and navigator on this fine performance and thank Flight Lieutenant Furze for preparing the account of the flight which we print below.

Preparations

THIS story begins in December 1950 with my posting on to No. 101 Squadron, the first unit in the Royal Air Force to be equipped with Canberras. From the first announcement that the Service would enter a flight of jet bombers in the race, the Canberra squadrons in Bomber Command had been humming with conjecture about the identity of the crews who would take part; but Command Headquarters kept us guessing. Not until my return from a long week-end in April of last year did I know that I was to be one of the lucky pilots on the Air Race Flight, and that in June the flight would be established at Royal Air Force Wyton. The three crews were captained respectively by Wing Commander Hodges (who commanded the flight), Squadron Leader Press and Flight Lieutenant (now Squadron Leader) Burton, with my crew as a reserve.

* * *

Training began there immediately on the B.2, which is the bomber version of the Canberra, until the arrival of the competition aircraft from the makers. These were four standard P.R.3 machines fitted with extra tankage and radio compasses. Finally the prototype P.R.7 joined the flight a month before the deadline. The Mark 7 is also a standard design, but is an improved version of the P.R.3.

Our training flights had a threefold object:

(a) to familiarize the navigators with the route and the aids available;

(b) to evolve a race technique which would give the best results within the performance limits of the aircraft; and

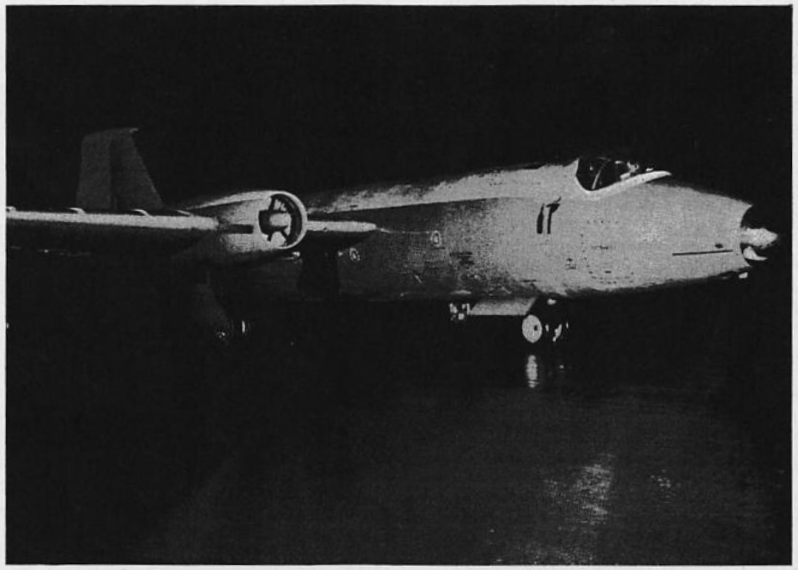
(c) to accustom the crews to flying long distances at altitudes with the minimum of time spent on the ground.

These three requirements were met by flights from U.K.—Shaibah—Malta—U.K. in a day, and others of a similar nature over a different part of the route.

It is outside the scope of this article to examine in detail the navigational methods used. The salient features were the lack of visual pinpoints (since we flew over the land by night and over the sea by day), and our consequent reliance on accurate radio aids. Of equal importance was the need for precise forecasts of upper winds.

The second aim of our training was to find a way of reaching Christchurch as quickly as our aircraft could take us there. This meant striking a balance between the conflicting demands of range and speed. To cover the distances on the longer legs it was imperative that we flew at, or above, 30,000 feet. The problem still remained, however, of determining how fast above the range speed we could fly to leave untouched a safe reserve of fuel. The solution was found in a 'how-goes-it' graph on which speed was plotted against fuel remaining and 'distance to go.' The graph showed these values between thirty and fifty thousand feet so that the cruising altitude could be changed if necessary.

It was found in practice that a temperature increase of 10°C. resulted in an approximate increase of 10 knots in T.A.S. Similarly a change of .02 in Mach number achieved the same effect. Therefore, if the fuel remaining at a given time was above the 'safe line,' then the aircraft could either descend about 5,000 ft. to take advantage of the speed increase from the higher temperature, or the Mach number could be increased at that height. But the captain had to bear in mind other considerations, such as wind changes with height, the height of the tropopause in his latitude (since this affects temperature change with height), and in the second instance, the effect of compressibility arising from an increase in Mach number.



The Canberra aircraft, piloted by Flight Lieutenant Furze and navigated by Flight Lieutenant Harper, landing in the rain in the early morning of 10th October (New Zealand time) after having taken 24 hours 34 minutes to fly from London to Christchurch

The third aim of our training flight was to prepare the air crews for the discomfort and tedium of long distance sorties, and at the same time to give practice to the various servicing teams in refuelling the aircraft as quickly as possible. In both instances this preparation paid great dividends for, as you will see later, crew fatigue during the race was offset by training, and the ground crews at the staging posts achieved excellent results in reducing turn-round times. In order to decrease further the time spent on the ground, navigators at the stopping places had charts prepared in readiness for the next stage of the journey.

With so much to do our four months at Wyton passed very quickly, but not without incident. It was on a flight from Negombo to the Cocos Islands, when I crossed the Line for the first time, that the ceremony took an unusual and unwelcome form. We were flying in cirrus at 43,000 ft., when, without warning, the aircraft entered a cumulo-nimbus cloud, and promptly flipped over on to its back. This, I am told, is not the usual way of entering the Southern Hemisphere and I made sure that the procedure was not repeated on later flights.

Although we had covered the first three legs of the course during our training, none of the Royal Air Force crews had landed at Cocos or gone beyond that point before the actual race. It would have been to our advantage to do so in order to familiarize ourselves with the airfields *en route*, but the risk of the aircraft becoming unserviceable too far away from the base made this plan impracticable.

* * *

Saturday, 3rd October, saw our arrival at Uxbridge, where we stayed till the day of the

March 1954 - Lead Article (2)

race. The five days at London Airport were spent in checking our equipment and in briefings. The latter included an explanation of the Air Race rules and the latest navigational warnings along the route. The navigators checked their flight plans together and the aircraft were air tested before being sealed by officials of the Royal Aero Club.

It was with mixed feelings that I heard on the eve of our departure that I was actually to take part in the race. Squadron Leader Press, the captain of Canberra No. 2, unfortunately caught a severe cold the day before the start of the race and so had to drop out. I considered myself very lucky to be given the chance to compete, but felt sorry for Squadron Leader Press, who had put so much work into the preparation of the aircraft and into the training programme.

In Flight Lieutenant Harper, who was to have flown with Squadron Leader Press, I had a very experienced and capable navigator, and we immediately went over the details of the flight in readiness for the take-off. That evening, still feeling rather dazed at my good fortune, I had to take part in a television programme featuring the Air Race. Shortly afterwards I returned to Uxbridge and, taking the sleeping pills which we had been given, retired to bed. The next day, having packed our bags and stored them in the aircraft, we had our final briefings. We were then inspected standing by our aircraft, by the Duke of Gloucester. Before dressing up ready for taxi-ing to the take-off position, I had a final word with my parents who had come to see me off, and collected flasks of hot coffee which were to sustain me on the first leg.

The Race

We took off at dusk on 8th October and I immediately swung the aircraft on course for Shaibah, our first stopping point, trying not to think of our terminal forecast of fog. With the radio compass being almost our sole aid on this leg, we were unlucky enough to suffer from serious night effect over Europe. This was doubly unfortunate, as, coupled with the difficulty of fixing our position, there was a wind change which drifted us south of track and thereby lost us a few minutes. On landing at Shaibah, thankful that the fog had not materialized, we realized that we had lost time and were therefore impatient to start off on the next leg. After stopping the engines, the aircraft was quickly refuelled, but when starting up again eight minutes later the safety disc on the starboard engine turbo-starter blew out. Normally it is rectified in a few minutes, but this time the entire turbo-starter had to be changed. Naturally we were very despondent, especially as we heard the other two aircraft take off while we were waiting.

Distance : London—Shaibah—2,900 s.m.

Time : 5 hrs. 25 mins. Average speed, 535 m.p.h.

Time on ground : 71 minutes.

Taking off on the second leg, and now almost 400 miles behind the others, I coaxed the maximum possible speed out of the aircraft. Owing to contrary winds, however, this did not make an appreciable difference in our ground speed. My navigator informed me that on take-off our average speed from London Airport to Shaibah had dropped to 440 m.p.h. When dawn broke, we were leaving the Persian Gulf and I could distantly hear the other aircraft ahead of me talking to the Washington aircraft which was acting as V.H.F. link to the shore. Eventually I saw the coast of India loom up ahead and soon afterwards started my let-down through the clouds of the inter-tropical front into Negombo.

Soon after shutting down my engines I was told to my horror that because of a brake fault at Shaibah our starboard wheel would have to be changed. Despite this the ground crew did a wonderful job, and we were soon in the air again, having lost yet another 10-15 minutes.

Distance : Shaibah—Negombo—2,640 s.m.

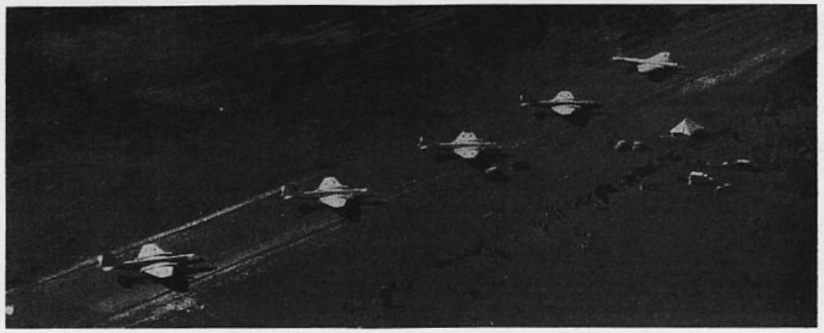
Time : 4 hrs. 54 mins. Average speed, 540 m.p.h.

Time on ground : 26 minutes.

The next leg to the Cocos Islands was a short one; we were able to fly at a high Mach number and at a fairly low altitude to take advantage of the increase in air temperature. Once again, head winds prevented our ground speed from increasing appreciably. We encountered the usual cloud formation at the Equator, but, although apprehensive (following our experience on the training flight), continued through and later saw the Cocos Islands below.

We landed down-wind as briefed and as I was braking I saw Wing Commander Cummings's aircraft, the first Australian entry, at the side of the runway with a burst tyre. Not realizing at this time that this meant we should now be at least fourth, I taxied to the refuelling position. In an incredibly short time we were refuelled and trundling down the runway again on our take-off run.

Distance : Negombo—Cocos Islands—1,780 s.m.



A line up of the five Canberras in the Speed Section of the England—New Zealand Air Race at Harewood Airport, Christchurch. This photograph was taken after the arrival of the aircraft piloted by Wing Commander Cummings on 12th October

Time : 3 hrs. 17 mins. Average speed, 540 m.p.h.

Time on ground : 12 minutes.

The next leg was also a short one and, aided by a slight tail wind, I expected to improve my average speed considerably. Soon after taking off I could hear that Wing Commander Hodges (who had over-flown the Cocos Islands in his P.R.7) was now leading the field but having trouble with his electrical generators. Flight Lieutenant Burton was now about three-quarters of an hour in front of me, but there was no news of Squadron Leader Raw, the other Australian. About an hour before arriving at Perth, it began to get dark again. This was the beginning of the second night without sleep, and I naturally felt tired. However, a flask of hot black coffee and some caffeine tablets refreshed me and we landed at Perth soon afterwards.

On reaching the refuelling position I found Wing Commander Hodges still there and having serious trouble with his generators. This could put us in third place, and, although it was hard luck on the Wing Commander, I felt that after all we were now well in the running. Once again we were refuelled very quickly, but when I started to taxi away to the take-off position the taxi track lights were not on, and, since I did not know the airfield, I had to grope my way along very slowly. Eventually I took off down wind on the runway in use.

Distance : Cocos Islands—Perth—1,840 s.m.

Time : 3 hrs. 7 mins. Average speed, 588 m.p.h.

Time on ground : 14 minutes.

Perth was our last stop before Christchurch and, about an hour and a quarter after sunset, we took off on what we knew to be the longest leg of the route. A reliable forecast for our destination was not available, so the flight was planned to leave an adequate fuel reserve should bad weather necessitate a diversion.

On all of the previous legs we had flown a great circle track, but for this stage we chose a rhumb line track to use the west-east jet stream which is normally encountered over the Great Australian Bight at that time of the year. This plan kept us near the Australian coast. Thus we passed over Melbourne instead of Tasmania on our way to New Zealand. The jet stream was a disappointment, for, although on the previous day the winds had reached 120 m.p.h., our tail wind dropped to 90 m.p.h. for the first few hundred miles and then decreased still further.

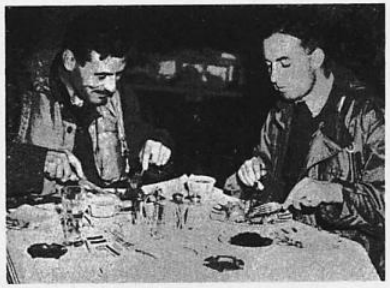
During the flight we chatted with radio stations on the south Australian coast who told us of Squadron Leader Raw's take-off time from Woomera, and from this information we calculated that he was five minutes ahead of us. The stations also passed weather forecasts for Christchurch, but these proved to be optimistic. It was not until we spoke to the aircraft carrier stationed halfway across the Tasman sea that we learnt that cloud and rain were obscuring Christchurch. On the strength of the earlier forecasts I had increased speed as far as I dared to overhaul Squadron Leader Raw, and had reduced our safe reserve at Christchurch. This left us in a critical position such that I was now forced to throttle back and fly for range. This more than offset the time gained when cruising fast earlier on.

March 1954 - Lead Article (3)

A radio interview held immediately after arrival. Left to right: Mr Hume D. Christie (President of the Canterbury International Air Race Council), the Right Hon. Walter Nash (Leader of the Opposition), the Right Hon. Sidney G. Holland (Prime Minister), Lieutenant-General Sir Willoughby Norrie (Governor-General), Flight Lieutenant Furze

The final hour before touching down at Christchurch was an anxious one. The thought of a blind approach at a strange airfield in bad weather was not encouraging, especially after 24 hours of flying. But fortunately the effect of the caffeine tablets had not entirely worn off. To my great relief we picked up Christchurch G.C.A. who brought us safely round the hills and into the aerodrome where we landed about fifteen minutes after the original contact.

We landed in the dawn twilight and taxied off the wet runway to our dispersal. As the noise of the engines died away, I savoured for a few seconds the relief at being safely on the ground with our journey finished. Then the pressure door opened and I heard for the first time the welcome from the crowd of ten thousand who had stood in the pouring rain to greet our arrival. Both my navigator and I were very much moved by this reception since it was so unexpected.



Pilot and navigator tackling steak and eggs in the airfield restaurant at Christchurch, their first solid meal for over 30 hours. It was fitting that the steak had been cooked by infused rays in a few seconds

We climbed out, or rather, in my case, fell out of the door into the arms of a waiting policeman. We were then introduced to Mr Hume D. Christie, President of the Air Race Committee. He bundled us into a car in which we drove along a line of cheering people. After meeting the Governor-General, the Prime Minister and the Leader of the Opposition we were taken off to a news conference. A meal of steak and eggs followed—our first hot food for 30 hours, and we relished every mouthful.

It was immediately after this meal that we learnt that we had been officially placed third in the race, Squadron Leader Raw having beaten us by *just over 2 minutes*. Tired, disappointed, but thankful, we went to bed.

Pilot and navigator being driven away from the aircraft along the front of the crowd of ten thousand people who stayed out all night in the pouring rain to witness the finish of the race

After the Race

At four o'clock that afternoon a newspaper photographer burst into our room and woke us with a loud yell, thus securing an unusual photograph of two startled and sleepy competitors. Then on, for the next fortnight, our programme was filled with all manner of engagements, beginning with an official reception at Christchurch. There we were introduced to girls from all districts of New Zealand who, as Air Race Queens, looked after us for the period of our visit. This, you will agree, was a most thoughtful gesture and was typical of the hospitality which was lavished upon us so wholeheartedly whilst we were 'Down-Under.'

(Please turn to page 62)

March 1954 - Second Article (1)

Flying Forty Years Ago

By CHRISTOPHER DRAPER, D.S.C.

We are much indebted to Mr Christopher Draper, the veteran pilot, for the reminiscences of the very earliest days of military flying which we publish below.

Mr Draper's most recent exploit will be fresh in the minds of readers. On 5th May last he flew an Auster under the 15 bridges between Waterloo and Kew, a distance of 11½ miles.

He was born on 15th April, 1892. He secured his Royal Aero Club Certificate (No. 646) on 9th October, 1913. In January 1914 he found himself on the fifth course of the Central Flying School at Upavon, a mixed naval and military establishment of which Captain Godfrey Paine, R.N., was Commandant, Major Trenchard Assistant Commandant, and Captain J. M. Salmond one of the flying instructors. Between April 1914 and April 1918, Mr Draper was successively sub-lieutenant R.N.R., flight commander R.N.A.S., squadron commander R.N.A.S., and a major in the newly formed Royal Air Force. He is described in 'The History of British Aviation' (Vol. 2, p. 73) as 'one of the greatest pilots of Sopwith Camels in the world.' For his services he was awarded the French Croix de Guerre with Palm in 1917 and the D.S.C. in 1918. He was demobilized in April 1919.

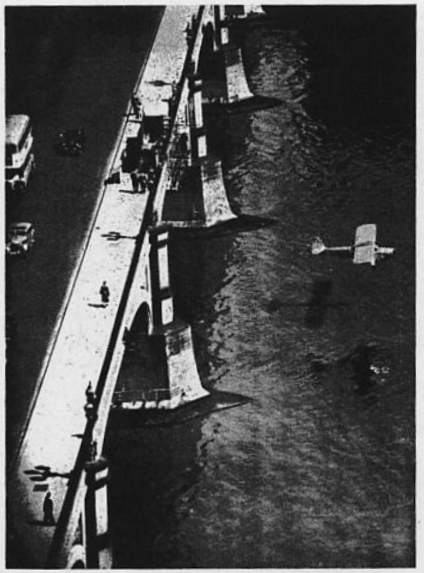
Mr Draper saw service again in the Second World War as an officer in the R.N.V.R., reaching the rank of Lieutenant-Commander (A) in 1942. He was demobilized for the second time in September 1945.

IT is just over forty years ago, in October 1913, that the Royal Aero Club granted me my certificate. In these days when the cost of everything has reached such astronomic heights, the £75 charged by all the flying schools in 1913 seems fantastic, as does the fact that it took six weeks to get in 3¼ hours' flying. The reason for this latter fact was the weather. No instruction was given except in a flat calm, when little hops *could* be made from one corner of the aerodrome to another.

Dual control was achieved by the pupil sitting close up behind the instructor, like a pillion rider on a motor-bike, and putting his right hand on the instructor's right hand, the 'joy stick' being on the right. Dual control with the rudder was impossible. Instruction in this was given on the ground with the instructor behind keeping control of the engine to ensure that the plane did not take off.

The 50 h.p. 7-cylinder Gnôme engine was fed with petrol and pure castor oil through the hollow crankshaft into the crankcase, where centrifugal force carried it through a valve in the piston and out through an exhaust valve in the cylinder head. As there was no sump the consumption of oil was almost greater than the consumption of petrol and it was flung out in all directions on to everyone and everything near. There was no throttle. The engine ran full speed or stop. The supply of petrol was controlled by a small tap on the left of the instructor, the flow being judged entirely by the sound of the engine. It was possible, however, to switch the engine on or off, 'blipping,' as we called it. This was the method used in landing or taxying. A pulsator glass showed that the oil pump was doing its job and was the only other engine 'instrument.'

There were only two flying instruments. One was a flat plate about three inches square connected to an arm which moved up and down a scale marked 0 to 50 m.p.h. This was fixed in the middle of the outer inter-plane strut and gave a very rough idea of the speed. The other instrument was a piece of string about 24 inches long, one end of which was secured to the trailing edge of the elevator. The elevator was mounted on two pairs of outriggers about six feet in front of the pilot's head, so that the string blew back directly in his line of sight. If it moved sideways, up or down, the pilot knew he was not flying straight. This is the only 'instrument' I have ever met which was completely infallible.



The 'Fifteen Bridges' Flight: 5th May, 1953. A view from Big Ben as Mr Draper's Auster emerges from Westminster Bridge

All the instruction at the Flying School at Hendon, which I attended, was given in Box-kites, but there were only three of them. One was kept specifically for week-end flying, and one was invariably out of action for one reason or another. There was only one left then for the five or six pupils. It is not perhaps surprising that it took six weeks to accumulate 3¼ hours.

The tests for the Royal Aero Club certificate consisted of five figures-of-eight within the boundaries of the aerodrome at a height of not less than 500 feet and two separate landings from the same height finishing within fifty yards of two Aero Club observers. As it was not possible to throttle down and landing had to be made by 'blipping,' it was not, in the true sense of the word, a glide without power. It was not many months after this that gliding down without using the engine was taught at all the schools and considered a true test of the abilities of a pilot.

Forty years later when I had occasion to requalify for a private pilot's licence, it was interesting to find 'power approach' now being taught, on the assumption, I suppose, that engine failure is the least worry, while in the early years it was a constant threat. While on this subject it is interesting to recall that from about 1916 until 1922 to stall a machine enough to stop the propeller dead, glide in and land by a given mark, became a useful practice. In the case of rotary engines it was possible to dive and restart the engine provided it was not left too late, but I never saw a stationary engine re-started. I need hardly add that there were no self-starters, so the manœuvre was quite thrilling, but it was *not*, repeat *not*, general practice.

A word or two about aerobatics. Looping had started before the 1914 war but was only carried out in aircraft which had been specially strengthened by extra bracing-wires. It was not until about the middle of 1915 that the machines I was flying in the Naval Air Service were considered strong enough without any modifications. These were mostly tractor bi-planes of quite robust construction—anyhow looking adequately robust, for one's technical knowledge was pretty hopeless.

What we did not know and could not fathom at the time was the terrific gyroscopic effect of 80, 100 or 150 h.p. rotary engines, which required entirely different movements of the control for left and right hand rolls and spins. After the first loops carried out in fear and trembling at a completely deserted aerodrome at Montrose in 1915 (in a Bristol biplane with an 80 h.p. Gnôme rotary engine) the flying wires, as opposed to the landing wires, were so stretched that the wing tips could be moved up and down nearly six inches.

Pemberton-Billing single-seater pusher Scout with 50 h.p. Gnome engine

March 1954 - Second Article (2)

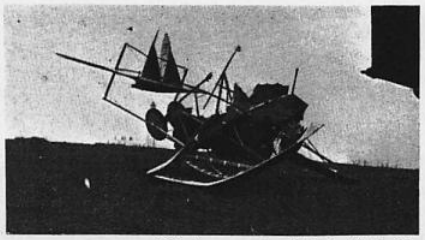
About a year later rumours about spinning got around. I first saw one carried out by a Frenchman in a Nieuport biplane over an aerodrome near Paris. There was much speculation about how it was done. Everyone agreed that the first necessity was to stall. Once again trial and error was the only way to find out.

Two experiences stand out as rather unusual. The first was during the First World War and was actually the first time I flew over enemy territory, in a Sopwith 1½ - strutter 2 - seater biplane, with a 110 h.p. Clerget rotary engine. Both landing wires were cut by bullets from an enemy aircraft after landing. And as soon as the air pressure under the wings ceased, the wings fell off.

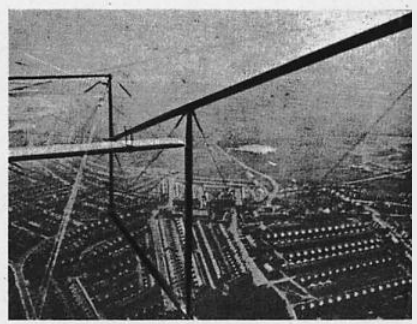
The second happened on the last day of a flying exhibition in Holland in 1919, in front of 90,000 spectators, in a tiny BAT Bantam biplane, 125 h.p. A.B.C. radial engine. Exactly at the top of a rather low loop the crankshaft broke immediately behind the propeller boss. Luckily I was in the right position to complete the loop and land in the middle of the aerodrome minus the prop. It is possible that the spectators did not realize what had happened or thought it was just part of the show. It was certainly some moments before the pilot realized what had happened: the engine nearly raced itself out of the machine. What I never understood was why the propeller came back, taking a chunk out of the top port wing.

In both these experiences youth and ignorance were a great asset, but of the two the after-effects of the first were worse.

A four-months' spell at a seaplane station on the Tay showed up some of the early struggles with underpowered seaplanes. By contrast with the days at Hendon when we could not fly if there was any wind, at Dundee we could not fly unless there *was* some wind. Neither the Avro Seaplane, with a 150 h.p. Sunbeam engine, nor the Sopwith, with a 200 h.p. engine, would take off unless there was enough wind to help lift the machine on to the step of the floats. In my logbook there are many entries: 'Failed to get off.' Another headache was overheating. Tearing all over the Firth of Tay looking for 'catspaws' soon caused the watercooled engines to boil, but, once off, flying in these seaplanes over the wide open spaces of the Firth was quite the most pleasant form of flying imaginable. Also it was good fun to fly back and forth through one of the 29 arches of the Tay Bridge. (It may have been this that gave me a taste for 'bridges.')



A Caudron comes to a bad end. This batlike tractor biplane was powered by an 80 h.p. Gnome rotary engine



A seemingly far from secure view of the earth from a Caudron biplane

Of the 'freaks' I came across, a quadroplane designed and built by Armstrong Whitworth at Newcastle - on - Tyne was interesting (though the designer would not like it called freak). At the time, 1916, the great cry from the pilots in the single-seater fighters in France was for visibility. Both the Germans and ourselves had introduced the triplane. This gave the same wing area but with a much reduced chord and consequently better visibility, but there was still that blind spot which caused so many casualties. Koolhoven, A.W.'s designer, thought he could go one better with the quadroplane. It had exactly the same performance as the Sopwith triplane, but being more complicated and costly to build was never adopted, though I carried out quite a number of tests with it for the Admiralty.

Another curious aircraft was a French Nieuport triplane in which the top plane had a backward stagger from the middle plane. This again was another attempt to give increased visibility. Even more curious was the fabric with which the whole machine was covered. This was a kind of net of very fine mesh stretched tightly over wings and fuselage then doped with a transparent fluid. The idea of this was to make the machine as *invisible* as possible; theoretically sound, but in practice useless. The Navy had one of these machines at Dunkerque and when I was with No. 8 Naval Squadron in 1917-18 I carried out a number of tests at 1500 feet only to learn that it could be seen as easily as any other, if not more easily.

Anxious Moment—a picture of Mr Draper taken at Broxbourne immediately before take-off on 5th May, 1953

By the middle of 1917 every form of aerobatics had become commonplace, but a few of us tried hard to think up something new. One particularly naughty incident, ending up in a crash, nearly got me court-martialled. I was trying to see if it was possible to touch the water with the wheels. It was. On the second attempt, however, the water seemed to hold on to the wheels and pull the machine in. It should have turned over, but it sank right side up. My passenger and I had to wade ashore in only three or four feet of water. What was the wrong side up was my captain, who, unknown to me, had witnessed the whole affair. So I was on the mat and had to give my reasons in writing.

In conclusion, a story which emphasizes the need for cockpit drill might interest. It occurred during the last war and I was a material witness. A certain assistant flying control officer with thousands of hours' flying was persuaded to try his hand in a Hurricane, which he had never flown before. He enjoyed two or three local flights and a fortnight later he went up again. On this occasion he took a more recent machine and when it was time to lower the undercarriage he found he could not move the selector lever into the down position. The design of this lever was different, needing to be raised to pass it through the gate, whereas in the older model the lever had a fore-and-aft movement. He flew around for nearly three-quarters of an hour in a perfect sweat, realizing it meant a belly landing. It was only a practice machine for local flying and had no intercom. At the last moment, and entirely by chance, he got the lever over and the undercarriage down. Commander Flying told him later that if he had made a belly landing he would have court-martialled him. It occurred at a large and important naval air station where such an error by Commander F.'s assistant simply could not happen.

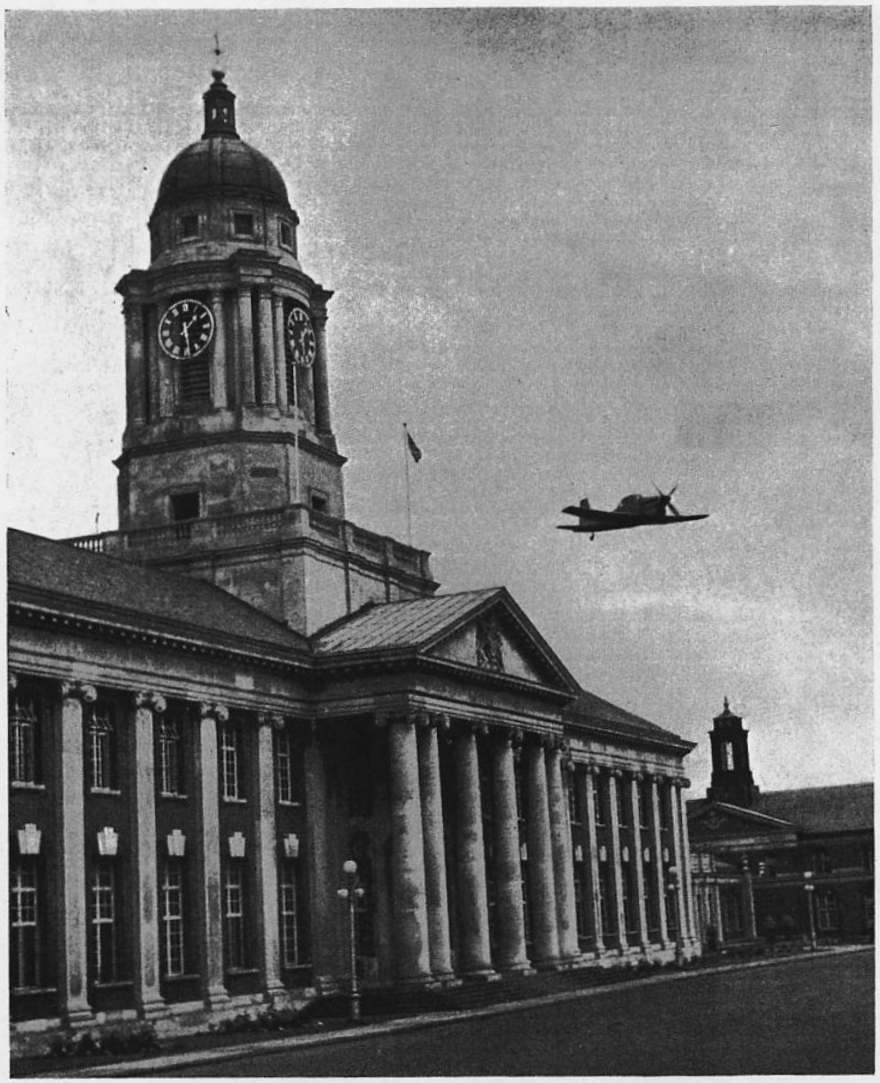
ABOUT THIS ISSUE

Readers will doubtless notice several changes in layout and typography in this issue of the 'Journal.' The Editorial Committee hopes that these changes, which have been made after exhaustive experiment and enquiry, will make the 'Journal' easier and pleasanter to read. It was the original intention of the Committee to complete the process of revision by this issue, the first of Volume XXVI, but this has not proved possible.

It will be appreciated that the Committee, in considering the problems of layout and typography, has been careful to take full account of the urgent need to make available more space for contributions of all sorts while at the same time improving production standards and reducing costs.

Suggestions and constructive criticism from 'Journal' readers are welcomed by the Committee. These should be sent, in the case of officers and readers outside Cranwell, to the Managing Editor and, in the case of flight cadets and cadets, to entry representatives, a list of whose names appears at the foot of page 87 of this issue.

June 1954 - Lead Photo



THE BALLIOL COMES TO CRANWELL

This term the Balliol has taken the place of the Harvard for advanced flying training. Two squadrons are at present based at Barkston. The picture above, one of many taken earlier this term, shows a Balliol piloted by O.C., Headquarters Flight (Squadron Leader J. E. Townsend) flying low over the College

June 1954 - 61 Entry Passing Out Parade (1)

The Passing Out of No. 61 Entry

The Chief of the Imperial General Staff reviews the Parade

AS an earlier page records, the College welcomed as Reviewing Officer at the passing-out parade of No. 61 Entry on Tuesday, 6th April, 1954, the Chief of the Imperial General Staff, Field Marshal Sir John Harding, G.C.B., C.B.E., D.S.O., M.C.

A large number of guests attended the parade, which was held in fitful April weather.

Address of C.I.G.S.

In his address Sir John Harding said:

Flight cadets of the Royal Air Force College. I esteem it a very high honour to have been invited to take your passing-out parade today, and to have the privilege of addressing you.

The arrival of Field Marshal Sir John Harding

In the first place I would like to tell you how very impressed I have been by your drill and marching, by your fine martial bearing, and particularly by the way you looked me full in the eye as you marched past just now. I know that such excellent results can only be achieved by the united and determined efforts of every single individual taking part. My heartiest congratulations to you all on an excellent parade.

On these occasions it is usual for the Reviewing Officer to offer some words of advice to those who are passing out, and my advice to you is threefold.

First, make absolutely certain that you always uphold the magnificent traditions of the Service to which you have the honour to belong.

The Royal Air Force has a tradition for courage and endurance, for duty and service, that is second to none. Its glorious tradition and famous name will be in your keeping. Be sure you never allow them to be sullied or tarnished.

Second, remember that for officers in Her Majesty's service there is only one standard—the highest.

In these days the fighting Services have a greater and more important part than ever before in peace time to play in our national life, and in the affairs of the world. They can only play that part to the full if they are officered by men of the highest standards of character and courage, of knowledge and of skill. That is the standard that you must reach and maintain.

Third, remember too that by yourselves you can do little, but that as good comrades in a highly skilled, united and determined team there is nothing that you cannot achieve.

First-class team work is essential in every sphere—in your units, in your Service and between the Services.

Co-operation is the keynote to success in battle, and in my experience it is best bred by mutual trust and friendship, and by honesty of purpose. Extend your trust and friendship to all your comrades in the Royal Air Force, in the Royal Navy and the Army, and be absolutely honest in purpose in all you do.

In conclusion, I am sure I speak not only for all your relatives and friends, but for all ranks of all three fighting Services, and the people of this country as a whole, when I wish you great happiness and great success in the career on which you are about to embark as officers of the Royal Air Force in the service of Her Majesty the Queen.

The very best of good luck to you all!

The C.I.G.S. inspecting 'B' Squadron, accompanied by Senior Under Officer Newby (squadron commander), Under Officer Cox (parade adjutant) and Senior Under Officer Blockey (parade commander)

The Presentation of Wings and Prizes

The now customary presentation of wings, individual prizes and squadron trophies took place in the College lecture hall on the eve of the passing-out parade before a large gathering of relatives and friends of the senior term, as well as many College and Station officers. Air Marshal L. F. Pendred, Air Officer Commanding-in-Chief, Flying Training Command, was present, as were Colonel de Maricourt, Colonel commanding the Ecole de l'Air, and other guests from the Ecole.

The Commandant made the presentations and delivered an address.

Remarking that the occasion was essentially a family one, the Commandant said in his address that it gave him a great pleasure to preside at the culmination of the training of 61 Entry. He offered G.D., Equipment and Secretarial cadets of the entry his warmest congratulations. He had pressed on the flying brevets of the G.D. cadets firmly, but even so he felt that they might 'still be a little insecure'. 'The only way to make them firm,' he said, 'is by your own ability and efforts in the next stages of your flying training, and by getting all the experience you can once you join your squadrons . . .

June 1954 - 61 Entry Passing Out Parade (2)

The C.I.G.S. presents the Sword of Honour to Senior Under Officer R. S. Blockey, of 'A' Squadron

When you are flying . . . there is always an opportunity to improve your skill.'

No. 61 Entry were the last entry at Cranwell to have graduated on the Harvard. That was quite a distinction. The Harvard had done valiant service throughout its life in the R.A.F. and, in years to come, members of 61 Entry would doubtless look back to the thought with a certain amount of pleasure and nostalgia, as well as with a feeling that the vices and kicks of the Harvard probably taught them something nothing else could. There was laughter when the Commandant observed that 'the oldest Harvard at Cranwell has served cadets for not less than 11 years' hard flying training.' For that the aircraft ought to have a place of honour, if not in the College museum, then in the Imperial War museum for the hard knocks it had received.

The Commandant then reminded the passing-out entry of their responsibilities as permanent officers of the Royal Air Force. Upon commissioning they would no longer be No. 61 Entry, no longer a group of people. They would become individuals, and, what was more important, individuals who had a vitally important part to play in the R.A.F. of the future. There were at that moment more than 20,000 commissioned officers in the Royal Air Rorce, of whom only 908 had been trained at Cranwell. On the morrow, it was true, there would be 952. But even so the 952 carried very heavy responsibilities. The ratio was more than 20 to 1, but the influence of the R.A.F. officers trained at Cranwell was in the ratio of 1 to 20. They had at all times to enhance the reputation that the College had and justify in the eyes of the Service the continuation of 'this magnificent training establishment at Cranwell'.

There was one word of advice to offer before the entry left the College. The most important vital quality that any officer should possess, the Commandant emphasized, was efficiency. To achieve efficiency would always lend interest to the dullest work. This did not mean that one had to adopt a priggish rectitude in one's behaviour. 'Efficiency is doing anything you want to do as well as you possibly can and enjoying yourself in the process; you can have efficiency in the air, on the ground, in sports, or even at a flight party or at a party in the Sergeants' Mess.'

The Commandant concluded by saying that

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The Commandant concluded by saying that No. 61 Entry were receiving their commissions at a time when the general efficiency and reputation of the Royal Air Force itself had never been held in higher esteem either by the other Services or by the public. With the tremendous additional loads that were being placed on the Royal Air Force in the defence of this country and western civilization, yet greater responsibilities were being placed on the shoulders of Royal Air Force

The parade over, Field Marshal Sir John Harding and the Commandant enter the College

officers. The highest possible efficiency was required if we were to justify ourselves. The record of No. 61 Entry at Cranwell had been good, and they would not break faith with that record. They would belittle neither the reputation of Cranwell nor the small band of 900 ex-Cranwellians in the Service. It was a tremendous privilege to be in such a Service, not only as a member of the Royal Air Force but also as a member of 'this Cranwell community which stands for everything that is best, and which thrives on the success and prowess of its sons that it sends out into the Service.'

Order of Merit

No. 61 ENTRY

General Duties Branch

R. L. HOLMES, Senior Flight Cadet: Queen's Medal; R. M. Groves Memorial Prize; Dickson Trophy; Abdy Gerrard Fellowes Memorial Prize; Royal United Service Institution Award; Gliding (Captain).

D. ALLISON, Senior Flight Cadet: Rugby; Canoeing; Engineering; Bridge (Secretary).

J. C. NEWBY, Senior Under Officer: Phillip Sassoon Memorial Prize; Air Ministry Prize for Imperial and War Studies; Squash (Captain, Full Colours); Jazz (Secretary).

B. CARSE, Under Officer: Rugby (Captain, Full Colours); Cricket (Half Colours); Bridge (President); Canoeing; Jazz.

D. C. E. ENGLAND, Senior Flight Cadet: Gliding; Printing; Fine Arts; Music.

M. L. SINEL, Senior Flight Cadet: Fencing (Captain, Full Colours).

P. H. CHAMPNISS, Under Officer: Rowing (Captain, Full Colours); Debating; *Journal* (Committee and Assistant Editor (Sports)); Toxophily.

B. J. ST AUBYN, Under Officer: Association Football; Photography; Sailing.

B. G. COX, Under Officer: L. A. Chance Memorial Prize; Cricket; Fencing (Half Colours); Aeromodelling; Canoeing (Captain); Dramatics.

J. D. LANGLEY, Senior Flight Cadet: Boxing (Full Colours); *Journal* (Committee and Editor).

J. MCLEOD, Senior Under Officer: Rugby (Vice-Captain, Full Colours); Printing (Secretary).

I. R. MARTIN, Under Officer: Swimming (Full Colours, Captain Water Polo); Rugby; Fine Arts; Jazz.

R. S. BLOCKEY, Senior Under Officer: Sword of Honour; Hockey (Captain, Full Colours); Cricket (Half Colours); Squash (Half Colours); Field Shooting.

R. C. MACDOUGALL, Senior Flight Cadet: Languages Award; *Journal* (Committee and Assistant Editor (Liaison)); Mountaineering; Photographic.

E. S. DENSON, Senior Flight Cadet: Boxing (Captain, Full Colours); Natural History (Secretary).

D. D. DE S. SENEVIRATNE, Senior Flight Cadet: Cricket; Hockey; Athletics.

P. J. LEWIS, Under Officer: Cricket (Half Colours); Athletics (Half Colours); Rugby; Aeromodelling (Secretary); Choral; Dancing; Dramatics (President); Riding.

J. L. SPATCHER, Senior Flight Cadet: Sailing.

F. A. MALLETT, Senior Flight Cadet: Rowing (Half Colours); Aeromodelling; Gliding; Photographic; Radio; Sailing.

J. T. TUCKEY, Senior Flight Cadet: Boxing (Half Colours); Rugby; Aeromodelling; Canoeing; Philately (Secretary); Sailing.

M. A. KELLY, Senior Flight Cadet: Rugby (Half Colours); Boxing; Aeromodelling; Fine Arts (Secretary); *Poacher* (Art Editor).

D. A. BRIGGS, Under Officer: Cricket (Vice-Captain, Full Colours); Rugby (Half Colours).

B. A. READER, Senior Flight Cadet: Dramatics (Stage Manager); Engineering; Gliding; Sailing.

G. S. GRIERSON, Senior Flight Cadet: Chess (Captain); Gliding; Mountaineering (Captain).

J. P. S. DIXON, Senior Flight Cadet: Rugby; Cadets' Activities Organization (Secretary); Bridge; Jazz; Sailing.

A. W. HYMERS, Senior Flight Cadet: Hockey; Tennis; Choral; Fine Arts; Jazz; Riding.

P. H. MENDIS, Senior Flight Cadet: Cricket (Half Colours); Hockey; Ski-ing.

P. E. G. MCKINSTRY, Senior Flight Cadet: Aeromodelling; Sailing; Toxophily.

B. C. LETCHFORD, Senior Flight Cadet: Rowing (Half Colours); Boxing; Choral; Field Shooting; Sailing; Scottish Country Dancing.

I. C. R. MCINTOSH, Senior Flight Cadet: Aeromodelling; Canoeing; Jazz; Sailing.

J. N. DYMOND, Senior Flight Cadet: Engineering; Jazz; Photography (Secretary); Scottish Country Dancing.

I. A. QURESHI, Senior Flight Cadet: Hockey (Full Colours).

Secretarial Branch

J. B. BARNARD, Senior Flight Cadet: Languages Award; Cross-country (Full Colours); Athletics (Half Colours); Canoeing; Pot-holing (Treasurer); Riding.

R. GREEN, Senior Flight Cadet: Fencing; Dramatics; Pot-holing (Captain); Shooting.

L. DENT, Senior Flight Cadet: Gliding (Committee); Fine Arts; Music (Secretary); Sailing.

Equipment Branch

J. R. SANDLE, Senior Flight Cadet: Hockey; Fine Arts (Committee); Sailing; Toxophily.

J. G. DE'ATH, Under Officer: Air Ministry Prize for Equipment Studies; Cross-country (Captain, Full Colours); Athletics (Vice-Captain, Full Colours); Choral (Treasurer); Dramatics.

G. S. LARKINS, Senior Flight Cadet: Choral; Gliding.

D. R. BOURNE, Under Officer: Athletics (Half Colours); Association Football; Hockey (Full Colours); Choral; Dramatics; Fine Arts.

P. MCLEOD, Senior Flight Cadet: Rowing; Cricket; Rugby; Radio (Secretary); Toxophily (Captain); Sailing.

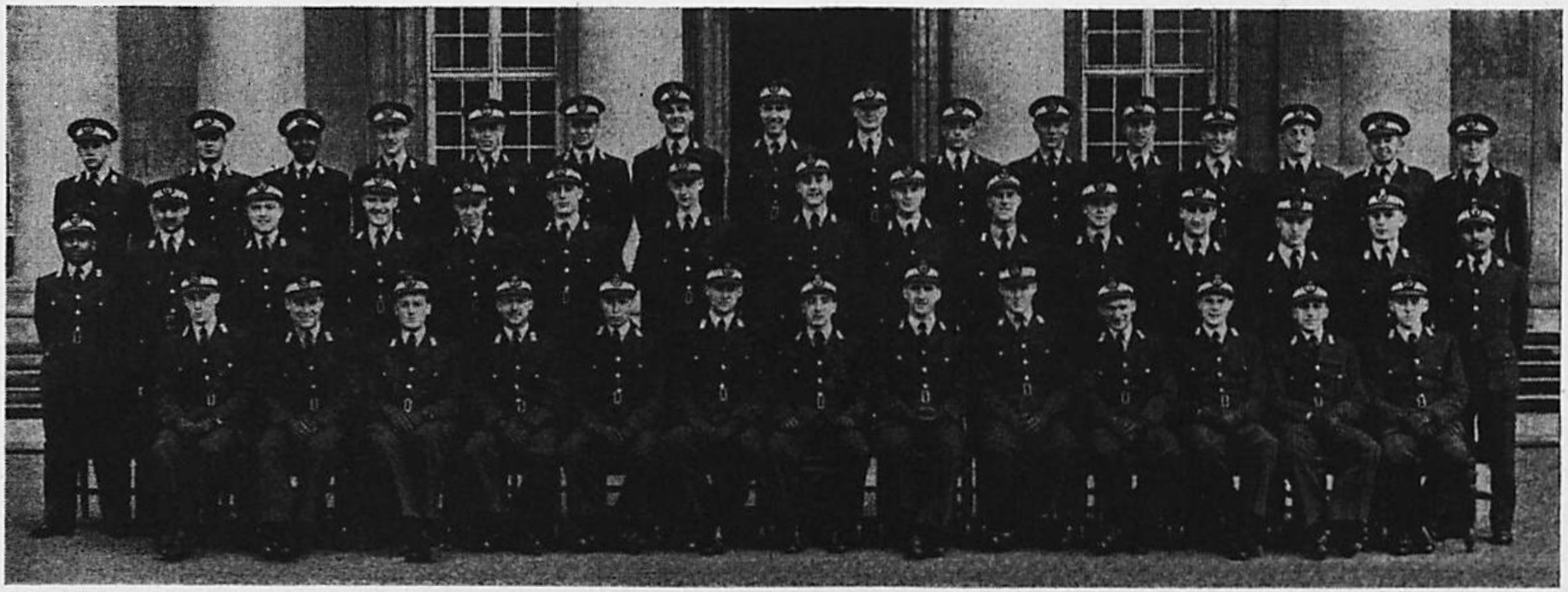
D. C. PURSE, Senior Flight Cadet: Hockey; Dramatics; Ornithology; Photography.

J. E. COOPER, Senior Flight Cadet: Squash (Half Colours); Dramatics; Fine Arts; Music; Ornithology; Photography; Sailing.

J. F. VELLA, Senior Flight Cadet: Swimming (Half Colours); Fine Arts; Music; Riding.

A. REHAN, Senior Flight Cadet.

June 1954 - 61 Entry (Apr 54)



THE SENIOR TERM: APRIL 1954

Senior Flight Cadets J. B. Barnard, J. F. Vella, D. D. De S. Seneviratne, J. E. Cooper, B. C. Letchford, M. L. Sinel, J. D. Langley, J. R. Sandle, R. C. MacDougall, E. S. Denson, R. Green, D. C. Purse, F. A. Mallett, P. E. G. McKinstry, L. Dent, M. A. Kelly

Senior Flight Cadets I. A. Qureshi, A. Rehan, J. T. Tuckey, B. A. Reader, J. N. Dymond, D. C. E. England, G. S. Grierson, J. L. Spatcher, G. S. Larkins, A. W. Hymers, J. P. S. Dixon, B. McLeod, D. Allison, I. C. R. McIntosh, P. H. Mendis

U.O. B. Carse, U.O. B. J. St. Aubyn, U.O. I. R. Martin, U.O. D. A. Briggs, U.O. B. G. Cox, S.U.O. J. C. Newby, S.U.O. R. S. Blockey, S.U.O. J. McLeod, U.O. D. R. Bourne, U.O. P. H. Champniss, U.O. P. J. H. Lewis, U.O. J. C. De'Ath, Snr Flt Cdt R. L. Holmes

June 1954 - Lead Article (1)

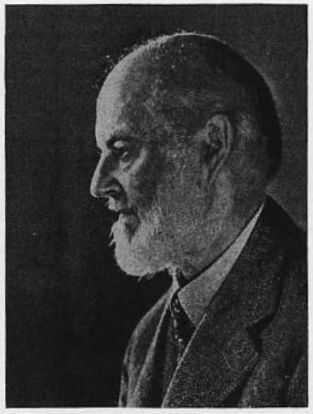
Frederick Henry Royce: 1863-1933

Pioneer in the Development of the Aero-Engine

Twenty-one years ago, Sir Frederick Henry Royce, Bt., the 'mechanic', as he modestly called himself, died. Up to the time of his death, despite an illness that confined him to his bed, he had been the 'engineering brain' of the great firm at Derby that bears his name equally with that of his colleague, the Hon. Charles Rolls, whom he met for the first time almost exactly fifty years ago.

The article below gives a brief picture of the life of Sir Frederick Henry Royce. The author, a flight cadet at the College, acknowledges his great debt to Mr Harold Nockolds's book 'The Magic of a Name', without which the preparation of this account could never have been contemplated[1]. The Editor, for his part, would like to express his thanks to Rolls-Royce, Ltd., for supplying the photographs that accompany the article and for their help and advice.

IN the year 1904 a motor car with a three-speed gearbox glided out of an electrician's workshop and proceeded along Cook Street, Manchester. This was no ordinary car. Its approach was not heralded by all the noises that had hitherto earned cars the title of 'avalanches of tea-trays'. The silence of its progress made people stand and stare. Behind the wheel sat a bearded middle-aged man with a smug expression on his face. The facial expression is explained by the fact that the driver had designed and built the amazing vehicle himself. It was driven without breakdown, a feat in itself in those days, to the designer's home in Knutsford—the home of an electrician, Mr Royce.



Sir Frederick Henry Royce

Frederick Henry Royce was born at Alwalton, Lincolnshire, on 27th March, 1863. A precocious interest in engineering nearly brought him to an untimely end when at the age of two years, in an attempt to inspect the water mill wheels near his home, he fell in the mill-race and would have been drowned had not his father been standing nearby.

His father was not a particularly successful man and unemployment forced him to take Henry and an elder son to London. Henry worked for Messrs W. H. Smith and Sons as a newspaper boy at Clapham and later at Bishopsgate. When Henry was only nine his father died. He then became a telegraph boy at a Mayfair post office.

It is doubtful whether Henry would have found his way into the engineering field if it had not been for a kindly aunt of his who lived at Flitton, near Peterborough. She paid for his apprenticeship at £20 a year at the Great Northern Railway works at Peterborough. Henry was fortunate enough to be boarded out with a Mr Yarrow, whose interest in tools and machines was such that he had built himself a small workshop in his back garden. In the evenings, Mr Yarrow taught his son (who was also an apprentice) and Henry the use and care of all kinds of tools. In his spare time Henry tried to improve his almost non-existent education by attending evening classes whenever possible. Unfortunately his association with the railway lasted only three years; his aunt got into financial difficulty and could no longer provide the necessary £20 a year.

Henry Royce went north in search of a job and eventually found one at a mill in Leeds, making tools for a foreign armament contract. His spare time was once again taken up with studies and it was during this period that Royce gained a working knowledge of electricity.

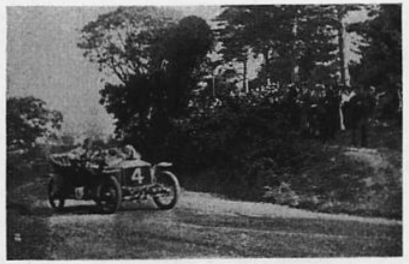
His position at the mill was not what Royce really desired, and an advertisement in a London newspaper brought him south again in an attempt to become a tester for the newly formed Electric Light and Power Company. He was given a job with the company and found lodgings in Kentish Town. He still devoted all his spare time to study. He did very well in his new position and, while still in his 'teens, he became first electrician in a subsidiary firm responsible for lighting in theatres and entertainment halls in Lancashire. But Royce had only been with the firm a short time when it went bankrupt.

All through his life Royce was peculiarly fortunate in meeting the right people at the right time. On this occasion it was another young electrician, A. E. Claremont, who possessed fifty pounds, and together they set up business in Cook Street, Manchester, as electricians. The firm was called F. H. Royce and Co. Royce was then only twenty-one.

At first Claremont and Royce made lamp holders and filaments. But these did not sell very well, and it was not until the ingenious Royce invented a small, cheap electric bell, which proved to be a very popular item on the electricity market, that their fortunes improved. The two partners often worked all night to make and deliver the bells. Then Royce made an important discovery which brought comparative prosperity to the firm. He found a method of obtaining sparkless commutation on dynamos, a problem which had beaten the best brains of the time. It turned out this way. Royce would not admit that the dynamo of his day was the best there could be; so he designed his own in which he eliminated nearly all the drawbacks of previous makes. About this time he married a Miss Punt of London and started living at Knutsford. They did not have any children.

One of the first three Royce two-cylinder cars

Royce next turned to designing and building electric cranes. His products were so efficient and so beautifully made that he was overwhelmed by orders, which by 1899 were worth twenty thousand pounds. He became so engrossed with his work that he neglected his health. He often went without meals and worked throughout the night. The chief accountant of the firm, John De Looze, alarmed at Royce's habits, employed small boys to run after Royce in the street with glasses of milk and instructions that they were not to come back until Royce had drunk the milk!



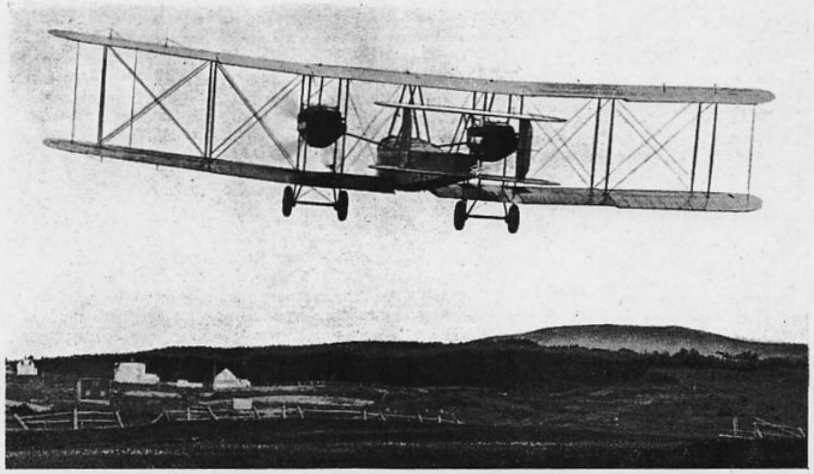
The 20 h.p. Rolls-Royce in which Charles Rolls won the 1906 T.T. race at an average speed of 39 m.p.h.

The Boer war brought a drop in sales of Royce's products, but he would not listen to any suggestions for lowering the high standard of workmanship of his articles. The fierce competition from the United States of America and Germany caused sales to drop even further, but Royce refused to consider the possibility of trying to compete by turning out inferior goods.

It was in the year 1903 that Royce bought a second-hand Decuiville car and immediately set about improving it. This undoubtedly fired his enthusiasm for cars and in 1903, without any care for his dwindling capital, he announced his intention of building three experimental cars.

[1] *The Magic of a Name*, by Harold Nockolds, illustrated from paintings by Roy Nockolds, and published by G. T. Foulis & Co., Ltd., London. A copy of this book will be found in the library.

June 1954 - Lead Article (2)



The Vickers Vimy, piloted by Alcock and Brown, taking off from Newfoundland on the first direct flight across the Atlantic on 14th June, 1919. The aircraft was powered by two Rolls-Royce Eagle engines

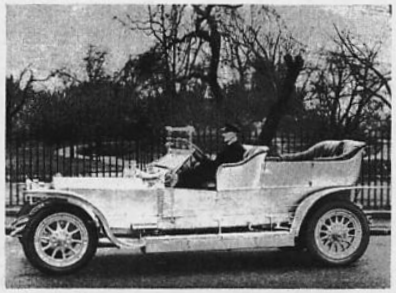
Royce put everything he had into his new idea. Each component of these machines was tested by him and again he often worked day and night. He did not, however, make anyone work harder than himself. This is hardly surprising, when one considers that he spent three days and nights on one occasion at the benches trying to solve one particularly difficult problem. He still maintained his high standards and on one occasion dismissed an employee whom he had overheard saying a piece of work was 'good enough'. If he discovered a component that was slightly heavier than it should have been he would bellow down the workshops 'Who is the author of this "sinker"?' Although Royce, or 'Pa', as he came to be called, was very keen to see his first car finished, he did not allow his enthusiasm to get the upper hand, and often scrapped whole pieces of work because they did not conform to his very high standards.

At last, in 1904, his first car, a ten-horsepower, two-cylinder model, was completed, and Royce, having started it with one turn of the handle, drove it on the remarkable journey from his works to his home at Knutsford. He continued building his other two cars during 1904 with little regard for the financial side of his business. This was not, in fact, very sound at the time. But once again he met the right people at the right time. Mr Edmunds, a well-known figure in motoring circles, persuaded a car salesman, the Hon. Charles Rolls, to ride in one of Royce's cars. Rolls was very much impressed with the smooth running of the car and its amazing silence and, after meeting Royce, the two entered a partnership at the end of 1904. So, to the engineering genius and high standards of Royce were added the wealthy sales connections of Rolls, and under the managership of Claud Johnson, an organizing genius, the firm of Rolls-Royce began.

Royce carried on designing and building different types of car. Each one proved to be a first class piece of work. When the speed limit was fixed at twenty miles per hour, he designed a car that could go no faster than this speed. When hill climbing became the fashion in motoring, Royce brought out a car that could climb a one-in-six gradient quite easily with nine 13-stone men on board. In racing both at home and abroad, Royce's cars did exceptionally well. Each new race brought improvement to a car's design and performance. Royce strove for perfection; the name of the firm 'Rolls-Royce' was becoming a household word.

Later, as the demand for 'R.R.' cars increased, it was decided that the Manchester premises were too small and that the firm, if it were to expand, must expand elsewhere. Here, Royce proved himself to be a shrewd judge of land values. He chose the site at Derby, where the firm still is today. He designed all the buildings and installations himself and, judged by even the most modern standards, the original buildings at Derby are outstanding for their light, airy workshops and efficient layout. The new factory was opened in 1908. Designs were standardized—Royce had a penchant for bringing out many types of car—and for the next few years only the famous 'Silver Ghosts' were produced. These cars—of between 40 and 50 h.p.—Royce believed to be the finest he had produced.

Suddenly, in 1910, the strain of overwork claimed Royce as a casualty. He collapsed, and was taken to London, where specialists gave him only three months to live. Fortunately the doctors were wrong and Royce recovered, but he was never to return to Derby. With Claud Johnson, he went on a tour of Europe, during which he decided to build himself a house in the village of Le Canadel, overlooking a bay near Toulon.



The Rolls-Royce Silver Ghost. All the external metal is silver-plated. This car gave its name to the famous series

For the tour, a 'Silver Ghost' had been converted into an ambulance, and on one occasion, while they were driving along the coast road, Royce noticed another car trying to pass them. He shouted to the driver 'Faster, faster,' but the car still tried to overtake them. Then Royce realized that it was, in fact, another 'Silver Ghost' and relieved his driver by saying, 'It's all right; it's one of ours.'

In 1912 Royce returned to England while his house at Le Canadel was being built. He chose to live in Sussex. It was here that he gathered round him a group of assistants and draughtsmen and carried on designing and improving as before. Ideas would come to him as he lay in bed and he would have them transferred to the drawing board by his staff. The drawings would then be sent to Derby, where they would be translated into machines or motor car engines which, in their turn, were returned to Royce for his comments. He was personally responsible for or supervised every new engine that was produced.

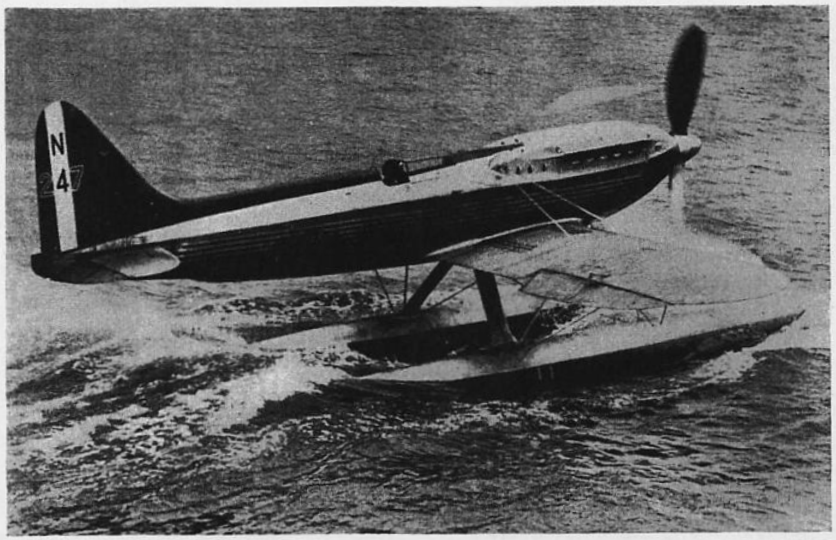
With the outbreak of war in August 1914, Royce found himself unable to move into his new home abroad. He stayed in England and turned his thoughts to designing engines for war. Most of the armoured cars used in the First World War were powered by Rolls-Royce engines, and by 1918 five-ton armoured cars engined by Rolls-Royce were putting up speeds of up to sixty miles per hour.

But the war was by no means a land war; the air assumed an increasingly important part in the calculations of the strategists as the war went on. In the circumstances it is not surprising that Royce's genius became engaged in the production of aero-engines. He was, in fact, asked to assist, for hitherto he had not shown much interest in aero-engines, possibly because his friend and partner, Rolls, had been killed in 1910 flying in an air display at Bournemouth. But it was not very long before the name Rolls-Royce began to mean something in the air. Royce's first engine, the Eagle, was designed to produce 200 horse power, but it actually ran at 25 per cent more than this. A year later he had improved the original Eagle to produce 360 horse power, an engine that without doubt was the finest of its day. When the war came to an end Royce's aero-engines were already being described as the 'soul of an aeroplane'.

The end of the war, however, did not see the end of Royce's efforts in the field of aviation. The first aeroplane to cross the Atlantic, the Vickers Vimy, piloted by Captain John Alcock and Lieutenant Arthur Brown, was powered by two engines Royce had produced specially. The first air passenger service, inaugurated in 1919, also used Rolls-Royce engines.

In 1928 Royce was approached by the Supermarine Company and asked to build an engine for the Schneider Trophy race which was being held in the following year. A scaled-up version of the Kestrel, the Buzzard, was already in existence. (The engine, incidentally, was the same bore and stroke as the present-day Griffon.) The Buzzard was expected to develop about 1000 horse power and, when the firm undertook to provide an engine for the race, it was the

June 1954 - Lead Article (3)



The Supermarine S6, powered by a Rolls-Royce 'R' engine

Buzzard engine that was selected for the job. The first proposal was to develop it to produce 1500 horse power and the Supermarine Company accepted this figure. J. R. Mitchell, the Supermarine designer, who was later responsible for the Spitfire, had sufficient confidence in Royce to know that he would give him the right engine in time, and went ahead designing his machine, not knowing what power unit it was going to have. In a manner typical of him, Royce, in three months, brought out his 'R' engine, which weighed only 1530 pounds and which, to the pleasant surprise of the Supermarine Company, was made to develop 1900 horse power in time for the race. The 1929 race, as is known, went to Great Britain with the record speed of 332 miles per hour. Later in the same year 360 miles per hour was attained using the same remarkable engine. Indeed it is no exaggeration to say that the development of the 'R' engine from the Buzzard was the greatest feat in the history of piston-engined aircraft.

Great Britain's aircraft for the next Schneider race in 1931 was also Rolls-Royce powered. This time Royce had improved his 'R' engine to develop 2783 horse power. He had produced an engine 21 per cent more powerful, but only 6.5 per cent heavier. A record speed of 407.5 miles per hour was attained by Great Britain's entry in the race. Unfortunately all this exertion had its effect on Royce's health. He did not watch the 1931 race, but listened to a broadcast commentary of it from his bed. His body was failing, though his mind remained active. One of his last acts was to lay down specifications for the great Merlin engine.

Sir Frederick Henry Royce died at West Wittering in Sussex on 22nd April, 1933. Throughout his life he had refused to believe that the products of his mind, his engines, were incapable of improvement. A favourite remark of his to young designers was 'You seem to have got it right now, but I think we could improve it in the following way. . . .' At root he was a perfectionist and for him there was no mechanical problem that could not be solved. His exceptional brilliance notwithstanding, he was an extremely modest man. 'I am just a mechanic,' he would say, when people praised him to his face; and it was as a mechanic that he thought of himself. When the great mechanic died, however, the colour of the radiator badge of the Rolls-Royce cars—the famous two 'Rs' monogram—was changed from red to black, a tribute to his memory that is still upheld today.

E. F.

November 1954 - 62 Entry Passing Out Parade (1)

The Passing Out of No. 62 Entry

General Alfred M. Gruenther Reviews the Parade

A HEAVY rainstorm greeted General Alfred M. Gruenther, Reviewing Officer at the Passing-Out Parade of the 45 flight cadets of No. 62 Entry, when he landed on the North Airfield in his magnificently polished Super-Constellation on Tuesday, 27th July. However, the optimistic forecast of the meteorological section proved well founded—a point which General Gruenther himself underlined in his address—and the rain ceased for the parade. Even the cold and gusty wind could not lessen the warm and lively regard which the College showed for the Supreme Allied Commander. When, four hours later, he made his friendly farewell gesture from the head of the steps to his aircraft, it seemed to us that our feeling of regard was reciprocated.

The parade followed the now well-established pattern and what differences one might perceive between this parade and its predecessors were those which had their origin in the personalities of the chief actors. The easy and friendly manner of our Reviewing Officer, his quick eye and military bearing, seemed to blend unconsciously with the spirit that one felt, as a spectator, infused the parade itself. The march on of 'A,' 'B' and 'C' Squadrons under Under Officer T. H. Sheppard, Senior Under Officer E. D. Frith and Senior Under Officer I. H. Keppie respectively and the forming up in line under Senior Under Officer P. H. Stanning, the parade commander, and his adjutant, Under Officer G. F. Poyser, were smartly and spontaneously done, while the marching itself had a sprightliness about it that foreshadowed a confident parade. And so it proved to be.

The Supreme Allied Commander arrived at the western edge of the Orange at 1128 exactly. His cheerful greeting to the Air Officer Commanding-in-Chief, Air Marshal Sir L. F. Pendred, the Commandant and the Assistant Commandant was audible to all. Thence he was escorted to the saluting base which he mounted as the senior officers took up their positions to the left and right of the dais. The wind was still blowing raindrops from the roof of the dais,

The arrival of the Reviewing Officer at the Orange. To his left is Sir Laurence F. Pendred, Air Officer Commanding-in-Chief Flying Training Command; to his right, the Commandant (Air Commodore H. Eccles) and Assistant Commandant (Group Captain E. MacK. Nelson)

General Gruenther inspects 'B' Squadron. To his left, Senior Under Officer Keppie, commanding 'B' Squadron; to the rear, Senior Under Officer Stanning, parade commander, and Under Officer Poyser, parade adjutant

but the sun struggled through the clouds momentarily as the parade received the Reviewing Officer with a general salute.

Quickly General Gruenther left the dais to begin his inspection of the Cadet Wing. Though his progress down the lines was swift, his inspection was thorough and critical. When it was over, the Cadet Wing formed close column on the west flank for the march past. This was executed with great dignity. None of the movements was hurried or slurred over. The careful positioning of the squadrons before, during and after each march past effectively concentrated attention, not on the elements on parade, but rightly, on the Queen's Colour, whose escort, in difficult conditions, carried out its assignment very efficiently.

The Cadet Wing then reformed line to the tune of 'The Dashing White Sergeant' and, with spectators rising to their feet, advanced in review order, halted and presented arms in a general salute. There followed the presentation of the Sword of Honour and the Queen's Medal by General Gruenther to Senior Under Officer Stanning, the only recipient of prizes on this occasion. The moment for the Reviewing Officer's address had now come. This was delivered extempore in a forthright and amusing manner, its underlying serious intent plainly evident despite a lightness of touch that delighted the parade and spectators alike. The address over, the parade commander stepped forward to ask permission to march off the Queen's Colour and the Senior Entry and, to the traditional 'Auld Lang Syne,' with the Cadet Wing at the present, the newly commissioned slow marched from the parade ground, up the steps and into the College.

Subsequently the Reviewing Officer inspected the Flying Wing Parade, which had fallen in under Wing Commander I. N. MacDougall in a great semi-circle on the grass to the west of the

November 1954 - 62 Entry Passing Out Parade (2)

General Gruenther took no half measures when he planted his commemorative tree and here shares a joke about his skill with Mr Stratton, Clerk of the Works

College. Before returning to the College for luncheon, General Gruenther planted a commemorative tree in the avenue to the south-west of the main gates.

Address of the Supreme Allied Commander

In his address General Gruenther said:

Thirty-six years ago, within a few days of this date, I was a cadet at West Point. In the early part of August, 1918, we were assembled in a parade formation, very much the same as you have here today, to receive an important announcement. You will recall that World War I was then in progress. Our class was scheduled to be graduated in June, 1921. But we heard that day the reading of the official orders that, because of the shortage of officers, we were going to be graduated early—actually on November 1st, 1918. Three hundred and eleven of us were graduated on that day, and history has recorded that the Armistice was concluded only ten days later! I hope you will not consider me obnoxiously boastful when I say to you that our class has always considered that there was a very direct relation between these two events. (*Laughter.*)

I do not know whether or not the impact of your passing out is going to be nearly as great as ours was. But I do want to state that while the cold war is in progress—and it is probably going to last for many years—the contribution you can make in the resolution of that conflict will be a significant one. If, unfortunately, the cold war should be turned into a hot one, I can assure you that the Service you are joining wields the dominant factor in modern warfare — air power. That overwhelming reality imposes tremendous responsibilities on you. I know from the education you have received at Cranwell, from the training, from the ideals that you have absorbed, that you are going to be able to meet the numerous challenges with outstanding distinction.

You are entering the Royal Air Force at a time when collective security has become a vital factor in preserving world peace. The Free World has learned, at great sacrifice, that no nation, be it the United States, the United Kingdom, or little Luxembourg, is sufficient unto itself in this jet-atomic age. We shall solve the problem of defence together and in common, or it will not be solved at all.

In your future careers you will have many dealings with our international headquarters, SHAPE, located near Paris. We have been charged by NATO with the defence of Europe from the northern tip of Norway to the eastern borders of Turkey, a 4,000-mile perimeter. The burden that we have placed upon the R.A.F. in executing that mission is an extremely heavy one, but I know you will fulfil it. You will belong to an air force that is second to none in this world. I have had a considerable amount of experience with the R.A.F. in the past 12 years, and I have always found every individual that I have known in it to meet the highest British traditions. I congratulate you because of your decision to dedicate yourselves to a life of service. Your objective, the preservation of peace in an uneasy world, is indeed a noble one.

I was very favourably impressed by the parade which I saw today. Your drills were perfectly executed. You have every reason to be proud of your performance.

I was very pleasantly surprised when I arrived here this morning at 10.40 at the airfield. It was raining very heavily, so when I met your Commandant, I asked, 'Well, surely you are going to have the rainy day schedule?' He replied, 'Absolutely not. I can guarantee you that we will have clear weather by 11.30 and it will remain that way throughout the ceremony.' That showed great confidence in the excellence of the R.A.F. Meteorological Service. And we all can note the results! (*Laughter.*)

I am sure that you will continue to have that same confidence in all R.A.F. activities as you perform your varied duties, and as you advance through the different stages of your careers. I wish you every possible success. Good luck and God bless all of you.

The Wings' Ceremony

As usual, the College lecture hall was well filled when the Commandant presented the wings, individual prizes and squadron trophies on the eve of the parade. Air Marshal Sir L. F. Pendred, Air Officer Commanding-in-Chief, Flying Training Command, was present for the occasion.

After welcoming the many friends and relatives of No. 62 Entry, and congratulating the prizewinners and successful squadrons, the Commandant stated that the inter-squadron spirit and morale had never been higher. He wondered whether the senior entry on their last day at the College had ever tried to assess what Cranwell had tried to do for them; there were three thoughts that he would like them to retain fresh in their minds on the following morning.

'First of all,' he said, 'the College has tried to give you a breadth of knowledge and a keenness of intellect to fit you for your future responsibilities.' Much of that knowledge was intended to broaden and stimulate their minds for future work. In this respect he was very pleased with the unusually high standard of a number of the theses submitted by the Entry. Moreover, the results of those cadets who had been the first members of the College ever to attempt the Royal Aeronautical Society's Fellowship examination had been most gratifying. It was encouraging to know that the training at Cranwell met the requirements of external societies and organizations. He hoped that those

The Inspection of Headquarters Squadron, Flying Wing. Accompanied by Wing Commander I. N. MacDougall and Squadron Leader E. A. Fairhurst, General Gruenther passes down the line of officers, n.c.os and airmen

November 1954 - 62 Entry Passing Out Parade (3)

From the top of the steps to his resplendent aircraft, General Gruenther turns to bid a friendly farewell

who had done so well would not in the future neglect those studies which were so useful not only to themselves but also to the Royal Air Force.

'Secondly,' the Commandant went on, 'we have tried to teach you to be Service pilots.' On the whole the standard had been good, but they should aim to become the finest pilots in the Service. Here he stressed the importance of rigorous, self-discipline in the air. 'We have no use,' he said, 'for the pilot who flies by himself or for himself.' The real object was perfection of skill in the interests of the Service. The Commandant then commended the Equipment and Secretarial members of the Entry on their hard work; they had done equally well. Moreover, they would be taking upon themselves heavy responsibilities as soon as they left the College.

'Thirdly, but not least,' the Commandant continued, 'we have tried to teach you to be officers and to learn the officers' code.' Mistakes might have been made—indeed without them they could hardly expect to learn anything—but he begged them from now on, in a world of lowered moral standards, never to relax the code of an officer. 'An officer's word should be his bond in everything he says; and in everything he does he should base his actions on what is right and not on what he can get away with.' If they applied that not only to their Service life, but also to their private and public life, they wouldn't go wrong. If they failed, as far as the Service was concerned, they would never survive any promotion boards.

Finally the Commandant stated his belief that No. 62 Entry had absorbed enough of the College's teaching and ideals to be a real credit to Cranwell. They had come through the course with flying colours, and he wished them all possible success in their future careers. 'I can say quite honestly,' he concluded, 'at this moment I am proud of you all. I only hope that your future actions will make the College proud of you, and when you look back you will be proud of the College.'

Order of Merit

No. 62 ENTRY

General Duties Branch

P. H. STANNING, Senior Under Officer: Sword of Honour; Queen's Medal; Abdy Gerrard Fellowes Memorial Prize; Royal United Service Institution Award; Swimming (Half Colours); Shooting (Half Colours); Fencing; *Journal* (Committee and Assistant Editor); Debating (President); Wildfowling.

J. FARWELL, Senior Flight Cadet: Hockey (Half Colours); Cricket; Riding.

E. D. FRITH, Senior Under Officer: Phillip Sassoon Memorial Prize; Cricket; Pistol Shooting; Archery (Captain); Wildfowling; Music.

T. H. SHEPPARD, Under Officer: Hockey; Gliding; Jazz; *Journal* (Committee and Editor).

I. H. KEPPIE, Senior Under Officer: J. A. Chance Memorial Prize; Rugby; Athletics.

A. J. W. WHITAKER, Senior Flight Cadet: Air Ministry Prize for Imperial and War Studies; Boxing (Full Colours); Rugby; Sailing; Aeromodelling; Jazz.

G. F. POYSER, Under Officer: Cross-Country (Vice-Captain, Full Colours); Athletics (Vice-Captain, Full Colours); Photographic; Jazz; Engineering.

I. D. BRIMSON, Senior Flight Cadet: R. M. Groves Memorial Prize; Hicks Memorial Trophy; Field Shooting (Captain); Archery (Secretary); Aeromodelling.

D. M. RICHARD, Senior Flight Cadet: Dickson Trophy; Michael Hill Memorial Prize; Canoeing (Captain).

K. BICHARD, Under Officer: Athletics (Half Colours); Shooting; Field Shooting; Dancing; Engineering.

G. M. TURNER, Under Officer: Fencing (Full Colours); Modern Pentathlon (Full Colours); Riding (Captain).

A. MACGREGOR, Under Officer: Rugby (Full Colours); Fencing.

J. R. WHITTAM, Senior Flight Cadet: Association Football (Full Colours); Swimming (Full Colours); Water Polo (Full Colours); Athletics; Boxing; Pot-Holing (Vice-Captain).

K. R. BRIGGS, Under Officer: Cricket (Captain); Rugby (Full Colours); Ski-ing.

M. N. BUTT, Senior Flight Cadet: Boxing; Hockey; Riding; Sailing; Dancing.

M. A. CROOK, Senior Flight Cadet: Association Football (Captain); Dancing; Archery.

Boxing (Full Colours); Rugby; Sailing; Aeromodelling; Jazz.

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K. R. BRIGGS, Under Officer: Cricket (Captain); Rugby (Full Colours); Ski-ing.

M. N. BUTT, Senior Flight Cadet: Boxing; Hockey; Riding; Sailing; Dancing.

M. A. CROOK, Senior Flight Cadet: Association Football (Captain); Dancing; Archery.

R. B. GUBBINS, Senior Flight Cadet: Rowing (Captain, Full Colours); Modern Pentathlon; Fine Arts; Photographic; Engineering (Secretary); *Journal* (Committee and Assistant Editor).

R. D. BATES, Senior Flight Cadet: Swimming; Printing (Secretary); Orchestra; Chess.

J. B. M. DOBSON, Senior Flight Cadet: Rugby (Half Colours); Cricket.

C. J. MILLER, Under Officer: Languages Award; Hockey (Vice-Captain, Full Colours); Swimming (Half Colours); Modern Pentathlon (Captain, Full Colours); Fencing; Riding.

M. J. HARDY, Senior Flight Cadet: Canoeing; Engineering.

C. PEARSON, Senior Flight Cadet: Hockey; Canoeing.

M. R. SOUTHGATE, Senior Flight Cadet: Rowing.

M. E. RANKIN, Senior Flight Cadet: Cross-Country; Gliding; Ski-ing.

R. H. L. MURMAN, Senior Flight Cadet: Aeromodelling.

I. A. R. KEARL, Senior Flight Cadet: Fencing; Rugby; Jazz; Archery.

B. E. C. FORSE, Senior Flight Cadet: Shooting; Jazz.

J. I. MILLER, Senior Flight Cadet: Swimming (Half Colours); Rugby; Gliding; Shooting; Engineering; Radio.

B. E. TAYLOR, Senior Flight Cadet: Association Football (Half Colours); Cricket; Canoeing.

D. MCINTYRE, Senior Flight Cadet: Shooting (Captain, Full Colours).

J. K. JENNINGS, Senior Flight Cadet: Cross-Country (Vice-Captain, Full Colours); Athletics (Vice-Captain, Full Colours).

L. T. OWEN, Senior Flight Cadet: Shooting; Gliding; Aeromodelling; Speleology; Ski-ing.

P. J. KING, Senior Flight Cadet.

A. C. COOPER, Senior Flight Cadet: Rowing.

J. H. CHAMPION, Senior Flight Cadet: Fiction Library (Committee and Secretary).

D. G. EDWARDS, Senior Flight Cadet: Rowing.

Equipment Branch

I. D. WILKINSON, Senior Flight Cadet: Cricket (Half Colours); Athletics (Half Colours); Association Football (Half Colours); Swimming; Radio.

C. P. JAMES, Senior Flight Cadet: Air Ministry Prize for Equipment Studies; Dramatics.

M. J. ALLISSTONE, Under Officer: Rowing (Full Colours); Dramatics; Choral; Engineering.

M. A. HOWELLS, Senior Flight Cadet: Rugby; *Journal* (Committee).

C. E. KING, Senior Flight Cadet: Tennis; Squash (Half Colours); Sailing.

J. J. DINNIS, Senior Flight Cadet: Cricket; Photographic (Secretary).

J. E. TIERNEY, Senior Flight Cadet: Boxing.

Secretarial Branch

A. DUFTON, Senior Flight Cadet: Air Ministry Prize for Secretarial Studies; Association Football; Choral (President).

J. G. KERRIGAN, Senior Flight Cadet: Canoeing; Dramatics; Music.

November 1954 - 62 Entry (Jul 54)

THE SENIOR TERM: JULY 1954

Senior Flight Cadets J. G. Kerrigan, J. J. J. Dinnis, C. P. James, M. E. Rankin, I. D. Wilkinson, J. R. Whittam, J. Farwell, R. D. Bates, R. B. Gubbins

Senior Flight Cadets M. A. Howells, D. M. Richard, J. I. Miller, B. E. Taylor, J. K. Jennings, D. G. Edwards, C. Pearson, A. C. Cooper, B. E. C. Forse, A. J. W. Whitaker

Senior Flight Cadets D. McIntyre, M. N. Butt, L. T. Owen, M. W. Southgate, J. H. Champion, P. J. King, J. B. M. Dobson, M. J. Hardy, C. E. King, I. A. R. Kearl, J. H. Tierney, M. A. Crook, A. Dufton

U.O. M. J. Allisstone, U.O. G. H. Turner, U.O. K. Bichard, U.O. T. H. Sheppard, U.O. G. F. Poyser, S.U.O. E. D. Frith, S.U.O. P. H. Stanning, S.U.O. I. H. Keppie, U.O. A. McGregor, U.O. K. R. Briggs, U.O. C. J. Miller, Senior Flight Cadets I. D. Brimson, R. H. L. Murmann