PART II

BASIC TRAINING OVERSEAS

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APPENDICES

PART II - BASIC TRAINING OVERSEAS

CHAPTER 6

SURVEY OF BASIC TRAINING OVERSEAS

Overseas Training in the First World War

The concept of training overseas has, for aviation, a long history. In the First World War the question of training British personnel overseas and the allied matter of training recruits from the Empire for service with the British Flying Services were soon considered. In the autumn of 1915 Lieutenant Colonel C.J. Burke suggested that flying training should be carried out in Canada. As a result of this proposal the War Office, in 1916, set up an organisation in Canada to train Canadians for service with the Royal Flying Corps. On 27 February 1917 a start was made at Camp Borden, with a total establishment of three aircraft. Within six months fifteen training squadrons had been established in Canada. With the entry into the War of the United States liaison developed between Canadian and American training and by September 1917, flying training schools had been opened at Fort Worth, Texas, to accommodate Canadian training squadrons during the winter as it was thought that training in Canada would be hampered by bad flying conditions during the winter months. Subsequently reciprocal arrangements were made for the R.F.C. to undertake the training of American squadrons in Canada during the summer months.(1)

Training facilities were also established in the other Dominions. Both Australia and New Zealand trained pilots at home for overseas service and an Australian training wing was established in the United Kingdom in 1918 manned entirely by Australians. Canadians, New Zealanders and South Africans served in the R.F.C., R.N.A.S. or the R.A.F. The South Africans were trained either in the United Kingdom or the Middle East. The Australians formed their own squadrons. In India arrangements had been made before the war to form an Indian Flying School at Sitapur, and it was proposed to commence the first course in September 1914. The war intervened, however, and the school was broken up, its staff and equipment being needed for active service in the field.

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(1) R.A.F. Year Book 1938.

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An Indian Flying Corps was sent to the Middle East where it saw service in the Canal Zone and Mesopotamia. In 1915, however, it ceased to exist as a separate body and was incorporated in the R.F.C.

In addition to the schools in the Empire and the United States, R.F.C. schools were established in Egypt to train personnel for the Middle East Brigade. The first training wing for pilots was formed in July 1916 and by the end of the war the training organisation in Egypt had grown to five wings. Recruits were drawn from the all Dominion Forces serving in the Middle East and others were sent out direct from the United Kingdom.(1)

Formation of the Dominion Air Forces

After 1918 the various overseas training schemes ceased and the Dominions formed their own air forces in accordance with their various domestic conditions and requirements. The Canadian Air Force was set up on a semi-permanent basis in 1919, becoming a permanent Royal Canadian Air Force, under the Ministry of National Defence, in 1923 and established on a permanent basis in 1924.(2) It was a government flying service, engaged very largely on civil work, with a small nucleus for training and possible active service expansion. In Australia, the Australian Flying Corps was demobilised after the war and there was very little Service aviation activity until 1921, when the Royal Australian Air Force was formed. The New Zealand Air Force was formed in 1923, as a training and military co-operation Service responsible also for civil work; some expansion was begun in 1934 when the Service was renamed the Royal New Zealand Air Force. The South African Air Force became part of the Dominion's permanent forces in 1923, and was organised on a stable basis in 1926; it also consisted of a training nucleus supported by a Citizen Air Force. All these Services, in the years between the wars, were concerned entirely with the training of Dominion personnel for Dominion purposes. Liaison with the Royal Air Force was maintained by a system of exchanges and of short service with the R.A.F. followed by return to the Dominion Reserve.

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(1) H.A. Jones, The War in the Air, Volume V.

(2) A.H.B./IIF1/13.

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Expansion Scheme 'F': First Proposals for Overseas Training

The only Royal Air Force training unit stationed abroad on the outbreak of war in September 1939, was No. 4 F.T.S. located at Abu Sueir, Egypt, (which had been re-formed in April 1921) although proposals to establish flying training schools overseas had been made as far back as 1936.

The first proposals were precipitated by Expansion Scheme 'F', which forced the Director of Organisation in May 1936, to the conclusion that England would be very congested after the scheme had been completed, and he suggested that this congestion should be relieved by establishing overseas those units which were not necessary in the United Kingdom for strategical reasons. Under the earlier Expansion Scheme 'C' it had been planned to increase the number of permanent flying training schools in the United Kingdom to seven (1) and he advocated that no more permanent F.T.S.s over the seven should be formed in the United Kingdom. Cyprus, Egypt and Canada were considered as possible locations but all these were rejected, the first two because of their strategical situation and because the weather was regarded as unsuitable - it was considered too good for flying training - and Canada because of political considerations.

By 1936 three distinct conceptions for overseas training were germinating. One was the plan of locating overseas (as No. 4 F.T.S. was located at Abu Sueir) R.A.F. schools training R.A.F. recruits. The second was a scheme for the Dominion training of Dominion recruits for service with the R.A.F., and the third was a plan for 'nominally Dominion but virtually British' schools training to R.A.F. requirements. These conceptions were not recognised as distinct in 1936, but they had a considerable influence in later developments.

India, New Zealand, Australia, South Africa, Palestine, Kenya and Rhodesia were all, in turn, considered as possible locations for R.A.F. schools. (2) The question was not one of overwhelming urgency. Eleven R.A.F.

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(1) Scheme 'C' actually planned to increase the number of F.T.S.s from six to eleven (excluding Cranwell) but only eight of these were to be established on a permanent basis (one of which was already overseas). The other three were due to close in 1937 when, it was estimated, expansion would be stabilised. Subsequent events not only prevented the closure of these schools but necessitated the formation of even more.

(2) E.P.M.83/36 and A.M. File S.38427.

/ flying

flying training schools were at work in the United Kingdom in July 1936, and although five of these were occupying aerodromes earmarked for operational purposes, all but one of the five were scheduled to move to non-operational stations within the next year or two. It was therefore only a question of finding one suitable location, and there were two years in which to search. Caithness and Northern Ireland were also considered as possible locations - presumably their remoteness caused them to be regarded as 'overseas' - but the prevalence of low cloud coupled with their geographical features was considered a serious handicap. All the other proposed locations were in turn eventually declared unfavourable chiefly because of either strategic vulnerability or political considerations. Shortly afterwards the possibility of putting a second F.T.S. in Egypt was again considered and a site at Suez provisionally accepted. That project too was dropped because it was declared strategically unsound. Canada was still the main attraction. To make the idea of a R.A.F. school in Canada more acceptable to the Canadian Government it was proposed that a school should be established in Canada which could be nominally Canadian although its output would go directly to the Royal Air Force. This scheme, however, - the first of a series officially presented to the Canadian Government during the following three years, schemes which finally blossomed into the vast Empire Air Training Scheme - was not acceptable to the Canadian authorities who were sensitive about the views held by the French 'bloc' and in June 1937 the Air Ministry reluctantly concluded that plans for the establishment of a flying training school in Canada could be regarded as dead.(1)

Overseas Schemes for Reserves and Cadets

While these deliberations were proceeding, small scale arrangements were being made to establish flying training facilities for reservists in one form or another in Malaya, Rhodesia, and Hong Kong. A Reserve School was started in Hong Kong in 1935, the Straits Settlement Volunteer Air Force was formed in Singapore and a Southern Rhodesian Air Unit was in the process of formation during 1936.(2) These schemes, however, which trained British personnel

(1) A.M. File S.38427.

(2) A.M. File S.32537.

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domiciled in these colonies on a Reserve basis were of no direct advantage to the Royal Air Force, whose main preoccupation at this time was to establish facilities for the training of regular Royal Air Force personnel overseas.

The only other direction in which progress was made by this time was the institution of the 'Trained Cadet' Schemes in Australia and New Zealand. Canada had also agreed in principle to participate in this scheme, but had not actually produced any cadets by 1937. Under this scheme volunteers were selected and appointed to cadetships in the Air Force of their home country. After receiving their flying training, which took roughly 12 months and was equivalent to that given in the R.A.F., they came to the United Kingdom and were appointed to short service commissions for five years in the Royal Air Force. After completing their service, unless appointed to R.A.F. permanent commissions, they returned home and served four years in the Reserve of the appropriate Dominion Air Force.(1) Further assistance came in the form of direct entry recruits from the Dominions, but they of course did not solve the training problem since they had to be trained in R.A.F. Schools in the United Kingdom.

Expansion Scheme 'L': Arrangements for Training in Canada

In April 1938, with the introduction of Expansion Scheme 'L'(2) it was necessary to establish three more permanent F.T.S.s over and above the eight planned under Schemes 'K' and 'F'.(3) Although these additional schools were initially formed in the United Kingdom it was still considered desirable to establish them overseas if possible. Once again Canada was regarded as the ideal location. The new suggestion was that they should be R.A.F. schools under R.C.A.F. control, train for the R.A.F. and to the R.A.F. syllabus, draw pupils from both Canada and the United Kingdom, and be paid for by the United Kingdom.(4) This was put to the Canadian Prime Minister in May 1938.

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(1) E.P.M.31 (36).

(2) See Volume 1, Chapter 2.

(3) Actually no additional schools had been formed under Expansion Scheme 'F'; expansion was to be achieved by retaining the three temporary schools a further two years, i.e. until 1939.

(4) A.M. File S.43124.

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Mr. Mackenzie King's reaction was unfavourable, and the proposal was dropped. Shortly afterwards, however, as a result of questions raised in the Canadian Parliament, (aided possibly by press criticism following the disclosure of the Canadian Government's chilly reception of the British proposals), the Canadian attitude changed and her position was eventually defined by a statement that British pilots could train in Canadian establishments under Canadian control, a distinction being drawn between this and the setting up in Canada of a branch of the British armed forces responsible to Britain.(1) This represented a considerable change of front, and as a result a mission visited Canada in July to find out whether she would train 135 Canadian recruits per year as pilots for service with the Royal Air Force. This proposal was to replace the existing agreement (which had not actually been implemented), for Canada to send 15 'trained cadets' together with 120 Canadian recruits (selected in Canada for training in United Kingdom schools) every year for service with the R.A.F. The delegates had a further brief, if Canada agreed to train these 135 pilots a year, to explore whether additional training capacity up to a total of 400 pilots per year (the equivalent of three flying training schools) could be created. Financial and political considerations caused certain difficulties, but eventually the Canadian Government offered to train 50 United Kingdom pupils a year. They were to have elementary training at civil schools in the United Kingdom, the cost was to be apportioned after twelve months' experience, and the United Kingdom was to supply 14 instructors. This offer was accepted in April 1939, and the first course of 17 was scheduled to begin in September.(2)

Final Pre-War Proposals and Progress

Elsewhere in the Dominions progress (on paper) was also made. Australia, who had been sending Australian-trained pilots for service with the R.A.F. under the 'trained cadet' scheme since before 1934, planned to make a further contribution to Imperial defence by developing capacity for aircraft manufacture and sending complete R.A.A.F. squadrons. The position was

(1) A.H.B./IIIC/3/1.

(2) A.M. File S.51649.

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different in New Zealand, where there was little possibility of building aircraft. Early in 1939 the New Zealand Government decided that their most effective peace-time contribution would be to train pilots for the R.A.F. and agreed to turn out 220 per year.(1) In war-time it was planned to train 650 pilots, 350 observers and 350 air gunners per year for the R.A.F.(2)

After the mission's return from Canada it was clear, in October 1938, that no early or considerable help over training outside the United Kingdom was to be expected from Canada.(3) Accordingly other possible locations including India, Iraq and Kenya were again investigated, and in November the Air Council formally approved the principle of establishing further flying training schools abroad.(4) There were considerable strategic difficulties. It was undesirable to back the Metropolitan Air Force by schools in Egypt or further East; there should be no more schools east of Gibraltar than were needed to feed the Middle East and Far East. There were political difficulties as well. Any school in India not under Indian control would present a constitutional problem, whilst in Egypt another station in the Canal Zone would present awkward problems. There was no hope of a school in Iraq without a lengthy process of negotiation and building. Nevertheless certain progress was made but by that time it had already been accepted that congestion in the United Kingdom could be effectively relieved only by training in Canada. The establishment of a school in Kenya was approved in May 1939, and the French Government agreed ten days before the outbreak of war to the formation of a school in France.

Training of R.A.F. pupils overseas was only one aspect of the matter. The provision of overseas reserves and the training of Dominion pupils for service with the R.A.F. were other aspects. Plans were made to establish Volunteer Reserve Centres in the Middle East, the Far East and the West Indies although by the outbreak of war, very little progress had actually been made. Auxiliary Air Force Units were in existence in Kenya, the Straits Settlements

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(1) A.M. File S.57870.

(2) A.M. File S.43124.

(3) E.P.M.169 (38).

(4) A.M. File S.50935.

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and Burma. Australia and New Zealand were unsuitable locations for R.A.F. schools because of their remoteness, but they contributed 'trained cadets' for service with the R.A.F., and shortly before the outbreak of war New Zealand had undertaken to make a substantial contribution of trained men, whilst Southern Rhodesia formed and trained an Air Unit for service with the R.A.F. The pre-war Dominions Air Forces themselves, however, were small and mainly concerned with civil work. There was little training for the first line in the Empire except for those members of Dominions Air Forces who served with the R.A.F.

Effects of the Outbreak of War

After the outbreak of war overseas training schemes began to expand and offers of assistance came from all parts of the British Empire. Canada, Australia, and New Zealand set out to develop their own air forces for service with the R.A.F. and shortly afterwards the Australian High Commissioner proposed that whilst each of the three Dominions of Canada, Australia and New Zealand should have its own air force contingent in the field, training should be rationalised in the most economical way by concentrating advanced training in Canada, and the other two Dominions doing only elementary training. This was the original conception of the Empire Air Training Scheme.

The Empire Air Training Scheme was not the only development in overseas training, however. Plans for the development of R.A.F. training schools in Kenya and France went ahead, whilst No. 4 F.T.S. in Egypt moved to Iraq and continued training on the shorter courses as laid down by the War Training Organisation. These schools, which were to be R.A.F. establishments training R.A.F. recruits for service in the R.A.F. itself, differed from the Empire Scheme schools, which dealt with the training of Dominion manpower for service in Dominion Air Forces working with the R.A.F. By the end of 1939 further offers from South Africa and Southern Rhodesia were made, and plans were laid down for the training of R.A.F. personnel in Africa. During the first six months of the war plans were also made for various locally sponsored schemes in the West Indies, Burma, and Malaya to give elementary flying training for suitable local personnel wishing to join the R.A.F. The pre-war plans for R.A.F.V.R. expansion overseas were dropped, but many overseas recruits volunteered for service in the R.A.F. and some of the projected V.R. centres grew into small flying schools.

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The Empire Air Training Scheme

The proposal made by Mr. Bruce the Australian High Commissioner, was considered in London, and plans were prepared for the annual production of roughly 11,000 pilots, 6,600 observers, and 11,300 air gunners from schools in the three Dominions. A preliminary examination indicated that full capacity would be reached by the end of July 1942. These figures represented about five-ninths of the total flying personnel required by the R.A.F. It was planned that schools already in or planned for by the R.A.F. would provide the remaining four-ninths. Canada received the initial proposal favourably, Australia and New Zealand were in general agreement and a British Mission, consisting of Lord Riverdale, and Air Marshal C.L. Courtney, assisted by Mr. J.B. Abraham, Group Captain L.N. Hollinghurst, Group Captain J.M. Robb, Group Captain A. Gray, Mr. F.R. Howard, and Mr. J.R. Smyth, arrived in Ottawa on 14 October 1939.(1) South Africa was not approached to take part, since it was obvious that such a proposal was likely to give rise to serious political difficulties. The Mission was instructed 'to secure the agreement of the Dominion Governments to the establishment of the proposed Dominion Air Training Scheme for pilots and aircrews' and it had no formal terms of reference.(2)

It is proper here to observe that the scheme being considered was for the training in Canada of pilots and aircrews recruited in the Dominions. The plan was to recruit in the various Dominions, train in Canada, and operate in the R.A.F., thus using Dominion man-power and Canadian training to reinforce the R.A.F. The division broadly was that the Dominions paid for the supply and training of the men while the United Kingdom paid for their operational employment. Concentration of training in Canada meant simply that accounts would have to be settled by Australia and New Zealand for what was done in Canada.

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(1) Air Marshal Courtney who took the place of Air Chief Marshal Brooke-Popham (who did not reach Ottawa until 12 November) remained in Ottawa until the Mission returned to England in December. The third member of the Mission Mr. F.T. Hearle, was taken ill and did not arrive in Ottawa until 23 October. His place was not filled but technical advice was provided by Air Vice-Marshal R.M. Hill of Colonel Greenly's Purchasing Mission in the United States. Captain Harold Balfour the Under Secretary of State for Air, was also in Ottawa from 23 October to 28 November.

(2) A.H.B./IIIC/4.

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When the Australian and New Zealand representatives arrived in Ottawa, on 1 and 3 November respectively, they made it clear that the scheme envisaged more training in Canada than was acceptable to them. Both Dominions had their own training facilities, New Zealand's having been provided at the express request of the United Kingdom, and naturally they wanted to make full use of them. Both Dominions, too, objected to spending money in Canada on training which would be more expensive than similar training carried out in Australia or New Zealand. The projected quotas of recruits were larger than they could supply. These various objections were fitted together into a revision of the plan. By allowing more training to be done in Australia and New Zealand, less training was needed in Canada, and the cost to all three Dominions was reduced. The United Kingdom contribution was to be in kind, i.e. aircraft and equipment, and some of this was diverted to Australia and New Zealand because of the training to be done there: the United Kingdom's proportionate contribution to the Canadian part of the undertaking was increased slightly.

On that basis, Australia and New Zealand were prepared to agree, but Canada wanted further assurance on several points. One was the control of the scheme: Canada was convinced that it should be a Canadian undertaking, controlled by the Royal Canadian Air Force. All attempts to make it 'nominally Canadian but virtually British' were rejected. Another was the operational employment of Canadians. Canada wanted visible acknowledgement of her effort in the front line, and would not have Dominion identity lost in a 'Royal Air Force' drawn from all the Dominions. In other words, though the scheme might train Dominion manpower to reinforce the work of the R.A.F. it should not reinforce the name of the U.K. Air Force by contrast with that of the Dominions. A third point was that it should be openly acknowledged by the United Kingdom that air training was considered the most valuable help that Canada could give, and that full publicity should be given to this fact. Canada's other points were practical matters of financial settlement and the dollar exchange with Australia and New Zealand.

Throughout these discussions the matters which called for adjustment and rectification had their origin in the awareness of the Dominions of their independent sovereignty. Dominion pilots and aircrew should fight as members

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of the Dominion Air Forces, and not lose their national individuality in one all-embracing Service. The Dominions should, as far as their resources allowed, be masters in their own houses: Canada should control all training in Canada, in fact as well as in name; Australia and New Zealand should do as much as possible of their own training under their own control. Finally the people of the Dominions had to be convinced, by open acknowledgement and publicity, that the arrangements made were an important contribution to the war effort.

The Empire Air Training Scheme Agreement was signed on the night of 16/17 December 1939.(1) It envisaged a total of 25 E.F.T.S.s, 25 S.F.T.S.s, 14 A.O.S.s, 14 B. & G.S.s, and 3 A.N.S.s, to be formed in the three Dominions. The provision of manpower did not of course follow the distribution of schools, since some training was to be done in Canada for the other two Dominions. Canada was to supply 51 per cent of the personnel requirements, Australia 37 per cent, New Zealand 9 per cent and the United Kingdom and Newfoundland the remaining three per cent. The overall annual output was planned to be 11,050 pilots, 6,396 observers, and 10,725 wireless operators/ air gunner. The United Kingdom undertook to supply almost all the aircraft and engines required, and to supply spares and replace wastage. The remainder of the cost was to be borne by the Dominion concerned except that in Canada, Australia and New Zealand were to contribute for the proportion of Canadian facilities they used. The whole scheme, in each of the three Dominions was planned in accordance with the R.A.F. system under the War Training Organisation(2) with the sole exception that navigation and armament training were not at combined schools, but separated, as was being done in the United Kingdom, between Air Observer Schools (for Navigation) and Bombing and Gunnery Schools. The syllabus, course lengths, size of schools and planned wastage rates were to be the same as those in the United Kingdom.

Time was needed to build the schools, train the instructors, and provide the aircraft. No time schedule was laid down for Australia or New Zealand, but the Canadian building scheme was to be completed by April 1942. The

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(1) A.H.B./IIIC/4.

(2) S.D.138.

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first output of trained pilots and other aircrew would leave the schools between September and November 1940, and the scheme would reach its full capacity by July 1942, and its full output by November 1942. The agreements made with Canada, Australia and New Zealand were all to remain in force until 31 March 1943.

No question arose over the control of training in Australia or New Zealand: in each case men from the Dominion were to be trained in schools belonging to the Dominion, and the training was to be run by the Dominion Air Force concerned, with such help from the United Kingdom by the loan of officers and men as might be required. Canada, however, was at first thought to be a somewhat different case; the original plan proposed to do all advanced training there, and the Canadian scheme would therefore have been so large that the Air Ministry considered Canada would not have officers with enough experience to run it. Control by a high R.A.F. officer as Director General, with a staff mainly composed of R.A.F. officers experienced in training, was therefore contemplated. The original scheme shrank, however, until training in Canada became preponderantly Canadian, with comparatively small commitments for Australia, New Zealand, and the United Kingdom. Moreover, Canada was strongly insistent that any Canadian scheme should be under R.C.A.F. control. Accordingly, though not without misgiving on the part of the Riverdale Mission, it was agreed that Canadian training should be run by the R.C.A.F. with a strong liaison staff in Ottawa to watch over the interests of the United Kingdom, Australia and New Zealand.

Overseas Training Outside the Empire Air Training Scheme

The Empire Air Training Scheme though it assured the eventual help to the R.A.F. of a substantial number of Dominion Air Force crews, did nothing to relieve congestion in the United Kingdom or to increase the R.A.F.'s own capacity for training. That scheme, however, was not the end of help from within the Empire: offers of assistance came from Southern Rhodesia, where it was agreed to form four elementary and four Service flying training schools together with a combined school for training, both observers and air gunners; and from South Africa where, under the 'Van-Brookham Agreement', six elementary and six Service Flying training schools and five combined air observer navigation, bombing and gunnery schools (known as C.A.O.N.S.s) were to be

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established.[1] The pre-war proposal for Kenya was also extended and plans made to set up an elementary as well as a Service flying training school in that Colony. Other parts of the Empire also responded and it was proposed to commence small scale training courses giving elementary flying instruction in Trinidad, Bermuda, the Straits Settlements, Singapore, Hong Kong, and Burma. Outside the Empire, in France, the scheme for siting one school grew until five S.F.T.S.s and one bombing and gunnery school were planned and the prospect of locating further schools in French Morocco was contemplated. The Air Ministry Works Organisation was to construct the aerodromes (which were to be grass) an advance party of which had left for France on 1 February 1940, and it was hoped to have the schools ready by the autumn the following year. Sites were selected at Sougé, Herbouville, Luble, and Houssay for four of the S.F.T.S.s (which were numbered 30, 31, 32 and 33) and reconnaissance for suitable locations for No. 34 S.F.T.S. and the B. & G.S. were in progress.[2]

By April 1940, the training position was beginning to stabilise.[3] Out of a total of some 203 schools required by 1942 to back the estimated front line of the R.A.F. only 16 were outstanding and more than half the total number of schools planned were to be located overseas. A further 23 schools were already in existence and needed replacement but these would not be disbanded until other replacements had been planned.[4]

The Crisis of 1940: The Transfer of R.A.F. Schools Overseas

In May 1940, the German blitzkreig in Western Europe began. The fall of France put a sudden end to the schools in that country and also to projects of training in Morocco and North Africa. In the Middle East the Italian entry into the war and the start of operations in East Africa caused the E.F.T.S. and S.F.T.S. planned for Kenya to be transferred to South Africa.

Up to that time the pattern of the basic training organisation had been in two main forms: the Empire Air Training Scheme in the Dominions, and R.A.F. schools. The E.A.T.S. was developing and training had started in all three

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(1) A.M. File S.2897.

(2) S.D.155/330 (40), A.M. File S.1617 and E.P.M.35 (40).

(3) See Appendix 62.

(4) A.M. File S.5614.

/ Dominions

Dominions. The R.A.F. schools were located mainly in Britain supplemented by one school in Iraq, some coming into operation in Southern Rhodesia, and some planned for Kenya (and subsequently moved to South Africa). The South Africa scheme, whereby S.A.A.F. training capacity was to be expanded and shared by the S.A.A.F. and the R.A.F. was finally agreed in the following month. By July 1940, the threat of imminent attack on the British Isles caused plans to be made for the bodily transfer of R.A.F. schools overseas. In all seven schools were transferred, four to Canada, and three to South Africa.(1) In South Africa these three schools together with the two from Kenya were merged into the Joint Air Training Scheme in that Dominion, and operated as part of the overall plan. In Canada, however, the transferred schools remained outside the E.A.T.S. and further R.A.F. schools, often referred to as 'Transferred' schools but which were actually formed by the Royal Air Force in Canada, came into existence the following year.

The various schemes, however, were not due to produce any trained men until the end of 1940, and were then to develop gradually throughout 1941, until by 1942 approximately 50,000 aircrew per year were being trained. The first line demand for trained men in large numbers was urgent and trained personnel were needed before the progress of new schools could turn them out. The period of basic training had therefore to be shortened and shortened again in order to turn out more aircrew in the time. All the schools were working to the R.A.F. syllabus, and so wherever conditions permitted the shortening of courses and the increase in capacities was applied to all schools whatever their location. These changes called for more schools and more staff. Trainer aircraft were in extremely short supply all through the year, and the great distances involved did nothing to improve supply and administrative problems. The United States was constantly in mind not only as a source of aircraft but also as a possible training area with ready-made schools, instructors, and facilities. The question was raised several times during 1940, and whilst it was not refused it was turned aside with the remark that Canada was a more suitable location. By the end of the year, however, the refresher schools for training American volunteers for service with the R.A.F. had been started in America.

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(1) E.P.M.37 (40).

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An offer from India made in September 1940 to participate in the Empire Air Training Scheme by training aircrew for service with the R.A.F. was rejected on the grounds that the limited resources in that country would be fully occupied in meeting the home needs of the Indian Air Force, and the supply and shipping position made it impossible to provide further assistance from the United Kingdom whilst the existing schemes were short of aircraft and equipment.

By December 1940 the training picture had changed considerably from that envisaged the previous March. The E.A.T.S. was basically unaltered although courses had been shortened and capacities increased. The R.A.F. training, apart from those schools remaining in England was now concentrated in three areas, South Africa, Southern Rhodesia, and Canada.(1) There were the small local schemes in the Far East and the West Indies, and although they did valuable work, their output was small, and they were not reckoned to be in the overall training plan. The pre-war schemes for training in Kenya and France had come to nothing.

The year 1940 saw the development of training within the Empire. The name 'Empire Air Training Scheme' gradually enlarged its connotation from the particular scheme for training Dominion recruits in Canada, Australia, and New Zealand, to the whole group of overseas training organisations - in Canada, Australia, New Zealand, Southern Rhodesia, and South Africa. Although more widely interpreted the term was no loosely applied phase. Co-operation was the keynote, and the world-wide interchange of pupils had an effect far reaching even outside the scope of the Royal Air Force. Pupils from the United Kingdom, Australia, and New Zealand were trained in Canada; Australian, English and South Africans in Rhodesia, and English pupils in South Africa. In addition the small local schemes which provided E.F.T.S. training facilities, sent their pupils for service training to Dominion Schools: Burmese to New Zealand; Malayans and West Indians to Canada.

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(1) There was also the school in Iraq but this remained rather a backwater of training and, in any case, was disbanded in 1941.

/ Training

Training in the United States

The year 1941 besides seeing the development of the existing training organisation overseas, also saw the exploration and development of a new area. Up to this time all overseas expansion had taken place within the Empire and had followed two main trends: one, whereby the Dominions trained their own pupils for service in or with the R.A.F. and the second, the establishment of Royal Air Force schools, training mainly R.A.F. pupils from the United Kingdom for service in the R.A.F. Both these schemes had the same shortcomings: the provision of trainer aircraft, equipment, and instructional personnel was the responsibility of the Royal Air Force. The new source of training facilities in the United States obviated all of these difficulties. In all, five different schemes were proposed and developed for training personnel for the R.A.F. and in all cases, the trainer aircraft, the schools, and the instructional and maintenance personnel were provided from American resources. There were difficulties, of course. Pupils were not trained strictly on the R.A.F. syllabus of instruction; administrative problems were not simple; and the American Neutrality Laws caused considerable embarrassment in the early days of American training.

The Refresher Scheme for training American volunteers for service with the Royal Air Force was inaugurated in November 1940.(1) The next form of assistance came in March 1941, in the shape of a proposal by Pan American Airways to train some R.A.F. observers in their navigation school at Miami.(2) This was closely followed by an offer by the United States Government to supply trainer aircraft under Lend-Lease, for use in six civil schools in the United States.(3) Known as British Flying Training Schools, these schools started training R.A.F. pilots in June 1941. The Arnold Scheme, training R.A.F. pilots in U.S. Army Schools,(4) began in April 1941, and the following month the U.S. Navy offered to train R.A.F. and Fleet Air Arm pilots as well as observers and wireless operators (air gunner).(5) By the summer of 1941 all five schemes were in operation.

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(1) A.M. File S.61719.

(2) E.T.S.223 (41). (A.H.B./IIIC/1).

(3) E.T.S.237 (41). (A.H.B./IIIC/1).

(4) E.T.S.225 (41). (A.H.B./IIIC/1).

(5) A.M. File CS.9659.

/ Measures

Measures for the Co-ordination and Liaison of Overseas Training

Little of the training done overseas was directly controlled by the United Kingdom. Empire Scheme schools in Canada, Australia, and New Zealand were organised and run by the Dominions. The Joint Air Training Scheme schools in South Africa were part of S.A.A.F. expansion. The Arnold and Towers Schemes in America were carried out in United States Army and Navy schools. Transferred schools were fused into the Canadian and South African organisations. Only the American B.F.T.S.s and the Rhodesian Group came under direct United Kingdom control - and that control had to be tempered by the need for harmony with the American and Rhodesian governments.

All overseas training, however, directly concerned the United Kingdom. The whole purpose of every scheme was to turn out men for service in, or in conjunction with, the Royal Air Force. Except in Australia and New Zealand, a large number of the pupils came from the United Kingdom. Except in the United States, the aircraft and much of the equipment came from the United Kingdom. In all cases the United Kingdom (helped by Lend-Lease from the United States) made heavy financial contributions in cash and kind, and only the United Kingdom was in a position to judge the success of the training and its fitness for operational needs.

Executive control overseas had to be reconciled with the United Kingdom's dominant central concern in all training, and the reconciliation involved questions of policy, planning, supply, training standards, training technique, and the results achieved. At the start of every scheme it was agreed (1) that the United Kingdom syllabus of instruction should be used, while schedules of output and supply were generally laid down in the United Kingdom. But syllabuses had to be altered, supply and output were subject to the vicissitudes of war, and local conditions had to be taken into account. Co-ordination and thorough liaison became more and more essential as the overseas training organisation grew and an ever greater proportion of training undertaken outside the United Kingdom.

In the United Kingdom, questions of policy and matters of planning and supply were dealt with by the Empire Training Scheme Committee. This Committee had no controlling or supervisory status outside the Air Ministry;

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(1) Except in the P.A.A., Arnold, and Towers Schemes in the United States.

its decisions could be carried out by Air Ministry Departments, but only conveyed as proposals to overseas training authorities. Only a few matters became the subject of communication between the United Kingdom and overseas governments, but there were a great many questions on which information and opinions had to be exchanged if overseas training was to develop quickly, smoothly and efficiently. Again, overseas training authorities had need of the United Kingdom's advice and experience while the organisation was being built up, but later, when their schools were running, they became eager to develop in the light of their own experience and ideas.

The R.C.A.F. Headquarters in Ottawa had executive control of the Canadian E.A.T.S. Schools and communicated with the Air Ministry through the United Kingdom Air Liaison Mission in Ottawa. In Australia and New Zealand their respective air forces were the controlling authorities with liaison officers in London. The Rhodesian Air Training Group, operated directly under Air Ministry control in the same way as a Command in the R.A.F. In South Africa, a British Air Liaison Mission was formed in Pretoria in October 1940, and a S.A.A.F. Liaison Officer appointed in London in February 1941. The British Air Liaison Mission in South Africa, however, did not remain wholly divorced (as the Liaison Mission in Canada did) from executive control of training: in June 1941, the Head of the Mission also became the South African Director of Training and A.O.C. the South African Training Command. In the United States training questions were dealt with by the air attaché until a training staff was set up in Washington at the beginning of May 1940.

The creation of an Air Member for Training (A.M.T.) was carried out during the first half of 1940, and in October 1940, the A.M.T. laid down the procedure concerning communications with the overseas training authorities. Communications on training policy, programmes, syllabuses, and reports were to go to the Liaison Missions in Canada and South Africa, to the Australian and New Zealand Liaison Officers in London, the R.A.F. Delegation in Washington and direct to the Rhodesian Air Training Group. A.M.T.'s department was to notify all changes, and be responsible for informing other departments of the Air Ministry. There would be personal liaison between A.M.T. and the Heads of the Liaison Missions, the Chiefs of Air Staff in Australia and New Zealand,

/ and

and the A.O.C., Rhodesian Group; while the various elements of the Empire Air Training Scheme would best continue to be co-ordinated in Ottawa.(1)

As overseas training developed during 1941, it became increasingly necessary to maintain satisfactory liaison on output standards and results, and hence on training methods and development, as well as on policy and planning. As outputs reached the United Kingdom overseas training authorities began to enquire, tentatively at first, and then more and more insistently, how good they were. In these enquiries there was a natural mixture of diffidence and pride in the results of schools' work, an anxiety to learn of shortcomings so that improvements could be made, and a reasonable hope that the output would compare favourably with that from other theatres. To these enquiries the United Kingdom was, however, able to give no adequate or satisfactory reply. Theoretically, statements about the proficiency of men from overseas were based on reports from O.T.U.s and signalled out to the various training theatres, but this theory was not carried into practice. By the middle of 1941 the Air Ministry had sent a few reports to Canada, but none to Australia, New Zealand, Southern Rhodesia, or South Africa.

This question of assessing the results of overseas training was far from simple. Three categories of aircrew (pilot, observer, and wireless operators/air gunner) were concerned, coming from six overseas training theatres (Canada, Australia, New Zealand, Southern Rhodesia, South Africa, and the United States). Overseas-trained men spread over a large number of O.T.U.s and each O.T.U. might at any one time be dealing with men trained in different theatres, under different schemes, and at different schools. The Dominion Liaison Officers were brought into the discussions, and it was agreed towards the end of September 1941, that Dominion representatives should carry out a programme of visits to O.T.U.s. This, however, remained purely a theoretical solution, no Dominions Liaison Officer visited any O.T.U.s before the end of 1941.

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(1) O.M.146 (40).

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The desirability of close co-operation on training details became clear during the A.M.T.'s visit to Canada in 1941, and an Aircrew Training Conference was held in London in January 1942.(1) At this conference the operational commands' requirements for training were described in detail, so that overseas training authorities might be fully informed of how tactical ideas were developing and the effect they had on training standards, and the working of each part of the training organisation was thoroughly discussed. The result was a body of conclusions and recommendations on the technique and practice of instruction which was agreed between the various training authorities and which each training authority undertook to try to carry into practice.

The Achievement of Training Expansion

By the autumn of 1941 the planned training organisation was large enough to meet the requirements of the front line. In Canada, Australia, New Zealand and Southern Rhodesia good progress was made and the stream of trained personnel was steadily mounting. In South Africa, progress was not so good; the large and ambitious scheme made heavy demands both in organisation and technical development, and in the early months of the scheme, it suffered from lack of experienced advice and guidance from the United Kingdom which resulted in a chequered and obstacle-riddled development during 1941. In the United States, things went according to plan and the only major difficulty there was the unexpected high rate of elimination at the Arnold Schools.

During 1941 plans had been made to 'transfer' more E.F.T.S.s and S.F.T.S.s to Canada during the next 12 months, and by the end of the year, all basic training of pilots and observers was carried out overseas, except for a small organisation continued in the United Kingdom for liaison and experimental purposes. The training of air gunners, flight engineers and wireless operators/air gunner, because of their comparatively short courses was carried out mainly in the United Kingdom the only R.A.F. personnel trained overseas in these categories were supplied from pilot and observer wastage or from remusterings of ground personnel already overseas.

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(1) S.D.349.

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The various schemes of training tended to settle into national contributions from the different Dominions and Colonies to the whole training organisation. This made little difference in Australia, New Zealand, and Southern Rhodesia: Australia and New Zealand dealt solely with the Empire Scheme training of their own personnel, and Southern Rhodesia with the training of R.A.F. pupils.(1) In South Africa, however, the S.A.A.F. element of training, the R.A.F. element, and the transferred schools had been unified into one Joint Air Training Scheme by June 1941. In Canada though the Empire Scheme and the transferred schools were not unified into a single organisation for some time they became more and more closely co-ordinated as 1941 went on, and finally, in June 1942, they were united into one large organisation known as the British Commonwealth Air Training Plan.

The 'New Deal'

Towards the end of 1941 the basic training organisation's capacity for supplying trained aircrew began to overtake the demand. At the same time, the diversion of the main weight of basic training from the United Kingdom to overseas training theatres gave rise to a number of new problems. Considerable time had to be spent in travelling, shipping space was precious and irregularly available, and men who failed during their course presented awkward problems of movement and further training. The length of voyages and waiting periods caused men to grow rusty and lose their skill and it was apparent that a refresher stage after arrival in the United Kingdom was needed. Overseas training theatres were vastly different from North West Europe in weather and topography; an acclimatisation stage was needed. Training space could not be ready and waiting for pupils at the unpredictable times of their arrival in the United Kingdom; a holding or pool stage was needed. Large numbers of personnel sent overseas for training as pilots failed their courses and had to be re-selected into other aircrew categories. On the average only 60 per cent of the pupils sent abroad for pilot training graduated as pilots, and in the Arnold Schools in America the ratio of re-selection was as high as 50 per cent. This system of training and

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(1) Only a few Burmese had been trained in New Zealand, and the number of Australians and South Africans trained in Rhodesia was not very large.

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selection proceeding at the same time was not making the most economical use of the expensive sequence of pilot training nor was it economical from a transportation point of view; a more elaborate system of selection and classification was needed.

During the second half of 1941, these additions to the training organisation, resultant from its wholesale transfer overseas, began to emerge.(1) Personnel Reception Centres for men arriving from schools overseas which had been started earlier in the year developed rapidly, and soon began to undertake refresher ground training. Advanced Flying Units, giving refresher and acclimitisation courses after arrival for pilots, observers and wireless operators, were formed out of the S.F.T.S.s and A.O.S.s which became redundant in the United Kingdom as the overseas training organisation expanded. The problem of dealing with men who failed after being sent overseas for training caused renewed attention to be paid to the selection of men according to their aptitude for aircrew work. Re-selection Boards and Centres were established in the areas concerned, and more important, a scheme for preliminary 'grading' was introduced in late 1941, to sift out pupils so that only the most promising were sent overseas. The E.F.T.S.s in the United Kingdom which had been replaced by schools overseas, were used for this purpose.

Other shortcomings were also becoming more evident. The training organisation had been working to minimum periods of instruction and minimum standards of output, in order to produce the maximum numbers of men from the schools and units in existence since the crisis of July 1940. With minimum standards and maximum output there came clear signs of danger - a rising accident rate, an inefficient bomber force and a sparsely trained Coastal front line. The fact that there was by the winter of 1941, sufficient basic training capacity available to meet demands, and new schools were about to open(2) meant that the pressure for rapid output could be relaxed and training standards revised.

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(1) See Chapter 2.

(2) These were the new 'transferred' schools in Canada, to replace E. & S.F.T.S. capacity in the U.K.

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It was a combination of these factors, the sufficiency of training capacity, and the need for grading, and refresher and acclimatisation courses, which prompted the Air Member for Training to propose his 'New Deal' in November 1941.(1) The experience gained by the operational commands, and their more powerful and more complicated aircraft also called for higher standards of flying technique, and it was proposed that the pilot's flying hours before he reached his operational squadron should be almost doubled. Subsequent factors, the revised crew policy, and the effect of American entry into the war accentuated these needs, and the 'New Deal' was approved in March 1942.(2)

The effect on the overseas training organisations was, in May 1942, a general increase in course lengths followed directly by an improvement in the standard of training. Air observer schools had to be reorganised in order to train navigators and air bombers in place of the observers, and the introduction of the one-pilot policy from heavy bombers meant that a slight drop in output (caused by the increased E.F.T.S. and S.F.T.S. course lengths) could be afforded.

The Effects of America's Entry into the War

The Japanese attack on Pearl Harbour on 7 December 1941, and America's entry into the War, had an appreciable effect on the overseas training organisation. The immediate effect was the temporary cessation of pupil drafts from Australia and New Zealand to Canada and Southern Rhodesia. It also meant that R.A.F. training in America could be carried out more openly. After the initial surprise of the attack was overcome both Australia and New Zealand agreed to maintain their quota of pupils for Canada on the same scale as before, and shipment was resumed in March 1942. The shipment of Australian pupils to Rhodesia was not resumed. Japanese operations in the Far East, put an effective end to the small training organisations in Burma and Malaya, and all thoughts for expanding India as a basic training area vanished.

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(1) A.C.70 (41).

(2) A.C. 7 (42) and A.C.27 (42).

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The long term effect was more drastic. Since America was in the war her own air forces were anxious to fly American aircraft and this, of course, reduced the numbers allocated to the R.A.F. By the spring of 1942 it was apparent that the basic training organisation, even with the longer courses introduced under the 'New Deal', was far larger than was required. The reduction of American aircraft allocations meant that the eventual size of the front line would be smaller than was originally planned, and this in turn affected the training organisation. All plans for establishing operational training units in America to train the output of American and Canadian schools on American operational types of aircraft were scrapped, and the Arnold capacity and the Pan American Airways School in America were given up; so were the three refresher schools which had previously been planned to combine to form another B.F.T.S. The B.F.T.S.s were reduced from 6 schools to 5. In addition, plans to form new S.F.T.S.s in Canada were frozen. Increased activities of the U.S. Navy Air Force meant that fewer facilities were available for training, and the operational training of Catalina crews could not be completed. Consequently, the Towers capacity for observers and wireless operators was relinquished, whilst the training of pilots was restricted to basic training.(1)

Improved Training Standards

By 1942 the corner had been turned. The problem of producing trained aircrews at any cost to meet the demands of the front line was no longer the overriding factor. At last sufficient training capacity had been developed, and the shortage of trainer aircraft and spare parts overcome. The peak had been reached, but this did not mean that for the remainder of the war years all was plain sailing in the basic training organisation. The vast, world wide organisation that had been built up over the last 2½ years presented special problems in itself. No longer did pilots go straight from their flying training schools to an operational squadron. Transportation considerations, refresher and acclimatisation courses, operational training and conversion together with various other specialist courses, meant that there was a considerable time lag before pupils who graduated at schools overseas reached the front line. Long range planning of requirements was therefore

(1) A.M. File S.61719.

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essential, and the training organisation whilst maintaining an overall compatibility, had to be essentially a flexible one, so that fluctuation of requirements could be applied to schools with the least possible delay. This factor of flexibility became increasingly important as time went on, and the manpower situation worsened. There were large numbers of ground and administrative personnel locked up in training, and it was essential that the training organisation should be operated as economically as possible in order to release as many personnel as possible for the front line. In addition there was the ever-increasing need for a better standard of training. As the size, power, and complexity of modern aircraft increased, so the gap between trainer and operational aircraft widened, and this gap could only be bridged by a higher standard of basic training, for both pilots and navigators - indeed for all categories of aircrew.

Thus we see the future pattern of the training organisation until its run down beginning in 1944. At all schools syllabuses were improved and modified in the light of operational experience, and course lengths were constantly changed to increase or delay outputs according to the needs of the front line.

The various local schools came to an end. In the Far East the Japanese invasion overtook the Malayan and Burmese Schemes, in the West Indies increased operational activities in the Atlantic caused the disbandment of the schools in Bermuda and Trinidad, and in Iraq the Rashid Ali revolt of May 1941 had caused the closure of No. 4 S.F.T.S. Training was concentrated in three main areas, North America, Africa, and Australasia, and each of these was again sub-divided: Canada and America, South Africa and Southern Rhodesia, New Zealand and Australia.

Two important measures introduced in order to improve liaison and to standardise still further methods of training in all overseas locations, were the inception of the Aircrew Training Bulletin, and the formation of the Empire Central Flying School. In March 1942, the Air Member for Training's liaison letter overseas, which had dropped into the background for some time, was developed into a monthly Aircrew Training Bulletin. It dealt with the technique and practice of instruction, and kept overseas training fully informed of developments. Its purpose was, in fact, to foster the common thoughts about flying instruction which had been formulated by the Aircrew

/ Training

Training Conference. A further ramification proposed in the 'New Deal' and endorsed by the Aircrew Training Conference, towards the development of a common instructional doctrine in pilot training was taken by the setting up of an Empire Central Flying School in April 1942. Its main function was to debate, develop and unify the technique of flying instruction, and it was attended by men from all the instructor training units overseas.

By the end of 1942 the earlier sub-divisions: the Empire Air Training Scheme, R.A.F. schools overseas, and the American schools, had lost their real meaning and the six theatres were combined into one highly co-ordinated overseas training organisation turning out, by the end of 1942 approximately 50,000 trained aircrew personnel per year.

The process of minor adjustments and improvements continued during 1943. The South African and Southern Rhodesian schools, feeding the Middle East saw a succession of course alterations, some due to Middle East requirements and others to relieve the build up of aircrew in the United Kingdom. In the summer of 1943, plans were made to increase the output of pilots and navigators in Canada, only to be cancelled in November, owing to the revised wastage rates and the more favourable war situation. A general lengthening of courses took place in all schools during the latter half of the year in order to reduce the growing surplus of pilots awaiting O.T.U. training in the United Kingdom.

The Revised E.A.T.S. Agreement

The Empire Training Scheme agreement of December 1939 which expired in March 1943, was renewed and training was to continue much on the same basis as before until 31 March 1945.(1) The agreement in so far as it concerned Canada had been renewed in Ottawa in June 1942, when, at the same time, it was decided to incorporate the R.A.F. schools in Canada into one large Canadian training organisation. At the same time the Governments of Australia and New Zealand agreed to maintain their quotas of partially trained pupils to Canada on the same scale as before. New agreements concerning the training in Australia and New Zealand up to 31 March 1945 were signed with the Australian and New Zealand governments in London in March 1943.

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(1) E.T.S.480 (42). (A.H.B./IIIC/1).

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By the end of 1943 it was evident that with the acute manpower shortage, and the now extremely favourable rate of aircrew production, steps would have to be taken to maintain the planned expansion of the Royal Air Force, whilst commencing a gradual run-down of the training organisation.

Proposed Reduction of the Training Organisation

Throughout 1942 and 1943 the Training Organisation had withstood all attempts made to effect reductions. In spite of the fact that there was a growing tendency to over-production of aircrew the Air Council were unwilling to reduce intake and to contract the existing organisation. The training machine was the 'Goose that laid the Golden egg', and any schools closed would almost certainly be irrecoverably lost, and great difficulty would be experienced in re-establishing schools should the requirements again exceed the demands. Nevertheless the time was not far distant when reductions would have to be made, and the planning of the 'Overlord' venture, and an assumed target date of December 1944 for the defeat of Germany eventually caused earlier decisions to be reversed. By December 1943 it was decided that considerable reductions would have to be made in the size of the training organisation, in order to release ground personnel for work in the expanding front line.(1) On 7 December 1943 the Air Council decided to continue front line expansion as planned until the autumn of 1945, at the same time progressively reducing the training organisation so that by that date the numbers of aircrew completing their training would be no more than required for the Japanese War.(2) This meant that an overall decrease of 40 per cent could be effected in the overseas training organisation. The main object of the reductions was, besides reducing the output of aircrews, to throw up ground personnel for manning the front line. It was decided therefore that the British flying training schools in America, which involved no overheads in R.A.F. ground staff or instructors should continue, and the first reductions would be made in Canada, South Africa and Southern Rhodesia where R.A.F. ground personnel were employed.

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(1) A.C.68 (43).

(2) The date (September 1945) offered a nine months insurance factor in case the German War continued beyond the assumed date, and for general purposes the autumn of 1945 was the target date.

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In order to plan in detail the training organisation which was required in the lights of the contemplated progressive reductions, it was necessary to decide on two matters:-

(a) The size, composition, and distribution of the Force which the Training Organisation would be required to back from October 1945, onwards.

(b) The form and extent of the contribution which the Dominions and Allies would be willing to make after October 1945.

Decisions on these two points were the subject of discussion between the Chiefs of Staff and the Governments concerned, and a further matter, to be decided by the Air Staff, was the allowance for operational wastage. Experience during 1943 had shown that current replacement rates were considerably in excess of requirements. Pending those decisions it was necessary to begin progressive reductions at once owing to the length of the training courses and some reductions in the number of schools in Canada was made in November 1943.

The 'Power/Balfour Agreement'

Subsequently, in January 1944, the Under Secretary of State for Air, Captain Balfour, and the A.M.T. went to Canada to explain to the Canadian authorities the basis of the reduced aircrew training programme. The result of this mission was the signing of the 'Power/Balfour Agreement' of February 1944 in which it was arranged, in view of the large reserve of aircrew already trained or under instruction, to begin gradual reduction of pupil intake and schools. At the same time the Air Ministry were anxious to spread reductions in training evenly over the various Empire organisations except Australia and New Zealand where it was assumed that their training capacity would be planned to meet their own requirements in the South-West Pacific. In March 1944, the Secretary of State, through the Dominions Office, notified South Africa and Southern Rhodesia of the proposed reductions amounting to about 40 per cent in their Training Organisation.(1)

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(1) A.C.1 (44).

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Early in 1944 thus saw the beginning of the decline of the Training Organisation with the Liberation of Europe still to come, the Japanese war still raging unabated and operations in the Mediterranean still in full swing. This illustrates very clearly the immense time lag there was between the decision and its effect, and how those responsible for planning had by the exercise of constant vigilance and courage in anticipating decisions, to legislate for war conditions which would obtain up to a year and a half ahead.

Further Measures to reduce the Overseas Training Schemes

Since the first decision to reduce the size of the training organisation there had been various adjustments in the flow of pupils, and variations in course lengths designed to reduce surpluses of aircrew arising on account of the changed circumstances. These changed factors: the advancement of the hypothetical date for the defeat of Germany from the autumn of 1945 to June 1945; the reduction in the size of the Phase II Force from 490 to 390 squadrons and then to 327 squadrons; the reduced manpower allocations; the decision that planned expansion would continue only until the end of 1944; the final agreement of the reduced replacement rates, both for the Japanese War and for the occupational forces in Europe; all meant that even the reduced training organisation planned in the spring of 1944 was considerably in excess of requirements.

A new calculation of the overall training organisation was made in September 1944 (1) based on the above factors, ignoring surpluses, and assuming minimum course lengths, which resulted in further large reductions being made in Canada, South Africa and Southern Rhodesia. The Australian and New Zealand schemes were reducing to provide only for their own needs, mainly in the S.W. Pacific area, and consequently were outside the jurisdiction of the overall R.A.F. plan. The four American schools were to continue as they cost the R.A.F. nothing in manpower and were still financed under Lend-Lease.

In Canada it was agreed to bring the British Commonwealth Air Training Plan to an end on 31 March 1945 as originally provided for in the 1942 agreement, but the training of R.A.F. pupils in Canada would if necessary be

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(1) A.C.10 (44).

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continued under a new agreement, and ten schools (four S.F.T.S.s, three E.F.T.S.s and three A.N.S.s) were earmarked for the training of R.A.F. pupils after the 31 March 1945. In Australia and New Zealand too, the E.A.T.S. formally ended on 31 March 1945, although by the end of 1944 both Dominions had already ceased sending pupils to Canada for training, and their home training organisations were being remoulded to meet their own needs for the Japanese War.

In South Africa requirements were subsequently altered and only one pair of pilot training schools was required. The Southern Rhodesian plans were originally agreed as one pair of schools only to be altered later in 1944 (when the target date for the defeat of Germany was extended to December 1945) to three pairs of schools. By early 1945, however, it was again set at one pair of schools. The reductions did not take place immediately, of course; quite a considerable period of time had to elapse before the schools finally closed after the intakes had been cancelled.

By the end of 1944 it was the broad general policy that the great bulk of the future basic training units would be in the United Kingdom. The process of establishing schools in the United Kingdom to replace overseas schools was necessarily a lengthy one, and it was desirable to retain the overseas training schools until the United Kingdom training capacity had been re-established.

The termination of the German War on 8 May 1945, caused a further revision of training requirements for Stage II. The Japanese War was estimated to continue for 18 months after the defeat of Germany (i.e. until November 1946) and since R.A.F. training in Canada and America was, on account of political and financial considerations, precluded except for war purposes entries into those schools were planned to cease on 1 July 1945. Pupils entered training before this date were, however, to complete their training. In Southern Rhodesia and South Africa training was to continue until at least the autumn of 1945. By that time requirements for Phase III (the post-war period) would be clarified.

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The End of the Japanese War

When the Japanese war ended further plans were superimposed on the programme for training reductions. For political and financial reasons, all training in Canada and the United States was immediately stopped, and pupils under training were returned to the United Kingdom. In South Africa and Southern Rhodesia the training authorities were notified that no more pupils would be entered into training. Those already undergoing training not willing to volunteer for an extended period of service were removed from training, and the remainder were allowed to complete their courses.

This marked the end of overseas training during the war. In order to maintain for the future the close co-operation between the air forces of the British Commonwealth that had been brought about during the war, plans were made to continue some R.A.F. training in peace-time in Southern Rhodesia, and discussions were continued with Canada, Australia, New Zealand and South Africa about joint training arrangements, and inter-service co-operation in peace time.

Geographical and Weather Conditions Overseas

The development of training in these widely ranging locations had progressed with the utmost speed, and comparisons of progress are difficult and unprofitable owing to the different weather and geographical conditions prevailing in the six training areas. A comparison of these special conditions with those in the United Kingdom is not out of place, and much can be learned from a cursory meteorological study.

In general, it is apparent that weather conditions, in so far as they affected flying training were much better overseas than in the United Kingdom. Southern Rhodesia, in particular, was ideal all the year round and even in Canada, where it had been feared that the severe winters would hamper training there was only one major hold-up - this in the winter of 1942-3 when the winter was exceptionally bad and many courses were delayed. Some allowance had to be made for the spring thaw in Canada, but in practice even this did not cause much delay since most airfields had concrete runways and the snow was brushed off regularly as soon as it fell. On grass airfields with no runways the snow had to be compacted and there was a slight hold up when the thaw came.

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In the United Kingdom the difference between summer and winter weather was such that the syllabus at nearly all stages of flying training had to be extended during the winter months. Thus, while the intakes and output of the overseas training schools remained constant throughout the year, those in the United Kingdom were variable. Since the bulk of basic training was carried out overseas and most operational training in the United Kingdom these differences meant that the movement of graduates through the Personnel Reception Centres, instead of being an even and constant flow, tended to become unbalanced, and the large numbers that accumulated during the winter caused considerable accommodation difficulties by the spring, and they had to be kept waiting until the summer weather allowed speedier intakes into the A.F.U.s and O.T.U.s.

The absence of a blackout overseas had its advantages in the early stages of night flying training, but on the other hand it meant that the pupils needed acclimatisation to the English conditions when they reached the United Kingdom. To some extent blackout conditions may be said to have existed in Canada, America, and Rhodesia owing to the sparseness of population, but this was largely counteracted because schools were usually sited in the vicinity of towns and cities.

In the Transvaal and Orange Free State the weather was eminently suitable for the training of pilots, especially ab initio pupils. In the winter, which was invariably rainless, conditions were at their best, with clear blue skies every day and extremely good visibility. In the summer the weather was generally sunny and very hot, but it was accompanied by violent thunder storms which occurred rapidly. The weather at the coast was more variable and was very much worse for flying, since the hills (especially the Drakensberg ranges) were frequently obscured by clouds and bad thunder storms. This area therefore was unsuitable for pilot training, but was quite satisfactory for the training of navigators, air gunners, etc. since the pupils were flown by experienced pilots. Although the uninterrupted fine weather in the Transvaal and the Orange Free State was excellent for the training of pupils, they suffered from the lack of opportunities for cloud flying experiences, and elementary schools were inclined to suffer from extremely bumpy and turbulent conditions during the summer months. This was overcome to some extent by flying early in the mornings.

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In Australia too the worst flying weather was found in the coastal areas, but this was only relatively bad, and most of the training units were placed in the coastal strip between the sea and the south-eastern mountain range, because this was the more developed area and therefore had better communications. Defence measures were an added consideration; it was desirable to have training airfields near the coast so that in an emergency coastal convoys could be protected and enemy forces attacked. On the western side of the mountains the weather was universally good. Dust storms were prevalent but not severe and did not seriously interfere with training. The inland units were also sited with one eye on defence, and were located to improve internal communications.

Training in New Zealand was carried out satisfactorily in both the North and South Islands. The latter had a rugged northern tip, with a backbone of mountains, averaging 10,000 feet in height, running its whole length. The training schools were placed on the plain to the east of the mountains, and flying conditions were good apart from occasional high winds, both in summer and winter which sometimes reached 90 m.p.h. and made it impossible to carry on with training. The North Island was less mountainous, but the centre was rough bush-land. Schools were placed on the west coast where the weather was similar to that of the South Island, but as most of these schools were Service flying training schools they were less affected by the bumpy summer conditions than the E.F.T.S.s on the South Island.

In America too, weather conditions were generally excellent. The B.F.T.S.s were mainly located in the Middle West where visibility and cloud conditions were good all the year round. Oklahoma was famous for its changeable weather, but sudden changes in temperature did not necessarily have an adverse effect on flying conditions. Once again heat and dust were drawbacks, particularly in the summer months, and bumpy conditions were a permanent feature of the desert areas of Arizona, New Mexico and Texas.

It is interesting to note that the pre-war reluctance to locate flying training schools in areas where the weather conditions were too good for flying training disappeared as the training organisation grew in size and complexity. Gradually the sequence of training was divided into two distinct parts: the basic stage when the pupil gained his flying badge; and the operational

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training stage where qualified personnel were given conversion training on the type of aircraft they would eventually fly on operations.(1) The connecting link between these two stages was the Advanced Flying Unit, when pupils became acclimatised to weather, map-reading, radio procedures, the blackout - and English food (the latter was often very different to the varied and richer foods available in America, Canada, and South Africa).

Comments on Training Overseas

It is possible, in the light of this wartime experience, to survey the advantages and disadvantages of carrying out basic training overseas. The three main advantages of training overseas, apart from weather considerations were: freedom from enemy interference, actual or threatened; the absence of both the blackout and the need for dispersal of aircraft which together meant that maintenance and inspection could be carried out in warm and well lit hangars; and the possibility of tapping a source of manpower for instructional and maintenance staffs which would otherwise be unavailable to the R.A.F. (e.g. the B.F.T.S.s in America). Some of these advantages applied with even greater force to night flying training than to day flying, because it was essential that a trainee should start his night flying under favourable conditions. A further advantage of training overseas was the possibility of locating schools to suit the theatre of operations. The Middle East for instance drew a large proportion of its replacements for aircrew from Southern Rhodesia and South Africa, taking about half the output from Southern Rhodesia in 1941. Again the majority of the pilots from Australia went to the Middle East in the same year which effected a big saving in shipping and in the time spent by trainees in travelling.

The widely dispersed but closely intermingled nature of the training organisation was in itself a contributory factor in the fostering of that spirit of comradeship and brotherhood in all squadrons of the Royal Air Forces. In addition to those of the Dominion squadrons, aircrew from Canada, Australia, New Zealand, and America served in, and flew with the aircrews of, R.A.F. squadrons. The fact that many of the R.A.F. aircrews themselves had served abroad often in the homelands of these people led to a far greater mutual understanding than might otherwise have been possible.

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(1) i.e. bomber, fighter, reconnaissance, etc. - not necessarily the particular aircraft they would eventually fly.

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There were, of course, certain disadvantages in locating schools overseas. Delays in shipping caused the most concern. Apart from the actual time on the journey more time was wasted because the availability of shipping seldom corresponded exactly with the intakes and outputs of the schools. This entailed pools at both ends of the journey. The consequent further waste of time adversely affected the morale of trainees and tended to reduce their standard of training.(1) Movements of material and instructional and maintenance personnel were also subject to shipping delays and difficulties. A further difficulty was a financial one, particularly the problem of dollar expenditure.

In retrospect it might appear that the advantages and disadvantages in overseas training were more or less equally balanced. But it was not a question of considering two alternatives; it simply was not possible to train all the aircrew requirements of the front line in the United Kingdom under the hammer of war. There were a number of disadvantages arising from the establishment of a vast training machine in the continents of Africa, America and Australasia, while the battles were fought mainly in the other two, but the success of this machine must be measured by its results and lessons learned from the way the many difficulties were surmounted. That they might have been more successfully or efficiently overcome is not disputed - but neither can it be disputed that despite these difficulties with men and materials, time and distance, the front line expansion of the Royal Air Force was never impeded through lack of well trained aircrews.

During the six years of war the overseas training schools produced 87 per cent of all the pilots, observers, navigators and air bombers, and 46 per cent of all the wireless operators/air gunner, air gunners and flight engineers that served in or with the Royal Air Force - a total of over 227,000 of the 326,000 aircrew produced during the war.

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(1) The fear that the long periods spent in pools might adversely affect flying skill was not as great as had been supposed. The Empire Central Flying School carried out a series of comparative tests on 764 pilots from the different training theatres, and the results of the investigation which were published in August 1944, showed no consistent tendency for performance to deteriorate as the interval between the last training flight and the test, increased.

CHAPTER 7

BASIC TRAINING IN CANADA

Flying training in Canada on behalf of the British Flying Services has a long history. The first flying training school was opened on 27 February 1917 at Camp Borden operating with three trainer aircraft. By July 1917 fifteen training squadrons were established; these squadrons had been formed from nucleus flights sent out from the United Kingdom, and were organised into three wings each consisting of five squadrons. The 42nd Wing was located at Camp Borden, the 43rd at Deseronto and the 44th at North Toronto. A school of military aeronautics at Toronto and a cadet wing at Long Branch were also formed during 1917. When America entered the war in April 1917 arrangements were made to train Canadian pilots in Texas during the winter months, because it was considered that the Canadian winter conditions would severely restrict flying training. Ten of the flying training squadrons were therefore moved to Forth Worth, Texas in the winter of 1917-18 and the remaining five squadrons continued flying training in Canada using aircraft fitted with skis which enabled them to operate on snow. Reciprocal arrangements were made and Canada undertook to train American squadrons in Canada during the summer months.(1)

By the Armistice the Canadian training organisation had grown still further; a fourth wing of five squadrons was in the process of formation, and there were schools of aerial fighting, armament, special flying and army co-operation in operation, as well as the necessary supporting ground organisation. Canadian recruits were trained at these schools, which in 1918, sent an average of more than 200 pilots per month to the United Kingdom as well as some hundreds of cadets from the Cadet Wing and School of Military Aeronautics who had not had flying training. By the end of the war nearly 3,500 Canadian pilots were trained by these schools, many of them in Texas, and in 1918 it was estimated that 40 per cent of the pilot strength of the R.F.C. were Canadian personnel. In all over 22,000 Canadians served in the British Flying Services.

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(1) R.A.F. Year Book 1938.

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After the war this training stopped and the Canadian Air Force was not set up until a year later; even then only on a semi-permanent basis and was concerned with purely domestic requirements. It consisted of a mere 300 technicians and pilots. In 1921 this Air Force was split into two parts, known as the Canadian Air Force Military and the Canadian Government Air Corps. The latter half, the corps, was a civilian organisation, which developed along its own lines to become the Department of Civil Aviation in Canada, controlling all civil flying and civil air regulations in Canada. On 15 February 1923 the Canadian Air Force became the Royal Canadian Air Force and on 1 April 1924 was placed on a permanent basis. It was composed of an Active Air Force and a Reserve Air Force.(1)

Pre-War Proposals for training R.A.F. personnel in Canada

Up to the outbreak of war flying training in Canada was concerned with purely Canadian requirements, and trained only Canadian personnel for Canadian units. Liaison with the Royal Air Force was maintained by a system of exchanges. Several attempts, however, were made in the years before the war to obtain in Canada training facilities for the R.A.F., the first of which was made at the Imperial Conference in June 1936. The decision to establish overseas training schemes grew hand-in-hand with the pre-war expansion plans, and Canada was the most favoured location because of her proximity to the resources of America and because training for the R.A.F. (and the R.F.C.) had already been carried out there successfully during the 1914-18 war. There was also the hope that the presence of R.A.F. schools in Canada might eventually lead to possible recruitment of Canadians for the R.A.F. The first thought was for the formation of a school operated by, and training personnel for, the Royal Air Force, but it was realised that this would be unacceptable, on political grounds, to the Canadian Government, so the proposal actually made was for a school training personnel for the R.A.F. which would be nominally Canadian. The Canadian Delegates at the Conference were not impressed, however; it was clear that they considered that Canada's participation in any form of Imperial Defence Organisation would jeopardise her liberty to remain neutral in war.

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(1) A.H.B./IIF1/13.

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Two years later the question was re-opened, and a Mission was sent to Canada in May 1938 (1) to propose that three permanent schools should be located in Canada. It was suggested that they should be established by the Canadian Government, operated by the R.C.A.F. and paid for by the United Kingdom; the pupils would be R.A.F. (and Canadian if possible) and would, of course, serve in the R.A.F. after completing their training. (2) This scheme would not only relieve congestion in the United Kingdom, it would utilise Canadian resources of both aircraft and personnel (instructional and maintenance), it would encourage Canadian recruitment for the R.A.F., and it would be a safe area in war. At first Canada's reaction was unfavourable, mainly because of the isolationist attitude then prevalent in some parts of Canada and the mission returned home, but a few months later, after strong criticism in the press and parliament by the pro-European community, Canada's attitude changed and it was thought possible that British pilots could train in Canadian establishments under Canadian control. (3) A distinction was drawn between this suggestion and the earlier proposal that a British Branch of the Armed Forces should be set up in Canada. In view of this changed attitude a second mission was sent to Canada in July 1938, to find out whether Canada would train 135 pilots per year for service with the R.A.F. and, if this were accepted, whether additional training facilities up to a total of 400 pilots per year could be created. In effect, the proposal was an extension of the 'trained cadet' scheme which was operating in Australia and New Zealand and to which Canada had agreed in principle as long ago as 1935. Pilots were to be recruited and trained in Canada, given short service commissions in the R.A.F. for five years, and then returned to Canada where they would serve four years on the R.C.A.F. Reserve. No further progress had been made with this scheme, although over 150 candidates had already come to the United Kingdom at their own expense to join the Royal Air Force.

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(1) E.P.M. 67(38).

(2) A.M. File S.43124.

(3) A.H.B./IIIC/3/1.

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The mission was limited by two conditions, first that the cost of training the 135 pilots should be divided between the United Kingdom and Canada, since their service would be partly R.A.F. and partly R.C.A.F. Reserve, and second that the pupils should be recruited in Canada. The Canadian attitude was that this was a United Kingdom scheme and Britain should pay; the pupils should come from the United Kingdom because to recruit and train Canadians would prejudice Canada's freedom to decide on Canadian participation in Imperial defence. A deadlock arose. Eventually the Canadian Government offered to train 50 United Kingdom pupils a year; they were to have had elementary training at civil schools in the United Kingdom, and the cost was to be apportioned after twelve months experience. The United Kingdom was to supply 14 instructors. This offer was accepted in April 1939 and the first course was scheduled to begin in September.(1) The outbreak of war caused the postponement of these arrangements and the scheme was eventually overtaken by the Empire Air Training Scheme.

The Conception of the Empire Air Training Scheme

After the outbreak of war the possibility of training in Canada was again considered, and it was suggested that Canada might be willing to concentrate more on training than on the formation of operational units. The possibilities of utilising civil flying schools for elementary training and of moving F.T.S.s from the 'operational zone' were also under consideration. A meeting held by the C.A.S. on 10 September 1939, had as its subject 'The measures necessary to provide the flying personnel who would be required to man the maximum number of aircraft that could be produced in the second and third year of war'. It was estimated that roughly 20,000 pilots and crews per year would be needed, and as this was obviously too big for the United Kingdom training organisation, the Dominions would have to be approached for help on a very large scale. It would be necessary to ask Canada to train 8,000 per year and to persuade her to devote her resources first to training and later to sending an expeditionary force.(2)

The conception of training in Canada was greatly widened by a proposal made by the High Commissioner for Australia (Mr. Bruce) to the Under Secretary of State for Air (Captain Balfour) on 22 September 1939, to the effect that

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(1) A.M. File S.51649.

(2) A.M. File S.56584.

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each Dominion should have its own Air Force Contingent in the Field, but that training should be rationalised in the most economical way by concentrating all advanced training in Canada, the other Dominions doing only elementary training.(1) It was estimated that an ultimate air force based on a monthly production of 2,550 aircraft would require to be backed by about 45 E.F.T.S.s and 45 S.F.T.S.s turning out some 19,500 pilots per year, with a corresponding number of schools for training other aircrew. It was proposed that 25 S.F.T.S.s should be located in Canada (of the remainder, 14 were in operation in the United Kingdom and one in Iraq; five more were planned to open at home), together with thirteen E.F.T.S.s (the remaining E.F.T.S.s to feed the 25 S.F.T.S.s in Canada were to be located in Australia and New Zealand). The training of other aircrew was also to be concentrated in Canada, and 12 armament schools, two G.R. schools, and two navigation schools were planned.

These proposals were formally transmitted to the Prime Ministers of Canada, New Zealand and Australia on 26 September, they were accepted in principle and a mission headed by Lord Riverdale left for Canada in early October.(2) The mission arrived on 14 October 1939, with a brief 'to secure the agreement of the Dominion Governments to the establishment of the proposed Dominion Air Training scheme for pilots and aircrews'. Preliminary examination showed that the scheme could reach full capacity by July 1942.(3) Negotiations began on the basis of recruiting aircrews in Canada, Australia, and New Zealand, providing elementary training in their respective Dominions, advanced training in Canada, and employing them on operational duties with the Royal Air Force. These personnel were to supply five-ninths of the total flying personnel required by the R.A.F. (i.e. about 11,000 pilots, 6,600 observers, and 11,300 air gunners per year), of which it was proposed that 48 per cent should be recruited in Canada, 40 per cent from Australia, and 12 per cent from New Zealand. The remaining four-ninths (of a grand total of 20,000 pilots and 30,000 other aircrew) were to be recruited and trained by the R.A.F. either in the United Kingdom or at R.A.F. schools overseas.

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(1) A.H.B./IIIC/3/1.

(2) A.M. File S.56584.

(3) A.H.B./IIIC/4.

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The reception of the proposals was somewhat mixed. Canada considered that, being a British scheme, the United Kingdom should bear the brunt of the cost. Australia and New Zealand also objected on financial grounds, as they considered that the advanced training could be done more cheaply in their own Dominions. Moreover, they were unable to supply the proposed quotas of recruits. After some modification the final agreement was signed on 17 December 1939. The scheme, known as the Empire Air Training Scheme, still planned to provide 11,000 pilots and 17,900 other aircrew annually, but the Dominion manpower contributions were altered so that Canada supplied 51 per cent, Australia 37 per cent, New Zealand 9 per cent and the United Kingdom 3 per cent. The financial objections were met by arranging for more training to be carried out in Australia and New Zealand and less in Canada.

The E.A.T.S. Agreement

The agreement covered the setting up and operating of training organisations in Canada, Australia, and New Zealand; the numbers of pilots and aircrew to be recruited, and the numbers to be trained by each Dominion; the operational employment of Dominion personnel in the R.A.F. or in Dominion units operating with the R.A.F., and the distribution of cost, rates of pay, training syllabus, provision of aircraft etc.(1)

The Canadian part of the scheme(2) which was to train pupils from Australia, New Zealand, and the United Kingdom as well as Canadians, was to consist of the following schools:-

13 Elementary Flying Training Schools
16 Service Flying Training Schools
10 Air Observer Schools
10 Bombing and Gunnery Schools
2 Air Navigation Schools
4 Wireless Schools
3 Initial Training Schools

In addition to these 58 units there were to be schools for the training of the necessary staff, and appropriate command, recruiting and maintenance organisations which involved the formation of the following ancillary units:-

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(1) A.H.B./IIIC/1.

(2) The details of the E.A.T.S. contained in this chapter apply only to the Canadian organisation. Other details are described in the chapters dealing with Australia and New Zealand.

2 Training Command Headquarters
4 Training Group Headquarters
2 Maintenance Group Headquarters
2 Manning Depots
1 Technical Training School
1 Equipment and Accounts School
3 Repair Depots
2 Equipment Depots
2 Air Stores Parks
1 A.I.D. Inspection School
1 Aero Engineering School
1 Air Armament School
1 Flying Instructors School
1 School of Administration
20 Recruiting Centres

Thus the scheme in Canada was to consist of 102 units. The first three flying schools were to open in May 1940 and the whole scheme was to be in operation by April 1942.

The plan was to be capable, when fully developed, of producing in Canada 544 pilots, 3,440 observers, and 580 wireless operators/air gunners every four weeks; an annual output as follows:-

Pilot Training	Output
Canadians (including the U.K. and Newfoundland quota)	5,746
Australians (S.F.T.S. training only)	884
New Zealanders (S.F.T.S. training only)	442
Total	7,072

Observer Training	
Canadians (including the U.K. and Newfoundland quota)	3,536
Australians	442
New Zealanders	442
Total	4,420

Wireless Operator/Air Gunner Training	
Canadians	6,032
Australians	754
New Zealanders	754
Total	7,540

The total number of trainer aircraft required for the schools in Canada was 3,540, with an estimated annual wastage rate of 580. The bulk of these aircraft were supplied by the United Kingdom and this formed the United Kingdom's financial contribution to the scheme. The total cost of the scheme

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was estimated to amount to $607,000,000, of which Canada was to contribute $353,465,600. The allocation of the expenditure was to be met as follows:- (1)

Estimated value of contributions to be made by the United Kingdom in the form of aircraft, equipment and freightage:-		$185,000,000
Estimated cost of initial ground training and elementary training to be borne entirely by Canada:-		$ 68,000,000
	Total	$253,000,000
Balance of estimated cost:-		$354,000,000
Allocation of Balance:-		
Canada	80·64%	$285,465,600
Australia	11·28%	$ 39,931,200
New Zealand	8·08%	$ 28,603,200

The significance of these astronomical figures can be better appreciated when it is realised that the cost of building one E.F.T.S. aerodrome averaged $100,000, that of an A.O.S., A.N.S., or B. & G.S. three and a half times that figure, and a S.F.T.S. eight times as much. The estimated cost of training a pilot was $23,000, and an observer or wireless operator/air gunner $14,000. Executive control of the Canadian training scheme was exercised by the Canadian Chief of Air Staff, Air Vice-Marshal Croil, while the whole scheme was directed by a Supervisory Board consisting of:-

The Minister of National Defence (Chairman)
The Minister of Finance
The Minister of Transport
United Kingdom Representations (High Commissioner and Liaison Officer-in-Chief)
Australian Representations
New Zealand Representations
Chief of Air Staff (R.C.A.F.)

The original intention, owing to the lack of experienced R.C.A.F. officers, was to have a R.A.F. officer as Director General and a staff comprising mainly R.A.F. personnel, but this plan was strongly opposed by the Canadians who insisted that any Canadian scheme should be under R.C.A.F. control. This was finally agreed to by the Riverdale Mission but not without some misgiving, though the subsequent success of the scheme proved them to be ill-founded.

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(1) Appendix I to the Report of the Riverdale Mission. (A.H.B./IIIC/4).

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The Riverdale mission returned to England after the signature of the Canadian agreement, and a liaison staff in Ottawa was formed to watch over the interests of the United Kingdom. Similar liaison personnel remained in Ottawa on behalf of the Australian and New Zealand interests. Air Chief Marshal Sir Robert Brooke-Popham was originally the United Kingdom Air Liaison Officer-in-Chief, but in March 1940 he was replaced by Air Vice-Marshal L.D.D. Mackean.

The early stages of the E.A.T.S.: The Supply of Instructors

When the plan was drawn up, air training facilities in Canada were limited, the total strength of the R.C.A.F. being approximately 4,000 officers and men, and its activities confined mainly to two stations organised under one Air Training Command.(1) A tremendous task confronted this small force to organise and develop the facilities necessary to fulfil the terms of the agreement and ensure an annual output of thousands of trained aircrew. Between the outbreak of war and the time the agreement was signed (17 December 1939) the R.C.A.F. had doubled in size but only a relatively small group were administrative personnel. One of the first and most important tasks was to recruit and train flying and non-flying personnel to act as instructors and to provide necessary services by July 1942 for the peak production of 1,464 personnel every four weeks.

The nucleus of flying instructors was recruited largely from Canadian 'bush' pilots and experienced American flyers, while many veterans of the 1914-18 war were brought in to fill administrative posts. Even so, there was a serious shortage of experienced personnel and in the first quarter of 1940 the R.A.F. contributed more than 250 personnel to the staff of the plan.

The entire R.C.A.F. training facilities were utilised to the full to train flying instructors to staff the first E.A.T.S. schools. Prior to the adoption of the plan there were two flying training establishments in Canada and one ground training unit: an Intermediate Training School at Camp Borden, an Advanced Training School at Trenton, and a Ground Training School at St. Thomas. On the outbreak of war Camp Borden was immediately converted into a combined refresher training school and flying instructor's school, and pupils already under instruction there were passed on to the A.T.S. at Trenton to complete

(1) Final Report by C.A.S. (R.C.A.F.) to the Supervisory Board of the British Commonwealth Air Training Plan (B.C.A.T.P.).

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their training.[1] Civilian pilots who were available for training as instructors were called up and sent to Camp Borden where they were given the refresher course followed by the flying instructors course. By January 1940, 30 flying instructors had been trained and a further 47 were under instruction. The output would have been considerably greater had it not been for the shortage of twin-engined training aircraft. Camp Borden was absorbed into the E.A.T.S. and renamed No. 1 S.F.T.S. on 1 November 1939 but it continued to train flying instructors until it received its first intake of pilot pupils under the E.A.T.S. on 22 July 1940. At Trenton the advanced training school continued to train pilots for Canadian home defence squadrons until the commencement of the E.A.T.S. in April 1940, when it was absorbed into the newly formed R.C.A.F. Central Flying School. By that time it had trained a total of 171 pilots since the outbreak of war. Meanwhile two other courses, one providing navigation instruction and the other armament training, had been inaugurated at Trenton. As soon as the A.T.S. was disbanded these courses were re-established as separate schools; the navigation course was transformed into the first Air Navigation School in Canada (it subsequently moved to Rivers and began training E.A.T.S. pupils) and the armament course became an air armament school for the training of armament specialists. The Central Flying School, with a training capacity of 26 pupils, commenced training elementary flying instructors for the E.F.T.S.s on 1 February 1940. Originally, its pupils were civilians sent for training by arrangements with their employing companies (the companies concerned operated Nos. 1 and 2 E.F.T.S.s), but in May 1940 the capacity of the school was increased to 36 - to supply instructors for the next six schools (Nos. 3-8 E.F.T.S.s) - and pupils, were to be enlisted personnel having at least 150 flying hours to their credit.[2] During training they received R.C.A.F. rates of pay and on joining their schools were granted leave without pay and received salaries from the operating companies. By July the supply of suitably qualified trainees had dried up, and to meet the serious shortage of instructors some civil flying clubs were utilised to bring civil pilots up to the necessary standard (i.e. 150 hours) for entry to Trenton.[3] At the same time the C.F.S. assumed responsibility for the

(1) E.T.S.5(40). (A.H.B./IIIC/1).

(2) E.T.S.50(40). (A.H.B./IIIC/1).

(3) E.T.S.74(40). (A.H.B./IIIC/1).

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provision of all instructors required for the E.A.T.S. schools, and in November 1940 when the first pupils of the E.A.T.S. graduated it was necessary to plough them back as instructors and a Refresher Flight was formed at Picton to give them a short pre-C.F.S. course.

The Provision of Aerodromes

The provision of aerodromes to house the large number of flying training schools required under the plan was one of the first tasks of the R.C.A.F. At the outbreak of war the Royal Canadian Air Force, hampered for many years by lack of funds for aerodrome construction, had only five aerodromes ready for use and six more under construction. The Service aerodromes, in any case, were required for operational use immediately the war began, and were not available for the training scheme. There had, however, been great activity in the building and improvement of civil airports in all parts of the country since 1936, principally along the line of the Trans-Canada airway, but including many airports to serve feeder lines as well. The use of this chain of airfields, built to a common, up-to-date pattern, as a foundation for the plan was the obvious solution to the problem and while discussions leading to the inter-Governmental agreement on the plan in general were proceeding in Ottawa, the Civil Aviation division was consulted in October 1939, and agreed to assume responsibility for the finding and building the aerodromes required for the scheme.

In October 1939, there were 153 airports and airport sites in Canada, roughly half of which were fully developed. Certain sections of the airway and its connections were not suitable for training purposes because of inaccessibility, climatic conditions, proximity to the American border, or the nature of the surrounding country, but twenty-four suitable airports were available which required, apart from buildings to accommodate the schools, comparatively little work to adapt them for training purposes. The remaining airfields required to house the fifty-five flying schools projected (the three I.T.S.s did not require aerodromes) needed a certain amount of development and to minimise the work of both airfield development and building construction the original plan for 13 E.F.T.S.s was changed to 4 full sized and 18 half sized schools. As the S.F.T.S.s each required two relief landing grounds (to relieve aircraft congestion at the main airfield) the total number of airfields

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needed to house all the schools amounted to 96, although it was eventually found possible to reduce this number to 88 by locating both E.F.T.S.s and A.O.S.s on some of the larger airfields.

By February 1940, the first contract was awarded (for an elementary flying training school) and in May the first schools opened on schedule. By the late summer of that year construction was under way on all types of training schools, involving between 500 and 600 contracts and up to $ 10 million in expenditure. Since the first contract was for a small type of school it had not been necessary to evolve special designs for its construction, but as the training of aircrew and other allied trades progressed special types of structures had to be designed. Here the R.A.F. played an important part in developing such facilities by sending specialist officers with wide experience early in 1940, and designs were prepared for standard barrack blocks, mess halls, hangars; in fact, for all the various types of structures used in the building programme.

Owing to the shortage of experienced Service instructional and maintenance personnel required to man the large numbers of schools planned it was realised that some flying schools would have to be civilian manned.(1) Prior to the inception of the Empire Air Training Scheme a certain amount of elementary flying training had been carried out on behalf of the R.C.A.F. by 22 civilian flying clubs in Canada, and it was therefore decided to utilise the services of these clubs and companies to operate the E.F.T.S.s and A.O.S.s The R.C.A.F. provided the airfields, buildings and aircraft, while the clubs were to be responsible for providing civilian flying instructors, mechanics, and maintenance staff. Profits from these schools were limited by the terms of their contracts.

Article 15 Squadrons

When the Riverdale agreement was signed in Ottawa in December 1939, establishing the Empire Air Training Scheme, one of the articles - Article No. 15 - provided that 'pupils of Canada, Australia, and New Zealand shall,

(1) E.T.S.33(40). (A.H.B./IIIC/1).

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after training is completed, be identified with their own respective Dominions either by the method of organising Dominion units and formations or in some other way, such methods to be agreed upon with the respective Dominions concerned. The United Kingdom Government will initiate inter-governmental discussions to this end'.

Accordingly discussions were held in London in December 1940 during the visit of Mr. Ralston the Canadian Minister of National Defence, and a supplementary agreement was signed by Sir Archibald Sinclair on behalf of the United Kingdom and Mr. Ralston acting for Canada, setting out arrangements to be made for the identification of Canadian aircrew.(1) Canadian pilots and aircrews trained under the B.C.A.T.P. and serving in the United Kingdom came to be incorporated into squadrons of the Royal Canadian Air Force up to a number of 25. This number was in addition to the three R.C.A.F. squadrons already serving in the United Kingdom.

It was realised that, owing to Canadian concentration on the production of aircrew under the Air Training Plan, she would have difficulty in providing sufficient numbers of ground personnel to man these squadrons, and it was arranged that R.A.F. ground crews should be attached to these Canadian squadrons until sufficient R.C.A.F. ground crew became available to replace them. The supplementary agreement also provided for a review of these arrangements in September 1941 in order to determine firstly, whether both the schedule and the number of squadrons fixed in the supplementary agreement could be maintained or accelerated, and secondly, to consider the employment of Canadian aircrews in excess of those who, under the agreement, might be absorbed in R.C.A.F. squadrons.(2) Many thousands of aircrews in excess of those required to man the 25 R.C.A.F. squadrons were eventually produced and many served in R.A.F., Australian and New Zealand squadrons.

The formation of these operational squadrons in no way retarded the primary purpose of the E.A.T.S. which was to supply the air forces of the Empire, as quickly as possible, with a steady and ever increasing flow of pilots, observers, and air gunners.

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(1) E.T.S.130(40). (A.H.B./IIIC/1).

(2) Supplementary E.A.T.S. Agreement, 7 January 1941.

/ Recuiting

Recruiting, Selection and Initial Training

The first course of trainees to start training in Canada under the Empire Air Training Scheme comprising 169 pupils, of which 50 were pilot trainees, 44 observers and 75 wireless operators/air gunner, entered No. 1 Initial Training School, Toronto, on 29 April 1940 and passed out four weeks later.

Pre-flight training in Canada was carried out only for Royal Canadian Air Force personnel. Pupils sent from the United Kingdom, Australia and New Zealand had all completed their basic ground training, i.e. the Initial Training School course, in their respective countries before proceeding to Canada. Facilities for the recruitment, selection and initial training of Canadian pupils were quickly established. Recruiting Centres were set up in twenty of the large cities of Canada, where applicants were interviewed, medically examined, documented and trade tested.(1) Successful candidates, classified as either potential pilots, observers, or wireless operators/air gunner proceeded to a Manning Depot. So great was the initial response to the call for recruits that training facilities could not begin to keep pace with applications. Rather than lose promising aircrew material, suitable applicants were accepted for immediate enlistment, and placed on guard duties whilst awaiting aircrew training. This not only assured a controlled supply of personnel who had completed documentation and preliminary training and were readily available for entry into aircrew courses, but also effected a substantial saving in the number of men permanently on guard duties.(2) In September 1940 when the R.C.A.F. accepted responsibility for aerodrome protection 80 per cent of the guards were aircrew cadets. As the scheme progressed a selection system, similar to that existing in the United Kingdom was set up, and a pre-flight training organisation was organised to deal with pre-E.F.T.S. training. As in the United Kingdom the Canadian selection procedure underwent various changes during the course of the war. Until October 1941 selection at recruiting centres was by interview, but with the number of recruits dwindling and the standards lowering it was realised that the 'ability to learn' was a truer test of suitability than formal educational standards. Accordingly selection after 1941 was done by specially trained

(1) E.T.S.5(40). (A.H.B./IIIC/1).

(2) E.T.S.87(40). (A.H.B./IIIC/1).

/ officers

officers, and those considered suitable but lacking in educational qualifications were accepted and given special instruction in mathematics and other ground subjects. In October 1942 a new selection procedure was adopted similar to the P.N.B. scheme whereby final classification was left until after the cadets had completed their Initial Training School Course.

At the next stage, the Manning Depot (equivalent to the R.A.F. Aircrew Reception Centre), the cadet's documentation was completed and he was issued with R.C.A.F. uniform and confirmed in his rank of A.C.2. Whilst in the Manning Depot cadets wore a red flash in their caps signifying that they were potential aircrew members. Drill and physical training were carried out and educational tests were later introduced to ensure that all personnel were up to the Initial Training School entry standard before proceeding to their I.T.S. Those cadets whose educational background was found to be insufficient were posted to a Pre-Aircrew Education School or other training scheme where they were given extra mathematical and general educational training before proceeding to the I.T.S.

The first manning depot was formed at Toronto on 15 September 1939 and seven months later (on 29 April 1940) a second depot was formed at Brandon. Each had a capacity of roughly 1,000 cadets and the duration of stay was between two and four weeks. When the R.C.A.F. was reorganised into four geographical commands two more depots were formed (No. 3 at Ottawa on 10 June 1940 and No. 4 at Quebec City on 3 September 1940) so that one manning depot was located in each Command. After passing through a manning depot and serving a period of aerodrome guard duty pupils proceeded to an initial training school. Under the original E.A.T.S. plan all R.C.A.F. aircrew recruits were to undergo an I.T.S. course, and three schools were therefore to be formed; one opened at Toronto in April 1940 and the other two were due to open by the end of the year. In August 1940, however, it was decided not to send wireless operator/air gunner pupils through an I.T.S. (they went straight to the wireless school from the manning depot) and the third I.T.S., due to open in December 1940 was not required until February 1941.(1) The I.T.S. course lasted four weeks, and each school trained 500 cadets during that time. Successful cadets were promoted to the rank of leading aircraftman before proceeding to their E.F.T.S. or A.O.S.

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(1) E.T.S.149(41). (A.H.B./IIIC/1).

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The omission of the I.T.S. course from the wireless operator/air gunner training was compensated for by adding four weeks to the wireless school course, thus bringing it up to 20 weeks. Although intakes and output at the wireless schools were to remain unaltered the longer courses meant that the schools had to be expanded to accommodate 900 pupils instead of 720.

As the scheme progressed further measures were taken to train the large numbers of young men anxious to join the R.C.A.F. The Air Cadet League of Canada came into being in November 1940, and was followed by the formation of University Air Squadrons. Both these organisations made vital contributions to the scheme. In 1942 the R.C.A.F. took over the administration of the Cadet League together with another system of pre-entry training of potential aircrew candidates which had formerly been sponsored by the Department of Labour.

Initial Difficulties and Changes

The schools in Canada were all organised and operated on R.A.F. lines in accordance with the R.A.F. syllabus.(1) The first schools all opened on time, but by May 1940 public opinion in Canada was critical of the apparent slow progress and this increased as Holland, Belgium and France were overrun. In actual fact, considering the scheme was not launched until December 1939, progress on the whole was good. Instructors and staff were being trained at Trenton, Camp Borden and St. Thomas, while aerodrome construction was going well ahead. Some delay was caused by the over centralisation of executive work and the rigidity of departmental control and in May when Air Vice-Marshal Breadner became C.A.S. he was given instructions to decentralize and to collaborate more effectively with the United Kingdom Air Liaison Mission.(2) The late start, due to the protracted negotiations in the autumn of 1939, was the real reasons for the absence of quick results which was the target of public criticism.

The deterioration of the war situation, however, with the consequent need for a greater output of pilots, the desperate shortage of trainer aircraft, especially advanced twin-engined trainers, and the widespread criticism in Canada led to several modifications of the original plan. An accelerated

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(1) See Appendix 62.

(2) A.H.B./IIC/3/S and E.T.S.48(40). (A.H.B./IIIC/1).

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programme was drawn up whereby eight S.F.T.S.s instead of five, and a corresponding increase in the other types of schools, were to be formed by the end of 1940. This acceleration was not easy, however, and even in January 1940 it had been foreseen that the supply of advanced twin-engined trainers was going to be the main limiting factor, due largely to the fact that pilot requirements had changed since the planning of the scheme.(1) The scheme had been planned to produce two twin-engined trained pilots to every one single-engine trained pilot, but the ultimate requirement changed to a ratio of 6·5 T.E. pilots to 1 S.E. pilot to man the large bomber force projected. Unfortunately it was not possible to buy more T.E. trainers than was originally planned and arrangements to build Ansons in Canada would not improve the situation for over a year.(2) This position was further aggravated by the embargo on sending aircraft out of the United Kingdom which came into force in May 1940. Intense public outcry in Canada at the apparent slowness of the scheme and the threatened resignation of Mr. Power (Canadian Minister for Air) caused the embargo to be lifted on 9 July 1940 and the United Kingdom undertook to supply enough aircraft for the accelerated programme to be carried out.(3) The programme was achieved but not without great difficulty and some schools had to be equipped with Harvards instead of Ansons,(4) which meant that the proportion of twin-engined pilots trained was far lower than it should have been.

The aircraft requirements already planned could not be drastically altered, however, and the conversion of the surplus single-engined trained pilots to twin-engined aircraft had to be accepted as a further liability, the result of which was the introduction of the A.F.U. stage in the United Kingdom late in 1941, to provide conversion training. At the request of the R.A.F. course lengths at pilot training schools were reduced in August 1940 in order to increase output still further. E.F.T.S. courses were cut from eight weeks

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(1) E.T.S.2(40) and 9(40). (A.H.B./IIIC/1).

(2) E.T.S.50(40). (A.H.B./IIIC/1).

(3) A.M. File S.62894.

(4) E.T.S.2(40) and 4(40). (A.H.B./IIIC/1).

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to seven, and S.F.T.S.s from 16 to 14 weeks. Four months later A.M.T.s 'Third Revise' was introduced which meant that the E.F.T.S. and S.F.T.S. courses were reduced to 48 and 72 days duration respectively, and the attachment of S.F.T.S. pupils to bombing and gunnery schools for two weeks at the end of their course was abandoned. The B. & G.S. requirements were accordingly reduced from 10 to 8 schools, but it was decided to carry on with the original building programme in order to be ready for possible future requirements. One of the surplus schools was opened as planned and utilised for a new commitment, the training of 'straight' air gunners, and two years later the other was similarly used.(1) The 25 per cent overbearing of pupils, which was an additional feature of the 'Third Revise' was not introduced at the E.A.T.S. schools because they had fewer aircraft and instructors than the R.A.F. schools (100 aircraft and 34 instructors per school compared with 108 and 39 respectively at R.A.F. schools).(2) A slight improvement was made, however, by increasing the S.F.T.S. intakes from 40 every four weeks to 56 every 24 days, thus bringing the schools capacities up from 160 to 168. These changes together with the shortened courses increased the output from S.F.T.S.s by 40 per cent. At the same time the S.F.T.S.s specialised in one type of training, either single-engined or twin-engined training and the establishments reduced to 96 aircraft (64 I.E. and 32 I.R.).

To meet the increased demand of the S.F.T.S.s, the capacity of the E.F.T.S.s was increased from 48 to 70 pupils (half size school) to provide an output of 28 pupils every 24 days. The aircraft establishment was increased from 27 to 32 aircraft (24 plus 8), which raised the total elementary trainer aircraft requirements from 702 to 832 aircraft.

Transfer of R.A.F. Schools to Canada

As we have already seen the Empire Air Training Scheme was concerned only with the recruitment and training of Dominion personnel with the proviso that up to 10 per cent of the Canadian quota could be met by supplying pupils from the United Kingdom or Newfoundland. By the end of 1940, however, there were also four R.A.F. schools operating in Canada and training R.A.F. pupils. These schools had been transferred from the United Kingdom owing to the unfavourable training conditions and by April 1942 there were 26 'transferred' schools in Canada.

(1) E.T.S.119(40). (A.H.B./IIIC/1).

(2) E.T.S. 87(40). (A.H.B./IIIC/1).

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The advantages of transferring schools to Canada were first considered in September 1939, but the idea was dropped because of the loss of output which would be caused whilst the schools were in transit. By July 1940 the situation had changed. The E.A.T.S. was under way and the imminent threat of heavy German attacks following the conquest of France was expected to produce serious difficulties for training schools in the United Kingdom. The vulnerability of training aircraft and airfields, together with the restrictions on night flying pressed heavily on the training schools, particularly the S.F.T.S.s and Navigation Schools. Canada was quick to realise the changed situation, and in May 1940 Great Britain was informed unofficially that Canada was willing to give all possible help if schools had to be moved out of the United Kingdom.(1) The excellent progress made in building aerodromes for the E.A.T.S. schools would enable R.A.F. schools to be accommodated in Canada with the least possible delay and interference with the E.A.T.S. would not be serious. On 8 July 1940 the Air Ministry decided to move four S.F.T.S.s out of the country as soon as possible, and Canada, South Africa and Southern Rhodesia were considered as possible destinations. Canada was eventually chosen because of her nearness to the resources of the United States and because she already had the aerodromes available. An official request for the transfer of four schools was made to the Canadian Government on 13 July 1940(2) and was followed five days later by a further request that four more Service flying training schools, together with two air observer navigation schools, a bombing and gunnery school, a school of ground reconnaissance, an air navigation school and a torpedo training school, making 14 schools in all, might be accommodated in Canada. Canada agreed on 21 July, adding that as the number of schools was so large R.C.A.F. control would be necessary, and asking that aircraft shipments to the E.A.T.S. schools should be uninterrupted.

The transfer plans, however, were opposed by Lord Beaverbrook, the Minister of Aircraft Production, on the grounds that a high proportion of spares would be locked up in transit, thus making a large number of aircraft

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(1) A.M. File S.5614 and E.T.S.44(40). (A.H.B./IIIC/1).

(2) E.T.S.67(40). (A.H.B./IIIC/1).

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idle, which in turn meant that more aircraft would be needed, and that the schools would be divorced from the technical backing of the aircraft industry. At a Cabinet Meeting on 20 August 1940, Lord Beaverbrook added the further objection that it would be folly to dispense the 'last reserves' of aircraft and instructors, and that large scale transfer overseas would exaggerate the scale of the German attack and give rise to false rumours. He urged that it would be better to form new schools overseas, and that the risk of casualties to trainer aircraft and pupils through enemy action was so small that it should be accepted. The Air Ministry view was that the handicaps on training in the United Kingdom together with the urgent need to expand their operational force, outweighed by far the spares and maintenance difficulties.(1) In August, however, the Prime Minister decided that it would be unwise to take any large part of the reserves of men and machines out of the country while the air battle was in progress. Preparations for reception of schools in the Dominions were to go ahead but the plans were to be postponed in general until later in the year. Eventually only four R.A.F. schools were actually transferred to Canada, together with three to South Africa.(2) The first school to go was No. 7 S.F.T.S. which started moving from Peterborough to Kingston in Canada on 26 August; it was renumbered as No. 31 S.F.T.S. (all R.A.F. schools in Canada were to be numbered from 31 onwards to distinguish them from the E.A.T.S. schools) and recommenced training six weeks later. The School of Air Navigation, St. Athan, was the second school to be transferred. It re-opened at Port Albert as No. 31 A.N.S. on 18 November 1940 and in addition to continuing its 15 weeks specialist navigation courses and 4 weeks astronomical navigation courses it was expanded to train 120 observer pupils at a time on A.O.S. courses of 12 weeks' duration. Third to move was No. 10 S.F.T.S. Ternhill which left England on 21 October and re-opened at Moose Jam as No. 32 S.F.T.S. at the beginning of December. The last of the four transferred schools was opened at Carberry as No. 33 S.F.T.S. on Boxing Day 1940. It was actually a new school, but was formed in England

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(1) A.H.B./IC/7/163.

(2) A.M. File S.62894.

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before moving to Canada. Complete transfers of schools came to an end after the move of No. 33 S.F.T.S. and the remaining 10 R.A.F. schools, still known as 'transferred schools' were to be formed as new schools in Canada on the lines that Lord Beaverbrook had suggested.

The process of bodily transfer was lengthy. The schools moved in echelons to minimise dislocation; as a course came to an end in the United Kingdom a section moved overseas. The staff and equipment of the new units to form in Canada were assembled at a personnel despatch centre in the United Kingdom and moved overseas in echelons. Various difficulties were met with the transfer of these schools. Only one S.F.T.S. was to move at a time because of the dislocation of output, and all the moves were to be made while the St. Lawrence River was still open. Aircraft shipments were another difficulty; it had been agreed that shipments to the E.A.T.S. schools should not be interfered with, and all the schools were badly under-established in their early stages.

The R.A.F. schools in Canada were not part of the E.A.T.S. plan although, because of geographical considerations, the schools came under R.C.A.F. control. They were manned by R.A.F. personnel and trained only R.A.F. pupils, who were sent to Canada for training after completion of their E.F.T.S. training in the United Kingdom. A.M.T.'s 'Third Revise', introduced into both the United Kingdom schools and E.A.T.S. schools during October 1940, was also applied to the transferred S.F.T.S.s in Canada, and so was the overbearing of 25 per cent (which increased the pupil population to 200) although that had not been applied in the E.A.T.S. schools. No. 31 E.F.T.S., however, which was training Fleet Air Arm pupils, continued the old 16 weeks' course in accordance with Admiralty requirements.(1)

Progress by the end of 1940

The accelerated programme for the formation of schools in Canada was successfully carried out and by the end of the year there were 36 Empire Schools at work. In addition four R.A.F. schools had been transferred to Canada. These were the target figures which the programme had set; but they were achieved with great difficulty owing to the shortage of aircraft and

(1) A.M. File S.5613 and E.T.S.76(40). (A.H.B./IIIC/1).

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instructors; in actual fact the last two S.F.T.S.s to open had only seven aircraft between them at the end of the year. Various steps had been taken to overcome this bottleneck - S.F.T.S. aircraft establishments were reduced, Ansons were manufactured in Canada, aircraft (Cessna Cranes) were purchased in the United States - but at the end of the year the supply was still only half the demand.(1) Shortage of spare parts was an added difficulty, which needed vigorous attention in the early stages of the scheme; a difficulty which was not improved by inaccurate estimates of requirements and shipping delays.

One bright feature was the progress of aerodrome construction. By the end of the year aerodromes for over 50 schools were ready - more than the original plan had required by July 1942. Recruiting too, was well ahead of schedule and over 10,000 recruits had been enlisted in Canada by the end of the year, (nearly twice the planned intake), of which nearly half were under training. The first graduates of the scheme were 34 pilots from No. 1 S.F.T.S. who passed out on 5 November 1940, and by the end of the year the total output was 521. The supply of Newfoundland pupils dried up at the end of the year, after 114 had entered initial training and Canada temporarily filled part of the United Kingdom's 10 per cent quota of places.(2) In March 1941, however, it was agreed that the United Kingdom in future, should fill all the places. The first pupils from Australia had arrived in Canada in September 1940, and those from New Zealand five months later. It had been intended that pupils from these Dominions should be concentrated in special schools in Canada but this was never done and they were distributed among all the E.A.T.S. schools.

Opening of Further 'Transferred' Schools

The accelerated programme brought forward the target date for the completion of the plan from mid-1942 (as planned under the Riverdale agreement) to the summer of 1941, and the schedules of opening dates for the schools was advanced by anything from three months to a year. The overall capacity of the scheme however remained unaltered, except for a slight increase in the S.F.T.S. populations.

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(1) E.T.S.187(41). (A.H.B./IIIC/1).

(2) E.T.S.159(41). (A.H.B./IIIC/1).

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In November 1940 Canada offered to expand her training organisation over and above the 58 E.A.T.S. and the 14 transferred schools already planned.(1) The United Kingdom replied with a tentative suggestion that more 'transferred' S.F.T.S.s might be established in Canada, providing Canadian production of trainer aircraft was developed.(2)

The possibilities of establishing E.F.T.S.s in Canada to feed the transferred S.F.T.S.s was also considered at that time.(3) This meant that there would be no break in training before the S.F.T.S. course began and no intake or shipping difficulties would affect the S.F.T.S.s. Against this, however, was the fact that many pupils would have to be sent to Canada who would be eliminated from the E.F.T.S. course, and with E.F.T.S. wastage at 25 per cent it meant that to produce, say, 100 S.F.T.S. pupils 135 would have to enter E.F.T.S.s - thus increasing shipping requirements by more than one third. Another factor in favour of retaining the E.F.T.S.s in the United Kingdom was that they were civilian operated and also less hampered by war conditions than any other type of school. The matter was discussed with the Canadian C.A.S. in November 1940, and as a result of Canada's wishes to undertake more training two R.A.F., E.F.T.S.s were formed in the summer of 1941 in Canada. These, unlike the E.A.T.S. schools, were Service operated.

The S.F.T.S. question was further discussed. Owing to the difficulties of obtaining advanced trainers plans were going ahead to establish training facilities in the United States using American aircraft and instructors.(4)

After considerable discussion whether additional R.A.F. schools called for by the expansion programme should be located in Canada, the United States, or Southern Rhodesia, Canada was asked in May 1941 to find room for another six 'transferred' S.F.T.S.s thus making a total of 14 R.A.F. S.F.T.S.s to be operating in Canada by the summer of 1942.(5) These 'transferred' schools - the word had now lost its original meaning - were really new schools opened in Canada, staffed by the R.A.F. and handling R.A.F. pupils. These six S.F.T.S.s and the two E.F.T.S.s were in addition to the original 14 'transferred' schools agreed in July 1940.

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(1) E.T.S.120(40). (A.H.B./IIIC/1).
(2) E.T.S.123(40) and 120(40). (A.H.B./IIIC/1).
(3) E.T.S.69(40). (A.H.B./IIIC/1).
(4) E.T.S.137(40). (A.H.B./IIIC/1).
(5) A.M. File S.5614.

/ Canada's

Canada's desire to do more training also extended to other types of school, particularly to operational training units. During their visit to the United Kingdom at the end of 1940 the Canadian Minister for Air (Mr. Power) and the Chief of Air Staff (Air Vice-Marshal Breadner) suggested that O.T.U.s should be formed in Canada. The general O.T.U. policy was that they should be located in the operational areas in which they served, in order to maintain a close liaison with the front line, and also for final training under operational weather conditions. The fact that operational aircraft were to be built in Canada and the United States and would have to be delivered across the Atlantic, gave grounds for modifying this policy. The matter was left unsettled until March 1941, when it was agreed to set up O.T.U.s in Canada, and it was decided that four O.T.U.s should be established by 1942 in addition to the Torpedo Training Unit (T.T.U.) which was to be converted into an O.T.U. In addition a second school of general reconnaissance was to be established. Pursuant to the policy of matching a proportion of the transferred S.F.T.S. capacity with E.F.T.S. facilities, the number of Royal Air Force E.F.T.S.s formed in Canada was increased from two to eight during the latter half of the year. Two other R.A.F. units were also opened in 1941, the first was a transit centre for R.A.F. pupils arriving for training in Canada and America which was formed at Dartmouth in May 1941 and moved five months later to Moncton where it became known as No. 31 Personnel Depot. It handled trainees arriving from the United Kingdom as well as graduates returning to the United Kingdom. The second school which is really outside the scope of this monograph since it trained ground personnel only, was No. 31 Radio School which was formed to train R.A.F. mechanics on Canadian produced Radar, mainly for R.C.A.F. Home Defence needs. It was opened at Clinton on 16 August 1941, and two years later, on 31 July 1943 it was handed over to the R.C.A.F. and became No. 5 Radio School. These additions brought the total planned R.A.F. schools up to 35 making an overall total, including E.A.T.S. schools, of 93 schools to be formed by mid 1942.(1)

The actual development of the Canadian Empire Training Scheme Organisation went according to plan; the last school (No. 9 B. & G.S.) opening on 9 December 1941. The only alterations from the original scheme were in the actual number

(1) See Appendix 63.

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of E.F.T.S.s and B. & G.S.s formed; 22 E.F.T.S.s were opened instead of the planned 13, because only four of these were full-size schools; and only nine bombing and gunnery schools were required instead of the ten it had been intended to open.

Reorganisation of Schools to Improve Training Standards

As the scheme progressed modifications to the original plan were inevitable. The advent of the four-engined bombers called for a higher standard of training of all aircrew categories, in particular that of observers. Accordingly, in September 1941 the air observers' training system was revised so as to allow some bombing training and practice in bomb dropping to be given at the air observer school stage.(1) From the training point of view the ideal way of achieving this would have been to combine the A.O.S.s and B. & G.S.s into single units with one all-through course, but this was impossible because constructional work on all the schools planned under the E.A.T.S. was either completed or well under way and to amalgamate them at this stage would have involved heavy expenditure. Amalgamation would not have been easy in any case because the A.O.S.s were civilian operated whilst the B. & G.S.s were Service manned.(2) The improvement in training was achieved by adding two weeks to the course at the air observer school. Thus, with effect from 1 September 1941, the length of the complete air observer's course, both at the E.A.T.S. and transferred schools was:

Air Observer School	-	14 weeks
Bombing and Gunnery School	-	6 weeks
Air Navigation School	-	4 weeks

At the R.A.F. schools, both the A.O.S. and A.N.S. courses were completed at Nos. 31, 32 or 33 A.N.S.s before pupils proceeded to No. 31 B. & G.S. for their bombing and gunnery course.

These extensions also led to capacity increases; those at the E.A.T.S. air observer schools were increased by 50 per cent to 184 pupils on 29 September 1941, while the air observer course capacity at the R.A.F. air navigation schools were increased from 120 pupils to 140 per school.(3)

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(1) A.M. File S.72375.

(2) E.T.S.313(41).

(3) A.M. File S.64452.

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The introduction of A.M.T.s 'New Deal' in November 1941 necessitated increased course lengths and capacities in the pilot training schools. At the elementary flying training schools where the school capacities had already been increased (on 9 June 1941) to 84 pupils, the courses were extended to eight weeks and capacities further revised to 90 pupils. Concurrently S.F.T.S. courses were extended to 12 weeks and then, on 8 December, to 16 weeks and capacities increased to 204 pupils. At the R.A.F. schools the capacities were further expanded to 240 pupils and their aircraft establishments increased from 96 to 108 aircraft. Unfavourable weather conditions, coupled with supply difficulties, prevented a similar expansion of the E.A.T.S. schools until the summer of the following year. These extensions made it possible to add 10 flying hours on to the E.F.T.S. course (making it an average of between 60 and 75 hours per pupil) and those at the S.F.T.S.s raised to 90 per pupil.(1) In the summer of 1941 more link trainer instruction had been added to the curriculum of the elementary and Service flying training schools, and to provide the necessary instructors to carry out the revised syllabus two additional ancillary schools had to be added to the training organisation - link trainer instructor schools.(2) These modifications appreciably raised the standard of the pilot output. Instrument and night flying were progressively increased and night cross country exercises introduced; aircraft recognition was also introduced into the syllabus for the first time and bombing and gunnery training, which had been omitted from the syllabus when the old A.T.S. system was abandoned, was re-introduced.

The training of 'straight' air gunners was formally introduced in Canada in October 1941. No provision had been made under the original E.A.T.S. agreement for the training of these personnel although some twelve months earlier one course of 54 pupils had been trained at No. 1 B. & G.S. to meet Canadian Home Defence requirements.(3) Pupils were selected from those failing other aircrew courses, and there was sufficient training capacity in the bombing and gunnery schools to train them without adversely affecting the W.O./A.G. and observer output.(4) The wireless course for wireless

(1) E.T.S.388(41) and 431(41). (A.H.B./IIIC/1).
(2) E.T.S.313(41). (A.H.B./IIIC/1).
(3) E.T.S.105(40), 119(40) and 365(41). (A.H.B./IIIC/1).
(4) E.T.S.365(41). (A.H.B./IIIC/1).

/ operators

operators/air gunner was lengthened in December 1941 to 24 weeks, although the school capacities remained unchanged by reducing intakes from 165 to 136 pupils every four weeks.

Attention was also paid to the pre-flying training organisation, and a six weeks syllabus of training covering signals, mathematics and aircraft recognition was introduced in December 1941 in order to standardise the training of candidates undergoing aerodrome guard and tarmac duties. The I.T.S. syllabus was also revised to include navigation and signals training (which had previously been taught only at flying training schools) and the course length increased to seven and then to eight weeks. The extension and acceleration of intakes at the flying schools introduced earlier in the year, necessitated additional I.T.S. capacity, and the position was further aggravated by the wastage rates at the initial training stage which were considerably higher than had been anticipated. The result was that by the end of the year it was necessary to increase the number of I.T.S.s from three to seven. The wastage rates at all stages of training were reviewed and in November 1941 (1) the following new rates were laid down:-

Schools	Percentage
Initial Training	10
Elementary Flying Training	25
Service Flying Training	10
Air Observer	10
Bombing and Gunnery	4 (for observers) 3 (for W.O.s/A.G. and A.G.s)
Air Navigation	Nil
Wireless	12

All these changes imposed a greater load on the output of instructors from the Central Flying School, and this led in October, to the reorganisation of the school: courses were lengthened from six to eight weeks duration and the intake of pupils was raised from 85 to 128 every four weeks. (2)

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(1) The actual wastage rates over the previous 12 months were:-

Schools	Percentage
Initial Training	7·9
Elementary Flying Training	24·0
Service Flying Training	9·7
Air Observer	11·6
Bombing and Gunnery	2

(2) E.T.S.388(41). (A.H.B./IIIC/1).

/ Summary

Summary of progress by December 1941

By the end of the year all of the E.A.T.S. schools, as well as the fourteen original 'transferred' schools were in operation, and five other R.A.F schools were also working. Excluding the manning depots, (which had been increased to five in number by the opening of No. 5 at Lachine on 1 December 1941) the recruits centres, (which had been reduced to 16) and the 40 other ancilliary units, a total of 89 training schools were in operation.(1)

The effect of the accelerated E.A.T.S. programme was to more than double the output during 1941; pilot output for example was actually 7,754 compared with a planned output (before the accelerated programme was introduced) of 3,196. In all over 16,000 aircrew had been produced since the beginning of the scheme at the E.A.T.S. and R.A.F. schools.

This acceleration, and the establishment of more R.A.F. 'transferred' schools in Canada was not accomplished without difficulty. The shortage of instructors was overcome by retaining some of the E.A.T.S. output in Canada; 1,416 pilot graduates were retained as instructors during the year. The serious shortage of advanced trainers (particularly Ansons and Battles) and spare parts continued, and at one time the twin-engined S.F.T.S.s were operating with less than 50 per cent of their aircraft establishment. It was not until the autumn of 1941 when the production of twin engined trainers in Canada and the U.S.A. was increasing that the situation began to improve. The deficiency of Ansons had been alleviated to some extent by equipping some of the R.A.F., S.F.T.S.s with Oxfords, and the installation of the Canadian built engines in British aircraft helped to relieve the engine shortage. A typical example of the way in which these shortages were overcome is portrayed in the development of the Anson aircraft. When the Cheetah engine supply from the United Kingdom failed the Canadian built Anson was modified to take the Jacobs engine, the only suitable American type then available; this aircraft was designated the Anson II. Coincidently the British Anson I was fitted with Jacobs engines and named the Anson III. When the engine supply lagged behind airframe production, a Wright engine installation was engineered and a moderate number of the type known as the Anson IV was produced. To provide better performance and to conserve critical materials a major re-design

(1) See Appendix 64.

/ of

of the Anson was undertaken involving a moulded wooden fuselage and the use of Wasp engines. This type, the Anson V, proved very successful and was later adopted as the standard type.(1)

The 'transferred' schools besides suffering through these shortages had numerous other difficulties. Schools opened with aerodromes unfinished and personnel arrived with camps and buildings unprepared. Consequently there were periods of enforced idleness, which, coupled with the isolated locations of many of the stations, and the fact that at home friends and relations were suffering from the bombing, led to an appreciable lowering of morale. The difficulty in providing passages to Canada for the ground staffs' families did nothing to improve the situation, although the schools soon settled down when buildings were finished and proper training became possible.

The Effect of Japan's Entry into the War

Japan's spectacular entry into the war in December 1941 was an effective headline for the opening of the new year. The original Riverdale Agreement of December 1939 expired on 31 March 1943, and the continuation of the Canadian Scheme was dependent upon a new agreement. A delegation to discuss this continuation which was on the point of leaving for Canada when Japan entered the war, was cancelled, since it was apparent that the future organisation would need considerable revision. Australia and New Zealand ceased sending pupils to Canada until the strategical situation became more settled.

One thing, of course, was clear, it was essential that the E.A.T.S. should continue beyond 1943 at its maximum effectiveness, and it was equally essential that plans for the continual flow of aircraft and equipment should be settled as soon as possible.(2) Accordingly the Director-General of Organisation (Air Vice-Marshal L.N. Hollinghurst) went to Canada and America in March 1942 to discuss aircraft production and requirements for all training establishments in Canada, pending the opening of formal negotiations for the continuance of the E.A.T.S. At the same time it was suggested that more schools should be established in Canada within the framework of the E.A.T.S.

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(1) E.T.S.277(41), 313(41) and 569(43). (A.H.B./IIIC/1).

(2) A.M. File C.S.13570.

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These were necessitated by two events: First, the revised crewing policy for heavy bombers which reduced the number of both pilots and wireless operators/ air gunner per aircraft from two to one, replaced the observer by a navigator and an air bomber, and increased the number of air gunners; and secondly, A.M.T.'s 'New Deal' which proposed to improve the training standards of pilots and observers by lengthening training courses (thereby requiring additional capacity if the current output was to be maintained). Added reasons for this proposal were the increased aerodrome capacity needed in the United Kingdom for operational purposes, especially since U.S. Forces were destined to arrive, and the need to utilise United Kingdom training schools, both for 'grading' flights in the United Kingdom before personnel proceeded overseas for training and for acclimatisation courses to those returning from overseas.

The Ottawa Air Training Conference

The Canadian reaction to the proposal was favourable, and it was suggested that a conference should be held in Ottawa to discuss not only the establishment of more schools in Canada, but both the continuation of the Empire Air Training Scheme after March 1943 and the status of the R.A.F. schools already in Canada. Whilst the arrangements for this Conference were under discussion the Government of the United States proposed that another conference (attended by representatives of the United States, the United Kingdom and Canada) should be held to discuss the co-ordination of all air training schemes in operation in North America. After a meeting between President Roosevelt and Mr. Mackenzie King it was announced that the two conferences would be amalgamated, and as the Governments of Norway, China, and the Netherlands had small training establishments in progress in North America they were invited to send representatives.

Eventually to prevent any misunderstandings, invitations were issued to all the Allied nations, and the scope of the conference gradually developed into a major international conference with the main subjects of discussion concerning the standardisation and co-ordination of all systems of aircrew training. Various sub-committees under the main conference with representatives only from those countries directly concerned were appointed to deal with specialist matters and the following matters concerning the training of aircrew personnel in Canada were discussed:-

/ (a)

(a) The future basis of the E.A.T.S. and R.A.F. transferred schools.

(b) The status of schools which were still due to be formed in Canada.

(c) The status and scope of the R.A.F., O.T.U. organisation in Canada (Canada's home defence programme of 49 squadrons also needed a large O.T.U. backing).

(d) The civilianisation of R.A.F., E.F.T.S.s in Canada.

(e) The continued participation of Australia and New Zealand.

(f) The manpower position and the sources of supply of pupils to be trained in Canada in 1943-5.

The Air Training Conference opened in Ottawa on 19 May 1942, and as a result of the discussions concerning air training in Canada, a revised agreement was signed on 6 June 1942. This new agreement superseded the original Riverdale agreement of December 1939, and was operative from the 1 July 1942 and was to last until 31 March 1945.(1)

The E.A.T.S. Agreement of June 1942

Under the revised agreement Canada became the administrator not only of the schools and formations established under the Riverdale agreement, but also of all the existing R.A.F. 'transferred' schools in Canada, and of any further schools which might form in that country. This was, in effect, a unification into one organisation, which, in future was known as the British Commonwealth Air Training Plan (B.C.A.T.P.).

The United Kingdom had expressed certain misgivings over this unification, mainly because it was felt that the 'Canadianisation' of R.A.F. schools would eventually lead to the replacement of all R.A.F. instructional staffs by R.C.A.F. personnel, and thus might lead to difficulties in the future when experienced personnel would be needed to establish new R.A.F. schools. A further argument against unification was that R.A.F. personnel would be posted indiscrimately instead of being concentrated in certain schools, and this might lead to friction with the higher paid R.C.A.F. personnel. The arguments in favour of amalgamation, however, were overwhelming, since the pooling of all resources would facilitate supply and posting matters and therefore simplify administration, and, at the same time, would obviate comparisons being made between the two sets of schools which might be taken by Canada as a reflection on her ability to operate the E.A.T.S.

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(1) E.T.S.480(42) (A.H.B./IIIC/1).

/ Under

Under the new agreement the existing R.A.F. schools kept their identity (they had been numbered from No. 31 upwards to differentiate them from the E.A.T.S. schools) but new schools were to be numbered consecutively after the E.A.T.S. schools. The pupil intakes into the combined organisation were also laid down and the United Kingdom was to supply enough pupils to fill at least 40 per cent of the schools. The shipment of trainees from Australia and New Zealand, which was resumed in February 1942, was to continue at approximately the same rate as before, namely Australia 1,300 pilots (for S.F.T.S. training only), 676 observers and 936 wireless operators/air gunner per year; New Zealand 450 pilots (for S.F.T.S. training only), 676 observers and 715 wireless operators/air gunner per year.

The 'New Deal' and the new crew policy had considerably altered the overall aircrew requirements and the agreement also outlined the future capacity of the B.C.A.T.P. Including the two E.F.T.S.s and four S.F.T.S.s still to form, planned pilot and wireless operator/air gunner training capacity was more than sufficient to meet future requirements, but extra schools were needed to meet the demand for more navigators, air bombers and air gunners - in all an additional commitment of 2,270 per month. It was also agreed that more operational training should be carried out in Canada and altogether the equivalent of 16 new schools were needed comprising nine air observer schools, two and a half air gunner schools, two and a half general reconnaissance schools and two operational training units.(1)

Revised Pilot Training Organisation

By June 1942, when the revised agreement was signed the pilot training organisation stood at 26 E.F.T.S.s (6 R.A.F.) and 26 S.F.T.S.s (10 R.A.F.), and two more elementary and four more Service flying training schools were about to open (originally as 'transferred' schools). All the S.F.T.S.s had been expanded to take 240 pupils (the E.A.T.S. schools in May 1942 and the R.A.F. schools six months earlier) which meant that the eventual pilot output, when all the new schools were opened, would be roughly 1,200 a month, or 15,000 a year.(2) It was realised that this output was in excess of current

(1) E.T.S.480(42). (A.H.B./IIIC/1).

(2) E.T.S.442(42). (A.H.B./IIIC/1).

/ requirements

requirements (in June 1942), but it would be required later and consequently the opening of the six new E. & S.F.T.S.s was deferred until the spring of 1943.

Owing to the need to provide more pupils for the expanded S.F.T.S.s, seven of the half-sized E.F.T.S.s (Nos. 6, 9, 10, 11, 12, 13 and 15) had to be expanded to full size. At the same time the capacities of two schools (No. 5 E.F.T.S., a full-sized school, and No. 16 E.F.T.S., a half-sized school) were, as an experiment, increased by one-third (to 240 and 180 pupils respectively). This expedient proved both practicable and economical, so when the time came to provide additional navigation training capacity it was accomplished by disbanding those E.F.T.S.s sharing aerodromes with the air observer schools (thus allowing the latter to expand) and making up the capacity so lost by further expanding some of the remaining schools. Accordingly although eight E.F.T.S.s were closed only one new school had to be opened. The former R.A.F. schools were already working to a 240 pupil capacity, and seven of the former E.A.T.S. full sized schools were to expand from 180 pupils to a similar capacity (with a proportionate increase at one of the half sized schools). This additional accommodation was not needed until the new S.F.T.S.s formed (in the spring of 1943), but when established it would also provide capacity equivalent to the two new E.F.T.S.s due to open. The closure of E.F.T.S.s also made it possible to civilianise the R.A.F. elementary schools (which had formerly been Service manned) thus bringing all schools on a common basis of operation.(1)

The Service flying training schools also underwent certain changes. Two schools (Nos. 8 and 9 S.F.T.S.s) were converted from Harvards to Ansons and the latter moved from Summerside to Centralia because its aerodrome was needed for a G.R. school. At all schools the syllabus was modified to include more instrument and night flying and more navigation, and bombing and gunnery training. It was necessary to provide some twin-engined trainers to carry out navigation training at the eleven single engined schools and the aircraft establishments at these schools were accordingly altered to 100 Harvards and 8 Ansons. Pupils did not qualify as pilots on the Ansons but were given flights in order to practise taking bearings, measure drift etc.

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(1) E.T.S.480(42), 487(42) and 510(42). (A.H.B./IIIC/1).
See Appendix 65.

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The replacement of Ansons by Oxfords at some of the schools did not improve the maintenance situation at the twin-engined schools very much. Lack of spares in general and spare Cheetah engines and cylinders in particular caused extremely low serviceability rates - it was never over 60 per cent and in September 1942 it fell to only just over half that figure - which led to a bottleneck in training and the intakes at the four Oxford schools fell to nearly 50 per cent by September 1942. Towards the end of the year the position improved somewhat but bad weather prevented the resumption of full courses until well into 1943. The reduction of intakes caused a build up of elementary trained pupils awaiting S.F.T.S. training, a situation that was not improved by the introduction of grading courses in the United Kingdom since these had the effect of reducing the high wastage rates at E.F.T.S.s in Canada (from over 35 per cent to under 20 per cent during 1942) thereby increasing output; consequently it was necessary to reduce temporarily the intakes at two E.F.T.S.s during the latter half of the year from 60 to 32 pupils every two weeks. This reduction was made effective only at the two 'Stearman' equipped schools (Nos. 31 and 32 E.F.T.S.s) because the non-provision of cold weather modifications for this aircraft would have, in any case, adversely affected the training at these schools.(1)

Revised Navigator and Air Bomber Training Requirements

The revised crewing policy which demanded that all aircraft where the size permitted should carry two crew members (a navigator and air bomber) instead of an observer radically altered navigation, and bombing and gunnery training requirements. In future there would be five different navigator categories according to the aircraft they were flying, although only four of these, and the air bombers, would be trained in Canada.(2) The 'straight' navigator would be trained only in navigation and would fly in heavy bombers with an air bomber who would be responsible for dropping the bombs. The latter, however, required a short navigation course. The old style observer was renamed navigator/bomber and received the same training as before. In addition there were now navigators/wireless and navigators/radio. The former received a full wireless operator's course in the United Kingdom before

(1) E.T.S.541(42). (A.H.B./IIIC/1).

(2) See Appendix 66.

/ proceeding

proceeding to Canada for navigation training, and the latter a radio course (for night fighting) at No. 62 O.T.U. on completion of training. In Canada these two categories received the same training as the 'straight' navigators.(1) Some of the former category (then known as observers/wireless) had actually started training at No. 32 A.N.S. in March 1942.(2) In addition to this reorganisation it was necessary to improve the standard of all navigator categories by introducing an elementary navigation course, to be completed before proceeding to navigational training proper. An elementary air navigation school had been formed in England in October 1941 to provide this training and it was found to be very beneficial. In Canada it was not necessary to form special schools - the existing A.O.S.s could be expanded to enable this four weeks' course to be added to the normal A.O.S. syllabus.

The deletion of bombing training from the 'straight' navigator's syllabus enabled the old air observer syllabus to be reduced by two weeks which meant that the complete navigator's course lasted 20 weeks in all (4 weeks elementary, 12 weeks A.O.S., 4 weeks astronomical). The syllabus for air bombers comprised an eight weeks' bombing and gunnery school course followed by a six weeks' course in map reading and applied bombing at an A.O.S. The navigator/bomber, after completing the elementary course, took a 14 weeks' A.O.S. course, followed by an eight weeks' bombing and gunnery course, although some months later the A.O.S. course for this category was reduced to 12 weeks and brought into line with the other A.O.S. courses.

These modifications, together with the additional requirements for navigators and air bombers (300 navigators and 300 air bombers per month) meant a drastic reorganisation of the existing schools. The dropping of bombing and gunnery training for 'straight' navigators did not offset the new requirements for air bomber and navigator/bomber training capacity at the B. & G. schools. Although intakes were unaltered the extension of the course length from six to eight weeks represented an increase in capacity by one third, in addition to which extra facilities were needed for training air gunners. These requirements were met by doubling the population of air

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(1) The fifth category the Navigator/Bomber/Wireless was trained solely in the U.K. In addition to navigation training they received wireless and bombing and gunnery instruction.

(2) E.T.S.461(42). (A.H.B./IIIC/1).

/ bomber

bomber and navigator/bomber pupils at eight of the existing ten schools - their commitment of 60 W.Op./A.G. pupils per school remained unchanged - and diverting the remaining two, together with one new school exclusively for air gunner training.(1) Both air bombers and navigators/bomber underwent the same bombing and gunnery school course and the new syllabus was started at all schools on 17 August 1942.(2)

The provision of the additional navigation training capacity, necessitated both by increased requirements and longer courses presented far more difficulty. The total increase called for the formation of nine new A.O.S.s, but constructional difficulties made this an impossible task, so instead of opening additional schools the existing navigation training schools, i.e. the E.A.T.S. air observer schools, the R.A.F. air navigation schools, and the central navigation school - the latter had just been formed by the amalgamation of the two astronomical navigation schools(3) - were increased in size. As the new courses, both for navigators and navigators/bomber, were 'all through' courses the Astro capacity at the C.N.S. could be utilised for the new syllabus and it was found possible to train 520 straight navigators (on a 20 weeks' course) and 156 air bombers (on a six weeks' course). This was equivalent to two normal sized A.O.S.s, and left the equivalent of seven new schools to be found. Two of the existing schools, however, (No. 6 A.O.S. and No. 32 A.N.S.) had to be closed because their accommodation was needed by the other schools sharing their airfields, which again brought the requirement up to the equivalent of nine new schools. This was achieved by expanding eight of the remaining nine A.O.S.s and one of the R.A.F. A.N.S.s into double sized schools; the other two schools (one A.O.S. and one A.N.S.) remained as single schools. It will be remembered that the E.F.T.S.s sharing airfields with some of these schools had already been moved to enable the expansion to be carried out.

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(1) The new school was No. 10 B. & G.S., a school planned to open under the original E.A.T.S. agreement but subsequently found surplus to requirements.

(2) E.T.S.530(42). (A.H.B./IIIC/1).

(3) Nos. 1 and 2 A.N.S.s had been amalgamated and located at Rivers on 11 May 1942 in order to provide an establishment for specialist and instructors courses in navigation. Their former commitment (the 4 weeks' Astro courses) was continued, and was now centralised at one school.

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It was decided to expand all the air observer schools, except Nos. 7 and 10, to train 520 air navigators and 156 air bombers. Nos. 7 and 10 A.O.S.s were to train 572 and 286 air observers respectively. This reorganisation was planned to be completed by October 1942.(1) The revised courses and syllabuses were put into effect in the summer, but unforeseen constructional difficulties coupled with a deterioration in the serviceability of Anson I aircraft (with which all the schools were equipped) caused the postponement of the planned expansion of nearly all schools until the target date was finally set as March 1943. By the end of 1942 only three schools, the C.N.S., No. 8 A.O.S. and No. 33 A.N.S., had expanded as planned - the first two on 12 October and No. 33 A.N.S. on 11 September 1942. All the remainder were still operating as single sized schools.

Revised Wireless Operator (Air Gunner) and Air Gunner Requirements

The revised heavy bomber crewing policy also affected wireless operators/air gunner and 'straight' air gunner requirements. The former were required in smaller numbers, and made it possible to concentrate wireless training at Nos. 2, 3 and 4 Wireless Schools, allowing No. 1 Wireless School to be used for training ground personnel (wireless operator mechanics and wireless operators (ground)).(2) At the same time the opportunity was taken to improve the standard of aircrew wireless training by lengthening courses from 24 to 28 weeks, which allowed an increase in the flying time per pupil to 25 hours as first operator. Capacities at the schools remained roughly as before (840 pupils) but intakes were reduced to 120 pupils every four weeks. The wireless operator/air gunner standard of gunnery training was also improved by extending course lengths from four to six weeks at bombing and gunnery schools. The capacity for wireless operators/air gunner remained at 60 pupils per school and it was possible to reduce the number of schools needed for this commitment from nine to seven, thus making two schools available for the training of 'straight' air gunners.

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(1) E.T.S.501(42). (A.H.B./IIIC/1).

(2) The last W.Op./A.G. intake to No. 1 W.S. was on 25 May 1942, and those personnel graduated on 4 December 1942.
E.T.S.501(42) and 510(42). (A.H.B./IIIC/1).

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The requirement for 'straight' air gunners which was set at 1,670 per month represented a considerable increase and meant the addition of the equivalent of two and a half new bombing and gunnery schools, but with the capacity thrown up from the reduced wireless operator/air gunner output, it was hoped to provide the additional facilities by opening one new school - No. 10 B. & G.S. - in the spring of 1943. The policy of air gunner recruiting had to be changed to meet the increased demand since rejects from other aircrew categories would not provide sufficient air gunners, and direct entry air gunner candidates were recruited after May 1942. This policy gave a further reason for increasing the air gunnery courses at the bombing and gunnery schools from four to six weeks as those air gunners recruited direct from civil life would not have sufficient background of Service training to allow them to obtain the necessary standard in four weeks. The policy of training air gunners as part of the wireless operator/air gunner intake at B. & G.S.s was changed and it was planned to concentrate the training of air gunners at three schools, each training 270 pupils; the two thrown up by the reduced W.Op./A.G. requirements, (Nos. 3 and 9 B. & G.S.s) and the new B. & G. school. It was not necessary to open the new school until six weeks before the revised outputs of pilots, navigators, air bombers and wireless operators/air gunner were graduating - about the spring of 1943.(1)

Formation of Flying Instructors Schools (F.I.S.)

The revised agreement of June 1942 besides reorganising the whole of the basic training organisations, caused changes in the supporting organisation. The inclusion of the R.A.F. schools in the new B.C.A.T.P. meant heavier demands for flying instructors from Canada, and at the same time it was decided that after twelve months on instructor duties personnel were to be released for overseas service. To meet these new requirements three flying instructors schools, each with a capacity for training 60 pupils, were established on 3 August 1942. The Central Flying School at Trenton was converted to form No. 1 F.I.S. (for single-engined and twin-engined advanced trainer instructors), No. 2 F.I.S. formed at Vulcan (for twin-engined advanced

(1) E.T.S.487(42), 501(42), 510(42) and 559(42). (A.H.B./IIIC/1).

/ trainer

trainer instructors) and No. 3 F.I.S. formed at Arnprior (for elementary trainer instructors).[1] A new Central Flying School was established at Trenton instead of providing ordinary flying instructor courses the school consisted of a handling notes flight and two visiting flights, together with a special high calibre instructional flight for experienced instructors for the purposes of re-categorisation and liaison.[2]

Changes in the Pre Flight Organisation

The course lengths of I.T.S.s were increased from 8 to 10 weeks in September 1942, with the chief object of improving the physical fitness of recruits by allowing more time for drill and games.[3] The capacity lost through the longer course lengths was offset by allowing University Air Squadron cadets to omit the I.T.S. course providing they had already achieved the necessary standard. The I.T.S. course extension led to a temporary overcrowding at the manning depots and caused a new Depot, No. 8, to be opened at Souris on 4 January 1943 bringing the total number of aircrew manning depots up to six.[4] It was scheduled to close when the surplus was overcome, but subsequent delays in intakes gave the unit a longer lease of life than had originally been anticipated.

More attention was being paid to the pre-entry training schemes and the aeronautical side War Emergency Training Programme (later known as Canadian Vocational Training), which had been organised by the Department of Labour was brought under the direct supervision of the R.C.A.F. in 1942. A few months later it was arranged that W.E.T.P. trainees were to be enlisted as members of the R.C.A.F. in the same way that R.A.F. pupils entered the Preliminary Aircrew Training Scheme in the United Kingdom. Other similar courses in air force subjects were conducted at Pre-Educational Detachments at colleges and universities, eight of which were formed during the last quarter of 1942. A new selection procedure was also instituted at the

(1) E.T.S.476(42). (A.H.B./IIIC/1).

(2) E.T.S.487(42) and 530(42). (A.H.B./IIIC/1).

(3) E.T.S.554(42). (A.H.B./IIIC/1).

(4) Nos. 6 & 7 Manning Depots, formed in April 1942, dealt with recruits for the Canadian W.A.A.F.

/ manning

manning depots on 1 October 1942. It was similar to the R.A.F. 'P.N.B.' scheme under which all aircrew candidates were initially enlisted into a common category, and selection boards at the manning depots classified them as candidates for:-

(a) Pilot, Navigator or Air Bomber (P.N.B.).

(b) Wireless Operator/Air Gunner (W.Op./A.G.).

(c) Air Gunner (A.G.).

P.N.B.s went to an I.T.S., the final classification being made after completion of the course; W.Ops./A.G. to a wireless school and A.G.s to a bombing and gunnery school. The selection boards also decided whether candidates required further training (either at vocation training centres or other institutions) before proceeding to the schools .

Combined Committee on Air Training in North America

A further outcome of the Ottawa conference was the establishment of a committee to co-ordinate air training in the North American continent. Its membership was made up from representatives of the Royal Air Force (both the Delegation in Washington, which was responsible for R.A.F. training in the United States and the Air Liaison Mission in Canada), the R.C.A.F. the U.S. Army and the U.S. Navy, and its main functions were to exchange information, to advise on the standardisation of training methods, and to prevent uneconomical duplication of training facilities in Canada and the United States.(1)

The Committee, which was known as the Combined Committee on Air Training in North America, held its first meeting in Washington on 26 April 1943, the second meeting at the R.C.A.F. station at Trenton and after that further meetings took place at various training centres in Canada and the United States throughout the duration of the war. The benefits to be gained from closer co-ordination of training problems were soon apparent, and the Americans in particular were able to make good many of their deficiencies by learning from the experience already gained in Canada.

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(1) E.T.S.601(43). (A.H.B./IIIC/1).

/ Summary

Summary of Developments during 1942

The third year of the war saw great changes in the Canadian training organisation. The signing of the revised agreement in June 1942 resulted in the merging of the Empire Air Training Scheme Schools and the R.A.F. transferred schools and the birth of the British Commonwealth Air Training Plan, under the control of the R.C.A.F. The outbreak of war in the Pacific had only a temporary effect on the flow of Australian and New Zealand recruits to Canada, and the intention of maintaining that flow was re-affirmed when the revised agreement was signed.

The considerable reorganisation carried out within the framework of the new Plan had been made necessary by a combination of three factors: A.M.T.'s 'New Deal' which improved training standards by extending courses; the revised heavy bomber crew policy which altered the proportions of aircrew required; and America's entry into the war, which led to the reduction of the deliveries of American operational aircraft to the R.A.F., and therefore rendered the output of aircrews less urgent.

The sum of this reorganisation allowed a reduction in the planned output of pilots and wireless operators/air gunner - indeed it was recognised that there might be a surplus of pilots until the spring of 1943 when the heavy bombers were due to reach the front line in large numbers - but required an increase in the output of navigators, air bombers and air gunners. The result was a complete reshuffling of all schools, elementary flying training schools had to be moved to allow air observer schools to expand and numerous other upheavals took place.

In June 1942 when the revised agreement was signed there were 68 E.A.T.S. schools and 27 R.A.F. 'transferred' schools operating in Canada. By 31 December there were 92 B.C.A.T.F. schools. Although slightly fewer in number than six months earlier, most of the schools had been - or were planned to be - considerably expanded, and many were doubled in size. In addition five new schools (four S.F.T.S.s and a B. & G.S.) were due to open in the spring of 1943. The overall capacity had been increased by the end of the year and the agreement signed in June provided for the training of almost 30,000 (1) per year over and above the original E.A.T.S. programme - this

(1) 22,310 air gunners, 3,200 navigators and 3,900 air bombers.

/ additional

additional capacity to be provided by the spring of 1943. Expansion of the reorganised schools had not been completed as rapidly as had been hoped, mainly because of bad weather, constructional difficulties and low serviceability of some aircraft but this did not have any repercussions on the front line expansion because the shortfall of American aircraft deliveries meant that the planned production of aircrews was now more than sufficient to meet demands. This was not a sign that the peak had been reached; such things as operational wastage rates, shipping availability, etc., were by no means stable, and with the mounting bomber offensive, and projected allied land operations, it was essential to have a small margin as an insurance that there would never be any danger of supplies of aircraft exceeding the production of aircrews. Nevertheless, it was a sign that the scheme was beginning to achieve its object, and thus allowing time to pay more attention to the quality as well as the quantity of output. A summary of the schools in existence on 31 December 1942, was as follows:-

Training Units

Initial Training Schools	7
Elementary Flying Training Schools	20
Service Flying Training Schools	26
Central Navigation School	1
Air Observer Schools	9
Air Navigation Schools	2
Bombing and Gunnery Schools	9
Wireless Schools	4
Central Flying School	1
Flying Instructors Schools	3
General Reconnaissance Schools	2
Operational Training Units	6
Radio School	1
Personnel Depot	1
Total:	92

Ancillary Units

Command Headquarters	4
Group Headquarters	2
Station Headquarters	2
R.D.F. School (Temporary)	1
Manning Depots	8
Embarkation Depots	2
Repair Depots	5
Equipment Depots	5
Explosive Depots	2
Recruiting Centres	16
T.T.S.	1
School of Aero Engineering	1
A.I.D. Inspectors School	1
Air Armament School	1
Composite Training School	1
Re-selection Centre	1
Conversion Training Squadron	1
School of Cookery	1
Port Transit Centre	1
School of Aviation Medicine	1
Code or Cypher School	1
Link Trainer School	1
Disposal Unit	1
Total:	60

Further revision of Navigator and Air Bomber requirement

The year 1943 was one of consolidation rather than rapid expansion. Even so, the size of the organisation continued to grow throughout the year though at a much slower rate than hitherto, reaching its peak in December. In April 1943 the total number of aircrew trained under the B.C.A.T.P. topped the 50,000 mark, and the month of October had the distinction of producing the greatest output in any single month during the lifetime of the plan, training 5,157 aircrew. The general supply position was good (except for operational training requirements), and an adequate supply of training aircraft was maintained; temporary shortages of equipment did occur, but they were not of such proportions as to seriously impede the training programme.(1) The aircraft serviceability position at the four 'Oxford' Service flying training schools showed a marked improvement in the first three months of the year in spite of the severe winter and with improved flying conditions with the coming of spring, it was possible to resume normal intakes on 19 April 1943 at the four schools concerned. Consequently, normal intakes had been resumed (on 22 February) at the two 'Stearman' elementary flying schools, Nos. 31 and 32 E.F.T.S.s.

The year was marked by a series of surveys of aircrew requirements each of which called for changes in the training organisation. In February it was decided that while the development of pilot and air gunner training capacity should proceed as already arranged, that for navigators and air bombers need not be increased to quite the extent contemplated in June the previous year. Accordingly the expansion of the eight E.F.T.S.s took place as planned and three of the four new S.F.T.S.s were opened by September 1943 the fourth scheduled to form later in the year.

As a result of the revised requirements the schools training the various navigator and air bomber categories underwent further changes although the net effect was merely a reduction by one in the total number of schools needed. The requirements were changed from 1½ schools training navigators/bomber, 1½ schools training navigators/wireless and air bombers and 8 schools training navigators and air bombers to 1½ schools training navigators/bomber, 2½ training navigators/wireless and air bombers and 6 training navigators and

/air

(1) E.T.S.578(43) and E.T.S.604(43). (A.H.B./IIIC/1).

air bombers. In other words, a reduction in capacity for 520 navigators and 156 air bombers. Nevertheless, it involved a considerable amount of reorganisation of the navigation schools and the following changes took place during the early part of 1943:-

A.O.S. No.	Location	Changed				Remarks
		From		To		
		Navs	Air Bombers	Navs	Air Bombers	
1,2,4,5,7	-	-	-	520	156	Expanded as planned
3	Pearce	-	-	-	-	
8	Quebec City	572 Navs/B	-	520	156	-
9	St. Johns	260	78	572 Navs/B	-	Instead of doubling its navigator and air bomber capacity as planned.
C.N.S.	-	-	-	-	-	Undertook training of navigators/W in place of straight navigators.
10	-	-	-	-	-	Remained unchanged.
31 A.N.S.	-	-	-	-	-	Remained unchanged.
33 A.N.S.	-	-	-	-	-	Remained unchanged.

The additional navigator/wireless pupils were obtained by training R.C.A.F. personnel in that category (formerly only R.A.F. personnel had been trained) which meant that the capacity of No. 2 Wireless School had to be practically doubled in size (on 31 May 1943) and elementary training in navigation (roughly equivalent to that given at the I.T.S.s) introduced at all wireless schools for the benefit of the new trainees.(1) The size of the other two wireless schools was only slightly expanded. Some months later the navigation course for navigators/wireless was extended from 20 to 22 weeks; although their syllabus was identical to that of the straight navigators, additional time had to be devoted to refresh and maintain their wireless training. At the same time the training of air bombers was divorced from

(1) E.T.S.604(43) and 621(43). (A.H.B./IIIC/1).

/ those

those schools training navigators/wireless (Nos. 31 and 33 A.N.S.s and the C.N.S.). Experience had shown that it was impracticable to carry out the training of these two categories at the same schools.(1)

These requirement changes also affected the B. & G.S.s. Under the expansion planned in June 1942 most of the eight B. & G.S.s training air bombers and navigators/bomber were due to double their capacity in phase with the expansion of the navigation training schools. The slight reduction in requirements, however, led to several changes being made, the most important of which was the segregation of air bomber training from that of the navigators/bomber. Six schools were expanded in February as originally planned (Nos. 1, 4, 5, 7 and 8 were increased to 320 pupils and No. 2 to 240) to undertake the training of all air bombers. The remaining two schools (Nos. 6 and 31) concentrated on the instruction of navigators/bomber, each school training 160 pupils. These changes made it possible to extend the air bombers' courses from 8 to 12 weeks without interfering with the navigator/bomber courses.(2) Experience had shown that eight weeks was not long enough to complete the air bombers' syllabus and the Air Ministry had been pressing for an improvement in their training standard. One reason for the low standard of bombing and gunnery training had been the maintenance difficulties with the Merlin engines in the Battle aircraft; Bolingbrokes were used to replace the Battles, but their higher speed when using them as attack aircraft against the slower Lysander target towing aircraft at first led to serious trouble, and it was not until June 1943, after extensive investigations that this difficulty was overcome. When, however, the serviceability rates did improve it was possible to reduce the aircraft establishment at the B. & G.S.s.

A further change at the B. & G.S.s resulted from the urgency of the air gunner requirements. Constructional difficulties were delaying the opening date of No. 10 B. and G.S. and it was not likely to form until late in 1943, so to meet requirements until it could be opened, two air gunner ground training schools were formed on 8 March 1943, on a temporary basis (No. 1 at

(1) E.T.S.675(44). (A.H.B./IIIC/1).

(2) E.T.S.578(43) and 581(43). (A.H.B./IIIC/1).

/ Quebec

Quebec, and No. 2 at Trenton).[1] They dealt only with ground training on a six weeks' course, thus allowing the two existing B. & G.S.s training air gunners (Nos. 3 and 9) to concentrate on flying training on their six weeks' courses. The formation of No. 10 B. & G.S. at Mount Pleasant on 20 September allowed the disbandment of the two temporary schools, and the twelve weeks sequence of training (6 weeks' ground and 6 weeks' flying) was introduced at all three B. & G.S.s in place of the old six weeks' course. At the same time the opportunity was taken to double the length of the wireless operator/ air gunner courses at the B. and G.S.s, bringing them into line with the new straight air gunners syllabus. No. 1 A.G.G.T.S. closed on the day that No. 10 B. & G.S. opened, although No. 2 was not disbanded until 14 January 1944.

The Effects of Grading

In April 1943 a comparison of the failure rate between R.C.A.F. and R.A.F. pupils at E.F.T.S.s was made. Since April the previous year all Royal Air Force pupils had been undergoing a 'Grading' course in the United Kingdom prior to final selection for pilot training, and analysis clearly showed that this grading system was responsible for a marked decrease in the wastage rates at E.F.T.S.s in Canada. By March 1943 the failure rate for R.A.F. pupils was fairly stable at 15-20 per cent whereas during the previous year it had been well over 30 per cent.[2] The wastage rate for R.C.A.F. personnel, however, who did not carry out any flight test, had remained fairly constant around 20-25 per cent. This comparison led to two experiments being tried out in Canada with a view to reducing the wastage rate at flying training schools. One, at No. 10 E.F.T.S. Pendleton comprised the normal eight weeks elementary flying training school course, but with an extra two weeks training allowed for the course. In the first two weeks it was planned to rid the course entirely of unsuitable pilot material, experimenting on the assumption that unsuitable material showed itself very early in the course. The second experiment was carried out at No. 3 Flying Instructors' School Arnprior, where the test was carried out along lines

(1) E.T.S.581(43). (A.H.B./IIIC/1).

(2) E.T.S.604(43), 621(43) and 624(43). (A.H.B./IIIC/1).

/ similar

similar to those developed in the United Kingdom. That is to say, a fixed percentage of the course would be withdrawn from pilot duties, on the theory that in any class only a given percentage of pupils could be expected to make the grade as pilots and that percentage could be determined by overall experience. The percentage was roughly 50 per cent and these personnel were withdrawn after having the opportunity to demonstrate their pilot ability by means of 12 hours flying during which time they were given two flying tests.

These two flight selection experiments commenced on 28 June, and during the ensuing six weeks period roughly 350 pupils were flight tested. In the meantime the high failure rate at the E.F.T.S.s was causing a deficiency of pupils available for Service flying training.(1)

Fleet Air Arm Training

In the spring of 1943, as a result of an Admiralty decision to increase the size of the Fleet Air Arm for operations in the Pacific, Canada was asked to provide additional training facilities for Naval pilots. It was hoped to carry out elementary as well as Service flying training in Canada - formerly only S.F.T.S. facilities had been available and Naval pupils had to be given their E.F.T.S. training in the United Kingdom - and to increase the annual output of pilots from the current figure of 680 a year to 1,700. The planned S.F.T.S. capacity under the B.C.A.T.P. in Canada at that time was 30 schools (29 existing and one still to form), one of which was training Naval pilots. It was already apparent that operational wastage rates in the R.A.F. were falling, which meant that the planned output of the schools would soon exceed the demands of the squadrons, and with this contingency in mind, coupled with the urgency of the Admiralty's request, it was agreed that one school, together with its matching E.F.T.S. capacity, could be turned over to Naval training. The loss of output would not be serious - it was less than 4 per cent of the total output in Canada - and in any case if greater pilot output for the Air Force were needed at some later date (as indeed it was) the remaining schools were capable of further expansion. Accordingly No. 14 S.F.T.S. Aylmer was turned over to the training of Fleet Air Arm pilots in September 1943, and expanded to train 280 pupils at a time. To provide the

(1) E.T.S.624(43). (A.H.B./IIIC/1).

/ balance

balance of the capacity required, No. 31 S.F.T.S. Kingston which was already training Naval personnel was expanded by one third to bring its total capacity up to 320 pupils. To feed these two schools two E.F.T.S.s, Nos. 12 and 13, were each expanded from 180 to 200 pupils and made available for the training of F.A.A. personnel, the latter being replaced by a new school, No. 24 E.F.T.S. which was opened at Abbotsford on 6 September 1943.(1)

In addition to the expansion of Naval pilot training facilities arrangements had already been made to train telegraphist air gunners in Canada for the Fleet Air Arm, and a special school, known as No. 1 Naval Air Gunners School, was opened at Yarmouth on 1 January 1943. This school, which was equipped with 72 Swordfish aircraft (Seamews from the United States had originally been provided but they were found unsuitable and had to be replaced by Ansons until sufficient Swordfish became available), trained 324 pupils at a time on a 36 weeks' course, with intakes of 36 pupils every 4 weeks. It formed part of the B.C.A.T.P., although it was operated entirely by Naval personnel, and unlike the S.F.T.S.s training Naval pupils, which followed the R.A.F. syllabus, its system of instruction was laid down by the Admiralty.

The Peak of Training Expansion

In addition to the Fleet Air Arm requirements it was decided, in June 1943, that output would have to be still further increased if the planned air expansion, particularly in heavy bomber and transport squadrons, was to be achieved. In all an additional output of 1,600 pilots, 3,500 navigators and 1,000 air bombers per year was required, and it was hoped to achieve this with the minimum of major constructional work. Apart from the S.F.T.S. already planned only one new school was to be opened. S.F.T.S.s could be expanded to take an additional 20 pupils per school (thus raising their total annual output of pilots from 19,500 to 21,100) with paralleled increase at E.F.T.S.s; the schools training air bombers could be similarly enlarged; and the navigation requirements met by omitting the elementary stage of the course, lasting 6 weeks from the overall 20 weeks course (22 weeks for navigators/wireless) at the A.O.S.s and A.N.S.s, thus accelerating output without increasing capacities. To replace the elementary part of the course (which did not involve any flying training) a new school, an elementary air navigation school, was to be formed.

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(1) E.T.S.657(43). (A.H.B./IIIC/1).

/ Before

Before the new expansion plans could be put into effect the acute manpower shortages in the United Kingdom led in September 1943, to the Cabinet decision that the Army's manpower requirements were to have priority over those of the Royal Air Force. This meant that the R.A.F. allocation was considerably reduced and the plans drawn up in June were immediately suspended, only to be scrapped completely two months later when a new Target Force was drawn up which limited front line expansion and consequently revised aircrew requirements.(1) A reassessment of operational wastage rates caused a further reduction and the revised annual requirements were for 3,400 pilots less and 2,300 navigators more than had formerly been planned (before the June expansion programme). The reduction in pilot capacity and the increase in navigator output could best be carried out in Canada since Australia and New Zealand would be concentrating more on the Pacific requirements, and South Africa and Southern Rhodesia were feeding Middle East and India O.T.U.s. Furthermore the closure of schools in America would not release ground personnel for other duties, and there was little likelihood of being able to acquire navigational facilities there.(2)

It therefore followed that the required adjustments in training capacity would have to be made in Canada. In terms of standard schools, the adjustments amounted to a reduction of five Service flying training schools each of 240 pupil capacity on a 16 weeks course (giving an output of 210 pupils per course, or 680 per year) with a corresponding reduction in elementary flying training school capacity, and an increase of two air navigation schools each of 520 pupil capacity on a twenty weeks course, which could be formed from two of the vacant S.F.T.S.s. Unfortunately it was not simply a matter of closing a few schools. Although it was essential to close schools as soon as possible in order to economise in manpower, courses would have to be completed before schools could be closed, and the cessation of intakes would have to commence at the Personnel Depot, and would not be felt in the P.R.C.s in England until eight months later.(3) Intakes into advanced flying units and O.T.U.s in the United Kingdom, however, were being reduced forrhwith, and unless output from

(1) E.T.S.656(43). (A.H.B./IIIC/1).

(2) E.T.S.656(43). (A.H.B./IIIC/1).

(3) Two months E.F.T.S., four months S.F.T.S., and two months spent on travelling and in No. 31 Personnel Depot before starting and after completing training.

/ Canada

Canada could be reduced immediately the P.R.C.s in England, which already had a considerable population, would be flooded.

Summary of Developments by December 1943

While these revised plans for expansion and then contraction were being drawn up in rapid succession, the development of the B.C.A.T.P. organisation continued. Beam approach training was introduced at two S.F.T.S.s (Nos. 3 and 10) in the summer of 1943 and by the end of the year beam facilities had been installed at all S.F.T.S. aerodromes. Schools equipped with Harvard and Crane aircraft managed to carry out this commitment without any additions to their aircraft establishments, but the Oxford and Anson schools with their lower serviceability rates had to have 10 extra aircraft per school.(1) Yet another improvement in S.F.T.S. training standards was made when synthetic dead reckoning trainers were installed at all the schools.

In the autumn arrangements were made to ensure that there was no repetition of the serious effects of the previous year's winter conditions, when a very large number of minor adjustments to course lengths and intakes had to be temporarily made. A general direction was issued to the Training Commands in October 1943, outlining the basis on which course adjustments would be granted, which allowed schools to so plan their training that maximum output during the period would be obtained. Every effort was made to complete the regular syllabus, but when bad weather interfered, certain less essential exercises were omitted and E.F.T.S. pupils graduated with a minimum of 50 hours flying instead of 60, and S.F.T.S.s with 120 hours instead of 150.(2)

The training of flight engineers for R.C.A.F. heavy bomber squadrons was commenced in Canada on 1 November 1943, with an intake of 12 per week at the Technical Training School, St. Thomas, on a 17 weeks engineer's course. This was followed by a two weeks gunnery course at a B. & G.S. and a further seven weeks type training course in the United Kingdom before going to an operational squadron. By February 1944, intakes had reached their maximum of 50 per week (2,600 per year) the majority of whom were obtained from aircrew reselections, the balance coming from normal I.T.S. selections without requiring any capacity

(1) E.T.S.624(43). (A.H.B./IIIC/1).

(2) E.T.S.666(43). (A.H.B./IIIC/1).

/ increases

increases. A few of these flight engineers (about 5 per cent) were required for Coastal Command, and these were given a full 12 weeks air gunners course at No. 9 B. and G.S. in place of the two weeks course.(1) Several qualified ground tradesmen selected as flight engineers, flight mechanics and wireless operator mechanics had already been given gunnery training at No. 9 B. and G.S. They had then proceeded to No. 3 (Flying Boat) O.T.U. for crewing up before being posted to Canadian Home Defence Squadrons.(2) By the time intakes had reached their maximum, on 17 February 1944, No. 1 Flight Engineers School was opened at Arnprior, with a capacity for 300 pupils, to provide a six weeks course of basic ground training (comparable to the I.T.S. training given to other aircrew candidates) for flight engineer trainees before they received their technical training.

The length of the tour for flying instructors and staff pilots was considered and the maximum length set at two years for personnel sent from the United Kingdom and eighteen months for graduates retained as instructor and staff pilots. It was not always easy to persuade pilots to volunteer for instructor duties, because of the comparatively long lengths of the instructing tour, but on the other hand too short a period would be uneconomical (since more instructors would have to be trained) and tended to lower training standards since efficient instructing depended on the experience of the instructor.(3)

Thus, during the latter half of 1943 considerable upheaval took place within the Canadian Training Scheme. This was due entirely to the rapidly changing war situation which made it extremely difficult to reconcile the short-term operational demands with the necessarily long-term training organisation. The length of time taken to train aircrews was so long (it was roughly two years before a pilot reached his operational unit) that the requirements to meet the front line underwent numerous changes while the process of training was proceeding. The situation that arose during the latter half of 1943 when plans were made to increase output only to be followed a few months later by a request for a decrease in output, was one

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(1) E.T.S.657(43). (A.H.B./IIIC/1).

(2) E.T.S.559(43). (A.H.B./IIIC/1).

(3) E.T.S.646(43). (A.H.B./IIIC/1).

/ which

which, it may be said, should not have arisen. But the plans made in June 1943, warranted that increase if the front line expansion was to be maintained, and it was not until wastage rates were revised and the strength of the German Air Force reassessed that it was safe to reduce the training output. It was clear too, that if the manpower shortage had not been so acute, a larger margin on the side of training outputs would have been allowed.

Although by November 1943, plans had already been laid for a small reduction in the size of the Canadian training organisation,(1) the actual size of the scheme was not to reach its peak capacity until the following month when there were a total of 98 training schools and 184 supporting ancillary units. The November decision planned to reduce this figure to 82 schools. Since the start of the scheme over 80,000 aircrews had been trained in Canada, nearly half of which were trained during 1943.

The Decline of the Training Organisation

January 1944 marked the turning point in the growth of the British Commonwealth Air Training Plan in Canada, and from that time onwards there was a progressive decline in the size of that organisation. It started with the arrangements made in November 1943 to reduce pilot and increase navigator output and was followed by discussions held in February 1944 which reduced the size of the plan to the equivalent of 47½ schools by the following year. In October this was further reduced and arrangements made to terminate the plan.

During the first quarter of 1944 the arrangements made in November 1943 were put into effect, and by March 1944 the closure of six E.F.T.S.s, five S.F.T.S.s, one F.I.S. and one G.R.S. was completed. The planned navigation training organisation was equivalent to 12 schools (eight A.O.S.s and four A.N.S.s), but the equivalent of only 10 were actually in operation (seven and a half A.O.S.s, one C.N.S. and one and a half A.N.S.s) and they had a combined capacity of 6,212 pupils (3,120 navigators, 1,430 navigators/wireless, 780 navigators/bomber and 882 air bombers). The projected expansion (one full sized A.N.S. and two half sized schools) was suspended in February 1944. One school (No. 2 A.N.S.) did actually form but the increase in capacity was offset by the decision to close No. 2 A.O.S. at Edmonton, in order to relieve traffic congestion there.

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(1) See Appendix 67.

/ Outside

Outside the B.C.A.T.P. the R.C.A.F. opened four schools to provide leadership training, similar to that provided in the United Kingdom for R.A.F. personnel, for Canadians, Australians and New Zealanders graduating as officers and N.C.O.s. Nos. 1 and 2 Aircrew Graduate Training Schools at Maitland and Calgary each trained 400 officers, and Nos. 3 and 4 schools at Three Rivers and Valleyfield each trained 600 N.C.O.s. Training commenced at Nos. 2, 3, and 4 A.G.T.S.s on 15 January and No. 1 A.G.T.S. two weeks later.(1)

Towards the end of 1943 it was clear that considerable reduction would have to be made in the training organisation in order to release ground crews to man the front line. The plans made in November 1943 were a step in that direction, but they were only the first step, and when, in January 1944, the Cabinet assumed that Germany would be defeated by October 1945 it was proposed to make a considerable reduction in the overseas training schemes.

To implement this proposal and to draw up a new agreement superseding that of June 1942 a small mission, headed by Captain H.H. Balfour (U.S. of S.), assisted by Air Marshal Sir Peter Drummond (A.M.T.), Mr. Howard (S.8.) and Mr. M. Laing (T.P.) went to Canada in February 1944.(2) Australian and New Zealand representatives also attended, and the discussion made such rapid progress that a new agreement was signed on 16 February 1944, which not only covered the reduction in the Canadian training organisation,(3) but also a number of matters concerning the disposition and control of R.C.A.F. personnel serving with the R.A.F. in the United Kingdom.

Arrangements were made to cancel the scheduled opening of the two A.N.S.s and to disband 31 existing schools. Instructor training facilities were no longer needed to support the B.C.A.T.P. although the Central Navigation School, the Central Flying School and the two Flying Instructor Schools continued to operate to meet R.C.A.F. requirements. The operational training facilities were also turned over to the R.C.A.F. although some of the capacity (four O.T.U.s) continued to be used for training R.A.F. crews. The net result of these changes was a 40 per cent reduction in the capacity of the Canadian Scheme by February 1945. It was agreed to continue the scheme in Canada

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(1) E.T.S.657(43) and 675(44). (A.H.B./IIIC/1).

(2) E.T.S.692(44) and 709(44). (A.H.B./IIIC/1).

(3) E.T.S.682(44) and 692(44). (A.H.B./IIIC/1).

/ after

after 31 March 1945 (the terminal date of the 1942 agreement) if the situation warranted it. Australia and New Zealand agreed to continue sending pupils to Canada, although arrangements were made to fill their capacity with R.A.F. pupils any time their places fell vacant.(1) By May 1944, however, there was such a large surplus of trainees in Canada that Australian and New Zealand drafts were discontinued. In addition to the closure of schools, many were reduced in capacity.

In March 1944 a programme for the closure of the schools was drawn up, and it was planned that all the changes should be put into effect by the end of the year so that the scheme would be working to its revised capacity by February 1945. Many of the aerodromes vacated by the closure of schools were used to store surplus aircraft and equipment pending its disposal or future use in the training organisation. Other schools were utilised for the Canadian Vocational Training Programme and for pre-aircrew educational courses which had formerly been carried out by Canadian Universities.(2)

Extension of Course Lengths

In addition to the reduction of capacities and closure of schools it was decided in February to continue indefinitely the longer E.F.T.S. and S.F.T.S. courses and a month later further extensions were ordered. It will be recalled that Elementary and Service Flying training school courses had been extended to 10 and 20 weeks respectively in December 1943 in order to reduce the output of pilots until the planned closure of the S.F.T.S.s was completed. It had been intended to revert to the normal 8 and 16 week courses in March 1944. By the spring of 1944, however, it was clear that there was already a surplus of pilots in the United Kingdom, and that surplus was increasing rapidly. This was due to a variety of reasons: the delay in Bomber Command expansion; lower casualty rates than anticipated; and the fact that the reserve for forthcoming operations was adequate by that time and did not need to be further increased. The reduction of the training organisation was, in itself, a further contributory factor; not only would graduates no longer be retained as instructors, but the closure of schools released instructional personnel for operational duties. Although the pilot output from world wide

(1) E.T.S.703(44). (A.H.B./IIIC/1).

(2) E.T.S.725(44). (A.H.B./IIIC/1).

/ training

training organisations would not greatly exceed the intakes into A.F.U.s and O.T.U.s during the summer months, there would be a considerable surplus when winter intakes were resumed. It was therefore necessary to reduce output by extending courses still further. Four weeks was added to the E.F.T.S. course (making it 14) and eight weeks to the S.F.T.S. course, bringing it up to 28 weeks. This was equivalent to freezing output completely for two months and with the forthcoming reductions in schools would reduce output to the level of winter A.F.U. and O.T.U. requirements by August 1944. The extended courses, which were also applied to schools in South Africa and Southern Rhodesia and were to remain in force indefinitely, came into being in March at the E.F.T.S.s and two months later at the S.F.T.S.s. The schools training Fleet Air Arm pilots (Nos. 12 and 13 E.F.T.S.s and 14 and 31 S.F.T.S.s) continued with the old courses.(1)

As a result of these extensions intakes into all pilot schools were temporarily stopped. E.F.T.S. pupils awaiting entry into S.F.T.S.s (there were over 3,000 by August 1944) had to be given leave without pay or employed on ground duties while awaiting their training, and entries into I.T.S.s for pilot training had to be drastically reduced. To reduce the large number of I.T.S. pupils awaiting entry into E.F.T.S.s a system of 'grading' similar to that already used in the United Kingdom, was introduced in April for R.C.A.F. pupils, and the first two weeks of the E.F.T.S. courses were used for that purpose. R.A.F. pupils did not have to undergo this test.(2) As a further means of reducing surplus, and at the same time to increase training standards elimination rates at both E.F.T.S.s and S.F.T.S.s were raised to 20 per cent. This rate, at the E.F.T.S., was in addition to the 'grading' wastage which was about 30 per cent which meant that the overall E.F.T.S. output was 5 per cent of intake. It was also arranged that all R.A.F. pilot candidates who were eliminated should return to the United Kingdom instead of being reselected in Canada.

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(1) E.T.S.734(44). (A.H.B./IIIC/1).

(2) E.T.S.718(44). (A.H.B./IIIC/1).

/ Closure

Closure of Schools

The summer of 1944 saw the large scale reduction in the size of the Canadian Training Organisation. As a result of the very large reduction in aircrew intakes the recruiting, and initial training organisation underwent considerable pruning. Recruiting centres, were reduced from 15 to 8 centres by 1 April, and on 1 August, these 8 remaining centres were closed, and small recruiting sections were established at each Command H.Q. It was also possible to dispense with all manning depots, with the exception of No. 1 Manning Depot, Toronto, by the end of August.(1)

The reduction of pilot intakes in December 1943, led to the cutting of the I.T.S. capacity by roughly two thirds of their previous capacity (from 980 to 650 pupils per school) and the decisions taken in February concerning the overall reduction of the Training scheme meant that the Initial Training School capacity (7 schools) which was then approximately 4,400 pupils, could be reduced to 1,600 pupils. Nos. 5, 6 and 7 I.T.S.s were disbanded in June 1944(2) and the capacities of the remaining four reduced to 400-450 pupils per school. Pilot intakes were reduced on 8 May, air bombers on 5 June, and navigators on 3 July. These four remaining schools, however, owing to the surplus of pupils awaiting entry to E.F.T.S.s and A.O.S.s only operated at approximately 50 per cent of their pupil capacity over the next few months. In September 1944, as a result of these reduced requirements 4,200 direct entry R.C.A.F. personnel who had not commenced initial training, were discharged.(3) By November all pupils due to graduate by 31 March 1945, by which time the scheme was due to cease, had passed through initial training schools.

The eight E.F.T.S.s and 11 S.F.T.S.s closed as planned; E.F.T.S. intakes were reduced on 17 July and S.F.T.S.s 10 weeks later (the extended courses were not, of course, applied to the schools due to close). The reduction of the navigator and air bomber capacity meant that two A.O.S.s (Nos. 2 and 4) and four B. and G.S.s (Nos. 2, 6, 8 and 31) were closed and the two projected A.N.S.s were no longer required. Intakes into bombing and gunnery schools were reduced on 25 September 1944, for air bombers and 11 September for navigator categories;

(1) E.T.S.713(44) and 758(44). (A.H.B./IIIC/1).

(2) E.T.S.739(44) and 779(44). (A.H.B./IIIC/1).

(3) E.T.S.769(44). (A.H.B./IIIC/1).

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the A.O.S./A.N.S. reduction took place 12 and eight weeks later respectively. Wireless operator/air gunner training capacity was also reduced by the closure of the four B. and G.S.s, that of the wireless schools was cut from 3,465 pupils to 1,312 by decreasing the size of two schools (Nos. 2 and 3 W.S.s) and disbanding the third (No. 4). Air gunner capacity was to be reduced by two thirds (from 1,836 to 612 pupils) and would allow the closure of two of the three bombing and gunnery schools training air gunners (Nos. 3 and 10 B. and G.S.s). This reduction, however, was not due to take effect until early 1945. Flight engineer school capacity was reduced by 50 per cent on 28 August 1944 and a similar reduction made at the technical training school six weeks later. To centralise flight engineer training it was decided to carry out type training in Canada instead of the United Kingdom, and four Halifaxes were established at No. 1 F.E.S. for that purpose in July, at the same time the school was moved from Arnprior to Aylmer. All these reductions meant that the post-graduate courses could be cut, and it was possible to disband No. 4 A.G.T.S. on 4 July 1944.(1)

The instructor position was also changed. The reductions planned in November 1943, had already allowed the closure of No. 3 F.I.S. - although capacity of the remaining two schools had to be slightly increased from 102 to 107 pupils per school - and these, planned in February 1944, meant that the schools would have to cater only for R.C.A.F. requirements, and capacity could therefore be reduced by 50 per cent (18 elementary, 24 T.E. and 12 S.E. advanced pupils per school). The course length remained at eight weeks. It was also possible to shorten the instructional tour length for staff pilots, air gunner and air bomber instructors to 12 months. Although the supply position would have allowed it, flying instructors and navigation instructors tours were unchanged, because shorter tours would have lowered training standards.

Revised Pilot Training Syllabus

The extension of the E.F.T.S. and S.F.T.S. course lengths allowed the standard of pilot training to be raised. At the E.F.T.S. stage this was done by the introduction of grading during the first two weeks of the course and the eight weeks' extension of the S.F.T.S. course was utilised for what might be described as a post-graduate flying course. It consisted of 60 hours' flying and 145 hours' ground lectures, and most of that time was devoted to such things as cross country sorties with pre-flight briefing and post-flight discussion.

(1) E.T.S.746(44). (A.H.B./IIIC/1).

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The reduction in pilot requirements also meant that there was sufficient capacity to allow experimental courses to be undertaken. In previous years the pressing need for maximum output had prevented any deviation from the recognised system of training, and even the system of grading, introduced in the United Kingdom in 1942 could not be applied to Canada until the reductions rendered E.F.T.S. facilities available for that purpose. By 1944, however, output requirements were not so urgent, and two experiments were carried out to see whether the existing syllabus needed any major alterations.

The first was an investigation initiated by the R.C.A.F. to determine the possibility of training pupil pilots ab initio on Harvard aircraft instead of commencing on an elementary type. A preliminary investigation for a group of 12 pupils commenced in July and the first reports were encouraging, eight of the pupils going solo. It was therefore decided to extend the experiment and a further 69 pupils were used in the main experiment which commenced in August 1944 at No. 2 S.F.T.S. Uplands. The idea of the experiment was to compare with normal orthodox courses the progress and achievement of pupils, the time required to reach wings standard, elimination and accident rates, costs, etc. At the conclusion of the course 45 pupils graduated. The length of the course was 24 weeks and the main conclusions pointed to the feasibility of ab initio Harvard training. It produced satisfactory pilots in a minimum of time, and accident and wastage rates compared favourably with those of the orthodox courses. More pupils could be trained in the same period of time, and slight reductions in both flying hours and instructional staff could be effected. Costs, however, showed a slight increase for the experimental training, although it could have been carried out with more limited resources and, therefore, offered the possibility of definite financial advantage.

The other experiment was carried out at No, 16 Service Flying Training School, Hagersville, where pupils were trained on both single-engined and twin-engined aircraft, commencing 10 April. Single-engined training was considered as a basic requirement only and all pupils were turned out as twin-engined pilots. It was found that 140 hours was the minimum necessary on account of the extra time needed for conversion. Useful experience was gained and this was to be used as the basis for a new syllabus if similar training was ever introduced at the remaining Service flying training schools.[1]

(1) E.T.S.725(44). (A.H.B./IIIC/1).

/ Final

Final Reduction of the British Commonwealth Air Training Plan

In the autumn of 1944 it was clear that further drastic reductions in the Canadian training organisation could be made. The reduction planned in February 1944 had been based on three main assumptions: that Germany would be defeated by October 1945; that 490 squadrons (including 93 R.C.A.F.) would be needed for the Japanese war; and that Australia and New Zealand contributions would gradually fade out.(1) Since that time aircrew surpluses had grown still greater (chiefly due to more favourable operational wastage rates) and pilot training courses had had to be considerably extended in order to further reduce output. Although final decisions on the requirements for the Japanese War had still to be taken it was clear that the existing training capacity was far in excess of that required to support the force required after the German War was over. There were already sufficient aircrew personnel within the training organisation to cover all requirements up to at least the end of 1945 and it was undesirable to retain large numbers of personnel in various stages of training for unreasonably long periods. Not only would refresher facilities be needed but the training organisation might, at some later date, be reduced to a size smaller than the ultimate peace-time requirements.

Moreover certain basic factors, upon which training requirements depended had altered since February 1944. June, instead of October was taken as the hypothetical date for the defeat of Germany; the force for the Japanese phase had been provisionally reduced to 390 squadrons (58 R.C.A.F.), and manpower shortages made it likely that it would be further reduced; and front line expansion was unlikely to continue after the end of 1944. In addition lower wastage rates, both for occupational duties and the Japanese war, had been agreed, and allowance had to be made for the possibility of using prisoners of war released in Europe for operations in the Pacific after a period of recuperation and refresher training.(2)

In view of these considerations a revised calculation of the overall training requirements was made in September 1944, when it was proposed to reduce the number of B.C.A.T.P. schools to 14 (one I.T.S., two and a half E.F.T.S.s, four and a half S.F.T.S.s, two A.O.S./A.N.S.s, two B. & G.S.s,

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(1) E.T.S.756(44). (A.H.B./IIIC/1).

(2) E.T.S.756(44). (A.H.B./IIIC/1).

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one W.S. and one G.R.S.), with capacities for approximately 1,000 pilots, 1,000 navigators and air bombers, and 600 air gunners and wireless operators/ air gunner. These requirements ignored surpluses and assured minimum course lengths - S.F.T.S. courses, for example, were taken at 16 weeks, although at that time they were actually of 28 weeks duration.

Shortly after these requirements were proposed the assumed date for the defeat of Germany was advanced six months (to 31 December 1944) which not only rendered more urgent the necessary action to control the existing training organisation but further reduced training requirements. As a result of the advanced date there would be a considerable surplus of aircrew personnel, both in the United Kingdom and Canada, and it was therefore agreed to bring the British Commonwealth Air Training Plan to an end on 31 March 1945, the date originally agreed upon under the revised agreement of June 1942. After 31 March 1945, the training organisation in Canada would be to meet R.C.A.F. requirements.

It was, however, arranged that any training capacity required in Canada on behalf of the Royal Air Force should be mutually agreed between the two Governments, and should be provided on a contract basis. Pending discussions on these requirements, and in order to make quite sure that should unforeseen circumstances radically alter the favourable conditions prevailing at this time, it was provisionally proposed to maintain a 'shadow' training organisation in Canada. This consisted of one I.T.S., two E.F.T.S.s, four S.F.T.S.s, two B. & G.S.s, two A.N.S.s and one W.S. These schools remained on a care and maintenance basis and were to train any R.A.F. pupils sent to Canada after 31 March 1945. Their total capacity was greater than the anticipated needs of the R.A.F., but the remaining capacity could be used for R.C.A.F. training courses.(1)

Thus, by October 1944, it was agreed to bring to an end the British Commonwealth Air Training Plan in Canada and the training of R.A.F. personnel after 31 March 1945 was carried out on a contract basis. It was arranged, however, to train as many pupils as possible during the last stages of the plan, and by 6 November 1944 all untrained aircrews had been posted for training. Schools were closed as soon as their last intakes graduated and by the end of the year the number of schools in Canada had been reduced to 52 - a decrease

(1) E.T.S.788(44). (A.H.B./IIIC/1).

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of 46 during the last 12 months.[1] In addition the number of supporting units was reduced from 184 to 63.

In addition to the schools required for R.A.F. training others were utilised for R.C.A.F. training, but because of the surplus of trained personnel, these schools were not required for basic training but were reorganised for refresher and specialist courses. All the B.C.A.T.P. schools were closed, however, and new R.C.A.F. schools opened in their place. R.C.A.F. enlistments had been suspended in June 1944 and they were not resumed. 4,200 aircrew cadets were transferred to the Army and more than 10,000 trained aircrew, who were surplus to requirements were transferred to the Reserve between September 1944 and March 1945. Even after these transfers it was estimated in October 1944 that the R.C.A.F. still would have more than sufficient trained aircrew to cover two years replacement requirements for both Western Hemisphere operators and in the Pacific.

Training in Canada after March 1945

In December 1944 by which time the date for the defeat of Germany had been re-estimated as June 1945, a survey of aircrew requirements was made and it was calculated that capacity for training 720 pilots and 1,040 navigators would be required. In addition it was desired to continue the Fleet Air Arm training organisation on its existing basis. The requirements were discussed by the R.C.A.F. authorities and it was agreed to provide the required capacity for one year after the termination of the B.C.A.T.P., that is up to 31 March 1946.

All schools retained in Canada after 31 March 1945 were operated as R.C.A.F. schools. Pilot training capacity was provided by retaining some of the existing schools modified to train the requisite number of pupils. The navigation schools, however, were nominally new schools, although they were all converted from existing facilities. The old C.N.S. was re-formed as No. 1 A.N.S., No. 7 A.O.S. was transformed into No. 3 A.N.S., and No. 1 G.R.S. was turned into No. 1 R. & N.S. The latter school in addition to instructing R.A.F. pupils in navigation, provided G.R. courses for R.C.A.F. pilots and navigators/bomber required for Canada's home defence squadrons. The following schools were provided for the training of R.A.F. and F.A.A. pupils:-

(1) Actually 52 schools were closed during 1944, but seven new schools opened.

		Capacity	
No. 23 E.F.T.S.	Yorkton	264	R.A.F.
No. 10 E.F.T.S.	Pendleton	136	
No. 13 E.F.T.S.	St. Johns	156	F.A.A.
No. 3 S.F.T.S.	Calgary	240	R.A.F.
No. 16 S.F.T.S.	Hagersville	240	
No. 18 S.F.T.S.	Gimli	240	
No. 14 S.F.T.S.	Kingston	280	F.A.A.
No. 1 A.N.S.	Rivers	260	R.A.F.
No. 3 A.N.S.	Portage de la Prairie	520	
No. 1 R. & N.S.	Yarmouth	260	

In addition it was agreed to retain the six operational training units for both R.A.F. and R.C.A.F. personnel. The arrangements made to retain a shadow organisation as an insurance against an unfavourable turn in the progress of the war were changed to two E.F.T.S.s, five S.F.T.S.s, one A.N.S., one B. and G.S. and one W.S. These schools were disbanded in the normal way as their last courses passed out, but pending their final disposal they were capable if necessary of being re-opened at short notice. Apart from those schools continuing R.A.F. training after March 1945 all the remaining B.C.A.T.P. schools (33 in all) were closed during the first three months of 1945.

Under the new agreement Canada was to accept drafts of 100 pilots and 104 navigators every two weeks for training in Canada, the first 50 of which commenced training at No. 23 E.F.T.S. on 4 December 1944. In order to complete their training by 31 March 1946, it had been agreed that the last draft would leave the United Kingdom in July 1945 and would enter training in mid August. With the sudden end of the Japanese war however, all R.A.F. training in Canada was immediately halted. The last graduates passed out on 17 August and in all 151 pilots and 739 navigators had been trained since the termination of the B.C.A.T.P.

During the six years of war, approximately 360 training schools and ancillary units were established on 231 sites in Canada. From these schools came 137,910 aircrew graduates to take their place in the R.A.F., R.A.A.F., R.C.A.F., or the R.N.Z.A.F.(1) The actual output under the British Commonwealth Air Training Plan Agreements in Canada, excluding 171 R.C.A.F. pilots trained before the E.A.T.S. started, 5,296 R.A.F. and Fleet Air Arm personnel trained in R.A.F. 'transferred' schools in Canada prior to 1 July 1942, and 890 R.A.F. personnel trained in R.C.A.F. schools after 31 March 1945, was 131,553. Of these, the R.C.A.F. contribution was largest, representing 55·4

(1) See Appendix 68.

per cent of the total; the R.A.F. provided 32 per cent, the R.A.A.F. 7·3 per cent and the R.N.Z.A.F. 5·3 per cent. The 10,000th graduation took place in September 1941, the 50,000th in April 1943, and the 100,000th in June 1944. From 1 July 1942 to 31 March 1945 the average number of men graduated per month was 3,265. The strength of the trained staff flying and non-flying, grew from 4,538 at the end of March 1940 to a peak of over 104,000 as at 31 December 1943, followed by a gradual decline to less than 67,000 by March 1945.(1) The peak effort of the scheme was reached in the year 1943 when aircraft of the plan flew roughly 7,000,000 hours with a maximum in the month of July when 677,000 hours were flown.

Training of Norwegians in Canada

A history of flying training in Canada would not be complete without reference to the activities of the Royal Norwegian Air Force in North America. In August 1940, shortly after their country had been overrun, the leaders of the 120 odd Norwegian airmen who had escaped from Norway, in consultation in London with representatives of the Air Ministry and the Canadian Government, drew up plans for the resurrection of the Norwegian Air Force. An air training camp was to be established in Canada utilising some aircraft that had been ordered in America shortly before the invasion of Norway to train airmen for service in Europe with the Royal Air Force. The camp would be paid for by the Norwegian Government and operated entirely by the Norwegian Air Force, and would therefore be quite independent of the Empire and R.A.F. training schemes in Canada.

Training started on 10 November 1940, using the 100 or so Curtiss and Northrop fighters ordered from America supplemented by Fairchild elementary trainers. The camp, which soon became known as 'Little Norway' and was originally situated near Toronto, consisted of several separate schools training pilots, observers, wireless operators and air gunners besides numerous ground tradesmen. Volunteers, all of Norwegian extraction, were soon reaching 'Little Norway' from all parts of the world, including large numbers from Norway itself and it became necessary to expand training facilities. A site at Muskaka, which had been used for elementary training shortly after the Toronto station was opened, was suitable for expansion and

(1) A.H.B./IIIC1/26.

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in April 1943 the whole of 'Little Norway' was moved from Toronto to Muskaka. Six months later this was supplemented by the opening of a gunnery schools in America.

The first Norwegian Air Force squadron was formed from the output in Canada in 1941, and three more were formed within the next few years. In addition many Norwegians served in R.A.F. squadrons in all Commands. By the end of the war 420 pilots, 142 navigators and 55 wireless operators/air gunner had been trained at 'Little Norway' in Canada.(1)

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(1) A.M. File C.31906.

CHAPTER 8
BASIC TRAINING IN AUSTRALIA

The first flying training school to be established in Australia was the Central Flying School - later known as No. 1 Flying Training School - which was opened at Point Cook when the Australian Flying Corps was formed in 1912. During the first World War the school trained over 150 pilots, most of whom served abroad, but with the disbandment of the Flying Corps at the end of 1918 the school was closed. It was opened again two years later with the formation of the Australian Air Corps - renamed the Royal Australian Air Force on 31 March 1921 - and for the next few years Point Cook was the main Air Force Station in Australia. It was used both as a training base, producing about 10 pilots a year, and as an operational base for survey work of the uncharted parts of the Commonwealth.

By 1928 the training intake had grown to 12 pupils every 6 months, each of whom received 100 hours flying, mainly on worn out D.H.9's, and arrangements were made for four of the annual output of 24 pupils to serve with the R.A.F. under the 'trained cadet' scheme. Pilots served for four years in the R.A.F., to which could be added a further three, before returning home to be posted on the R.A.A.F. Reserve for another four years. For the next eight years progress was slow, and the only notable event was the formation of a reserve force known as the Civilian Air Force. In 1936 an expansion programme was begun. Many new stations were opened and intakes into training were increased to 50 pupils every 6 months, half of whom served in the R.A.F. after completing their training. The Civilian Air Force was also expanded and civil flying clubs were subsidised to the extent of £25 per pupil. A further important step was the introduction of the policy of training most G.D. officers, of both the Permanent and the Civilian Air Force, as flying instructors - a policy which paid high dividends when the Empire Air Training Schools scheme was first established in Australia.

The R.A.A.F. on the outbreak of war

When Australia entered the war on 3 September 1939 a programme of development to 19 squadrons by 1941 was proceeding to schedule and 12 squadrons had actually been formed. The personnel strength of the R.A.A.F. was roughly 3,400 and its equipment consisted of 246 aircraft.

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Immediately following the outbreak of war Australia offered to send to Europe an Expeditionary Air Force comprising six squadrons and some 3,200 men. When the Empire Air Training Scheme was proposed, however, it was considered that the Australian contribution might best be made by strengthening the R.A.A.F. at home both for defence and training, and utilising its resources as fully as possible so as to make the maximum contribution towards the Empire Air Training Scheme. The proposed expeditionary force which would have required the continuous output of two E.F.T.S.s and two S.F.T.S.s to maintain it was, therefore, cancelled and the only Australian personnel sent overseas at that time were 17 officers and 166 airmen despatched to the United Kingdom to form No. 10 R.A.A.F. Squadron utilising a number of Sunderland aircraft ordered in the United Kingdom by the R.A.A.F. shortly before the war and subsequently put at the disposal of the R.A.F.(1)

Following the decision to despatch an Air Mission to Canada to examine and report on the Empire Air Training Scheme in detail, the immediate development of training in Australia was considered. Pending a final decision on Australia's contribution to the scheme, the existing reserves of aircraft and instructors were utilised on a short term basis. The primary object was to produce instructors for the large number of training schools it was anticipated would be needed in Australia. No. 1 F.T.S., Point Cook, which before the war had been responsible for all flying training carried out in Australia (apart from some training carried out at aero-clubs), was reorganised so as to concentrate on the advanced training of pilots, together with the training of flying instructors. Two small elementary flying training schools were established at the former civil schools at Parafield and Archersfield as part of the Home Defence plan and these, together with flying clubs at Maryland, Newcastle, Essendon, and Mascot, provided elementary training facilities for pupils proceeding to the Service course at Point Cook. The first course of instructor pupils, all of whom were drawn from the Civilian reserve, entered training on 16 October 1939, and the civil schools and clubs commenced elementary training about the same time. Parafield and Archersfield officially became E.F.T.S.s a few weeks later.

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(1) War Report of the C.A.S., R.A.A.F.

/ Empire

Empire Air Training Scheme

The idea of co-ordinating all training in the Dominions was first proposed by Mr. Bruce, the Australian High Commissioner in London, on 22 September 1939 who suggested that although each Dominion should have its own Air Force in the field, advanced training should be rationalised by concentrating in Canada, the other two Dominions sending their pupils there for training after receiving elementary training in the home country. The scheme was formally submitted to the Australian Government by the British Prime Minister four days later. It was approved in principle on 5 October and a mission, consisting of the Member for Air (the Honourable J.B. Fairbairn) the Assistant C.A.S. (Wing Commander G. Jones) and a financial adviser (Mr. C.V. Kelloway) accompanied by Mr. R.E. Elford as secretary arrived in Ottawa the following month for discussion with the United Kingdom, Canada and New Zealand.

The original conception that only elementary training should be carried out in Australia was not popular with the Australian government who considered that it would be cheaper, besides strengthening the Australian Home Defence Organisation, if full use were made of Australia's own resources, both existing and potential. Accordingly, when the agreements covering the training of R.A.A.F. personnel was signed - the first, a two party agreement between the British and Australian Governments relating to training in Australia, on 27 November; and the second, a four party agreement between the British, Australian, New Zealand and Canadian governments regarding training in Canada, on 17 December 1939 - Australia's claims were recognised and it was agreed that only two ninths of the Australian personnel should receive their advanced training in Canada. Under these agreements, which came into force immediately, Australia was to set up a training organisation which, when it reached its peak (estimated as July 1942), would be capable of producing some 10,335 fully trained personnel per year.(1) The output which amounted to 36 per cent of the total E.A.T.S. production represented a four weekly intake of 432 pilots, 226 observers and 392 wireless operators/air gunner, from which Australia undertook to send to Canada 80 pilot pupils (trained up

(1) See Appendix 61.

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to E.F.T.S. standard), and 42 observer pupils and 72 wireless operator/air gunner pupils (trained up to I.T.W. standard) every four weeks.

Australia's task was a considerable one, involving three main requirements: personnel, aircraft and training schools. The securing of personnel necessitated the setting up of a large recruiting organisation, the enrolling of flying instructors, and the training of ground staff. A Directorate of Recruiting was established, and recruiting centres were opened in all six capital cities before the end of the year, and shortly afterwards five recruit depots were formed to provide non-technical recruit training. The centres and depots were further supplemented by mobile units, and special motor and railway vehicles were fitted for that purpose. The response to the recruiting campaign passed all expectations causing long waiting lists during the first two years and a 'reservist' scheme had to be introduced under which men awaiting aircrew training were placed on the reserve and given pre-entry training in Service subjects. Instructors were provided from the interim training schools already established, although they had to be supplemented by R.A.F. personnel until graduates from the E.A.T.S. could be trained as instructors. The initial aircraft requirements were 436 Tiger Moths, 315 Harvards and Wirraways, 591 Ansons, 336 Battles and 24 D.C.2's, plus wastage replacements which increased these figures by over 40 per cent. The United Kingdom undertook to supply all the Ansons (without wings) and Battles, and two thirds of the Tiger Moth engines, besides paying for 233 of the Wirraways to be produced in Australia. The remainder of the aircraft were to be provided by Australia.(1)

The Royal Australian Air Force was faced with a tremendous expansion to provide the necessary training facilities. The scheme was planned on a geographical basis in order to give a planned combination of home defence, training and maintenance units in each area, and as far as possible an aircrew trainee was enlisted, trained and embarked for service overseas within his own state. Organisation on a functional basis (in Home Defence, Training and Maintenance Commands) was not possible owing to the great distances between capital cities.

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(1) See Appendix 61.

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To produce Australia's quota of trained aircrews under the agreement the following schools had to be opened:-

Initial Training	-	5
Elementary Flying Training	-	9
Service Flying Training	-	7
Air Observers	-	4
Wireless Operator/Air Gunner	-	4
Bombing and Gunnery	-	4
Air Navigation	-	3

In addition it was necessary to establish further training and ancillary units, and to increase the capacity of existing units for the training of staffs for both the flying training schools and the appropriate command, recruiting and maintenance organisations. These training and ancillary units included:-

Armament School	-	1
Signal School	-	1
Engineering School	-	1
Central Flying School	-	1
Recruiting Centres	-	6
Recruiting Depots	-	5
Schools of Technical Training	-	6
Aircraft Depots	-	2
Stores Depots	-	3
Aircraft Parks	-	2
School of Administration	-	1

Organisation of Schools

The schools in Australia, like those in Canada and New Zealand, were organised on R.A.F. lines and worked to the R.A.F. syllabuses of instruction. Originally it was planned to retain the services of those flying clubs that had carried out some elementary flying training since the early days of the war, to supplement the two E.F.T.S.s instead of forming new E.F.T.S.s. It was soon apparent, however, that the standard of training varied from school to school, and even the airworthiness of the aircraft (many of which were not only obsolete but decidedly antique) was sometimes questionable. A further handicap was the difficulty in arriving at a satisfactory basis for payment in

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respect of training. For those reasons it was decided, in April 1940 (just before the first E.A.T.S. intake commenced E.F.T.S. training), to abandon the plan for training in civil schools and to establish air force schools, half the size of R.A.F. standard schools, which meant that 18 E.F.T.S.s would be needed.

The sequence of training also followed the R.A.F. system. All pupils first went to intial training wings for a ground training course (eight weeks for pilots and observers and four for wireless operators/air gunners), after which pilot pupils proceeded to E.F.T.S. for eight weeks and then to an S.F.T.S. either in Canada or Australia for 16 weeks. Observer pupils proceeded either to Canadian or Australian schools for an A.O.S. course for 12 weeks, followed by a B. and G.S. course of 6 weeks duration and a 4 weeks A.N.S. course. Wireless operator/air gunner pupils, after leaving the I.T.W., went either to a Canadian or Australian wireless/air gunner school for a 20 weeks' course in wireless operating followed by 4 weeks at a B. and G.S.

Early Difficulties

When the details of the Empire Air Training Scheme were worked out it was possible to reorganise the existing facilities and plan the new schools. Australia's home defence requirements were outside the scope of the E.A.T.S. and one E.F.T.S. and one S.F.T.S. were needed to supply those needs. No. 1 E.F.T.S. Parafield and No. 1 S.F.T.S. Point Cook were earmarked for that purpose which meant that the overall E.F.T.S. and S.F.T.S. requirements were increased to 10 and 8 respectively. The training of flying instructors was rationalised and a central flying school was formed at Point Cook on 29 April 1940 (it moved to Camden on 21 May). Both elementary and Service instructors were trained, the former on an eight weeks' course and the latter twelve. The school was equipped with 38 aircraft and had a capacity for training 80 pupils at a time.

Although steps were taken to implement the E.A.T.S. agreement as soon as it was signed (in November 1939) time was needed to open schools and train instructors and it was not until 29 April 1940 that the first pupils entered No. 1 I.T.W. Somers for training. After that date all aircrew training in the Dominion was to be carried out under the E.A.T.S. Between the outbreak of war and the commencement of the E.A.T.S. 116 pilots, 17 observers and 10 air gunners had been trained in R.A.A.F. schools. The first E.A.T.S. output, numbering 34 pilots, graduated from No. 2 S.F.T.S. on 18 November 1940, and the first

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draft of trainees for Canada left in September 1940. By the end of the year there were eight E.F.T.S.s and three S.F.T.S.s in operation (including the pair of schools supplying Australia's home defence needs). Other schools for training observers and wireless operators/air gunner had also been opened and by 31 December 1940 there were twenty-two schools operating in Australia (excluding the ancillary units such as recruit centres, depots etc.) of which all but four (one E.F.T.S., one S.F.T.S., the C.F.S. and a G.R.S.) were established under the Empire Air Training Scheme. It was notable progress but it was not achieved without a great many difficulties and shortcomings. Throughout the year Australia was handicapped by shortage of aircraft, spares, and instructional equipment. Ansons and Battles for the E.A.T.S. schools (seven S.F.T.S.s, four A.O.S.s, four B. & G.S.s, and three A.N.S.s) were to be supplied from the United Kingdom and aircraft for the remaining schools were to be manufactured in Australia or purchased in America. The delivery of Wirraways and Wacketts for the elementary and Service flying training schools was satisfactory although their production placed a large burden on the Australian aircraft industry. At the outbreak of war that industry, though extremely small, was established on a sound basis, and for that reason was able to respond steadily as the war progressed, and aircraft to meet the needs of E.A.T.S. schools as well as a number of operational types were soon in production.

The delivery of aircraft and spares from the United Kingdom, however, was far from satisfactory. By the end of 1940 Anson deliveries were nearly 40 per cent short of requirements and the spares position was little better. In addition, there was an acute shortage of instructional equipment. Not unnaturally the training at some schools suffered through these shortages, and to relieve the aircraft shortage a number of civil types such as D.H.84's and D.H.87's were used to replace Ansons at A.O.S.s.

Measures to increase output

In the autumn of 1940, with the Battle of Britain at its height, the need for more pilots was desperate, and an urgent call was sent to all the Dominion partners to increase pilot output. In Australia it was hoped that the Air Member for Training's 'Third Revise' which reduced the E.F.T.S. and S.F.T.S. course length from 8 and 16 to 5 and 10 weeks respectively and also increased

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increased the schools' capacity by 25 per cent could be put into practice. The acute shortage of trainer aircraft, however, prevented the implementation of that policy in full and it was decided to retain the existing course lengths and to introduce the 25 per cent overbearing at schools. Accordingly, in October 1940, the E.F.T.S.s were expanded from 48 to 60 pupils per school and S.F.T.S.s from 160 to 200. It is interesting to note that Canada, faced with the same problem, shortened the course lengths, but did not increase the size of her schools. The expedients adopted in Australia had the advantage of retaining practical armament training as part of the pilots' curriculum. The shortage of aircraft also delayed the conversion of S.F.T.S.s into specialised schools equipped with either single-engined or twin-engined aircraft instead of both types, which was also a feature of the 'Third Revise'.

The world wide expansion of pilot training capacity meant that Australia's quota of trainees for pilot training in Canada would have to be increased. Canada, by shortening courses, had stepped up her pilot output by 40 per cent, which meant that 1,450 elementary trained pilot pupils would be required every year from Australia in place of the 1,040 under the original agreement. Such an increase, however, was beyond Australia's immediate capacity and until the supply of aircraft would allow courses at Australia's schools to be shortened, it was agreed that the rate of flow to Canada should be increased by only 25 per cent, to 1,300 per year (100 every 4 weeks), and two schools (Nos. 5 and 8 E.F.T.S.s) were devoted exclusively to training pupils for Canada's S.F.T.S.s. The increased pilot quotas commenced in January 1941 although observer and wireless operator/air gunner shipments remained unchanged at 546 and 936 per year.

In addition to increasing pilot output under the E.A.T.S. plans were made to increase aircrew output to meet Australia's growing Home Defence requirements. Pilot output was increased by 25 per cent by expanding the two R.A.A.F. schools (No. 1 E.F.T.S. and No. 1 S.F.T.S.) in the same way as the E.A.T.S. schools, and observer and wireless operator/air gunner requirements were met by expanding the planned E.A.T.S. capacity by 10 per cent and 25 per cent respectively. At the same time course lengths at the W.A.G.S.s were extended by four weeks to improve the standard of training. Yet another

/ training

training commitment was undertaken the following month (November 1940) when arrangements were made for Australia to provide 580 pupils per year (40 every four and three weeks alternately) for pilot training in Southern Rhodesia. They were to receive I.T.W. training in Australia before proceeding to Southern Rhodesia for elementary and Service flying training. After completing their training they would go to the Middle East for operational training before reinforcing R.A.A.F. squadrons operating in that theatre.

These three extensions to Australia's training organisation to meet the E.A.T.S. expansion, Home Defence requirements and the Southern Rhodesian commitment - resulted in an overall increase of more than 20 per cent in Australia's original manpower commitment under the Ottawa agreement of November 1939. The total output of Australian personnel planned during the life of the E.A.T.S. (i.e. until 31 March 1943) was 21,393, compared with 15,956 visualised in November 1939 - an increase of 5,437 on the original plan.(1)

The increases planned late in 1940 did not, of course, have an immediate effect on aircrew output, and by the end of 1940 only 200 Australian pupils had graduated, of which 97 were pilots (37 graduating in Canada), 39 observers and 163 wireless operators/air gunner. The total intake had been 3,802, of which 80 had been sent to Southern Rhodesia and 732 (320 pilots, 126 observers and 286 wireless operator/air gunner pupils) to Canada.

Manpower Problems

By 1941 it was realised that the aircrew reserve was fast diminishing and steps were taken not only to encourage recruiting but to make the best use of the available manpower. To cater for those recruits who were otherwise suitable for aircrew training but whose educational standard was below that required for entry into I.T.S.s a system of pre-I.T.S. training was introduced. The I.T.S.s were expanded to incorporate a special four weeks' course for candidates that the recruiting centres considered would benefit from extra instruction.

There was also a scheme in operation under which aircrew enlisted on the reserve pending their call-up for training who lacked the necessary academic qualifications were required to complete courses in mathematics and physics.

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(1) See Appendix 69.

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These recruits were given instruction at weekends and in the evenings by honorary instructors of the R.A.A.F. Educational Service. Later in the year this reservist training scheme was rendered redundant by the establishment of the Air Training Corps in Australia. The Corps was formed on 11 June 1941 as part of the Citizen Air Force and was administered direct from R.A.A.F. Headquarters. Cadet Wings were established in the capital city of each state to control the squadrons set up within the state. The primary purposes of the A.T.C. were to widen the field of selection of aircrew entrants and to raise the educational standard of cadets in order to prepare them for entry into the Service. Officers of the A.T.C. held honorary commissions in the R.A.A.F. reserve and the instructors of the educational service continued their supervision of pre-entry instruction.(1)

In addition to pre-entry training, steps were taken to ensure that the most economical use was made of the existing training facilities. Responsibility for categorisation as pilots, observers and wireless operators/air gunner was transferred from the recruiting centres to the initial training schools. Intelligence tests and, more important, medical examinations were introduced at the initial training schools for that purpose, and only those candidates showing a marked aptitude for pilot training were sent forward to the E.F.T.S.s. A few months later, in July 1941, a review of the actual wastage rates was laid down under the E.A.T.S. agreement. The effect of the new classification system had not had time to make itself felt (subsequently it was found to have reduced pilot wastage at E.F.T.S.s by more than 10 per cent) but experience had already shown that the actual wastage rate for observers and wireless operators/air gunner was rather lower than had been expected. Accordingly, the anticipated wastage rates were revised as follows:-

Pilots	E.F.T.S.	- $16\frac{2}{3}$ per cent	(No change)
	S.F.T.S.	- 15 per cent	(No change)
Observers	A.O.S.	- 3 per cent	(Formerly $16\frac{2}{3}$ per cent)
	B. & G.S.	- 3 per cent	(No change)
	A.N.S.	- Nil	(No change)
Wireless Operators/Air Gunner			
	W.A.G.S.	- 3 per cent	(Formerly 20 per cent)

(1) R.A.A.F. Report on Australian Air War Effort, May 1943.

/ Shortages

Shortages of Aircraft and Equipment

Although by the summer of 1941 the training of aircrew was proceeding satisfactorily, particularly that of observers and wireless operators/air gunner, whose lower wastage rate meant that the output was higher than had been expected, Australia continued to be seriously handicapped by lack of aircraft, spares and instructional equipment. The S.F.T.S.s were particulary hard hit. All, except No. 1 S.F.T.S., had been converted into specialised schools, but in the spring of 1941 many of the schools only had two thirds of their full aircraft establishment. The twin engined schools (Nos. 3 and 4 S.F.T.S.s) suffered most, but even at these schools the syllabus was maintained and all pilots passed out having completed 180 hours flying.(1) Later in the year the situation was improved by despatching Oxfords in lieu of Ansons from the United Kingdom, and subsequently, in response to a request from the United Kingdom, it was possible for the amount of flying carried out at S.F.T.S.s to be increased. After some delay because of shortage of night flying equipment for the Tiger Moths, night flying was also introduced at the E.F.T.S.s.(2) The production of the Wackett elementary trainer in Australia, which was commenced in 1941, relieved the shortage of elementary trainers, and in July 1941 it was possible to add 12 elementary trainers (either Tiger Moths or Wacketts) to the establishment of the W.A.G.S.s so that trainees could practise solo wireless operating. Formerly they had been able to have air practice only en masse since the schools' aircraft, Douglas D.C.2's, were capable of carrying a large number of trainees and were therefore used as flying classrooms. The addition of the elementary trainers to the W.A.G.S.s raised the training capacity of the schools and it was possible, after July 1941, for those wireless operator/air gunner trainees who failed the wireless course (nearly 10 per cent) to be trained as 'straight' air gunners.(3)

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(1) E.T.S.419(42). (A.H.B./IIIC/1).

(2) E.T.S.374(41). (A.H.B./IIIC/1).

(3) E.T.S.342(41). (A.H.B./IIIC/1).

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At nearly all types of school the standard of training was good. The only exceptions were the bombing and gunnery schools, where aircraft unserviceabilty (due to the shortage of Battles and the lack of engine spares) and deficiencies of instructional and range equipment were the retarding factors. The shortages of spares and equipment were being overcome rapidly, and the supply of both Oxfords and Ansons improved considerably by the end of the year, although deliveries of Battles continued to be a bottleneck which was relieved only when they were replaced by Oxfords at one school.

Disposal of Outputs

The policy for the employment of Australia's E.A.T.S. output was beset by many vicissitudes during 1941. Early in the year in order to reinforce the Middle East theatre of operations, Australia agreed to a suggestion from the United Kingdom that part of the Empire Air Training Scheme output in Australia should go direct to that theatre. An average of 30 pilots, 30 observers and 45 wireless operators/air gunner every month were to proceed to the Middle East, and the balance, after meeting Australian home defence requirements, continued to be sent to the United Kingdom. The first draft for the Middle East (60 pilots, 50 observers and 90 wireless operators/air gunner) left Australia on 12 January 1941.(1) In August congestion at the operational training units in the Middle East caused a temporary stoppage of wireless operator/air gunner shipments, but two months later the position was reversed when arrangements were made to send 100 wireless operators/air gunner per month to the Middle East. A further change of policy occurred in October when it was decided to direct all pilot outputs (excluding home defence requirements) to the United Kingdom.

The quota of partially trained aircrew to be sent overseas was also changed. It was agreed in November 1941 that the quota of air observer pupils to be sent to Canada should be increased from 42 to 52 every four weeks commencing in January 1942.

Entry of Japan into the war

Japan's treacherous entry into the war on 7 December 1941 caused many changes in the Australian training organisation. The immediate effect was a temporary stoppage of the shipment of all trainees abroad. It was natural

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(1) E.T.S.342(41). (A.H.B./IIIC/1).

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that a general review of the strategical situation should be made, and it was undesirable to continue the shipment of trainees through the dangerous Pacific waters to Canada and Southern Rhodesia or even trained personnel to the United Kingdom and Middle East until a policy concerning the provision of escorts for troopships had been formulated.(1) Moreover the possibility that the Dominion itself might be attacked led to a strong feeling in the country against manpower leaving Australia.

Expansion of the Home Defence organisation was an urgent necessity and the Douglas and De Havilland aircraft and some of the staffs of the wireless/ air gunner schools were withdrawn to meet the urgent needs for transport and ambulance squadrons. In fact Australia prepared to become an operational base. The replanning of the R.A.A.F. higher organisation, which had taken place only a few months earlier, greatly facilitated the rapid mobilisation of Australia's reserves. Prior to 2 August 1941 the Group Organisation of the R.A.A.F. was functioning purely on a geographical basis and was divided into four 'areas': Southern, Central, Western and Northern. Training, however, had assumed such a degree of importance that its control on a functional basis was necessary, and accordingly Nos. 1 and 2 Training Groups were formed with their headquarters at Melbourne and Sydney respectively, to control all the training units in the eastern states. The three 'areas' remained (it had been found possible to disband Central Area) but two were confined to the command of operational and maintenance units, and only Western Area remained a composite operational, training and maintenance formation.(2) It had been planned to form more Training Groups (at Brisbane and Adelaide) but subsequent events made it unnecessary to do so.

For a short time it seemed that Australia would be called upon to supply reinforcements and possibly operational training facilities for the Far East,(3) but the dramatic Japanese victories there removed the need for such facilities, although in fact a few trained airmen were sent to reinforce the Far East during December 1941.

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(1) E.T.S.408(42). (A.H.B./IIIC/1).

(2) War Report of the C.A.S., R.A.A.F.

(3) E.T.S.398(41). (A.H.B./IIIC/1).

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There were obvious advantages in making Australia as self-contained as possible, but even so the expansion of the R.A.A.F. in Australia could not absorb all the pilots and other airmen the Dominion had undertaken to train, and the United Kingdom was anxious that the balance should, as had been planned under the E.A.T.S. agreement, continue to be available for service with the R.A.F. As far as training was concerned the shortage of aircraft and aerodromes made the idea of training all Australian aircrew within the Commonwealth quite impossible. An additional 300 aircraft would have been needed and neither the United Kingdom nor the United States was in a position to supply them. The shortage of aerodromes was so acute that, far from making additional ones available for training, many of those used by training units had to be turned over for operational purposes. Indeed, so critical was Australia's shortage of aerodromes that it was even suggested that the entire Australian training organisation should be transferred to the United States. Shortage of aircraft and lack of aerodromes there made that idea equally impracticable.(1)

Summary of Development by December 1941

December 1941, then, was an important landmark in the development of the Australian training organisation. The expansion had been both considerable and rapid, especially during the latter half of the year when nine new schools were opened and by the end of the year the total strength of the flying training organisation had risen to 35 schools (including the four used for home defence requirements). Over 3,000 personnel had graduated at schools in Australia, nearly 2,500 of whom had been sent overseas after completing their training (1,276 to the United Kingdom, 1,008 to the Middle East and 120 to the Far East). In addition nearly 4,000 partially trained aircrew pupils had been sent to Canada or Southern Rhodesia to complete their training.

Such an achievement had not been easy. Shortages of aircraft and equipment had caused many difficulties and even the supply of instructors was only just keeping pace with requirements in spite of the revised training scheme that

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(1) E.T.S.448(42). (A.H.B./IIIC/1).

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had been put into operation at the Central Flying School, Camden, in March 1941 to speed up the output of instructors, (elementary instructors were trained at the rate of 28 every seven weeks, instead of eight weeks, and advanced instructors 30 every seven weeks instead of twelve weeks). It was found that the only way to relieve the strain of long periods of continuous instructing was to grant regular periods of leave to personnel employed on instructor duties.

The aircraft and spares position was just beginning to improve when the extension of the war to the Pacific area, and the transformation of Australia into an operational as well as a training area, brought further problems to be faced and overcome.

Resumption of the shipment of pupils to Canada

After fully reviewing the overall strategical situation in the Pacific area, with particular reference to manpower problems and the continuation of the Empire Air Training Scheme, the Australian War Cabinet, on 24 March 1942 decided that although the ultimate aim was to make the Dominion a self-contained training area, Australia would continue to send pupils for training in Canada under the Empire Air Training Scheme. The numbers were to be the same as before, i.e. 100 pilot pupils trained to E.F.T.S. standard, and 52 observers and 72 wireless operators/air gunner trained to I.T.S. standard, every four weeks and graduates would continue to be available for service with the Royal Air Force.(1)

The temporary cancellation of drafts to Canada in December 1941 had caused a small surplus of partially trained aircrew to accumulate in Australia. To minimise that surplus course lengths at all Australian schools were increased by two weeks in December 1941, and the following month a further two weeks extension (making four weeks in all) was effected.(2) In March 1942, when shipments to Canada were resumed, courses reverted to their former lengths. The total loss in output of fully trained aircrew, caused by the course extensions during these four months amounted to 464 (254 pilots, 87 observers and 123 wireless operators/air gunner).(3) Shipments of pupils to Southern

(1) E.T.S.499(42). (A.H.B./IIIC/1).

(2) E.T.S.494(42) and 499(42). (A.H.B./IIIC/1).

(3) E.T.S.499(42). (A.H.B./IIIC/1).

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Rhodesia were not resumed. Between November 1940 and December 1941 when the last draft sailed a total of 676 Australian pupils were sent to Southern Rhodesia to complete their training and 514 pilots, 61 observers and 8 air gunners graduated in the colony.

The Australian War Cabinet made a further decision affecting the Australian Training organisation when, on 10 February 1942, in response to a request made some two months earlier by the Netherlands East Indies Government, it was decided to provide facilities for training Netherlands East Indies aircrew personnel in Australia. R.A.A.F. Station, Rathmines, was to be used as a personnel depot and arrangements were made for suitable pupils to be trained as pilots at No. 1 E.F.T.S. Parafield and No. 6 S.F.T.S. Mallala. The loss of the Dutch East Indies to the Japanese, however, took place before the plans had been put into practice and the scheme was effectively killed before it was even born.(1)

Expansion of Home Defence Forces

The main preoccupation of the Australian War Cabinet at the beginning of 1942 was the development of Australia's Home Defence Forces. On 2 March 1942, it was decided to implement the progressive expansion of the R.A.A.F. in the S.W. Pacific area from 32 squadrons (as planned in September 1939) to 73 squadrons. At that time only 22 squadrons of the 32 originally planned were actually in existence, and the new programme therefore involved a considerable additional training effort; the formation of 41 new squadrons would require 2,500 additional aircrew and 38,000 ground staff. The continuation of the Empire Air Training Scheme was accordingly subject to several modifications: the supply of aircrew for R.A.A.F. squadrons (at home and abroad) was first priority for the output of Australian schools; as many Australian aircrew as possible (not required for R.A.A.F. squadrons) were allotted to R.A.A.F. 'Article XV' squadrons in the Pacific area; and an operational training organisation was set up in Australia. Arrangements were made with the Air Ministry for a regular flow of Australian personnel who had been serving overseas with the R.A.F. to provide a war-experienced nucleus for all R.A.A.F. units based in Australia. A further aim was to prepare plans for training in Australia the partially trained aircrew who were at that time being sent to

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(1) E.T.S.499(42). (A.H.B./IIIC/1).

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Canada to complete their training. It was realised that a considerable time would elapse before sufficient aircraft and equipment were available for that purpose and in point of fact the aim was achieved only when reductions in requirements made it no longer necessary to send personnel to Canada for training. Indeed the following year, when the original E.A.T.S. agreement expired and a new one drawn up, Australia undertook to maintain her quota of personnel for training in Canada.(1)

To meet her home defence requirements it was estimated that Australia would need to retain during the following 12 months 50 per cent of the output of pilots, 30 per cent of the air observers and 35 per cent of the wireless operators/air gunner and air gunners, that is, approximately 2,000 pilots, 700 observers and 1,200 wireless operators/air gunner and air gunners. These personnel would provide staffs for training units, crews for the operational squadrons in existence and those due to form, and meet wastage in those units and squadrons. Apart from the requirements for the 73 squadrons planned the largest commitment was for staffs for the six operational training units to be established in the Commonwealth. Although it was not (in March 1942) intended to establish O.T.U.s for training personnel for service outside Australia, a large organisation was required to train those personnel selected for R.A.A.F. Home Defence Units.

Shipping Difficulties

The overall output from the schools by 30 September 1942 was actually greater than had been originally formulated under the E.A.T.S. agreement, (although taken by categories observer outputs were slightly below the planned figures) 9,070 fully trained aircrew had been produced compared with the 8,567 estimated. Although the output of partially trained aircrew for training in Southern Rhodesia had been in excess of that planned (675 compared with 500) the despatch of trainees to Canada had fallen slightly below expectations (5,122 compared with the 5,664) because of the four months delay earlier in the year. Since their resumption in March, however, drafts to Canada were regularly

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(1) War Report of the C.A.S., R.A.A.F.

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maintained throughout the year, and when in June 1942 at the Ottawa Conference, the E.A.T.S. agreement relating to Canadian training was extended for a further two years up to March 1945 Australia undertook to continue her quota of pupils for training in Canada.(1) The effect of the temporary bottleneck at the beginning of the year was also reflected in Australia's own trained output during the last quarter of the year, and it was accentuated to some extent by a temporary revival of the familiar shortages of spares and the consequent high rates of aircraft unserviceability. By the end of the year, however, the repercussions of the course extensions had run out, and difficulties over aircraft unserviceability overcome, and all schools were functioning at their full capacity.

Shipment of Australia's output to the United Kingdom was, as expected, somewhat below that anticipated under the original agreement mainly because of the additional squadrons needed for the South West Pacific area. Home defence needs were not the sole reason for that shortcoming, however; shipping delays were a contributing factor, particularly during the latter half of the year when the shortage of shipping led to the accumulation of large numbers of R.A.A.F. personnel in embarkation depots awaiting passages to the United Kingdom - and, to a lesser extent, to Canada. To help relieve the position arrangements were made, at Australia's request, to route E.A.T.S. trained observers via Canada instead of to the United Kingdom direct, where they were given O.T.U. training before resuming their journey to the United Kingdom. Up to 100 observers per month were routed via Canadian O.T.U.s, and the first draft sailed in October 1942.

By the end of 1942, after a year of considerable reorganisation, the training position had not only reached its maximum capacity but had achieved stability. The shortage of aircraft spares, which had hitherto been a constant limiting factor had been slowly overcome, largely as a result of local manufacture and the extensive use of salvage. Consequently the serviceability rate had improved and courses were no longer held up through lack of aircraft. The large Home Defence programme was being carried out, although not entirely according to plan owing to the failure of aircraft deliveries (the target had

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(1) E.T.S.478(42). (A.H.B./IIIC/1).

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been reduced from 73 squadrons to 51), but the only effect on the training organisation of that reduction was to make available more Australian aircrew for service with the R.A.F.(1)

The Australian E.A.T.S. organisation consisted of 28 schools with a total trainee population of over 10,000, and by 31 December 1942, a total of 11,180 fully trained aircrew had graduated in Australia, of which more than half (6,367) had been allocated for service with the R.A.F. In addition, 6,476 partially trained personnel had been sent overseas, either to Canada or Southern Rhodesia to complete their instruction.(2)

Introduction of 'Navigator' and 'Air Bomber' Categories

Early in 1943, in conformity with Royal Air Force procedure, the category of 'Air Observer' was abolished in the R.A.A.F. and new categories of 'Navigator' and 'Air Bomber' substituted, the latter trade being trained only for bombing and gunnery. The navigator category was further sub-divided as follows:-

Navigator	-	trained in navigation
Navigator/Bomber	-	trained in navigation, bombing and gunnery
Navigator/Bomber/Wireless	-	trained in navigation, bombing, gunnery and wireless operating
Navigator/Wireless	-	trained in navigation and wireless operating
Navigator/Radio	-	trained in navigation and radio operating

The categories of navigator, navigator/bomber/wireless, navigator/radio and air bomber were introduced primarily to cover R.A.A.F. personnel serving abroad who completed their training in Canada and no arrangements were made at that time (1943) to train personnel in those categories in Australia.(3) Of the two categories trained in Australia, navigator/bomber and navigator/wireless, the former, which was in effect the old observer trade, carried on under the old system of training (i.e. 12 weeks A.O.S., 8 weeks B. & G.S. and 4 weeks A.N.S.). Three quarters of all navigator pupils were trained in that category and the remaining 25 per cent the navigator/wireless category (most of whom were needed to meet home defence requirements) were trained at a special navigator

(1) E.T.S.580(43). (A.H.B./IIIC/1).

(2) E.T.S.580(43). (A.H.B./IIIC/1).

(3) E.T.S.634(43). (A.H.B./IIIC/1).

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and wireless school which was established as a section of No. 1 Wireless Air Gunners' School, Ballerat. It opened on 4 February 1943, with an aircraft establishment of 24 Ansons and a trainee population of 350 on a 28 weeks combined navigation and wireless course. From the navigator and wireless school pupils proceeded to a bombing and gunnery school for a shortened (4 weeks) course. The overall capacity of the Australian training organisation remained unaltered but categorisation into the aircrew trade of pilot, navigator/bomber, navigator/wireless, wireless operator/air gunner took place after eight weeks had been spent in an I.T.S. Those selected for wireless operators/air gunner immediately proceeded for their wireless training, while the other categories spent a further four weeks at the I.T.S. before starting their trade training. The formation of the new school meant that the capacities of the schools formerly training observers could be correspondingly reduced. No. 1 A.O.S. was halved in capacity (to 152 pupils), Nos. 1 and 2 A.N.S.s were reduced by 25 per cent (to 42 and 86 pupils respectively) and the overall capacity of three B. & G.S.s was reduced by 44 (11 pupils at Nos. 1 B. & G.S. and 22 at the other two).

Renewal of the E.A.T.S. Agreement

On 31 March 1943, the original Empire Air Training Scheme agreement expired. By that date approximately 35,000 trainees had entered E.A.T.S. schools in Australia, of whom 13,000 had graduated in Australia, 7,000 had been sent overseas partially trained to complete their instruction (over 5,000 of whom had already graduated) and 10,000 were still under training in Australia. In that month the E.A.T.S. scheme was, by mutual agreement between the Government of Australia and the United Kingdom extended for a further two years (i.e. until 31 March 1945). The new agreement was formally signed in London on 31 March 1943, and under it Australia undertook to maintain her quota of partially trained airmen to Canada, i.e.:-

Trainee pilots ex E.F.T.S.	100	224 every four weeks
Trainee navigators ex I.T.S.	52	
Trainee wireless air gunners ex I.T.S.	72	

A new agreement relating to the extension of the E.A.T.S. in Canada to March 1945, had been signed in Ottawa in June the previous year.(1)

(1) E.T.S.642(43). (A.H.B./IIIC/1).

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Because of the additional needs for R.A.A.F. Home Defence squadrons the Australian Training Scheme actually expanded to a larger organisation than had been envisaged in the first E.A.T.S. agreement - the four weekly intake was 1,274 (1) compared with the 1,050 planned in November 1939 - and the new agreement embraced that extension although at the same time the R.A.A.F. was authorised to retain from the total output sufficient aircrew to man all R.A.A.F. squadrons. The new agreement involved the recruitment of some 16,562 personnel per year which, after allowing for wastage during training, would produce in Australia and Canada together approximately 12,500 basically trained aircrew personnel, two-thirds of whom were destined for service with, or in conjunction with, the R.A.F. (2) That proportion, numbering 8,352 per year was estimated to be provided in the following categories:-

Pilots	3,348
Navigators (B)	1,300
Navigators	353
Air Bombers	247
W.Ops/A.G.	2,415
Air Gunners	689

Further Manpower Problems

By the middle of 1943 the R.A.A.F. was experiencing considerable difficulty in recruiting the requisite numbers of suitable personnel needed to maintain its planned output. The reserve of aircrew which had stood at roughly 3,200 at the beginning of the year fell to 2,600 by June and had been absorbed completely two months later. The manpower allocation of the R.A.A.F. was 4,000 per month, 1,400 of these recruits were aircrew volunteers from which 1,274 suitable candidates every four weeks had to be selected for entry into the I.T.S.s. This meant that after August when there was no longer any reserve of candidates awaiting training, the R.A.A.F. was forced to lead a hand-to-mouth existence as regards aircrew recruits.

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(1) See Appendix 70.

(2) E.T.S.636(43). (A.H.B./IIIC/1).

/ In

In spite of the recruiting difficulties, Australia was pressed to maintain her flow of trained personnel to the European theatre of operations. Any reduction in the planned figure of 8,352 aircrew per year for service with the R.A.F. would have had serious repercussions on the strength of that Service, since the acute manpower shortage in the United Kingdom ruled out the possibility of making up any appreciable shortage of Australian personnel from R.A.F. sources. The answer to the problem was for Australia to follow the policy already adopted in the United Kingdom. Medical standards were constantly revised and eventually some aircrew categories were accepted with a lower medical standard than others, instead of having one common standard for all aircrew based on that required for the highest category. Educational standards were improved by introducing some extensive pre-entry courses, and a further recruiting obstacle was overcome when volunteers for aircrew under 21 were no longer required to obtain their parents consent.(1) By raising educational standards of recruits before they joined the Service it was possible to dispense with the pre-I.T.S. courses which had hitherto been performing this task after candidates had been accepted. Accordingly, the Initial Training School courses were re-organised on a 12 weeks basis for pilots and navigators and 8 weeks for wireless operators/air gunners, and the pre-I.T.S. courses abolished. As a further measure to aid recruiting, men in the Australian Army were encouraged to volunteer for the Air Force.

A few months later the Australian War Cabinet carried out an extensive review of the Australian War Effort in the light of the manpower position.(2) The effect of that review, in so far as the R.A.A.F. was concerned, was a 15 per cent reduction of its manpower allocation, i.e., from 4,000 to 3,400 per month, which meant that aircrew intake would be cut from 1,400 to 1,000 per calendar month. Furthermore, it was considered of vital importance that Australia's military effort should be concentrated as far as possible in the South West Pacific Area. The strength and organisation of the R.A.A.F. was reviewed and from the revised manpower allocation it was estimated that roughly 9,500 aircrew per year could be produced. Nearly half of these were needed to form or maintain the eighteen 'Article XV' squadrons already planned (16 of

(1) E.T.S.636(43). (A.H.B./IIIC/1).

(2) War Report of the R.A.A.F., C.A.S.

/ which

which were already formed), and after allowing a small margin for unforeseen contingencies it was decided that a force of 53 R.A.A.F. squadrons could be maintained in the South West Pacific Area,[1] (representing an expansion of five over the existing strength of 48 squadrons) from the reduced allocation.

The revised aircrew requirements and disposal were estimated in detail as follows:-

Intake (every four weeks)	923	(12,000 per year)
Output (every four weeks)	729	(9,477 per year)
Requirements:-		
R.A.A.F. squadrons in S.W. Pacific	323	
R.A.A.F. 'Article XV' squadrons	334	
Available for contingencies	72	
Total	729	

Following the decision to concentrate Australia's War effort in the S.W. Pacific area it was suggested by the Australian Prime Minister in a telegram to the British Prime Minister in November 1943, that the flow of trainees to the United Kingdom and Canada should be stopped and that all R.A.A.F. personnel and squadrons serving in or with the Royal Air Force should be transferred to the Pacific Area. This proposal was not very warmly received in London. The return of Australian personnel from the United Kingdom (who at that time numbered about 11,000) could only have been accomplished at the expense of the offensive against Germany; moreover there was no strategical justification for such a move since plans for Allied air strength in the Pacific area had already given a 6 to 1 superiority over the enemy. The supply of aircraft would also have proved a difficulty; unless the R.A.F. Target Force was reduced. R.A.A.F. expansion would have had to be carried out using either somewhat questionable American types or locally produced aircraft.[2]

The Reduction in the Training Organisation

The question was settled the following month when a decision on the expected duration of the European war was made. In the United Kingdom, as in Australia, the manpower shortage was acute and to make the most economical use

(1) There were also three R.A.F. and two N.E.I. squadrons in Australia and two R.A.A.F. squadrons overseas, one in the U.K. and the other in the Middle East.

(2) E.T.S.664(43). (A.H.B./IIIC/1).

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of available resources it was essential to plan on a long-term basis. For that reason it was laid down by the War Cabinet on 1 December 1943 that for planning purposes the European War was estimated to continue for a further 18 months. The size of the force required after the end of the war in Europe (i.e. for the Japanese War, Home Defence, and police duties in Europe, etc.) was also considered and was laid down as 490 squadrons.(1) It was assumed that Australia and New Zealand would withdraw their forces from Europe after Germany's defeat, and for that reason the 490 squadron force did not include any R.A.A.F. or R.N.Z.A.F. squadrons.

With the target date for Germany's defeat set as June 1945, it was possible to reduce training intakes so as to release more personnel for operational duties, and the overall training capacity was to be reduced by 40 per cent by the end of 1944. Although it was desirable for Australia and New Zealand to continue their shipments of trainees both to Canada and the United Kingdom at that time (December 1943) it was agreed that their contribution should be progressively reduced during 1944 so that shipments could cease altogether by the end of the year.

Reorganisation of the Schools

The decision taken in December 1943 had a profound effect upon the E.A.T.S. in Australia. Drafts of trainees to Canada were, for the time being, maintained at the rate of 224 every four weeks, but the training organisation had to be recast to conform with the reduced intake of 1,000 per calendar month,(2) and the overall capacities of the various types of school were reduced as follows:-

	From	To
I.T.S.	3,938	3,623
E.F.T.S.	1,110	864
S.F.T.S.	1,425	1,040
A.O.S.	800	786
W.A.G.S.	1,884	1,260

The pilot training organisation was reduced by decreasing the capacities of all the E.F.T.S.s and S.F.T.S.s by roughly 25 per cent. At the same time the standard of training was improved by increasing E.F.T.S. flying hours from

(1) W.P.164(43); A.C.17(44).

(2) See Appendix 71.

60 to 65 per pupil and S.F.T.S. hours from 105 to 120. In addition, a modified version of the R.A.F. aystem of 'Grading' was introduced at E.F.T.S.s, and a revised classification procedure introduced at the I.T.S. stage. When these modifications were introduced the opportunity was taken to extend the course length at I.T.S.s to 16 weeks for navigator/bomber pupils and a few months later all other I.T.S. courses were also extended by 4 weeks. These extensions necessitated the formation of a sixth I.T.S. even though the overall I.T.S. capacity was slightly reduced. On leaving the I.T.S. pilot candidates (classified as P.N.B.W.s) underwent a four weeks flying test at an E.F.T.S. before being finally selected for pilot training. The grading test had been introduced experimentally at No. 1 E.F.T.S. in July 1943 and was carried out at all schools after December 1943.

The wireless operator/air gunner training capacity was reduced by closing one school (No. 2 W.A.G.S.) in February 1944. Course lengths at the remaining two schools were extended by 4 weeks (to 28 weeks) to improve training standards.

The navigation training organisation was not only reduced in capacity but was reshuffled so as to provide an 'all-through' course for the training of navigators/bomber. The two air navigation schools, the three bombing and gunnery schools, and the navigator/wireless school, were all disbanded on 9 December 1943, and their resources utilised to enlarge the two existing A.O.S.s and to form a third. Two of these schools were then used for training navigators/bombers on a combined course in navigation, astro-navigation, and bombing, lasting 20 weeks, and the other was used to train navigator/wireless personnel on a 28 weeks course. In addition, an air gunnery school was formed to carry out the gunnery training (wireless operators/air gunners and air gunners) formerly provided by the bombing and gunnery schools. The following changes took place under that reorganisation:-

No. 1 A.O.S. moved from Cootamundra to Evans Head on 9 December 1943 and reorganised to train 225 navigators/bomber.

No. 2 A.O.S. reorganised (by absorbing the navigator and wireless school) on 16 December 1943 to train 336 navigators/wireless.

No. 3 A.O.S. formed from No. 2 B. and G.S. on 9 December 1943 to train 225 navigators/bomber .

A.G.S. formed on 9 December 1943 from No. 3 B. and G.S. to train 300 wireless operators/air gunner and air gunners.

/ A

A further change was the almost 100 per cent expansion of the Central Flying School, and its move from Tamworth to Parkes on 17 January 1944 - the increased output allowed the shortening of the instructional tour and enabled all flying instructors to have a tour on operational duty.

By the end of 1943 the Australian training organisation had been reduced, mainly through manpower shortages, to 26 E.A.T.S. schools, compared with the peak of 29 schools existing on 1 November 1943. The reduction was greater than the closure of three schools, however, and in terms of actual training capacity it was more than 33 per cent. These reductions made in the last two months did not have time to affect adversely the output of schools during 1943, and by the end of the year more than 20,000 aircrew had been fully trained in Australia, nearly two-thirds of whom were made available for service with the R.A.F. In addition, 9,000 partially trained pupils had been sent overseas to complete their training, and a further 8,323 pupils were actually under training in Australia on 31 December 1943. It should also be mentioned that the training of flight engineers to meet the needs of R.A.A.F. flying boat and heavy bomber squadrons operating in the South-West Pacific was carried out in Australia after 1943. These personnel did not pass through the basic flying training schools and were therefore not trained under the Empire Training Scheme arrangements. Volunteers were recruited from ground tradesmen with the necessary engineering experience and given all their air training at an operational training unit. The first Australian trained flight engineers served on long range flying boat squadrons and were trained at No. 3 O.T.U. Rathmines, commencing in mid-1943. In April the following year, when the training of heavy bomber crews for Liberator squadrons was commenced in Australia, flight engineers were included in the pupils sent to No. 7 O.T.U. Tocumwal. No flight engineers were trained in Australia for service outside the South-West Pacific area; and flight engineer requirements for Australian squadrons serving in Europe and Africa were met by including suitable R.A.A.F. ground crews in the R.A.F. flight engineer courses in the United Kingdom.

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The Cessation of drafts to the United Kingdom

By 1944 large pools of basically trained aircrew were beginning to accumulate in the United Kingdom. This apparent over production was due largely to the fact that operational wastage rates were proving lower than had been expected. To relieve the situation, Australia was asked in March to delay drafts of graduates to the United Kingdom. Accordingly all course lengths in Australia were extended by four weeks in order to delay outputs and so prevent an undesirable build up on personnel in Australia. The following months the drafts were resumed and course lengths reverted to normal at all schools, except the I.T.S.s. where courses remained at 12 weeks for wireless operators/air gunners and air gunners, and 16 weeks for pilots and navigators (course lengths for navigators/bomber had already been extended to 16 weeks in 1943).

The courses for navigator/wireless pupils (at No. 2 A.O.S.) were also permanently extended by four weeks (to 32 weeks) in March 1944 in order to allow more time to complete the syllabus. Courses at the other two A.O.S.s were running smoothly and the first graduates under the new combined courses passed out in May 1944. The following month, however, it was necessary to disrupt courses at No. 1 A.O.S. in order to train 'straight' navigators and air bombers for R.A.A.F. Liberator aircraft. Both categories completed the normal 16 weeks I.T.S. course before proceeding to the A.O.S.; navigators then underwent a 20 weeks A.O.S. course, and air bombers 16 weeks. Intakes were changed from 45 navigators/bomber to 24 navigators and 24 air bombers every four weeks, and the school's capacity was reduced from 225 to 216 pupils.

Later in the year the dispatch of Australian aircrew to the United Kingdom was stopped. It had already been decided that the shipment of Australian personnel to the United Kingdom could be reduced to a rate sufficient only to meet the needs of the 'Article XV' squadrons until the end of the German War, and by April 1944 that end was clearly in sight. It was estimated that there were almost enough Australian personnel already in pools in the United Kingdom to maintain these squadrons until Germany was defeated, and it was therefore possible to reduce the size of drafts of personnel to the European theatre. The last full drafts to both Canada and the United Kingdom sailed in June 1944, although a few navigator pupils were sent to Canada in July and August and small

/ drafts

drafts of all categories, except pilots, continued to be sent direct to the United Kingdom until December when they finished altogether.(1)

Final Reduction of the Training Organisation

As a result of the cessation of overseas shipments it was possible for the Australian Training Organisation to be reduced to a scale sufficient only to provide for the needs of the Royal Australian Air Force. The R.A.A.F. contribution to the Japanese War was planned to be a 53 squadron force, and to meet its aircrew requirements and to maintain the two R.A.A.F. squadrons overseas, it was estimated that an output of 439 trained aircrew every four weeks was needed:-

Pilots	178
Navigators	20
Navigators/Bomber	10
Navigators/Wireless	28
Air Bombers	20
Air Gunners	117
Wireless Operators (Air)	66

To produce that output intakes into I.T.S.s could be reduced from 1,000 to 600 every four weeks, but before the new programme could be put into force a further manpower review by the Australian War Cabinet directed that 15,000 men and women were to be released from the R.A.A.F. to civil industries. There was already a surplus of aircrew personnel under training - due to the abrupt cancellation of overseas drafts - and the situation was worsened a few months later when the Air Ministry suggested that Australian trainees graduating in Canada should return to Australia instead of going to the United Kingdom. As a result of these decisions intakes, which had been temporarily reduced by about 50 per cent in June 1944 (to 530 every four weeks against the 600 planned) and which succeeded in considerably reducing the surplus of Australian trained personnel, had to be cut still further a few months later to counteract the 1,750 trained aircrew returning from Canada.

Those drastic reductions raised the further problem of temporarily reducing the training outputs so as to prevent the accumulation of surpluses, and at the same time ensuring that the training organisation remained capable of rapid re-establishment as a safeguard against future needs in the Japanese War. The answer it was decided was, to temporarily dispose of the surplus trainees by employing them on ground duties until they could be absorbed in

(1) A.C.17(44).

/ training

training and to continue intakes into I.T.S.s at the minimum number sufficient to maintain a nucleus training organisation. Current courses were completed at all schools and as the last pupils graduated schools were disbanded or reduced to a skeleton establishment.

Thus by December 1944, when the last drafts sailed for England the Empire Air Training Scheme in Australia had virtually come to a close. By the end of the year seven schools had been disbanded, ten more temporarily closed, and only nine schools were actually in operation - and even they were on a very much reduced scale.(1)

Termination of the E.A.T.S. in Australia

On 31 March 1945, all training in Australia under the Empire Training Scheme came to an end. On that date the agreement expired and with the end of the European War in sight the United Kingdom was no longer directly concerned with the size or nature of the Australian training organisation. R.A.A.F. personnel were still made available for service with the R.A.F. in accordance with the arrangements previously made under 'Article XV' of the original E.A.T.S. agreement, but all training carried out in Australia after March 1945 was purely to meet R.A.A.F. requirements, and the full cost was, of course, borne by the Commonwealth Government.

As a result the nine schools that had been closed on a temporary basis were disbanded on 1 June and the remaining ten schools were progressively reduced to meet the needs of the R.A.A.F. in the South West Pacific. The fall of Germany which made possible further reductions of aircrew training and at the same time made available large numbers of airmen from the European theatre, was accompanied by growing attacks on the Japanese home islands. The situation was such that, in order to relieve the critical manpower shortages in Australia, the development progress for the R.A.A.F. was to be reduced from 53 to 36 squadrons. Planning for that reduction was proceeding when Japan capitulated. It was possible therefore for aircrew intakes to be discontinued after June 1945 and the schools that remained after that date - two initial training schools, two elementary flying training schools, two Service flying training schools, two air observer schools, one wireless air gunner's school and one air gunners school, were reorganised as refresher training schools for basically trained

(1) See Appendix 72.

/ aircrew

aircrew waiting their turn to enter operational training units. A few weeks later the I.T.S.s were closed, and following the defeat of Japan steps were taken to disband the remaining schools.

During the war more than 27,000 aircrew personnel were fully trained in Australia, more than half of whom subsequently served with the Royal Air Force.(1) In addition, over 11,000 partially trained pupils were sent overseas to complete their training, 10,000 of whom graduated successfully and served with the R.A.F. To produce these 37,000 aircrew personnel, more than 52,000 potential aircrew candidates had to be enlisted. The success of the recruiting organisation during the war may be gauged from the fact that no fewer than 400,000 applications were dealt with at recruiting centres, 120,000 of whom volunteered for aircrew duties. The estimated cost of training in Australia under the E.A.T.S. was nearly £140 millions, and the training of Australians in Canada cost a further £26¼ millions.

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(1) See Appendices 73 and 74.

CHAPTER 9

BASIC TRAINING IN NEW ZEALAND

The history of the Royal New Zealand Air Force really commenced in the year 1936, when an expansion scheme was planned which, over a period of three years, was scheduled to effect a five-fold increase in the size of the Royal New Zealand Air Force. A certain amount of Service flying had been carried out before that date, and the first Service aeroplane in New Zealand - an 80 H.P. Bleriot monoplane - arrived just before the outbreak of the first World War although it was sent to Australia a few months later to augment the equipment of No. 1 Australian Flight.(1)

During the 1914-18 War two civil flying schools, operated by the Walsh Brothers and the Canterbury Aviation Co. Ltd., trained pupils for the Imperial Flying Services producing over 300 pilots in all and at the time of the Armistice there were a further 142 cadets under training in the Dominion. Immediately after the war the Air Ministry, at the invitation of the New Zealand Government, sent Wing Commander A.V. Bettington to report on Air Defence in New Zealand. He made a detailed examination of air problems and recommended the formation of considerable air forces. At that time, however, the Government was unable to face the cost of the complete scheme, although they endeavoured to provide some degree of air defence on a civil basis by subsidising Air Transport and forming a Reserve of Officers. All flying training in the Dominion continued to be carried out by the two existing flying schools. Five years later the permanent Air Force was formed but, apart from the training of the Reserve of Air Force Officers, the amount of Service flying carried out in the Dominion was small. The position was improved in 1934 when two flights of Vickers 'Vildebeest' general purpose aircraft were brought. That year was also marked by the award of the prefix 'Royal' for the New Zealand Air Force.

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(1) R.A.F. Year Book 1938.

/Expansion

Expansion of the R.N.Z.A.F.

In 1936 a complete reorganisation and development scheme for Air Defence was put in hand with the aim of increasing the strength of the Air Force to about 1,000 officers and men. To assist in this development Wing Commander the Honourable R.A. Cochrane was seconded to the R.N.Z.A.F. by the Royal Air Force on 2 October 1936, and a few months later he was promoted to Group Captain and became Chief of the New Zealand Air Staff. As a result of this expansion the R.N.Z.A.F., which had formerly been part of the military force, became an independent and self contained force on 1 April 1937. In the same month New Zealand agreed to operate a 'trained cadet' scheme similar to those in force in Australia and Canada, on the basis of 15 trained cadets a year. The first intake of seven cadets was in April and was followed by a further eight in August. These personnel were selected in New Zealand and were appointed to cadetships in the Royal New Zealand Air Force during training. The training which lasted twelve months and attained a standard equivalent to that given at a Royal Air Force flying school, was identical to that given to personnel destined to serve in the Royal New Zealand Air Force.(1) Initial training of pilots was undertaken by civil flying clubs and pupils were trained, as in the civil schools in the United Kingdom, according to the Royal Air Force ab initio syllabus. Pupils then proceeded to the Flying Training School at Wigram for their Service training, where, in 1937, its capacity was 40 pilots per year. On completion of training fifteen selected cadets were appointed as pilot officers to short service commissions in the Royal Air Force for five years and the remainder posted to Royal New Zealand Air Force units or the Royal New Zealand Air Force reserve. Those personnel sent to England unless selected for permanent commissions in the Royal Air Force were to be repatriated to New Zealand at the end of their five years service and commissioned in the Royal New Zealand Air Force Reserve for four years.

A further scheme for recruiting personnel in New Zealand for training and service in England at the rate of 25 a year was also started in 1937, but when in 1938 the trained cadet intakes were increased, the despatch of untrained

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(1) E.P.M.76(39).

/ personnel

personnel to the United Kingdom was discontinued. Under the trained cadet scheme 35 pilots were sent to the United Kingdom in 1938 and a further 120 were to be sent during the next two years - 40 in 1939, and 80 in 1940. A further scheme was planned, to be put in operation in war, for training 500 pilots in the first year and thereafter 1,000 per year.(1)

Final Pre-War Expansion

In April 1939, a mission led by Sir S. Hardman Lever, which had been sent to Australia and New Zealand to develop their war potential in aircraft manufacture, explored proposals for the manufacture of Tiger Moths in New Zealand.(2) As a result it was suggested that the United Kingdom Government should make a contribution towards the cost of purchasing 100 Tiger Moths in New Zealand coupling with this suggestion a proposal that the New Zealand Government should undertake progressively to train 1,000 pilots per year on Royal Air Force Volunteer Reserve lines. This latter proposal was in effect an acceleration of the earlier scheme to build up to, within two years of the outbreak of war, an annual output of 1,000 fully trained pilots. The new scheme planned to produce 1,000 fully trained personnel within the first 16 months - an acceleration of 8 months over the earlier scheme.(3) It was also hoped to train 150 reserve pilots annually up to elementary standard in peace-time, of which 60 would receive Service flying training. It was further proposed to expand the scheme for producing trained pilots for service with the Royal Air Force from 120 to 220 pilots per year, by forming a second flying training school.

New Zealand's resources were sufficient for this expansion provided that they obtained the 16 Vincent aircraft already on order together with the addition of 24 Oxfords and Ansons. One wing commander, two squadron leaders and 24 airmen fitters would also be needed to be on loan from the R.A.F. for two years. The British Government agreed to contribute £100,000 towards the cost of producing the 660 pilots during the next three years.

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(1) A.M. File S.51332.

(2) E.P.M. 80(39).

(3) A.M. File S.51332.

/ The

The scheme was finally launched in the summer of 1939 and on 29 June the New Zealand Minister of Defence made a public announcement giving details of the aircraft production programme and the expansion of flying training facilities. A similar statement was also made in the House of Commons by the Air Minister on 28 June 1939.

The new scheme meant that the flying training school at Wigram had to be expanded to train 140 instead of 80 pupils per year and a new flying training school was to be formed at Blenheim also with a capacity of 140 pupils per year. Thus 60 of the annual output of 280 would be available for New Zealand's home requirements.(1) As a further measure of assistance to Great Britain, the New Zealand Government at the time of the Munich Crisis (when this scheme for expanding the New Zealand war training organisation was suggested) also introduced arrangements under which New Zealanders who wished to volunteer for service in the Royal Air Force had their passages to England paid.

Whilst these arrangements were being made a letter was received from Air Force Headquarters proposing a major modification to the war training plans. The new scheme, which was accepted by the Air Ministry was designed to achieve a more balanced expansion by training 650 pilots, 300 observers and 350 air gunners per year in place of the 1,000 pilots a year previously visualised.(2)

Thus on the outbreak of war the expansion of the New Zealand Air Force, planned three years earlier, had in reality only just begun, and Tiger Moths, Vincents, Gordons, Oxfords and Ansons were just starting to arrive to replace the obsolete Avros, Faireys, Vildebeests and Tomtits. Other new aircraft, for operational use, in the form of 30 Vickers Wellingtons, had been ordered and R.N.Z.A.F. crews had been sent to the United Kingdom in June 1939 to fly them to New Zealand. The strength of the Royal New Zealand Air Force on 3 September 1939 was 766. Forty-two cadets were undergoing flying training prior to proceeding to the United Kingdom and 30 more had been called up and were awaiting to commence their course. In addition, mainly as a result of the assisted passages scheme, over 550 New Zealanders were serving as pilots in the Royal Air Force at the outbreak of war, which was a far larger number than from any other Dominion.

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(1) A.M. File S.51332.

(2) E.M.P.92(39).

/ Effects

Effects of the Outbreak of War

Immediately following the outbreak of war the War Training Organisation was put into effect, but as no further supplies of aircraft and equipment could be expected in the immediate future it had to be modified slightly to make the fullest use of civil aviation resources. All flying clubs were taken over by the Royal New Zealand Air Force and they provided the aircraft and instructors for the formation of the first two elementary flying training schools. The following expansion took place in 1939:-

(a) An initial training school for pilots, observers and air gunners was formed at Rongotai in September and moved to Weraroa as soon as the buildings there were completed.

(b) A flying instructors' school was formed at Mangere, a flying club site near Auckland, in September and was later (in March 1940) moved to Hobsonville.

(c) No. 1 Elementary Flying Training School was formed at Taieri in October 1939.

(d) No. 2 Elementary Flying Training School was formed at New Plymouth in November 1939.

(e) No. 1 Service Flying Training School, Wigram, which had expanded to a capacity of 80 pupils per year by the outbreak of war, continued to expand.

(f) No. 2 Flying Service Training School opened at Blenheim in December 1939, considerable assistance having been given by the Air Ministry with the loan of Royal Air Force personnel.

(g) An observers and air gunners school opened at Ohakea in November 1939.

The flying instructors for the two elementary flying training schools were provided by giving the staffs of the civil aero clubs, roughly 30 in all, a short refresher course at the flying instructors' school before posting them to the elementary flying training schools. Service instructors were drawn from Royal New Zealand Air Force and Royal Air Force sources. These schools were

/ expected

expected to produce 20 pilots in November; 30 pilots in January; 16 air gunners in February; 30 pilots and 16 air gunners in March; and thereafter 30 pilots, 14 observers, and 16 air gunners per month. It was not possible to expand this programme (360 pilots, 168 observers and 192 air gunners per year) until further aircraft were supplied from the United Kingdom.

The Wellington aircraft ordered in England for the Royal New Zealand Air Force were being formed into a bomber squadron on the outbreak of war and were on the point of flying out to New Zealand. Both the crews and the aircraft were immediately placed at the disposal of Bomber Command, and in exchange, those Royal Air Force personnel on loan or exchange to New Zealand were retained to assist in the training expansion. The Wellingtons were later utilised to form a New Zealand Squadron in the Royal Air Force.

The Empire Air Training Scheme

In October a co-operative scheme for the training of aircrews in the Empire was suggested and New Zealand agreed to send a delegation to Ottawa to discuss the project. The delegation arrived in Ottawa on 3 November and New Zealand became an enthusiastic partner in the great co-operative Air Training Plan which later became known as the Empire Air Training Scheme. Originally the scheme contemplated that pupils should be recruited and given elementary training in their respective Dominion, and should be sent to Canada for their advanced training and then proceed to the United Kingdom for service with the Royal Air Force. It was hoped that the overall scheme would supply about five-ninths of the Royal Air Force aircrew requirements. New Zealand, it was proposed would provide about 12 per cent of that figure - roughly 1,320 pilots, 720 observers and 1,356 wireless operators/air gunner per year.

Both New Zealand and Australia, however, were opposed to carrying out so much training in Canada; they both had their own training schemes and wanted to make full use of them. The scheme was therefore reorganised to allow these Dominions to do more training in their own countries and the agreement covering the amount of training to be done in New Zealand was signed on 27 November 1939 and the New Zealand representative returned home. Negotiations between Canada and the United Kingdom Mission dragged on for some considerable time, and the

/ final

final agreement covering training in Canada was not signed until 17 December 1939.[1]

These agreements (together with that signed by Australia) concerned flying training in Australia, Canada and New Zealand, and covered the setting up and operating of training organisations in those three countries, the number of pupils to be recruited and trained, the operational employment of the Dominions output, and the distribution of cost, rates of pay, training syllabus, provision of aircraft. The scheme was to remain in force until 31 March 1943.

New Zealand's share involved the establishment, as soon as possible, of an organisation which, when fully developed, would be capable of accepting for flying training 144 pilots, 42 observers and 72 wireless operators/air gunner every four weeks.

Two-thirds of the pilot entrants (96) were to receive the whole of their training in New Zealand. The remaining 48 pupils would complete their elementary flying training in New Zealand and would be transferred to Canada for their Service flying training. The observers and wireless operators would receive four weeks initial ground training in New Zealand and would then pass on to Canada for the rest of their training.

Thus New Zealand's contribution involved a yearly intake for training of 3,354 aircrew pupils:-

1,872 for pilot training

546 for observer training

936 for wireless operator/air gunner training.

These numbers would produce an annual output of 2,522 fully trained aircrew personnel:-

884 pilots fully trained in New Zealand

442 pilots graduated in Canada

442 observers trained in Canada

754 wireless operators/air gunner trained in Canada.

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(1) A.H.B./IIIC/4.

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These figures represented 9 per cent of the total Empire air effort: 12 per cent in the case of pilots, and 7 per cent in the case of observers and wireless operators/air gunner. The scheme involved the formation of one initial training school, three elementary flying training schools and two Service flying training schools in New Zealand, requiring 126 Oxfords or Ansons, 67 Harvards, and 162 Tiger Moths. The Tiger Moth aeroplanes were to be locally produced, whilst the United Kingdom undertook to supply all the advanced trainers and two-thirds of the Tiger Moth engines. Spares and wastage replacements were also to be supplied by the United Kingdom. The remainder of the cost of the training in New Zealand was to be borne by the New Zealand Government, In addition New Zealand was to pay for a proportion of Canadian training facilities to be used by New Zealand - just over 8 per cent - amounting to 28½ million dollars.

Training was to be carried out by the Royal New Zealand Air Force and was to be given in accordance with the syllabus of instruction laid down for each similar course of training in the United Kingdom.(1) The whole scheme in all three Dominions was planned in accordance with the R.A.F. War Training Organisation, and the Royal Air Force undertook to supply the necessary personnel to assist in carrying it out.

The schools in New Zealand were planned as follows:-

	Intake Every 4 weeks	Course Length - weeks	Capacity	Pupil Wastage per cent	Output Every 4 weeks	Aircraft Establishment	Aircraft Wastage - per year
E.F.T.S.	48	8	96	16⅔	40	36 + 18 Reserve	9 (25% of Establishment)
S.F.T.S.	40	16	160	15	34	30 + 15 Reserve (Single-engined) 42 + 21 Reserve (Twin-engined)	18 (25% of Establishment)

/ Owing

(1) S.D. 138.

Owing to the need for making the most economical use of the existing aerodromes and buildings, many of which could not be enlarged, it was not possible to form standard size schools, and four E.F.T.S.s. (two with capacities of 80 pupils each and two with 60 each) would have to be opened instead of three full-sized schools, and three S.F.T.S.s (each with 104 pupils) were to be opened instead of two.

Training during 1940

It will be seen that New Zealand's contribution in manpower was considerably larger than her contribution in flying training. Of the 3,354 recruits whom the Dominion undertook to provide annually, less than half were to be trained in New Zealand. Unlike Canada there was no detailed time schedule laid down for the formation of training schools and no target date set for the completion of the scheme, but as the war training organisation which came into operation on the outbreak of war, provided a good nucleus from which to expand it was estimated that the organisation in New Zealand would have reached its peak by February 1941.

Although the Empire Training Scheme in New Zealand did not commence until April 1940, a considerable number of New Zealand aircrew trained under the earlier war training scheme reinforced the Royal Air Force during 1940. Between September 1939 and August 1940 (when the first pupils completed their training under the E.A.T.S.) a total of 882 personnel were trained; 449 pilots, 118 observers and 208 air gunners were sent to the United Kingdom, 60 pilots went to the Far East, and 47 observers were despatched to the Middle East.

Five schools, one I.T.S., two E.F.T.S.s and two S.F.T.S.s., commenced training under the E.A.T.S. in April 1940, although they operated below strength and the S.F.T.S.s were equipped largely with obsolescent aircraft such as Gordons, Hinds, Vincents and Vildebeests, and it was not until July that the schools were working to their full capacity. The E.F.T.S.s soon had their full aircraft establishment, but the S.F.T.S.s had to operate below their planned aircraft strengths for some time although the delivery of Oxfords, to replace the obsolescent trainers was easing training problems. Concern was felt at the news that no more Vincents and Vildebeests were likely to be sent to New Zealand, as it was thought that they would have constituted an operational reserve in case of emergency. The supply of spares for the

/ obsolescent

obsolescent aircraft was very acute and the provision of training equipment was extremely slow.

New Zealand's wish to do everything possible to accelerate the output of aircrews for the Royal Air Force resulted in the expansion of the New Zealand training organisation being completed by the end of 1940 - two months ahead of schedule. The third elementary flying training school opened at Harewood in July 1940 and the fourth at Whenuanai in December. The last batch of air gunners and observers to be fully trained in New Zealand entered the combined school at Ohakea in August 1940 and the school converted into No. 3 Service Flying Training School and recommenced training in November 1940. After 3 September 1940 observers and wireless operators/air gunner received only preliminary training in New Zealand and proceeded to Canada to complete their training.

Expansion of Training Capacity

There were several modifications in the original scheme as planned in December 1939, the most important of which was the introduction of the 'Second Revise' at the elementary and Service flying schools on 25 November 1940, when course lengths were reduced from 8 to 6 weeks and from 16 to 12 weeks respectively.(1) At the same time pupil capacities of the E.F.T.S.s were increased by 25 per cent and a similar increase was applied to the S.F.T.S.s a few weeks later. As a result New Zealand's output of pilots in 1941 would be more than 50 per cent higher than originally planned. A further outcome of this expansion (and the introduction of the 'Revises' in Canada) made it necessary to increase the number of pilot pupils sent to Canada for training from 624 to 900 a year, and the revised shipments of pupils were as follows:-(2)

Pilots ex-E.F.T.S.	Total per year
52 every 4th and 8th week 104 every 12th week	900
Observers ex-I.T.S.	
42 every 4 weeks	546
W.Ops./A.G. ex-I.T.S.	
72 every 4 weeks	936

(1) A.P.3233, Chapter 7.

(2) See Appendix 75.

/ The

The I.T.S. courses were also extended. Pilots' courses were extended from four to six weeks in November 1940, and observers' courses from four to eight weeks a few months later. The net result was an increase in capacity of the school by 208 pupils.

New Zealand did not go beyond the 'second revise' because of the inexperience of instructors and a lack of equipment meant that a high standard of output could not be maintained if further shortening of the courses were made.(1) The use of obsolete aircraft continued to be a handicap throughout the year although the situation improved as more advanced trainers arrived. The full number of Oxfords were sent from the United Kingdom despite the embargo and Howards began to arrive from the United States early in 1941. A scheme of pre-entry and preliminary training for aircrew personnel was also introduced. In fact, the Royal New Zealand Air Force were the pioneers in pre-entry training. Very soon after the outbreak of war correspondence and other courses in pre-entry subjects were introduced, and a thorough scheme of basic education lasting from four to six months according to the recruits educational standard was brought into operation.

Home Defence Requirements

In January 1941, in view of the worsening situation in the Pacific, arrangements were made to increase the size of the R.N.Z.A.F. home defence force to three G.R. squadrons in New Zealand and two G.R. flights in Fiji. Four Singapore flying boats were supplied from the United Kingdom to form the nucleus of one of the flights at Fiji and 64 Hudsons were to be delivered during the next two years to help expand and re-equip the three G.R. squadrons. The development of these forces was directly related to the progress of the training organisation since the remaining aircraft needed for the squadrons, Vincents and Vildebeests, were drawn from the S.F.T.S.s, as the Harvards for those schools arrived from the United States. The training organisation was equally dependent on the supply of Hudsons; if an emergency arose in the Pacific and those aircraft were not available the obsolescent Service types in the S.F.T.S.s would have to be withdrawn and used for operational purposes.

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(1) E.T.S.155(41). (A.H.B./IIIC/1).

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By June 1941 the New Zealand training organisation reached its peak with an intake of 4,500 aircrew personnel a year, and the Royal New Zealand Air Force had grown to a strength of roughly 20,000, compared with 766 on the outbreak of war. The New Zealand Air Training Corps was formed during 1941 and superseded the earlier arrangements for pre-entry training. New Zealand's very extensive commitments in manpower required to meet the Empire Training Scheme were causing no little recruiting difficulties, and it was considered that the formation of an Air Training Corps would be of considerable help in meeting those requirements. Authority to form the Corps was received from the War Cabinet in February 1941 and the first two squadrons, both in Wellington, were formed on 15 September 1941. A fortnight later three squadrons formed in Auckland and by the end of the year well over 2,000 lads had signified their willingness to join the Air Training Corps.(1)

Thus up to the outbreak of war in the Pacific, the training scheme in New Zealand proceeded according to plan. The supply of aircraft was satisfactory and the old obsolescent single-engined biplanes had been replaced at two of the Service flying training schools by the middle of July and at the third by the end of the year. The introduction of these newer types made it possible to expand the capacity of the three schools from 104 to 128 pupils. The spares supply position was also much improved and was assisted further by local manufacture and by supplies from Australia.(2) Although weather conditions were satisfactory flying training in New Zealand was hampered occasionally because of very bumpy conditions produced by the mountainous country and prevalent high winds.

Everything possible was done to improve the standard of instrument flying and night flying at flying training schools and it was noticeable that as the Vincent, in which instrument instruction was difficult, was replaced by the newer advanced trainers, so the standard of instrument training improved. The new aircraft, Oxfords and Harvards, were also better for night flying training and this aspect of training was further improved in July 1941 when night flying at elementary flying training schools was introduced. The shortage of instructors which had also tended to restrict output and lower training

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(1) Air Department Report 1946.

(2) E.T.S. 348(41). (A.H.B./IIIC/1).

/ standards

standards, had been overcome and steps were taken to reorganise the Flying Instructors School. This school which, strictly speaking, was outside the Empire Training Scheme organisation had suffered a rather chequered existence. It was formed on 20 September 1939 at Mangere; it moved to Hobsonville in March 1940 and to Tauranja in August 1941. The F.I.S. courses were originally of four weeks duration and were only refresher courses for flying instructors called up for service. Later they were extended to eight weeks with a pupil population of sixteen. Shortage of flying instructors forced the reduction of the course to six weeks and it was not until June 1941 when all school establishments were filled that the school was reorganised to train eight pupils every eight weeks for flying instructor duties and to provide refresher courses for eight instructors every four weeks. It was then possible to release between six and eight instructors every two months for operational service with the Royal Air Force, and at the same time to improve the general standard of flying instruction in New Zealand.

Effects of the Japanese War

The outbreak of war with Japan in December 1941 set the same problem in New Zealand as it did in Australia - that of reconciling operational readiness with continued training. New Zealand continued to send her full quota of pupils to Canada for training, even though they had to cross the Pacific in penny packets in all kinds of ships.(1) The question of creating an operational organisation so that all available aircraft could be used offensively was solved by superimposing it on the training organisation without slowing up the training output. Sixteen squadrons were formed, 12 of which were auxiliary squadrons to be used only in the event of invasion and were only part-time units employing the personnel and aircraft of the training units. Two hundred and seventy-six trainer aircraft, mainly Oxford, Harvards and Tiger Moths were equipped for operational use in the auxiliary squadrons.

The extension of the War to the Pacific also resulted in New Zealand's schools being brought into line with the R.A.F. and the other E.A.T.S. schools. It will be remembered that in order to utilise existing facilities a larger number of smaller sized schools were opened than had been originally planned.

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(1) E.T.S. 461(42). (A.H.B./IIIC/1).

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With the urgent need for more aerodromes for operational purposes, however, extensions to airfields and buildings were inevitable, and the four E.F.T.S.s were accordingly reorganised and formed into three schools, and the three S.F.T.S.s combined into two schools, thus releasing aerodromes at Whenuanai and Ohakea for operational use. The I.T.S. had to be moved from Levin to allow the formation of an O.T.U.

To meet New Zealand's home defence needs a General Reconnaissance School and two operational training units were formed during the early part of 1942, although these units operated outside the Empire Air Training Scheme. It was estimated that New Zealand would require 350 pilots and 25 wireless operators/air gunner during 1942 to man her home defence squadrons. Pilots would, of course, be available from the schools in New Zealand, and wireless operators/air gunner and observers, if and when they were required, would be drawn from the output of R.N.Z.A.F. personnel from the Canadian schools.(1)

In June 1942 the New Zealand basic training organisation comprised the following units:-

I.T.S.	Levin
E.F.T.S.	
No. 1	Taieri
No. 2	New Plymouth
No. 3	Harewood
S.F.T.S.	
No. 1	Wigram
No. 2	Blenheim
C.F.S.	Tauranoa

Course lengths at the schools in New Zealand were extended twice while these other changes were taking place. The first extension was as a result of A.M.T.'s 'New Deal', when, on 3 March 1942, elementary flying training school courses were extended from 6 to 8 weeks and included 60 hours flying and Service flying training school courses were lengthened from 12 to 16 weeks with 120 hours flying. Shortly afterwards the courses were again extended: the elementary flying training school course to 12 weeks, and the Service flying training school course to 24 weeks. These extensions had the effect of reducing the output of pilots by 50 per cent.(2)

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(1) E.T.S.478(42). (A.H.B./IIIC/1).

(2) A.M. File S.79862.

/ At

At the same time New Zealand's quota of trainees to be sent to Canada was changed. As a result of the revised crew policy (also a feature of A.M.T.'s 'New Deal') which provided for one pilot and one wireless operator in heavy bomber aircraft instead of two, and replaced the observer by a navigator and an air bomber, fewer trainees in the former categories were needed, but more were needed for training as navigators and air bombers.(1) Consequently New Zealand's quota of partly trained pupils to Canada was altered to:-

	Every 4 Weeks	Total per year	Instead of
Pilots	35	450	900
Navigators/Bomber	52	676	546 observers
W.Ops./A.G.	55	715	936

A few months later, in November 1942, in order to accelerate the output of pilots in New Zealand, the course lengths at elementary and Service flying schools were again changed, and were reduced from 12 to 8 weeks, and from 24 to 16 weeks respectively. This stepped up the output of pilots by two-thirds and enabled New Zealand to increase her annual quota of partially trained pilot pupils for Canada from 450 to 663.

Renewal of the Empire Air Training Scheme Agreements

Whilst this reorganisation was going on a conference had been called in Ottawa to discuss the extension of the Empire Air Training Scheme beyond 31 March 1943. The conference met in May 1942 and New Zealand signified her willingness to continue in the Air Training plan and to maintain her existing quota of pupils to be trained in Canada.(2) As a result an agreement was signed on 5 June 1942 covering the training of pilots, observers and wireless operators/air gunner in Canada until 31 March 1945. Under this agreement New Zealand undertook to maintain her flow of pupils to Canada at the rate of 1,841 trainees per annum. An agreement concerning the continuance of New Zealand's own training organisation was not signed until the spring of the following year.

Thus it will be seen that 1942 was a momentous year in the history of the Royal New Zealand Air Force. Her Home Defence forces were more than doubled in

(1) E.T.S. 430(42). (A.H.B./IIIC/1).

(2) E.T.S. 478(42). (A.H.B./IIIC/1).

/ size

size, and steady progress had been made with the formation of New Zealand squadrons under 'Article XV' of the Riverdale Agreement - six had been formed by the end of the year. At the same time the home training organisation had been consolidated and a regular output maintained. The Air Training Corps had grown to a strength of 5,766 cadets, and a further 661 had been mobilised to the Royal New Zealand Air Force and 724 more were awaiting enlistment into the Air Force.

In the following year the agreement extending the duration of the E.A.T.S. in New Zealand was signed in London and it was agreed that for the next two years New Zealand's output would continue at the existing rate, which was planned as follows:-

Category of School	Total Output per 4 weeks	To receive further training in	
		New Zealand	Canada
Initial Training Schools:-			
Pilots	180	180	-
Navigators	52	-	52
W.O.s/A.G.	55	-	55
Elementary Flying Training Schools:-			
Pilots	135	84	51
Service Flying Training Schools:-			
Pilots	72	-	-

The number of personnel becoming available for service with the Royal Air Force was reduced early in 1943 when the expansion of the Royal New Zealand Air Force to 20 squadrons in the South Pacific was approved. To man the additional squadrons roughly half of New Zealand's home output of pilots had to be retained in the Dominion and other categories of aircrew were sent from Canada.

Manpower Problems

Concurrently with the expansion of her Home Defence forces manpower difficulties began to emerge in New Zealand, and it was necessary to intensify the recruiting drive in order to maintain the flow of aircrew overseas. This was successfully achieved by abolishing the rule which required Royal New Zealand Air Force volunteers between 18 and 21 years of age to obtain their

/ parents

parents consent before entry into the Service, and by increasing the funds for the recruiting drive.

By March 1944, however, the manpower situation had once again deteriorated, and the question of reducing New Zealand's contribution to the Air War had to be considered. From New Zealand's point of view the convenient method of effecting a reduction in the number of men allotted to the Armed Forces would have been to arrange for the return of the New Zealand Division which was at this time fighting in Italy.(1) In deference to the wishes of Mr. Churchill it was decided not to pursue that idea, and the necessary economies in manpower had to be sought in other directions.

By 1944 there was no longer a shortage of airmen in the Royal Air Force. The aircrew supply position was satisfactory - indeed, there was already a surplus - and steps had been taken to reduce the training organisation in Canada. It was possible therefore for New Zealand to reduce her output of fully trained pilots to the United Kingdom from roughly 500 to 250 per year. It was considered undesirable at that time (March 1944) to cease all drafts to Canada, as to do so would mean setting up additional basic training facilities in New Zealand to meet the needs of New Zealand's 20 squadron force for operations in the South West Pacific, and it was planned to reduce the annual quota from just over 2,000 to 1,200, commencing in the summer of 1944.

It had already been necessary to form two new O.T.U.s - No. 3 at Lauthala Bay in February and No. 4 at Andmore in March 1944.

Reduction of the Training Organisation

In the meantime the strategical situation in Europe had changed considerably and in August 1944 New Zealand was advised to stop all Royal New Zealand Air Force aircrew drafts to the United Kingdom both direct from New Zealand and via Canada. It was assumed that the German War would be finished by January 1945 and at that time (August 1944) there were already in the United Kingdom sufficient New Zealand personnel (330 pilots and over 250 other aircrew) to maintain the strength of the Royal New Zealand Air Force squadrons in the United Kingdom up to the estimated end of the German War.

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(1) E.T.S.704(44). (A.H.B./IIIC/1).

/ Thus

Thus after August 1944 New Zealand's contribution to the war was the maintenance of 20 squadrons in the Pacific. Training up to operational standard in future would take place in New Zealand and an overall output of roughly 1,200 fully trained aircrew per annum would be required. This allowed a considerable reduction in the New Zealand training organisation. Although the new requirement was roughly equivalent to the current output in New Zealand, the capacity for providing the initial and elementary training of pupils for Canada was no longer required. Subsequently, with the return of large numbers of R.N.Z.A.F. personnel from the United Kingdom, it was possible to reduce the size of the training organisation still further. During the first half of 1945 the I.T.S. at Delta, No. 2 E.F.T.S. at New Plymouth and No. 2 S.F.T.S. at Blenheim, were all closed, and No. 1 E.F.T.S. Taieri was converted into a combined Grading School and I.T.W.

The large reduction in the training organisation, and the surplus of aircrew in various stages of training, necessitated a complete revision of flying training policy and organisation, and certain improvements in the system were made with the aim of attaining quality rather than quantity. It had been anticipated that training facilities for other aircrew categories would eventually be required in the Dominion, but the end of the Japanese War came before they were provided. The termination of the E.A.T.S. agreement on 31 March 1945 officially marked the end of the Empire Air Training Scheme in New Zealand, although the scheme had virtually finished in the summer of 1944 with the cessation of shipments of trainees to Canada. By March 1945 intakes into training had been considerably reduced, and when the Japanese war ended they were progressively reduced and finally ceased altogether in November 1945.

Summary of Output

The R.N.Z.A.F. actually reached the peak of its expansion in May 1944 when its strength was over 12,000 men and women, 7,000 of whom (all aircrew) were attached to the R.A.F. or R.C.A.F. It was not possible, owing to the manpower shortage in New Zealand, to send any ground crews to the United Kingdom, but New Zealand's record in terms of trained aircrew in proportion to population was the highest in the British Commonwealth.

/ During

During the War a total of 13,185 trained or partially trained aircrew passed through the E.A.T.S. schools in New Zealand, 5,609 of whom graduated as pilots in New Zealand. Of the 7,576 trainees sent to Canada, only 574 failed to graduate.

New Zealand's quota sent to Canada represented 5·3 per cent of the total graduates of the E.A.T.S. in Canada. The individual percentages were as follows:-

Pilots	4·5
Navigators/Bomber	8·5
Navigators/Wireless	0·7
Navigators	4·6
Air Bombers	4·0
Wireless Operators/Air Gunner	11·5
Air Gunners	3·0

In all, the R.N.Z.A.F. fully trained in New Zealand and Canada a grand total of 13,493 aircrew, 12,078 of whom served with the R.A.F. either in Europe, the Middle East or the Far East. The remaining 1,415 were posted to R.N.Z.A.F. squadrons in New Zealand or in the Pacific Theatre of Operations. Of the total number trained 882 completed their training in New Zealand before the Empire Air Training Scheme commenced, and the actual number of New Zealanders fully trained under the E.A.T.S. was 12,611.(1)

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(1) See Appendix 76.

CHAPTER 10

BASIC TRAINING IN SOUTH AFRICA

The nucleus of a South African Aviation Corps was formed in 1914, when a small group of officers of the Union Defence Forces were sent to England for flying instruction. On the outbreak of the First World War they were mobilised with the Royal Flying Corps and proceeded to France with the expeditionary force. Later that year these officers were sent to South Africa where a flying unit for service in German South West Africa was formed. After the capture of that territory the unit returned to South Africa and was disbanded. The South African Aviation Corps was remobilised and the officers were again despatched to England where in October 1915, it became No. 26 (South Africa) Squadron. It was despatched to East Africa in January 1916, and after two years' service in the German East African campaign proceeded to Egypt; later it returned to the United Kingdom, and was disbanded in July 1918. Apart from this South African Unit, large numbers of South Africans came to England and joined the British Flying Services, and in all over 3,000 South Africans were commissioned in the R.F.C., R.N.A.S. and R.A.F. during the war.(1)

The foundation of a permanent South African Air Force was laid down in 1920, assisted by a gift of 100 aeroplanes from the British Government. The S.A.A.F. was formed on 26 April 1921 and was incorporated in the South African Permanent Forces.

A general reformation to put the Union Defence Forces on a stable basis took place in 1926 and the S.A.A.F. was organised on the simplest lines possible. With Headquarters at Pretoria it consisted of an aircraft depot, a central flying school (training 24 pupils per year) and one composite active service squadron, together with an active citizen force, and a special reserve for pilots and mechanics. A year later free training of members of light aeroplane clubs was introduced to augment the Special Reserve.

For the next nine years the S.A.A.F. continued to operate under this organisation. The 100 original aircraft supplied by the United Kingdom continued to form the backbone of its equipment, and it was not until 1930 that

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(1) The R.A.F. Year Book 1938 and Walter Raleigh, The War in the Air, Volume 1, Chapter 8.

/ new

new types, (the Wapiti and the Avian) were introduced into the Union; later South Africa undertook the building of Wapitis, Tutors and Harts. In 1936 a programme of expansion was introduced whereby 1,000 pilots and 3,000 mechanics were to be trained in the next five years; 100-150 of the former and 1,300 of the latter were to be posted to the regular establishment, the remainder to the Reserve. Four civilian flying clubs were used for the reservists' elementary training and the C.F.S. at Zwartkop carried out both Service training for reservists and the training of flying instructors, besides providing elementary and Service training for permanent force cadets.

The S.A.A.F. on the Outbreak of War, 1939

At the outbreak of war, in September 1939, by which time the expansion scheme had been in operation for three years, there were about 100 active flying regular and short service personnel and a number more in training; approximately 200 more had qualified under the reservist scheme of 1936. South Africa declared war on Germany on 6 September 1939, and an expansion scheme raising the strength of the S.A.A.F. to 36 squadrons was proposed. The training organisation was to be expanded to an output of 60 pilots per month and in response to a request for training aircraft, the United Kingdom agreed to supply South Africa with 50 Tiger Moths, 80 Hinds and 60 Ansons. During the first few months of the war training facilities were expanded and small units established in all parts of the Union. Early in 1940 the Central Flying School moved to Kimberley where it concentrated on the training of instructors and the old school at Zwartkop was transformed into two S.F.T.S.s. At the same time the four civil schools training reservists were taken over by the S.A.A.F., and their instructors enlisted in the Air Force. Aircraft and equipment at all other civil flying clubs and schools in the Union were requisitioned to supplement the four schools working for the S.A.A.F.

On 7 March 1940 in order to centralize all S.A.A.F. training under one command, a Training Command was established at Zwartkop. The Command took over control of all training units, comprising the following 12 schools:-

/ School

School	Location	Function	Remarks
Armament and Air Observers	Wynberg	Air Observers, Air Gunners and Armourers	
Ground Instruction	Bloemfontein	Pupils (Pilots, Observers, Air Gunners) Ground Training	
Electrical and Wireless	Dunbar	Wireless Training for Air Gunners. Also courses for Wireless Mechanics, Wireless Operators and Signals Officers	
Central Flying	Kimberley	Flying Instructors Training	
Civil Flying Training Schools	Baragwanath, Germiston, Pretoria and Bloemfontein	Ab initio pilots Training	These schools were amalgamated on 1 May 1940 to form Nos. 1 & 2 E.F.T.S.s at Baragwanath and Randfontein
Nos. 1 & 2 S.F.T.S.s	Zwartkop	Intermediate and Advanced training of Pilots	
Central Air Force Training Depot	Voortrekkenhoogte	S.A.A.F. Recruiting Depot	
School of Photography	Zwartkop	Training Photographic Personnel	

On 30 March the training organisation was further expanded by the formation of an armament training camp at East London.

This reorganisation brought the South African system more into line with the standard layout of R.A.F. schools, and resulted in a more balanced method of training. Formerly it had been the S.A.A.F. practice to train the majority of its pilots as instructors. As both advanced training and flying instructors training was carried out at one small school there were a considerable number of pilots who had received ab initio instruction at civil schools, but few who had been given Service training. Because of that policy - the use of civil schools for ab initio training and the limited amount of Service training - there was an accute shortage of Service personnel with technical experience when the time came to expand the S.A.A.F.

/ Offer

Offer to Train R.A.F. Personnel

South Africa's early attitude to the war was that she would take an active part in it only if the Union were directly threatened. Any suggestion that South Africans should serve outside Africa - that, for instance, they should be trained to reinforce the R.A.F. (as Canadians, Australians and New Zealanders were to be trained under the Empire Air Training Scheme) - would have provoked violent political conflict in the Union; and South Africa was, therefore, not included in the negotiations and discussions which produced the Empire Air Training Scheme.

Nevertheless the Union was actively concerned with self-defence and with the defence of Africa generally, and the expansion of her Air Force was for that purpose. Increased training arrangements were naturally part of the plan, and on 13 December 1939 General Smuts offered to make part of them available for British subjects of European descent who lived in South Africa. In making this offer he pointed out that training in the Union would be more economical than setting up schools in Rhodesia or Kenya. This offer was gratefully accepted on 5 January 1940 by the United Kingdom, who asked for it to be extended to include pupils from the United Kingdom. It was made clear that there was no intention of setting up any United Kingdom organisation in South Africa, and that all work would be under the control of the Union, which would act as the United Kingdom's agent. General Smuts agreed to this extension.(1)

Shortly afterwards the United Kingdom decided to negotiate for training capacity roughly equivalent to that scheduled for Southern Rhodesia - an output of roughly 1,750 pilots per year, over and above the 780 a year which South Africa was planning for the S.A.A.F. One difficulty could be foreseen at once; it would be a long time before South Africa could be provided with aircraft and equipment from the United Kingdom, since the whole production of training material was already committed to R.A.F. home expansion, the Empire Scheme, and Rhodesia. It was not until February that the Union was informed of the exact output the United Kingdom required and warned that the scheme

(1) A.M. File S.2896.

/ would

would be a long term project which would extend into 1942 and could not be implemented 'for some time to come'. It was proposed that a party of experts should visit South Africa to arrange the details. South Africa agreed both to the Target Scheme and to the proposed visit.(1)

A little later it became clear that South Africa was considerably concerned about the equipment and operational employment of the S.A.A.F. and any mission would have to discuss these matters as well as training. Her primary concern was the expansion of the S.A.A.F. and she wanted help over this, in the form of aircraft, instructors, and experience, in return for the training capacity she was putting at the R.A.F.'s disposal. Air Chief Marshal Sir Robert Brooke-Popham, who had been a member of the Riverdale Mission to Canada, was proposed as the head of the Mission, and South Africa welcomed the proposal. The mission consisting of Air Chief Marshal Sir R. Brooke-Popham, Sir James Ross, Group Captain A.L. Paxton, Squadron Leader E.F. Porter, Mr. A.L.M. Casey and Miss M. Holder arrived in South Africa on 30 April 1940.

The Joint Air Training Scheme

It soon became clear that the first step would have to be to create a sound S.F.T.S. nucleus, working on well-organised lines, and to a good general standard. Since General Smuts's offer had been made the S.A.A.F. Training schools had been reorganised but even so S.F.T.S. facilities were sadly lacking through shortage of aircraft and only one of the two schools was actually working. The possibility of sending a complete or nearly complete S.F.T.S. from the United Kingdom was investigated, but it could not be supplied because of the loss of pilot output the transfer would involve. The only alternative was to create the nucleus S.F.T.S. from what was available at Zwartkop, with such R.A.F. reinforcements from the United Kingdom as would be necessary to bring it up to full standard size - though this would swallow up all South Africa's resources and make it impossible to start a second S.F.T.S. until either the United Kingdom could supply the staff or South Africa could train the instructors and mechanics.(2)

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(1) A.M. File S.2896.
(2) A.M. File S.61525.

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The intention was to expand the existing organisation (which at that time was producing roughly 48 pilots every month and 20 observers every five months) to produce an output of 136 pilots and 60 observers a month, over and above those required for the South African Air Force (roughly 60 pilots, 40 observers and 40 wireless operators/air gunner a month). Four E.F.T.S.s, four S.F.T.S.s and three Combined Air Observer, Navigator and Bombing and Gunnery Schools (C.A.O.N. and B.G.S.) would be needed to supply the R.A.F. requirements. The S.A.A.F. requirements could be met from two E.F.T.S.s, two S.F.T.S.s and two C.A.O.N. and B.G.S.s.

All training facilities were pooled without segregation of pupils and with no differentiation between the needs of the S.A.A.F. and the R.A.F. The schools were to be planned in accordance with the R.A.F. War Training Organisation:-

School	Intake Every 4 weeks	Course Length - weeks	Capacity	Pupil Wastage per cent	Output Every 4 weeks	Aircraft Establishment
E.F.T.S.	48	8	96	16⅓	40	48 Elementary Trainers
S.F.T.S.	40	16	160	15	34	108 Advanced Trainers
C.A.O.N. & B.G.S. (Observers)	30 every 6 weeks	18	90	20	24 every 6 weeks	12 Navigation Trainers
(Air Gunners)	30 every 4 weeks	4	30	10	27 every 4 weeks	40 Gunnery Trainers
(Pilots)	34 every 2 weeks	2	34	Nil	34 every 2 weeks	25 Target Towers

As it was impossible, owing to the situation in Europe, to fix any definite date for the supply of personnel and material from the United Kingdom and consequently to draw up any programme for development giving opening dates for the seventeen schools, the scheme was considered in two stages:-

1. The expansion of the existing South African Training Schools to conform with R.A.F. schools and the development of auxiliary schools and maintenance organisation.

2. The development of new schools until the required monthly output of 196 pilots and 100 observers was reached.

In detail Stage 1, the creating of a nucleus, was to be as follows:-

(a) No. 1 S.F.T.S., due to move to Kimberley in June, to be brought up to full R.A.F. establishment by despatching six R.A.F. officers and 123 airmen from the United Kingdom. It was to be equipped with Hart Variants and Ansons which were either already in the Union or had been promised by the United Kingdom.

(b) No. 1 Combined Air Observer and Bombing and Gunnery School to be formed from the existing Armament Training Camp at East London as soon as possible.

(c) No. 1 E.F.T.S. to be brought up to full R.A.F. establishment, whilst still on a civil basis. This was not to be done until the expanded No. 1 S.F.T.S. had absorbed the surplus South African pilots awaiting S.F.T.S. training (90 on 31 May 1940).

(d) No. 2 E.F.T.S. to be brought to full R.A.F. establishment whilst remaining on a civil basis. This was not to be undertaken until No. 2 S.F.T.S. was sufficiently advanced to receive the full output of pupils from this school.

(e) No. 2 S.F.T.S. to be brought up to full R.A.F. establishment. This would virtually necessitate the transfer of a complete school, less certain non-technical personnel and non-specialist equipment from the United Kingdom.

No dates could be set for the completion of the scheme, but it was hoped to have Stage 1 finished by the end of 1940. The outputs from this nucleus would then provide the staffs for Stage 2 which was planned to develop with the formation of the following schools:-

No. 3 E.F.T.S., and No. 3 S.F.T.S.

No. 2 Combined Air Observer and Bombing and Gunnery School (C.A.O.N. and B.G.S.).

No. 4 E.F.T.S. and No. 4 S.F.T.S.

No. 3 C.A.O.N. and B.G.S.

No. 5 E.F.T.S. and No. 5 S.F.T.S.

No. 4 C.A.O.N. and B.G.S.

No. 6 E.F.T.S. and No. 6 S.F.T.S.

No. 5 C.A.O.N. and B.G.S.

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This scheme which commenced officially on 8 August 1940 and came to be known as the Joint Air Training Plan was embodied in the agreement signed by Air Chief Marshal Sir Robert Brooke-Popham and Major General Van Ryneveld on 1 June 1940 - an agreement more generally known as the 'Van-Brookham' agreement.(1) Aircraft and equipment were to be supplied by the R.A.F. as well as such instructors and staff as were needed. First call on the output would be to meet the needs of the S.A.A.F., and there would not be any room for R.A.F. pupils until at least the second S.F.T.S. was in working order. Ultimately, when Stage 2 of the expansion was completed 3,120 pilots and 1,050 observers per year would be trained, of which 2,080 pilots and 630 observers would be for the Royal Air Force. The R.A.F. syllabus of instruction was to be used; pupils from the United Kingdom were to go out to South Africa after their I.T.W. training; and payment was to be made on a capitation basis - so much per United Kingdom pupil trained - but the details were left to be worked out by Sir James Ross, who remained in South Africa when the rest of the mission returned to England on 3 June.

The training organisation which South Africa undertook to create was large, and in proportion to white population, it was over twice as big as the Empire Scheme to which Canada had committed herself. South Africa was handicapped by having few skilled mechanics and little industry to form a basis for the ground staff and the repair organisation.

These difficulties in the way of South Africa's training expansion were recognised before the Brooke-Popham mission returned to England, but no experienced R.A.F. officers remained in South Africa, or were sent out, to help and advise the Union in carrying out what had been undertaken. It was thought at the time that R.A.F. officers in South Africa would be able to do no more than 'elaborate academic details', since bringing into operation the schools that had been planned was very largely dependent on the supply of men and material from the United Kingdom - an event which, in May 1940, when the Germans were overrunning France and Belgium, seemed likely to be fairly long deferred.

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(1) A.H.B./IIIC1/29B.

/ Transfer

Transfer of R.A.F. schools to South Africa

In the summer of 1940 the imminent threat of heavy attacks which followed the German conquest of France was expected to produce serious difficulties for schools in the United Kingdom. The vulnerability of training aircraft and aerodromes (particularly lighted aerodromes at night) together with the restriction of areas, height, and weather conditions for training flights owing to intense fighter operations made it desirable to locate schools (particularly navigation and Service flying training schools) away from the operational area. Canada was approached on this subject on 15 July; and in spite of the fact that South Africa appeared less promising than Canada a request was sent to the Union asking if she would accept four schools from the United Kingdom - an air observers navigation school, a school of air navigation, a general reconnaissance school and a Fleet Air Arm observers school.(1)

The development of flying training in South Africa was considerably less advanced than it was in Canada - the plans for joint South African and R.A.F. training had only been agreed on six or seven weeks earlier. Moreover it was not certain that schools from the United Kingdom would be politically welcome, and although there was shipping space available it seemed unlikely that communications could be maintained as effectively as with Canada. Nevertheless, the request was made and on 26 July General Smuts accepted its proposals in principle.(2) The schools were to be administered by South Africa through senior officers from the United Kingdom, and the United Kingdom was to bear the cost of, and provide, the equipment. These schools were to be additional to the 17 already planned in South Africa.

This proposed transfer brought about a number of problems. A.O.N.S.s in the United Kingdom were civilian operated, but there would be political objections to English companies operating schools in South Africa, and there were no suitable South African civil firms to operate them. They would, therefore, have to be Service operated, and the United Kingdom civil companies compensated. Again, one of the School of Air Navigation's chief functions

(1) A.M. File S.62905.

(2) A.M. File S.62905.

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was the teaching of astro navigation, but there were no astro tables for the Southern Hemisphere, and if the school went to South Africa it could only train 'S.N.' courses. Shortage of Ansons for the schools was an added difficulty. As a result plans were changed in August. Two A.O.N.S.s were to go to South Africa instead of one and the S. of A.N. was to go to Canada; the transfer of the School of G.R. was still planned, but the Fleet Air Arm School was not to move to S. Africa after all - eventually it moved to the West Indies.(1) This meant that No. 5 A.O.N.S. Weston-super-Mare, No. 1 A.O.N.S. Prestwick and No. 1 S. of G.R. Squires Gate were to move to South Africa. A code name was given to each school to facilitate transfer and they were known as 'Mare', 'Prest' and 'Squire' respectively.

In spite of objections by the Minister of Aircraft Production, who was strongly opposed to the idea of transferring schools to the Dominions, the three schools moved to South Africa before the end of 1940 although it was conceded that no further schools were to be moved out of the United Kingdom.(2)

Establishment of the British Air Liaison Mission

Thus, in the summer of 1940, the size of the projected training organisation, including the three transferred schools had risen to some 20 schools. South Africa had been left to her own devices over the planning of this organisation and had to deal unaided with shortages of experienced staff officers, technical and skilled tradesmen, building artisans, etc., as well as a general shortage of steel and manufactured products. The organisation of aerodromes, auxiliary units, technical training, conditions of service and manuals of procedure and administration all had to be developed on a new and more complete scale. Furthermore there was the impending arrival of R.A.F. units and considerable numbers of personnel with all the problems of combined operations between two Air Services of basically different organisations which this portended. To help overcome these difficulties, for which to a large extent the R.A.F. was directly responsible, it was agreed to establish a British Air Liaison Mission in South Africa. It was headed by Air Commodore Frew, who was assisted by Squadron Leaders Baring, Tatnell and Lee, and arrived in the Union on 7 October 1940.

(1) A.M. Files S.62994 and S.62905.

(2) W.P.323(40) and W.P.338(40).

/ Meanwhile

Meanwhile the first steps in Stage 1 of the agreed programme of development had been taken. The E.F.T.S.s at Baragwanath and Randfontein were militarised on 8 August 1940, when training under the Van-Brookham agreement may be said to have begun. No. 1 S.F.T.S., which had moved from Zwartkop to Kimberley early in June (the C.F.S. moving from Kimberley to Bloemfontein), received its first batch of reinforcement staff on 6 September 1940. By the end of 1940 it was in working order, using Harts and Oxfords, but the remaining schools of the nucleus, No. 2 S.F.T.S. - which had existed in name only at Zwartkop and had to be disbanded and re-established at Vereeniging - and the first two C.A.O.N. and B.G.S.s had not started chiefly through lack of aircraft - a shortage which persisted even after they were opened early in 1941.(1)

The three 'transferred' schools had also started work by the end of 1940. No. 5 A.O.N.S. Weston-super-Mare closed on 1 September and began training as No. 5 A.O.N.S. at Queenstown in South Africa on 22 October. Part of No. 1 A.O.N.S. Prestwick closed on 23 October and began training as No. 7 A.O.N.S. Oudtshoon on 23 December 1940. Its size was to be increased from 120 to 180 observers in February 1941. No. 1 G.R.S. Squires Gate began to move on 30 September, started training at George on 1 December, and was at full capacity by 12 January 1941. The South African training organisation, on 31 December, therefore consisted of two E.F.T.S.s and one S.F.T.S. plus the three transferred schools. In addition there were various small nuclei for future schools: a bombing and gunnery school core for the first combined air observers school existed at East London, and there were elements of navigation and armament schools at Young's Field. An I.T.W. had been formed at Littleton to provide ground training for S.A.A.F. aircrew personnel, a task which had formerly been undertaken by the Ground Instruction School at Bloemfontein. A Signals school was also established to provide wireless training for wireless operators/air gunner, all of whom were to meet S.A.A.F. requirements. No wireless operators/air gunner or air gunners were to be trained for the R.A.F. in South Africa. It was the S.A.A.F. policy to provide wireless training for all air gunners and the school therefore had to produce an output of roughly 40 pupils a month.

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(1) E.T.S. 245/41 (A.H.B./IIIC/1).

/ Further

Further Offers of Assistance

The South African Training Scheme worked in close co-operation with the Southern Rhodesian Air Training Group. In January 1941, for example, South Africa provided pupils for training in Southern Rhodesia otherwise the Rhodesian schools would have been below their full capacity due to lack of suitable candidates in Rhodesia and shipping delays ~~from~~ between the United Kingdom or Australia and Rhodesia. Reciprocal arrangements were made for Southern Rhodesian pupils to proceed to the South African Central Flying School for instructor courses, and so overcome the shortage of instructors in Rhodesia. The G.R. School at George also trained considerable numbers of R.A.F. pupils from S.F.T.S.s in Rhodesia. Some months later Southern Rhodesia and South Africa co-operated to provide training facilities for Greek and Yugoslav pupils.

Once the Training scheme was under way South Africa was anxious to give more direct assistance to the Royal Air Force, and the opportunity came in the autumn of 1940 when the United Kingdom was short of pilots. Although South Africa could do nothing to increase her output, she offered to lend or transfer trained pilots to the R.A.F. and to provide South African pupils to be trained, either in the Union or in Southern Rhodesia, for service with the R.A.F.(1) The only stipulation was that the men would have to be volunteers for service outside Africa; there was strong feeling in the Union against using the S.A.A.F. to help the United Kingdom. A number of trained pilots volunteered and were prepared for service in the United Kingdom. The Air Ministry, however, sent them to the Middle East, presumably because South Africa's official attitude was that the S.A.A.F. should not serve outside Africa. As the men concerned had volunteered for service outside Africa, and were keen to operate in the United Kingdom, their posting to the Middle East caused despondency which was intensified when they discovered that it was difficult even to keep in flying practice as there were so many R.A.F. pilots in the Middle East.

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(1) E.T.S. 247(41). (A.H.B./IIIC/1).

/ Other

Other South Africans were invited to volunteer for service with the R.A.F. before their flying training began, and were transferred to the R.A.F. when they left Africa after it was finished. No publicity, either in South Africa or in the United Kingdom, was given to the volunteers, and South Africans trained in Rhodesia did not have to return to the Union as instructors. As a result of this scheme South Africans could be trained in places allotted for R.A.F. pupils. In March 1941 South Africa undertook to provide pupils for all schools in the Union (except the three transferred schools) until the autumn of 1941 - by then all the E.F.T.S.s would be open and South Africa would not be able to supply sufficient pupils to fill all the schools. As a result, the policy of filling five-sevenths of the capacity with R.A.F. personnel was not implemented until November 1941 and no R.A.F. pilots were sent to South Africa for training before that date.

In January 1941, following discussions between the C.G.S. (Major Van Ryneveld) and the A.O.C.-in-C. Middle East (Sir Arthur Longmore) it was agreed that the E.F.T.S. and the S.F.T.S. originally planned for Kenya should be located in the Union. Italy's entry into the war and the subsequent operations in East Africa had made Kenya unsuitable as a training area. These schools were in addition to those under the 'Van-Brookham' Agreement and were located at Wonderbook and Zwartkop. Thus the South African scheme, by early 1941, had grown to a planned size of 22 schools:-(1)

Seven E.F.T.S.s	-	Six J.A.T.S. and one R.A.F. school from Kenya
Seven S.F.T.S.s	-	Six J.A.T.S. and one R.A.F. school from Kenya
Five C.A.O.N. & B.G.S.s	-	All J.A.T.S.
One G.R.S.	-	R.A.F. 'transferred' school
Two A.O.N.S.s	-	R.A.F. 'transferred' schools

There were many difficulties, however, in putting plans into practice - difficulties which continued throughout most of 1941. The most critical was the shortage of aircraft and spares, particularly advanced trainers for the S.F.T.S.s, and as that shortage was a general one it was not easy for the United Kingdom to meet all South Africa's needs at once. Shipping delays and losses accentuated the trouble, and up to July 1941, 15 per cent of the aircraft shipped to South Africa was lost at sea. These shortcomings were much worse in South Africa because of the desperate shortage of skilled maintenance

(1) E.T.S. 193(41). (A.H.B./IIIC/1).

/ personnel

personnel; and it was a long business training the numbers required. As a result the S.F.T.S.s (even Kimberley, which had its full establishment of aircraft) found it hard to achieve the necessary flying hours, and as compensation the E.F.T.S. syllabus had to be altered to include 75 instead of 50 hours flying.

Reorganisation of the Observer Training Schools

The position of the two combined A.O.N. & B.G.S.s was even worse. They had no Anson aircraft to carry out navigation training and consequently they had to confine their activities to providing armament training for the output of the two R.A.F. transferred A.O.N.S.s. Even that training was considerably below the desired standard owing to the fact that Wapitis, Northrops, Harts and Oxfords had to be used in lieu of Battle aircraft.(1) This expedient was facilitated by the dropping of the bombing and gunnery training commitment for S.F.T.S. pilots at the combined schools, thus allowing them to concentrate solely on armament training of observers and air gunners. The policy of transferring pilots' bombing and gunnery training from the S.F.T.S. stage of training to the O.T.U. stage had been laid down by the Air Ministry in the autumn of 1940, but it was not until the first O.T.U.s were formed in the Middle East in early 1941 that it was possible to implement it in South Africa.

This temporary fusion of R.A.F. and J.A.T.S. observer training facilities, the former providing navigation instruction and the latter armament (all schools training both R.A.F. and S.A.A.F. pupils) was accompanied by a demand for greater observer output, and these factors eventually resulted, in June 1941, in plans being made to introduce a more effective navigation and armament training system in South Africa. All schools, the five projected J.A.T.S., C.A.O.N. and B.G.S.s and the two R.A.F., A.O.N.S.s, were to be reorganised. Four of the five combined schools would concentrate on all-through observer training only (navigation, bombing and gunnery) on an 18 weeks' course, and their capacities were to be increased from 90 pupils per school to 180 by 1 October and to 240 by February 1942.(2) The two transferred A.O.N.S.s were also converted into combined schools (C.A.O.N. and B.S.s) giving both navigation and bombing instruction to 200 observers on a 15 weeks' course.

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(1) E.T.S. 261(41) and 325(41). (A.H.B./IIIC/1).

(2) A.M. File S.64387.

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It was not possible for these two schools to be expanded to undertake gunnery instruction, so the fifth J.A.T.S. school (originally planned as No. 5 C.A.O.N. and B.G.S.) was to be opened as an air gunnery school, to carry out that part of the syllabus for observers trained at these two schools. It would train 80 observers at a time on a three weeks' gunnery course. In addition it was planned to centralise all air gunner training there, training 60 pupils on a six weeks' course. It was hoped to form the school, to be known as No. 43 A.G.S. at Port Albert on 1 October 1941.(1)

Shortage of aircraft again delayed most of this expansion and reorganisation; only one more C.A.O.N. and B.G.S. (No. 3 which was formed by combining the resources of the S.A.A.F., A.N.S. and the A.A.S. at Youngsfield, although the latter school continued to operate for the training of armament specialists) opened during the year, leaving two more still to form (one as an A.G.S.). Consequently throughout 1941 the schools continued as before, the R.A.F. schools providing navigation training and the J.A.T.S. schools concentrating mainly on armament training. S.A.A.F. air gunners continued to be trained at the three C.A.O.N. and B.G.S.s, and a few S.A.A.F. observers were trained at No. 3 C.A.O.N. and B.G.S, which inherited a few Ansons from the old S.A.A.F., A.N.S.

Financial Negotiations: The June 1941 Agreement

While the Joint Air Training Scheme was making its slow and difficult progress towards Stage 1 of the Van-Brookham plan, negotiations on the financial side of the arrangement went on continuously between the Union Government and Sir James Ross.(2) These negotiations were full of surprises and changes. Though they concerned the South African defence authorities, the defence side had little contact or co-ordination with the South African financial side; while the financial side, in its turn, preferred to negotiate without keeping the Defence Minister in the picture. There was no anxiety on the part of the Union authorities to reach a final agreement, and it seemed that they preferred to work without being bound by a written contract.

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(1) A.M. Files S.64356, S.71520 and S.72815.

(2) E.T.S. 247(41). (A.H.B./IIIC/1).

/ These

These protracted discussions were inevitably a bad background for the Joint Air Training Scheme. The payment for the aircraft and equipment urgently needed for the Scheme became the subject of lengthy and tortuous negotiation. At first it was intended that the South African Government should pay for the schools, aircraft, and equipment, and be paid at so much per head of output, but in September 1940 Sir Pierre van Ryneveld suggested that the Union should supply the buildings, land, and locally-produced requirements, that the United Kingdom should supply the aircraft and other requirements, and that each country should pay its own men working in the joint training organisation. Under this arrangement South Africa would have first call on the output to feed the S.A.A.F. first line, and the rest would be at the United Kingdom's disposal.(1)

This plan had a general similarity to the division of cost for the Empire Air Training Scheme, and was to cover the 'transferred' as well as the 'Van-Brookham' schools. Detailed discussion, however, of how many schools it was to embrace, whether the original S.A.A.F. schools were to be on the old or the new basis, and of the allocation of equipment to Union or United Kingdom responsibility dragged on and it was not until June 1941 that an agreement on the Joint Air Training Scheme in South Africa was signed.(2)

The scheme defined by this agreement was for the following schools:-

7 E.F.T.S.s.
7 S.F.T.S.s.
6 C.A.O.N. & B.G.S.s.(3)
2 C.A.O.N. & B.S.s.
1 G.R. School.
The C.F.S.
A unit for the assembling and testing of aircraft

The United Kingdom had the right, if it wished, to transfer the fourth school which South Africa had originally agreed to receive - The School of Air Navigation - but the prerogative was not used and no more schools were transferred from the United Kingdom. South Africa was to bear the cost of the

(1) A.M. File CS.12664.
(2) A.H.B./III/C1/29B.
(3) Only five were actually required, one of which became an air gunnery school.

/ stations

stations, administration, fuel and oil; the United Kingdom was to pay for aircraft, spares and replacements; responsibility for equipment was divided. The arrangements were retrospective from 1 August 1940, and the agreement was to last for the duration of the war. The output and intake schedules were not precisely defined: pilot and observer schools were to be available for both S.A.A.F. and R.A.F. pupils and the first call was to be for supplying the S.A.A.F. The remainder of the output, (both S.A.A.F. and R.A.F. personnel) estimated to be not less than the 2,600 pilots and 700 observers per year of the original Van-Brookham agreement, was to be at the R.A.F.'s disposal. All air gunners were to be trained for the S.A.A.F. It was agreed that South Africans might be trained in lieu of R.A.F. personnel provided that they were available for service with the Royal Air Force.

Early Difficulties and Criticisms

While the difficult process of growth and development was going on the standard of South African training was low. The instructors were generally poor, particularly the R.A.F. instructors sent out from the United Kingdom who found the South African climate and altitude very trying, and had to be sent to the South African C.F.S. for refresher courses. The S.F.T.S. output was too small to provide additional instructors and newly-trained pilots had to be obtained from Southern Rhodesia for C.F.S. training. Very little instrument flying was carried out - none at all at the S.F.T.S.s - because the instruments on the Harts were unsatisfactory, and there were no link trainers. Night flying was almost completely neglected, and armament training was scanty. Both wastage and accident rates were high. Because of the training scheme's slow development, the waiting time for recruits before their flying training began was long, and by the middle of 1941 an atmosphere of defeatism was noticeable, particularly in the elementary schools.(1)

It was not surprising that the early development of South African training was embellished with friction and misunderstanding. Some of the officers and men sent out from the United Kingdom made a poor impression, and anti-British feeling gave rise to a certain amount of unpleasantness.(2) Accommodation at schools was often improvised and uncomfortable. There was

(1) E.T.S. 284/41, 339/41 and 369/41. (A.H.B./IIIC/1).
(2) E.T.S. 245/41. (A.H.B./IIIC/1).

/ R.A.F.

R.A.F. criticism of the S.A.A.F. organisation because it was under army control. South African maintenance was criticised for inefficiency and for resorting to local manufacture of spares - though the shortage of spares was crippling. South African powers of administration and detailed organisation were considered poor.

The higher organisation of South African training also received a good deal of attention and criticism, and considerable thought was given in London to plans for improving it. These schemes were uninvited by South Africa, and when in June 1941 the Air Ministry eventually proposed to appoint a Head to the British Air Liaison Mission who would deal with administration, and leave Air Commodore Flew to deal with the training side, South Africa took the view that such an appointment would indicate lack of trust in the Chief of the South African General Staff (Major-General van Ryneveld), and the proposal was eventually dropped for the sake of South African goodwill.(1)

Air Commodore Frew recognised that the defects in the South African organisation and administration arose chiefly from inexperience and from a naturally casual outlook. He preferred to deal cautiously and gradually with the problem, and at first concentrated on maintaining good relations with the South Africans and winning their confidence.(2) In this he was successful and in June he was made S.A.A.F. Director of Training and A.O.C. Training Headquarters, and combined these functions with his duties as Head of the British Mission. A few months later when the Air Ministry proposed that he should be replaced, Major-General van Ryneveld refused to accept any replacement. It was, agreed however, that specialists in organisation and navigation should be sent out, and Air Commodore Croke and Group Captain Harrison arrived in South Africa in December 1941.

Progress by the end of 1941

Delays in building were largely responsible for lateness in Stage 2 of South Africa's training development. Stations and their equipment were seldom ready less than six months after the date scheduled for opening, and it was found that the only way of speeding up construction was to move the pupils in

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(1) E.T.S. 302(41) and 306(41). (A.H.B./IIIC/1).

(2) E.T.S. 397(41). (A.H.B./IIIC/1).

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and start work. Thus, as more aircraft became available, schools were consistently and habitually opened long before they were really able to operate properly. In August it was decided to get more schools opened and working by sharing what aircraft were available between them, which meant that E.F.T.S.s had 36 aircraft each instead of 48, and S.F.T.S.s 64 instead of 108, and pupil populations had to be correspondingly reduced. Nevertheless, it did get the whole organisation working as soon as was possible, and schools were brought up to full strength as more aircraft became available.(1)

The last four E.F.T.S.s and two more S.F.T.S.s were opened during the second half of 1941. The two new S.F.T.S.s were equipped with Masters, which immediately developed an extremely low rate of serviceability (about 20 per cent) chiefly because of structural failure and shrinkage caused mainly by bad packing for the voyage from the United Kingdom, and through lack of spares. In spite of being given more aircraft it was impossible for the schools to keep up to schedule, and their intakes had to be cancelled in November. As a result South Africa's S.F.T.S. capacity was too small for its E.F.T.S. output, consequently intakes were reduced and two schools turned over to advanced elementary instruction in December. The Master troubles gradually grew worse, and for a time it was impossible to use them for front gun firing.

These difficulties made it impossible to introduce into the South African schools A.M.T.s three 'revises' which were implemented at the E.A.T.S. schools and other R.A.F. schools to increase output by shortening course lengths and increasing capacities. Indeed shortage of aircraft often cut down the existing populations of the South African schools.

In October 1941, a Group organisation was introduced on a functional basis, and three training Groups were formed. One (No. 21 Group, Johannesburg) dealt with technical and ground training, the second (No. 24 Group, Zwartkop) dealt with pilot training, whilst the third (No. 25 Group, Port Elizabeth) dealt with observer and air gunner training. In December 1941 the pilot training schools of No. 24 Group were zoned geographically, so that the S.F.T.S.s could be fed by E.F.T.S.s near them while at the same time the E.F.T.S. output could conveniently be sent to either single-engined or twin-engined

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(1) E.T.S. 351(41). (A.H.B./IIIC/1).

S.F.T.S.s.

S.F.T.S.s. The southern zone consisted of the E.F.T.S.s at Randfontein, Potchefstroom, and Kroonstad with the S.F.T.S.s at Kimberley, Vereeniging, and Bloemspruit (the latter was opened in March 1942). The northern zone had E.F.T.S.s at Baragwanath, Wonderbrook, Benoni and Witbank, with S.F.T.S.s at Waterkloof, Nigel, Standerton, and Pietersburg (the latter planned for opening later in 1942).

In spite of the numerous difficulties, by the end of the year the South African training scheme had produced nearly 2,000 aircrew, since February 1941 when the first course graduated, roughly half of whom proceeded for service with the R.A.F. The training organisation had grown considerably and consisted of 18 schools training S.A.A.F. and R.A.F. personnel, together with a further six schools training personnel purely for S.A.A.F. home needs.

Completion of the Joint Air Training Scheme Programme

The remaining four schools planned under the agreement of June 1941 (two S.F.T.S.s, one C.A.O.N. & B.G.S. and the A.G.S.) were opened during the first few months of 1942 and by the end of May the scheme had reached its full planned size. Its effective size, however, was considerably less than the number of schools suggested; shortage of aircraft, unsuitable or unsatisfactory aircraft, and delays in building limited both the number of pupils and the efficiency with which they were taught.(1) Intakes into E.F.T.S. continued on a reduced rate in January 1942, and it was not until 16 February that full intakes were resumed.

The opening of the Air Gunnery School at Port Alfred meant that the reorganisation of the combined air observer schools that had been planned in the summer of 1941 could at last be effected. The gunnery training of S.A.A.F. wireless operators/air gunner (formerly carried out at Nos. 1, 2 and 3 C.A.O.N. and B.G.S.s) and observers from the two R.A.F. schools was, after January 1942, carried out by No. 43 A.G.S. Two months later three of the four combined A.O.N. and B.G.S.s were expanded to 240 pupils (No. 3 C.A.O.N. & B.G.S. remained with 180 pupils) and the two R.A.F. schools increased to a 200 pupil capacity. At the same time, in order to improve the standard of training, arrangements were made to replace Oxfords in use at these schools

(1) E.T.S. 455(42). (A.H.B./IIIC/1).

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by Ansons. The General Reconnaissance School at George was also expanded. After May 1942 it trained 168 pilots on a nine weeks' course and 24 observers on a four weeks' course. All pupils were R.A.F. personnel drawn from schools in either South Africa or Southern Rhodesia.

Pre-entry training was also developed in the Union along the lines of the Air Training Corps in the United Kingdom. Air training squadrons had been formed at the Rand, Natal and Cape Town Universities by March 1941, and others were opened shortly afterwards.

Extension of Course Lengths

In April 1942, courses at elementary and Service flying training schools were reorganised to conform with the revised pilot training syllabus recommended by A.M.T. in his 'New Deal' and ratified by the Aircrew Training Conference held in London in February 1942. The aim of the new syllabus was to give all pilots a minimum of 200 hours' flying training - 70 at the E.F.T.S. stage and between 120 and 150 at the S.F.T.S. In South Africa, however, where aircraft shortages and staff difficulties were still prevalent, it was necessary to extend E.F.T.S.s and S.F.T.S.s by four and eight weeks respectively to reach the new standards, which meant that the annual output was reduced from 3,150 to 1,900. To compensate for the longer courses, S.F.T.S. capacities would be increased to 240 pupils per school when the supply position permitted. The immediate effect of the resultant loss of output was not, as it happened, serious, since the expansion of the Middle East O.T.U.s was considerably behind schedule, and it would have been difficult to absorb all the planned output from the South African schools. Indeed, a few months later it became necessary to restrict temporarily pilot output in Southern Rhodesia by extending course lengths.(1)

At the two schools equipped with Harts (Nos. 2 and 3 S.F.T.S.s) it was decided that an eight weeks' extension would be unprofitable. Until August therefore (when they were re-equipped with Oxfords) courses at these schools were increased by only two weeks and the newly formed S.F.T.S. at Pietersburg was temporarily used to provide a six weeks' conversion course on Masters for Hart trained pupils.

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(1) E.T.S.481(42). (A.H.B./IIIC/1).

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Although the lengthening of courses prevented the accumulation of pilots awaiting O.T.U. training in the Middle East, it did cause other bottlenecks. The reduction of intakes, for instance, led to a large surplus of S.A.A.F. trainees in the I.T.W. By May 1942 there were over 1,000 pilot pupils in the I.T.W. and, with the intake of S.A.A.F. pupils reduced to 96 every 6 weeks (i.e. two-sevenths of the total intake) there was little prospect of reducing the surplus in the immediate future. At the other end of the scale the S.A.A.F. was experiencing difficulty in absorbing the output of both pilots and observers from the training schools.

Secondment of S.A.A.F. Personnel to the R.A.F.

In May 1942 the question of the allocation of S.A.A.F. pilots for service with the R.A.F. was revived. Although over 1,500 pilots had been trained in South Africa only approximately 540 were available for service with the R.A.F. - and they were personnel from Southern Rhodesian Schools who had been sent to the Union for G.R. training. None of the 1,000 S.A.A.F. pilots had been seconded to the R.A.F. It will be recalled that the J.A.T.S., which originally provided for six pairs of schools training pilots (two for S.A.A.F. personnel and four for R.A.F. personnel), was subsequently increased to seven by the transfer of an R.A.F., E.F.T.S. and S.F.T.S. from Kenya, five of which would train R.A.F. pupils. A few months later (March 1941) the S.A.A.F. undertook to fill intakes of all schools up to June 1941 - there were at that time only three pairs of schools in operation - on the understanding that, to compensate for the loss of output of R.A.F. pupils, S.A.A.F. pupils would be invited to volunteer for service with the R.A.F.[1] For the next few months the question of S.A.A.F. transfers to the R.A.F. was under discussion, and it was thought that South Africa, who had a potential of between 2,000 and 3,500 pupil pilots a year, might supply most of the intake for the seven pairs of schools. The principle that South Africa's operational requirements should have first priority was accepted but little else was settled, and when the financial agreement was signed in June 1941 the following passage was included to cover this question:-

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(1) E.T.S. 465(42). (A.H.B./IIIC/1).

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'The programme of supply and allocation of pupils will be subject to any arrangements made between the Defence Department and the Air Ministry Mission to modify the numbers to be trained from each country during any given period, or for training S.A.A.F. pupils in lieu of R.A.F. pupils on the assumption that a sufficient number of such pupils will be available for service with the R.A.F. .....'(1)

There the matter rested until November 1941 when the retention of the output from the third S.F.T.S., which was just materialising, was retained to meet S.A.A.F. requirements, caused further discussion. By that time the situation had changed considerably since the original agreement was signed. The S.A.A.F. had assisted the R.A.F. by forming additional squadrons in the Middle East, and by staffing the J.A.T.S. schools with S.A.A.F. personnel. Moreover, Japan's entry into the War had meant that South Africa's Home Defence programme would have to be expanded. So, once again, the question of the allocation of the S.A.A.F. output was left unsettled, although it was agreed that R.A.F. pupils should fill the agreed quota of places in the schools.

In the spring of 1942 the matter was again discussed and the fact that there was unlikely to be a large surplus of S.A.A.F. personnel available to reinforce the R.A.F. during 1942 ruled out the possibility of a final decision. The South African attitude to the question was briefly as follows:-

(a) The first priority was the expansion of its own operational forces.

(b) Any temporary surplus of S.A.A.F. aircrews resulting from unavoidable delays in completing that programme would be available for loan to the R.A.F. in Africa, though they would remain in the S.A.A.F. and would continue on S.A.A.F. rates of pay, leave, etc.

(c) If R.A.F. units which included aircrews on loan from the S.A.A.F. were moved out of Africa, no obstacles would be placed in the way of S.A.A.F. personnel volunteering to accompany R.A.F. units. Volunteers would be seconded to the R.A.F., the Union Government making up any difference between S.A.A.F. and R.A.F. rates of pay.

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(1) E.T.S. 465(42). (A.H.B./IIIC/1).

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(d) Any overall surplus of S.A.A.F. aircrews after allowing for the full requirements of the Union's authorised programme, would, as volunteers, be released from the S.A.A.F. for secondment to the R.A.F. in United Kingdom.

Once again attempts to reach a final settlement were thwarted. The temporary loss of output was not, as it happened, a serious blow at that time since the reduced allocations of American aircraft and the new one-pilot policy recently introduced for all heavy and medium bomber aircraft had resulted in a temporary surplus of pilots accumulating both in the United Kingdom and the Middle East. By July 1942, the first of the R.A.F. pupils completed their training and there was, of course, no question of their employment. It was thought that it would not be long before the R.A.F. pupils would be filling the agreed quota of five-sevenths of the total capacity. Thus it seemed that time and events had solved what might have been a delicate situation - although a few months later there were further differences over the allocation of training capacity. It was hoped that when, as was likely in the fairly near future, a surplus of S.A.A.F. pilots began to accumulate they would be made available for service with the R.A.F.

Further Reorganisation of the Combined Schools

During the latter half of 1942, with most of the initial difficulties of organisation, building and supply overcome it was possible to consider means of increasing the efficiency of the South African training organisation by improving training standards and expanding capacities. Both the pilot and observer instructional systems were in need of improvement and it was hoped to achieve this by bringing them more into line with the R.A.F. syllabus.

The revised crew policy of May 1942 meant that radical alterations to the training syllabus at the observer training schools would be necessary, since the old trade of air observer had been replaced by the new aircrew trades of the navigator and air bomber. The navigator category had been further split into those of straight navigator, navigator/bomber, navigator/wireless and navigator/bomber/wireless, although only the first two categories were to be trained in South Africa.[11] To train these personnel three of the four C.A.O.N. & B.G.S.s were reorganised to train 32 navigators every three weeks on a 15 weeks' course

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and 20 air bombers every three weeks on a 12 weeks' course. The capacity of these schools remained unchanged at 240 pupils (160 navigators and 80 air bombers). No. 3 C.A.O.N. and B.G.S. continued to instruct 180 observers (renamed navigators/bomber) on the old 18 weeks' course, but in future they were to be S.A.A.F. personnel to meet local requirements. The overall capacity of the school was raised slightly by the addition of 30 pupils on a staff navigator instructors course. These changes took place in August.

The two former R.A.F. schools (Nos. 5 and 7 C.A.O.N. & B.S.s also continued to train navigators/bomber on a 15 weeks' course, followed by 3 weeks gunnery training at the A.G.S. It was hoped in due course to re-arrange the syllabus to include a certain amount of gunnery training in the C.A.O.N. & B.S. course so as to obviate the need for the special gunnery course. As pupils went to light bomber squadrons in the Middle East and were unlikely to have to man a gun it was not essential for them to undergo the full gunnery course. This reorganisation, however, would take some months to complete - it was not actually completed until March 1943 - after which it was planned to convert the A.G.S. into another C.A.O.N. & B.G.S. In the meantime it continued work as an air gunnery school. These changes were accompanied by a minor adjustment in the official name of the combined schools; the word observer was dropped and they became known as Combined Air Navigation Bombing and Gunnery Schools - Combined Air Navigation & Bombing Schools in the case of the two R.A.F. schools.

In order to improve the standard of navigator's training - the revised courses merely introduced a different syllabus to train the new categories and did not necessarily improve training standards - an elementary air navigation school was opened at East London in October to provide a new stage of ground training for all navigator pupils between the I.T.W. and navigation school. The course length was 12 weeks in all and the school had a capacity for 800 pupils.(1) R.A.F. pupils would continue to complete their I.T.W. in the United Kingdom, or would be supplied from the wastage of Southern Rhodesia S.F.T.S.s when they could not be absorbed in that colony, and S.A.A.F. pupils would come from the I.T.W. at Lyttleton.

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(1) A.M. File S.79841.

/ Difficulties

Difficulties with Master Aircraft

It was more difficult to bring the South African pilot training syllabus into line with that of the R.A.F. The South African S.F.T.S.s were training 160 pupils on a 24 weeks' course while R.A.F. and E.A.T.S. schools were with the same aircraft and instructor establishment training 240 pupils on a 16 weeks' course. The E.F.T.S.s showed a similar unfavourable comparison. In the past one reason for these considerable divergencies had been the rather dogmatic attitude of the S.A.A.F. authorities on one or two minor points, such as the amount of night flying training to be carried out at E.F.T.S.s, and the methods of training and employment of flying instructors. By mid-1942, however, these differences had been overcome and, although the spares and maintenance position still left something to be desired, there was only one major stumbling block - the use of the 'Master'. The desirability of re-equipping the schools with more modern types of aircraft in place of the obsolete Harts had been recognised, and by the end of the year (providing the shipments of aircraft were up to expectations), it was hoped that all schools would be equipped with either Oxfords (in the case of the three twin-engined schools) or Harvards and Masters (preferably Harvards) in the case of the single-engined schools. In the meantime, the arrangements for giving conversion courses on Oxfords and Masters for pupils trained on Harts were continued.

The use of Masters, however, caused considerable dissatisfaction in the Union. At the beginning of the year the serviceability rate at the schools equipped with these aircraft was as low as 20 per cent and throughout the year, although repeated attempts were made to rectify the position, very little progress was actually made. The trouble was due almost entirely to lack of spare parts, but the consequent delays in training had repercussions throughout the training scheme; intakes into the Master schools were curtailed, which led to reduction in the E.F.T.S. intakes, and this in turn caused bottlenecks in other stages of training. It was true that the dry climate tended to weaken airframes through timber shrinkage, and also raised the incidence of engine failures, but with careful watching and regular overhauls these difficulties could be overcome. It was not considered justifiable on these accounts alone to throw up several hundred Masters in South Africa, especially at a time when

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there was a world-wide shortage of advanced trainer aircraft. The unserviceability position could be rectified given an adequate supply of spare parts. The only other disadvantage of the Master from the training point of view was the rather highly complicated nature of the Mercury 20 engine. It was not a robust or fool-proof engine, and was rather too high-class for training purposes. This argument carried little weight, however; trainer aircraft were in short supply and it was up to the training organisation to make the best use of all available aircraft; in any case they were in use at training schools elsewhere and were causing no undue dissatisfaction.(1)

The South Africans, however, disliked the Master, and considered that they should be replaced by Harvards, even at the expense of re-equipping the Hart schools. Thus in December 1942 it was planned to completely re-equip one Master S.F.T.S. with Harvards, and to reinforce the two Hart schools with Harvards (so that Hart-trained pupils could be given short conversion courses on Harvards before graduating) re-equipping them completely as more Harvards became available. In view of the various modifications made to the Masters to improve their serviceability it was agreed to defer the decision on the re-equipment of the second Master school until March 1943, by which time a sufficient number of modified Masters would be in use to judge whether the aircraft was suitable for retention. In spite of these difficulties it was hoped to increase the capacity of the S.F.T.S. to 200 pupils per school in January 1943 and to 240 three months later.

Allocation of Aircrew Outputs

The second bone of contention, the allocation of the pilot training capacity in the Union between the S.A.A.F. and the R.A.F. arose again in September 1942. When the scheme was originally planned it was estimated that the S.A.A.F. requirements (to meet a 31 squadron force) amounted to a maximum of 900 pilots a year, which represented the output of two pairs of schools. This was calculated on the basis of a 16 weeks' course with capacity of 160 pupils per school, but the lengthening of courses, and the failure of the Master had reduced output considerably. The South African Government considered that as 15 of their 31 squadrons were serving in the Middle East, and it was hoped

(1) A.M. File S.61525.

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that 11 of these would soon be filled with volunteers willing to serve in any theatre of war, South Africa should continue to provide pupils in the numbers laid down in the original agreement. The R.A.F.'s view, however, was that while the schools were running below their full capacity, the places should be allocated in the proportions laid down in the Van-Brookham agreement; any increase of S.A.A.F. intakes would result in an equivalent decrease in R.A.F. intakes - a reduction which in 1942 the R.A.F. could ill afford. The supply of aircraft would improve within a few months and it was felt that the South Africans should accept their share of the loss in output for the time being. South Africa did not agree, however, and in October 1942 the full quota of 96 South African pupils every four weeks was put into the training machine. The effect of this unwelcome move was soon softened by the early arrival of Harvards, and it was hoped that the planned output of 3,150 pupils per year would be reached by the spring of the following year.

There was another problem entwined with this question. Because of the delays in achieving full expansion coupled with an increased recruiting drive, there were 1,200 S.A.A.F. volunteers awaiting entry into aircrew training by September 1942 in addition to the normal 1,250 recruits per year. From the R.A.F. point of view, there were obvious advantages in utilising these personnel; the United Kingdom manpower situation was becoming difficult, and in any case, it was wasteful to ship pupils from the United Kingdom to South Africa for training while there were already surplus pupils awaiting training in the Union. On the other hand there had already been difficulties over the loan or secondment of S.A.A.F. personnel trained in lieu of R.A.F. pupils, to the R.A.F. Fortunately this problem, which might have been a difficult one, was settled with the decision to transfer all the surplus aircrew personnel into the South African armoured divisions.(1)

Measures to produce more Pilots and Instructors

Although the supply of aircraft, particularly Harvards, and spares continued to improve throughout the year, six of the seven S.F.T.S.s were still working on the old I.T.S. - A.T.S. system and below their full capacity while the seventh (No. 6 S.F.T.S.) carried out conversion courses on Masters and

(1) E.T.S. 528(42), 539(42), 544(42) and 545(42). (A.H.B./IIIC/1).

/ Oxfords

Oxfords for Hart trained pupils (from Nos. 2 and 16 S.F.T.S.s). As a result in December 1942, output was still roughly 30 per cent below the maximum which, at that time, with S.F.T.S. course lengths of 24 weeks and capacities of 160 pupils was 1,900 pilots a year. Nevertheless, the position was improving, and on 23 December, approval was given for the intensification of flying training.(1) Capacities at E.F.T.S.s and S.F.T.S.s were increased to 120 and 200 respectively, and in order to achieve the original planned output of 3,150 pilots a year course lengths were reduced to 10 and 20 weeks respectively. It was not considered feasible to achieve that output by increasing capacities to 144 and 240 and retaining existing course lengths. The revised programme came into operation rather slowly. It commenced in January 1943 at four schools - aircraft unserviceability prevented its simultaneous application at all - but by March 1943 all schools, including No. 6 S.F.T.S., had been reorganised and were working satisfactory. At the same time the opportunity was taken to abandon the old I.T.S. - A.T.S. system of training (which had been continued even when the 'New Deal' was introduced) in favour of all through courses at the S.F.T.S.s. The elementary schools found it difficult to cope with the additional pupils and in March 1943 their aircraft establishment had to be raised from 48 to 55 aircraft per school. Thus, the intake of 96 S.A.A.F. pupils every four weeks, which had been introduced so abruptly a few months earlier, at last represented the agreed two-sevenths of the total annual intake of 4,370.

The system of training and method of employment of South African flying instructors, which had also received a good deal of criticism, were revised in early 1943. For some time past the instruction provided by the South African Central Flying School had not been considered satisfactory by R.A.F. standards, and there had been several clashes over the S.A.A.F. policy which provided that all instructors should be trained and should serve first as elementary instructors, and then after a short (and extremely meagre) conversion course, employed as S.F.T.S. instructors. In February 1943, after protracted discussions the R.A.F. system of training was adoped, which was broadly as follows:-

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(1) E.T.S. 587(43). (A.H.B./IIIC/1).

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(a) All potential flying instructors were trained at the C.F.S. and passed out competent to instruct on either (i) Elementary types only or (ii) elementary and single-engined Service types or (iii) elementary and twin-engined Service types.

(b) Instructors were employed throughout their tour, as far as possible, on one type of aircraft and at one unit. The previous system had resulted in inexperienced instructors being concentrated at the E.F.T.S.s and tended to produce a low standard of E.F.T.S. instruction.

(c) The instructors' course was of 12 weeks' duration. Eight weeks were devoted to general instruction mainly on Tiger Moths and four weeks on specialist instruction on the type of aircraft in use at the school where the instructor was to be employed.

At the same time the school was expanded to train 150 pupils. The aim was an intake of 50 potential instructors every four weeks on a 12 weeks' course which, after allowing for 24 per cent wastage, would produce an output of 38 instructors every four weeks.

The length of the flying intructor's tour was also considered. It was the intention to give all instructors the opportunity of operational flying - a policy which was applied over the whole field of R.A.F. training including that in the Union, Rhodesia, the United Kingdom and in the Empire Air Training Scheme - and the instructional tour of duty was limited to a maximum of 18 months.(1)

It was further agreed that as many South African personnel as possible should be employed in the South African schools and the proportion of S.A.A.F. to R.A.F. instructors, maintenance, technical and administrative personnel should be raised from 3 to 1 to 9 to 1, a step which was greatly welcomed by the British Government, in view of the growing shortage of manpower in the United Kingdom. It was anticipated that the substitution of R.A.F. ground personnel in the Union by S.A.A.F. personnel would release roughly 9,000 personnel.

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(1) E.T.S. 612(43). (A.H.B./IIIC/1).

/ Secondment

Secondment of Additional S.A.A.F. Personnel to the R.A.F.

The replacement of R.A.F. personnel by South Africans in the training organisation was accompanied by an offer, made in a letter from General Smuts to the High Commissioner for South Africa on 2 April 1943, to second some 600 S.A.A.F. pilots to the R.A.F. over the following 12 months. The offer contained no restrictive provisos and was welcomed by the R.A.F. O.T.U. training was to be given in the Middle East as far as possible, though there were no objections to volunteers being sent elsewhere (the United Kingdom, Canada, India or the Bahamas) for their training. They were then to be posted to R.A.F. units operating in the Middle East, North Africa or the Balkans, and arrangements were made to concentrate these pilots as far as was practicable in certain selected R.A.F. squadrons. There was already an agreement between the United Kingdom and the Union Government covering the pay of S.A.A.F. personnel seconded to the R.A.F. whereby the United Kingdom Government contributed the equivalent to a standard R.A.F. rate of pay and the Union Government paid the difference between their own and the R.A.F. rate.(1)

It was hoped that secondment would start at the rate of 80 a month in June and would reach 100 per month by December 1943. The possible expansion of the South African S.F.T.S.s later in the year, however, led the S.A.A.F. to retain some of the 600 pilots, in order to provide the additional instructors if and when that expansion took place. In consequence the flow of S.A.A.F. personnel to the Middle East for secondment to the R.A.F. averaged roughly 30 per month during the last half of 1943. The loss of some of the promised pilots, however, was made up by despatching some 300 S.A.A.F. observers to the Middle East Command at the rate of roughly 25 per month.

In October 1943, during his visit to the United Kingdom, the South African C.G.S., General van Ryneveld, said that the S.A.A.F. was anxious to make a greater contribution in the War effort. He estimated that roughly 2,500 ground personnel could be released from South Africa in the near future, and a further 2,500 could be provided within the next twelve months from ground personnel under training in the Union. Surplus aircrews would also be available, and these together with the 5,000 ground crews should be formed into

(1) E.T.S. 631(43). (A.H.B./IIIC/1).

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new S.A.A.F. squadrons and maintenance units in substitution for R.A.F. units in the Mediterranean Air Command. The R.A.F. flying boat squadron (No. 262 Squadron) in the Union could also be manned by South Africans. Accordingly arrangements were made for the S.A.A.F. to take over No. 262 Squadron and replace two R.A.F. squadrons in the Mediterranean Air Command as soon as possible. A further six squadrons, together with repair and salvage, and maintenance units would subsequently be formed. When they were 75 per cent Africanised R.A.F. numbers would be withdrawn and the units renumbered as part of the S.A.A.F. All S.A.A.F. units so formed would be available for service anywhere with the Royal Air Force.

As a result of these developments, the arrangements made in April to replace up to 90 per cent of R.A.F. ground staff in the Union by S.A.A.F. personnel were cancelled and it was agreed that the existing proportion (roughly 30 per cent R.A.F. and 70 per cent S.A.A.F.) should remain. Most of the R.A.F. personnel were key men on whom the continuing success of the Joint Air Training Scheme depended and by manning units in the Middle East, South Africa was more than compensating for the retention of R.A.F. personnel in the Union.

Provision of O.T.U. Facilities

Another matter discussed with the C.G.S. on his visit to the United Kingdom in the autumn of 1943 was the policy for operational training units in South Africa. Accordingly when the new J.A.T.S. was signed all ancillary units, including O.T.U.s, of which there were two in South Africa at that time, were included in the new agreement.

South Africa's rejection of the Miles 'Master' Aircraft

The question of the continuance in Service of the 'Master' aircraft in South African training schools was finally and tragically settled in October 1943 when three Masters broke up in the air. Only seven months before this problem had been the subject of an investigation by the Air Ministry, the Miles Aircraft Company and the operators of the aircraft. The Air Ministry considered that the best use should be made of the aircraft as nearly 500 had been shipped to South Africa since March 1941 and they could not be scrapped out of hand. The Miles Aircraft Company had sent two representatives to South

/ Africa

Africa and the result of their investigation was that the aircraft had not had a fair chance to prove itself. In their view the low serviceability was due to faulty provision and allocation of spares, lack of knowledge of the aircraft, poor maintenance, inadequate instruction in engine handling and a lack of direction to schools on maintenance problems. The operators of the aircraft said that the aircraft was unsatisfactory both from the maintenance and training points of view and that during the past two years only about half the estimated flying hours per aircraft had been obtained.

The outcome of the examination, which was completed in March 1943, was that as the aircraft had been suitably modified and providing there was an ample supply of spares, efficient technical direction and maintenance, the aircraft should continue to be used in South Africa. It was therefore decided to keep one and a half Master Schools in operation. One school (No. 5 S.F.T.S. Standerton) would remain on Masters until at least the end of 1944, and No. 2 S.F.T.S. Vereeniging, which was equipped with 50 per cent Masters and 50 per cent Harvards would remain so equipped until sufficient Harvards were available for full replacement - probably by the autumn.

As a result of the accident in October, however, the Master was barred as a trainer in South Africa. The re-equipment of No. 2 S.F.T.S., which was over due anyway, took place immediately and No. 5 S.F.T.S. was operating with Harvards by February 1944. Fifty of the Masters in South Africa were used in meteorological flights and for target towing, 10 were sold to Turkey and the remainder, about 240 in all were broken up, and the resultant components returned to the United Kingdom where they were badly needed.

Progress in the Combined Schools during 1943

The Oxford too, while not so troublesome as the Master, had been causing a good deal of dissatisfaction in South Africa and by the end of the year all Oxfords in the combined schools had been replaced by Ansons which, besides having a higher rate of serviceability, were admittedly better for navigation training. The decision to replace the Oxfords had been taken earlier in the year after the reorganisation of the schools, started in 1942, had been completed. Navigator, navigator/bomber and air bomber pupils were re-allocated between the schools, and No. 43 A.G.S. was converted into a combined air

/ navigation

navigation, bombing and gunnery school, although as it still continued to train air gunners and wireless operators/air gunner, its navigator and air bomber capacity was only half that of the other schools. The two R.A.F. schools were also reorganised; both were expanded to train 240 pupils and No. 5, by including an air gunnery course, was converted into a C.A.N. and B.G.S. training navigators/bomber, while No. 7 was turned into a plain air navigation school training 'straight' navigators. No. 3 C.A.N. and B.G.S. was also reorganised and brought into line with the other combined schools. Formerly the school had concentrated on training observers and staff navigators to meet S.A.A.F. requirements. The latter commitment was transferred to No. 43 C.A.N. and B.G.S. and No. 3 C.A.N. and B.G.S. expanded to train 240 navigators/bomber (or 'observers' as they were still called in the S.A.A.F.).

When these changes were carried out the opportunity was taken to improve the standard of air bombers' training by extending their courses from 12 to 15 weeks. Capacities remained the same and it was therefore necessary to reduce intakes from 30 to 24 pupils every three weeks. As a result of all these adjustments the combined schools, after June 1943, had a capacity for training a total of 720 navigators/bomber, 540 navigators, 300 air bombers, 100 wireless operators/air gunner and air gunners, and 30 staff navigators. Apart from the wireless operators/air gunner, air gunners, staff navigators and 100 of the navigators/bomber, all the capacity was for meeting R.A.F. requirements. The revised organisation of the schools was as follows:-

C.A.N. & B.G.S. No.	Capacity	Course Length (weeks)
1	120 Navigators 120 Air Bombers	15
2	120 Navigators 120 Air Bombers	15
3	240 Navigators/Bomber	18
4	240 Navigators/Bomber	18
5	240 Navigators/Bomber	18
43	60 Navigators 60 Air Bombers 100 Air Gunners and W.O.s/A.G. 30 Staff Navigators	15 15 6 4
7 A.N.S.	240 Navigators	15

/ Two

Two new units, known as Pilots Despatch Centres, were formed in 1943. Their object was to provide acclimatisation and refresher courses for R.A.F. pupil pilots arriving from the United Kingdom. Similar facilities for navigator and air bomber pupils had already been provided by the pre-E.A.N.S. course pool at the E.A.N.S. No. 2 P.D.C.[1] opened at Nigel on 5 February 1943 and No. 3 P.D.C. formed at Standerton eight weeks later. It was hoped to provide a minimum of four weeks refresher training at both units but shortage of instructors and equipment prevented any training being given at the second centre, and it had to be used mainly as an acclimatisation pool. All drafts of pilot pupils from the United Kingdom went first to No. 3 P.D.C. and then on to No. 2 as and when vacancies occurred. It was not always possible to implement the four weeks' course owing to the irregularity of arrivals.[2]

Later in the year attention had to be given to the shipment of trained personnel from South Africa to the Middle East O.T.U.s (and incidentally the supplying of South African forces in that area). It had always been the practice to utilise spare space in convoys from the United Kingdom proceeding to the Middle East via South and East Africa for the shipment of these personnel, but as a result of the capitulation of Italy and the opening of the Mediterranean that route automatically fell into disuse. Transport by air was not possible owing to the shortage of transport aircraft, and a special shuttle service by sea between Durban and the Middle East had to be arranged.

The New J.A.T.S. Agreement, November 1943

During the autumn of 1943 the whole future policy of the Joint Air Training Plan in South Africa was reviewed in the light of experience gained during the previous three years. When the agreement of 1940 was drawn up it had covered only the schools actually carrying out flying training - 17 in the first instance and subsequently increased to 22 by June 1941 by the transfer of five R.A.F. schools. Whilst these schools had not increased in number since that time, their course lengths and capacities had changed considerably. In addition, various other units had been formed, admittedly only one of them

(1) No. 1 P.D.C. was a personnel despatch centre dealing with the reception and disposal of ground crews.

(2) E.T.S. 596(43). (A.H.B./IIIC/1).

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(the E.A.N.S.) was for the training of R.A.F. personnel and that did not involve any flying - the others were primarily S.A.A.F. schools - nevertheless, they were a necessary part of the ancillary organisation and were essential to support the flying training schools.

As a result of this review a new agreement was signed in November 1943 which, while following the broad intention of the June 1940 agreement, provided that all existing S.A.A.F. schools and ancillary units which contributed to the joint war effort together with any new ones that might be formed in the future, would be treated on the same broad principles as the flying training schools.(1) Another feature of the new agreement, introduced in order to forestall any future expansion difficulties, provided that the capacities of schools were to be set at the maximum likely to be required.

Under the new agreement the capacities of the South African training organisation, which at the end of 1943 comprised some 29 schools, was as follows:-

Number of & Type of Schools	Total Capacity
Former J.A.T.s schools Seven E.F.T.S.s	980 (140 per school)
Seven S.F.T.S.s	1,680 (240 per school)
Seven C.A.N. & B.G.S.s	480 Navigators 720 Navigators/Bomber 300 Air Bombers 120 W.Ops./A.G. or A.G.s 30 Staff Pilots (Nav.) 100 Staff Navigators 1,750
One G.R.S.	200 Pilots
One E.A.N.S.	1,200
Former S.A.A.F. Schools I.T.W.	1,000
Signals School	720 (excluding trainees for ground trades)
Air Armament School	50 (excluding trainees for ground trades)
C.F.S.	150
No. 11(F) O.T.U.	108
No. 29 (OR) O.T.U.	40 crews (160 pupils)

(1) E.T.S. 659(43). (A.H.B./IIIC/1).

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It was not intended to expand all schools to their maximum planned size unless the situation demanded it, and the only immediate effect, apart from the expansion of the fighter O.T.U., was the slight expansion of the navigation schools (to an overall capacity of 1,750 pupils) achieved by re-shuffling intakes and increasing the size of four of the seven schools from 240 to 250 pupils. Only one of the two South African O.T.U.s was actually expanded and brought under the terms of the new agreement. The other continued training only for South African home defence needs and as such was the sole responsibility of the South African Government.

Temporary Reduction of Pilot Output

All the major difficulties of supply, maintenance and organisation were overcome during 1943 and more attention was being paid to improving training standards. The higher quality of instructors was beginning to pay dividends and it was possible to increase the amount of night flying and instrument training and to introduce Beam Approach training at the S.F.T.S.s. Flying discipline, which had been noticeably lacking at E.F.T.S.s was tightened up, and the weakest feature of the S.F.T.S. syllabus, armament training, was considerably improved.

By the end of the year all schools were working smoothly, but no sooner had the scheme reached its maximum capacity than an urgent message was received from the United Kingdom asking that the output of pilots should be stopped for one month by adding an extra four weeks to the S.F.T.S. courses (with a corresponding increase of two weeks to E.F.T.S.s). This request, which was also sent to Southern Rhodesia, was made in order to help reduce the large number of pilots awaiting O.T.U. training in the United Kingdom. By freezing outputs in Africa, the Middle East O.T.U.s, which were normally fed from that area, could be used to absorb some of the surplus awaiting in personnel reception centres in the United Kingdom. The surplus of pilots, although partly seasonal (O.T.U. courses in the United Kingdom were longer in winter than in summer) was due largely to the fact that the enemy air effort was diminishing more rapidly than had been anticipated and the consequent reduction in operational wastage meant that the number of pilots (particularly fighter pilots) needed to maintain squadrons was fewer than had been estimated.

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Besides extending course lengths it was decided to reduce output by closing one pair of schools. When the time came for outputs to revert to normal the loss of one E.F.T.S. and one S.F.T.S. could be made good by expanding the remaining schools to their maximum capacity. It will be recalled that the new J.A.T.S. Agreement provided for the E.F.T.S. and S.F.T.S.s to train a maximum of 140 and 240 pupils respectively - roughly 25 per cent more than their existing capacities.(1) It was clear by 1944, that all seven pairs of schools would not be required to work at their full capacity, and by concentrating the requisite number of pupils into six pairs of schools, considerable economies in instructional and maintenance staffs would be effected. Accordingly, No. 1 E.F.T.S. Baragwana was disbanded on 8 March and No. 16 S.F.T.S. Waterkloof on 7 June 1944.(2)

The curtailment of output was intended only as a temporary measure and it was hoped that E. & S.F.T.S. courses would revert to 10 and 20 weeks respectively, and schools expanded to their maximum size in the spring of 1944. Events decided otherwise, however, and it will be seen that courses were lengthened still further before reverting to normal and the schools were never expanded.

The question of a replacement for the Tiger Moth as an elementary trainer was considered in March 1944, when it was proposed to re-equip the elementary schools with Cornells from America. Two Cornells were borrowed from Southern Rhodesia to test their suitability in the Union but their unsatisfactory performance on take-off on airfields six thousand feet about sea level resulted in the decision to continue with Tiger Moths indefinitely. Those Cornells already en route from the United States were directed to Southern Rhodesia and the remainder of the order was cancelled.

Reduction of the Training Organisation

By 1944 the manpower situation had become critical and a comprehensive review of establishments was carried out to see where economies could be effected. It was essential that the expansion programme should be sustained

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(1) The existing capacities were:-
E.F.T.S.s - 120
S.F.T.S.s - 200

(2) A.M. File S.61526.

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and the maximum pressure exerted against Germany during 1944, and in consequence economies would have to be made in the non-operational organisations. For planning purposes it was assumed that Germany would be defeated by October 1945, and the overall training organisation was to be progressively reduced by that time so that the output of aircrews would be no more than those required for the Japanese War - a force of 490 squadrons. A reduction of roughly 40 per cent in the world wide training organisation was to be made, and the personnel released from schools would enable the front line expansion programme to be maintained.(1) In South Africa these reductions were as follows:-

(a) Pilot training schools were to be reduced from 6 E.F.T.S.s and 6 S.F.T.S.s to 4 pairs of schools.

(b) Combined schools were to be reduced from 7 to 2 schools.

(c) The fighter O.T.U. to be reduced by 50 per cent by July 1945.

(d) The G.R. School would be redundant by July 1945 and would be turned over to the S.A.A.F. as part of their Home Defence organisation.

(e) The C.F.S., I.T.W., E.A.N.S., and the Signals School would all be proportionately reduced in size.

These schools were considered sufficient to meet both R.A.F. and S.A.A.F. requirements after October 1945 - it was estimated that the latter would be operating 15 squadrons after the defeat of Germany and would require an intake of 35 pupils a week into training to supply that force.

In April 1944 these reductions were agreed by the South African Government and detailed arrangements were worked out to effect them. The two E.F.T.S.s (Nos. 2 and 30) closed on 5 August 1944 and the S.F.T.S.s (Nos. 1 and 6) a few months later. The Air Ministry's original proposal was to reduce to four pairs of schools with a S.F.T.S. population of 240 but South Africa wished to achieve that capacity by retaining five pairs of schools on the basis of an S.F.T.S. capacity of 200. The position was further reviewed and it was finally decided that requirements could be met from four pairs of schools on the basis of 200 pupils at S.F.T.S.s. (Three single-engined schools each training 80 R.A.F. and 120 S.A.A.F. pupils and one twin-engined school training 155 R.A.F. and 45 S.A.A.F. pupils). The temporary extension of courses effected in December 1943

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(1) A.M. File S.98849.

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was continued and in July 1944 a further four weeks was added to the S.F.T.S. course bringing it up to 28 weeks. E.F.T.S.s were similarly lengthened to 14 weeks. This second extension was also made to relieve congestion in the United Kingdom and it was hoped to revert to the normal 10 and 20 week courses as soon as possible. Advantage of the extension was taken to give four weeks' conversion courses on twin-engined aircraft for S.E. trained pilots. The closure of schools and extension of courses caused a large bottleneck of pupils awaiting entry into pilot training, and to relieve the monotony of a prolonged wait at the I.T.W. special pre-E.F.T.S. courses, lasting five to six weeks for 60 pupils at a time, were started at each of the four E.F.T.S.s on 5 August 1944.

The Combined Schools were reduced to two schools training a total of 150 navigators and 150 air bombers and 60 wireless operators/air gunner (this included air gunner requirements - the S.A.A.F. policy was to train wireless operators/air gunner for employment as straight air gunners). All the wireless operators/air gunner and 50 of the navigators and 25 of the air bombers were to be S.A.A.F. personnel. The E.A.N.S. was reduced to 130 pupils, the Signals School to 280 pupils, the C.F.S. to 90 pupils, and the I.T.W. to 420 pupils.

S.A.A.F. Assistance in the Middle East

While the detailed arrangements for the reduction of the training organisation were being made, the South African offer of assistance to the R.A.F. in the Mediterranean theatre was beginning to materialise. Seven squadrons in the M.A.A.F. and one in South Africa, together with four ancillary units, were in the process of 'South Africanisation' by the spring of 1944. In most cases the change over was effected by infiltrating South African personnel into existing units, but a number of new units were also formed. At one time it was thought that the diversion of so many aircrews to the Mediterranean might lead to manning difficulties in some of the training schools: the estimated output of pilots (both S.A.A.F. and R.A.F.) after operational commitments had been met was insufficient to provide full intakes into the G.R. school, the C.F.S., and staff pilot courses in South Africa. The situation was saved by the reduction in the training organisation which

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would, of course, release considerable numbers of personnel from the training schools, and so enabled the process of 'South Africanisation' to be accelerated.(1)

Further South African assistance in the Mediterranean theatre was provided in the spring when three of the S.A.A.F.'s four Ventura G.R. squadrons were moved to that area. With the growing intensity of the American operations against Japan and the consequent lessening of the menace to South Africa, it was thought that one squadron, together with the G.R., O.T.U. and the G.R. school would provide a sufficient force to patrol South African waters. Shortly after the three squadrons left the Union, however, the (G.R.) O.T.U. was disbanded; it was preferable that replacement crews for the G.R. squadrons in M.A.A.F. should be trained in the Middle East (at No. 75 (G.R.) O.T.U.) and there was sufficient capacity there to provide crews for South Africa's reduced home defence needs. The aircraft made available by the closure of No. 29 O.T.U. were used to expand the G.R. squadrons remaining in South Africa and the personnel (both air and ground crews) were formed into No. 29 (G.R.) Squadron equipped with Wellingtons and sent to Aden to take over an R.A.F. squadron. As a result of these further transfers the total extent of the 'South Africanisation' of R.A.F. squadrons amounted to thirteen squadrons, eleven of which were in the M.A.A.F., one in South Africa and one at Aden, and six ancillary units. These were in addition to the South African squadrons already serving in the Middle East and West Africa. The total strength of the S.A.A.F. at that time was actually 34 squadrons:-

27 in M.A.A.F. (including 11 'South Africanised')
1 in W. Africa
1 in Aden
5 in South Africa

The reduction of the South African training organisation made it possible for the Union to make yet a further offer of assistance, and it was proposed to maintain recruitment at its existing level and supply sufficient personnel to replace a further six R.A.F. squadrons in the M.A.A.F. The offer, however, was not accepted. The military situation in the Middle East had considerably improved by that time and it was possible to reduce the strength of the Air Force there and reinforce the Far East. As the policy for moving South African

(1) C.A.S. Folder 911B.

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squadrons out of Africa was still unresolved it was undesirable to replace further R.A.F. squadrons with squadrons which might subsequently prove immobile. Instead, it was arranged that the S.A.A.F. should take over a further 15 ancillary units, in addition to the six already takenover to support their 27 squadrons already in that area.(1)

While plans were being formulated to reduce the size of the training scheme and to transfer the resultant surplus of personnel to operational units in the Middle East, the work of the J.A.T.S. continued. A scheme for training a new aircrew category was introduced in South Africa in June 1944 - that of the 'Flight Engineer' - to meet the requirements of S.A.A.F. flying boat and heavy bomber squadrons. Volunteers were taken from the fitter trades and given a three weeks' technical training course, followed by three weeks gunnery training at No. 3 C.A.N. & B.G.S. at the rate of six pupils every three weeks.

The training facilities for Allied personnel were improved. Large numbers of Greek and Yugoslav pupils, together with a few Belgians recruited from the Belgian Congo, were being trained in both the Union and Southern Rhodesia, and to help overcome the language difficulty a special section of the I.T.W. at Lyttleton was set aside to provide special English language instruction to foreign pupils.

Further Training Reductions

By the autumn of 1944 events had moved quickly and the two basic factors upon which the reductions had been calculated six months earlier had both changed: Germany was likely to be defeated by December 1944 instead of October 1945 and the force required for the Japanese War was reduced by 100 squadrons to one of 390 squadrons. In addition June 1946 was set as the provisional date for the defeat of Japan and new wastage rates, lower than formerly planned, had been worked out for that campaign.

In the light of these developments, which in themselves allowed considerable reductions in training, it was estimated that there were already sufficient personnel in the training pipe line to meet all requirements until at least the end of 1945. There was already a large pool of newly trained aircrew awaiting entry into squadrons and immediate steps were needed if the surplus was to be prevented from growing.(2)

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(1) V.C.A.S. Folder 2228.

(2) E.T.S. 773(44). (A.H.B./IIIC/1).

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Thus in October 1944 the Air Ministry planned a considerable reduction in the overseas training organisation, and a month later the Air Member for Personnel (Air Marshal Slesser) visited South Africa to discuss future requirements. To meet the needs of the R.A.F. after 1945 and to support an estimated force of 16 S.A.A.F. squadrons (one more than formerly planned) participating in the Japanese war, it was thought that the training organisation in South Africa could be reduced to:-

Number of & Type of School	Capacity	
	S.A.A.F.	R.A.F.
Two E.F.T.S.s	100	88
Two S.F.T.S.s	150	150
Two C.A.N. & B.G.s	120	240
One E.A.N.S.	-	120
One Air Armament School	60	-
One Signals School	310	-
One T.T. School	20	-

The S.A.A.F., it transpired, already had nearly all the aircrew it needed to back its Phase II force and their future requirements - mainly for refresher and specialised training facilities for personnel already trained and only a nucleus basic training organisation - would be outside the scope of the Joint Air Training Scheme agreement. This caused the R.A.F. training requirements to be re-examined. It was planned to retain only one O.T.U. (a day fighter) in the Middle East during Phase II - other operational training requirements would be provided either in the United Kingdom or the Far East - and the basic training requirement to feed that unit was for pilots. Two E.F.T.S.s (training 100 pupils) and two S.F.T.S.s (training 150 pupils) were to be retained with their course lengths reduced to 10 and 20 weeks respectively. Plans for the retention of navigator and air bomber basic training facilities were no longer necessary and no further drafts of navigator and air bomber pupils were despatched from the United Kingdom after October 1944. It was agreed, however, that one school (No. 43 C.A.N. & B.G.S.) should be retained until the surplus pool of R.A.F. navigator and air bomber pupils at the E.A.N.S. and re-categorized pilot pupils could be absorbed.(1)

(1) E.T.S. 777(44). (A.H.B./IIIC/1).

/ S.A.A.F.

S.A.A.F. post-graduate training requirements amounted to the retention of the fighter O.T.U. and the establishment of a small G.R. flight at Saldanha Bay to replace the G.R. School. As no further flying instructors were required the C.F.S., together with the G.R. School, could be closed within a few months. Although the S.A.A.F. basic training requirements were not finally settled - they were to be outside the J.A.T.S. and would be established once the run-down of that scheme was completed - the I.T.W., Signals School, and Air Armament School were provisionally retained. Any pilot, navigator and air bomber capacity required before the new schools were established could be met from the schools retained to train R.A.F. personnel.

It was agreed that immediate steps should be taken to disband the surplus schools and the South African training organisation which consisted of 29 schools at the beginning of the year, would, with the reduction planned in March and October 1944, be reduced to 10 schools (plus a G.R. flight) by the first quarter of 1945.

While the plans for the closure of schools were being formulated, arrangements were made to utilise some of the surplus training capacity to provide refresher courses for pilots who had finished their basic training and were awaiting their posting to an O.T.U. A pilots transit flight had been established at Zwartkop in July 1944 for that purpose, and as the commitment grew - owing to similar reductions being made in the Middle East Operational Training Organisation - the flight moved (in November) to Bloemfontein. When, in March 1945, Nos. 5 and 7 S.F.T.S.s ceased training the flight was split and S.E. trained pilots were sent to Standerton and T.E. pilots to Bloemspruit for training. Intakes and course lengths were fluid and varied considerably according to the demands of the O.T.U.s, but the courses carried out were roughly comparable to the syllabus of the advanced flying units in the United Kingdom and a few Kittyhawks and Venturas were added to the Harvards and Oxfords already at these stations to carry out the training. These courses continued until the summer of 1945 by which time the bottleneck had been broken.

The Termination of the J.A.T.S.

By the spring of 1945 all the reductions planned in 1944 had been completed, and the South African basic training organisation comprised two E.F.T.S.s,

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two S.F.T.S.s, one E.A.N.S., one C.A.O.N. & B.G.S., one Signals School, one Air Armament School and an I.T.W. besides the two temporary pilots transit flights. The end of the war in Europe in May 1945 brought about another review of requirements. R.A.F. needs remained unchanged (by that time the pool of air bombers and navigation pupils had been absorbed and arrangements were made to close both the E.A.N.S. and the C.A.N. & B.G.S.) and it was now possible for the S.A.A.F. requirements for the Pacific War to be formulated. Although sufficient trained aircrew were available to meet all foreseeable needs, it was planned to retain a nucleus training organisation producing roughly 100 pilots, 80 navigators and 60 wireless operators/air gunner a year. The pilot capacity was available at the two pairs of schools training R.A.F. personnel, and to meet the other needs an I.T.W., a combined G.R. navigation and armament school, together with a conversion and refresher flight were needed.(1)

The dramatic end of the Japanese War in August 1945 occurred before these plans could be consolidated, and it was decided that all training in the Union should be brought to an end. All S.A.A.F. personnel under training were immediately released, although it was agreed that the R.A.F. pupils under training should be allowed to complete their courses before the schools were closed. There was a proviso that only those that agreed to remain in the Service for three years after graduating should be allowed to continue training. Thus during the latter half of 1945, all but one of the schools were closed and No. 4 S.F.T.S., Nigel, the last school, closed when its last course graduated on 8 March 1946.

During the life of the plan more than 26,000 aircrew candidates completed their training in South Africa, roughly two-thirds of whom were R.A.F. personnel.

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(1) E.T.S. 813(45). (A.H.B./IIIC/1).

CHAPTER 11

BASIC TRAINING IN SOUTHERN RHODESIA

The self-governing colony of Southern Rhodesia not only made the largest wartime contribution in flying training facilities of all the colonies, but was the first British possession to offer active assistance to the United Kingdom. The offer, made in 1934, of a contribution of £10,000 a year towards the cost of Imperial Defence, was to be utilized on the recommendation of the committee of Imperial Defence, to establish facilities for pilot training in the colony. A Southern Rhodesian Air Unit was to be developed which could be available either for the defence of the colony itself or as a contribution to Imperial Defence outside Southern Rhodesia.(1) At the request of the Prime Minister of Southern Rhodesia (Mr. Huggins) the Deputy Director of Plans (Group Captain A.T. Harris) visited the colony early in 1936 to assist in the formation of the colony's Air Unit, and on his recommendation it was decided to achieve that object by a series of six progressive steps:-

(a) The establishment of a nucleus staff
(b) The training of technical personnel.
(c) The establishment of elementary training facilities.
(d) The establishment of Service training facilities.
(e) The formation of an operational unit.
(f) The setting up of a Volunteer Reserve Organisation.

Formation of the Southern Rhodesian Air Unit

Good progress was made during the following two years and by the beginning of 1938 stage (d) had been reached. In the summer of 1936, six Rhodesian schoolboys had been nominated by the Government of Southern Rhodesia for a course of training at No. 1 School of Technical Training (Apprentices) Halton, and after completing their training they returned to Rhodesia to form the nucleus of an Air Section of the Permanent Staff Corps of Southern Rhodesia. The following year, two R.A.F. officers and three N.C.O.s were seconded for duty with the Air Section, and arrangements were made for six pupils a year to be given ab initio flying training at the civil flying school at Salisbury operated by De Havilland.

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(1) A.M. File S.37926.

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A flight to carry out Service training was established at the newly constructed airfield at Hillside in December 1937. The aircraft for the flight, six Harts, cost £700 each and were bought from the United Kingdom. The first batch of pupils passed out in May 1938.(1)

To form an operational flight Southern Rhodesia needed more aircraft. In the United Kingdom the drive for expansion made it impossible to provide modern types of aircraft and the rapidly increasing Volunteer Reserve needed every available obsolescent aircraft. It was not until May 1939 that four Audax aircraft were supplied and an Army Co-operation Flight formed in Rhodesia. Two more Audax and three Gauntlet aircraft were promised later in the year to form a fighter flight.

The final stage, the establishment of Volunteer Reserve training facilities was raised by the Southern Rhodesian Government in July 1938, and a few months later the Air Ministry offered to supply aircraft and instructors for the formation of a V.R. Centre training reserves for both Southern Rhodesia and the Royal Air Force. There were financial difficulties over the question of relieving Southern Rhodesia of any liability for her own defence, and it was not until July 1939 that Treasury authority to proceed with the scheme was received.

In the same month Mr. Huggins visited the United Kingdom and discussed the question of the employment of the Southern Rhodesian Unit. In view of the need for air power in East Africa it was decided to expand the unit from two flights into a composite squadron of three flights, each of nine aircraft (two Army Co-operation flights equipped with Audax and a further flight of Gauntlets) which would move to Kenya in the event of war. The training flight was to be more than trebled in size and was to be equipped with 18 Harts and 6 Blenheims. In addition, it was suggested that an R.A.F. Flying Training School should be established in the colony. The climatic and geographical advantages of the country for air training were stressed and it was pointed out that if the school were established on the short service basis, not only would there be a good response from within the colony but it was likely to attract a number of recruits from the Union of South Africa.

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(1) A.M. File S.45773.

/ Progress

Progress up to the Outbreak of War

Little further progress was made by the outbreak of war. Volunteer Reserve training had not started, although the training flight had been expanded to train 12 pupils a year. The Audax and Gauntlets promised earlier in the year had not arrived and the projected squadron still comprised two Army co-operation flights. These two flights had been mobilised a week before war was declared, their Audax aircraft supplemented by a few Harts formerly destined for the training flight and some Rapides which had been commandeered from local civil clubs, and sent to Kenya as No. 1 Squadron S.R.A.F. Eight months later the unit was renamed No. 237 (Rhodesian) Squadron R.A.F.

The training flight at Hillside (it was officially renamed Cranbourne air station in September 1939) was expanded to train both air and ground crews. Its aircraft comprised four Harts, one Rapide and eight Moths, the latter being provided by the Bulawayo and Salisbury Flying Clubs who also provided some instructional personnel. It was soon apparent that Cranbourne would be unable to carry out Service flying training successfully so in December, after 15 pilots and nine air gunners had been trained and sent to reinforce the squadron in Kenya, the unit was reorganised as an elementary flying training school and arrangements were made for its output to proceed to No. 4 S.F.T.S. Habbaniya, Iraq, for their Service flying training. The first course of 20 elementary trained pupils entered Habbaniya on 4 December 1939.(1)

An offer to supply and maintain three Rhodesian squadrons for service with the R.A.F. was accepted by the Air Ministry in November 1939, only to be superseded a few weeks later by a scheme whereby Southern Rhodesia was to set up and operate schools for pilot training in the colony. It was proposed that three E.F.T.S.s and three S.F.T.S.s should be formed as soon as possible to train both Southern Rhodesian personnel and candidates for the Royal Air Force from sources outside the colony (e.g. neighbouring British territories in Africa or the United Kingdom itself). Southern Rhodesian personnel were enlisted into the R.A.F.V.R. and after training were to be posted to R.A.F. squadrons. When sufficient numbers became available, Southern Rhodesian squadrons of the R.A.F. were to be formed, and two such squadrons, in addition to No. 237 Squadron, were eventually formed during the war.

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(1) A.M. File S.51244.

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The Southern Rhodesian Government offered to meet the costs of all works expenditure (£800,000), barrack equipment (£90,000) and Headquarters establishment (£57,000 a year) together with roughly 22½ per cent of the annual maintenance costs of the scheme (£800,000 a year). The United Kingdom agreed to meet all other expenses and to provide aircraft and supply practically all instructors and staff.

Development of the Rhodesian Air Training Group

Once these plans had been made the development of training in Southern Rhodesia was swift, energetic and sound. Moreover, it had the wholehearted backing of the Government and the people of the Colony. Executive control was in the hands of the Rhodesian Officer, Air Commodore Meredith, who had played a large part in bringing the scheme together. Whereas schools in Canada, Australia, New Zealand and South Africa, were, in the main, Dominion establishments more or less reinforced by the Royal Air Force, Rhodesian schools were largely R.A.F. establishments in a Rhodesian setting.

In January 1940 Belvedere and Cranbourne were selected as locations for the first pair of schools, and two more sites for aerodromes were selected at Guinea Fowl and Kumalo. It was some months before training was started and in the meantime the old training flight at Cranbourne carried on its courses, sending its pupils to No. 4 S.F.T.S. Habbaniya for their Service training. In all a total of 62 partially trained pupils had been sent to Iraq before the flight was converted into an S.F.T.S. Arrangements were made for the aircraft for the schools to be shipped via Durban, South Africa: Tiger Moths and Ansons from the United Kingdom and Harvards direct from America. The Tiger Moths were sent on by rail to Rhodesia but the packing cases of the Harvards and Oxfords were too large to be taken by rail and a depot was established at Durban so that they could be erected and flown on to Rhodesia. An erection party of 40 personnel was sent from the United Kingdom and the South African authorities gave considerable assistance in the erection of the aircraft and provided South African Air Force pilots to ferry the aircraft to Rhodesia.

The schools were controlled by a Rhodesian Air Training Group at Salisbury answerable to the Southern Rhodesian Government through its Minister for Air, but working for all practical purposes direct with the Air Ministry in London. As

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Southern Rhodesia was a self-governing colony with its own Parliament the H.Q. had to act as the Rhodesian Air Ministry as well as a combined Command and Group. The Group was planned originally as three E.F.T.S.s and three S.F.T.S.s to produce some 1,300 pilots per year. Its first E.F.T.S. was opened at Belvedere in May 1940 - it was, in fact, the first school to open under the various Empire Schemes - (1) and the first S.F.T.S. two months later at Cranbourne. The schools were numbered consecutively with the R.A.F. schools planned or in existence in the summer of 1940, and training conformed to the normal R.A.F. syllabus, i.e. 8 weeks E.F.T.S. courses with intakes of 48 pupils and out-puts of 40 pupils every 4 weeks, and 16 weeks S.F.T.S. courses with intakes of 40 and outputs of 34 pupils every 4 weeks. While the scheme was coming into operation, Southern Rhodesia offered, in June 1940 to undertake more training and to accommodate another E.F.T.S. and S.F.T.S. together with an air observer school. The offer of the additional flying training schools was accepted, although it was agreed that the air observers school need not be formed until the following year. The Southern Rhodesian target then became four E.F.T.S.s and four S.F.T.S.s turning out some 1,768 pilots per year. The second E.F.T.S. which was ready only twelve weeks after construction began, was opened in August, and the second S.F.T.S. eight weeks later. The elementary schools were equipped with Tiger Moths, and the Service schools opened as 'mixed' schools equipped with both Harvards and Oxfords training on the old I.T.S. - A.T.S. syllabus, although shortly afterwards it was arranged that two schools should specialise in training with Harvards and the other two with Oxfords. The two 'revises' introduced at all schools during the autumn of 1940 by the Air Member for Training to increase pilot output, reduced the E.F.T.S. course to 7 weeks, and the S.F.T.S. course to 14 weeks without any change of syllabus and pilots received 150 hours flying before graduating. The 'third revise', which reduced S.F.T.S. and E.F.T.S. course lengths to 12 and 6 weeks respectively, was not introduced in Southern Rhodesia. Most of the output from the schools (and from those in South Africa where S.F.T.S. course length remained at 16 weeks) went directly into operational squadrons in the Middle East - there were hardly any O.T.U. facilities in that area until mid-1941 - and it was essential that they should have a more thorough grounding in basic training than pupils from schools in Canada and the United Kingdom who underwent O.T.U. training before being posted to squadrons. (2)

(1) The first E.F.T.S. in Canada opened a few days later.
(2) A.M. File S.4663.

A.M.T.'s request for a 25 per cent overbearing in all schools, which Rhodesia agreed to introduce in September 1940, meant that the S.F.T.S.s were expanded to 200 pupils per school and E.F.T.S.s to 120 pupils, thus increasing the planned output to 2,500 pilots per year.

Formation of an I.T.W.

When the scheme first started there was a larger proportion of failures amongst Rhodesian personnel than those from the United Kingdom due mainly to the fact that they had not had the benefit of passing through a pilots selection board and of undergoing initial training wing instruction. This was rectified in August 1940, when a pilots selection board was formed, and a seven weeks I.T.W. course inaugurated at Kumalo for 50 Rhodesian pupils at a time. In October the I.T.W. was expanded to take twice as many Rhodesian pupils and to cater for a further 50 R.A.F. personnel every seven weeks from the Middle East and E. Africa who had not carried out I.T.W. training. It was also essential owing to the uncertainty of shipping to build up a reserve of potential pilots, so that, in the event of a breakdown or delays in shipping the E.F.T.S.s could be kept supplied. To meet this contingency a policy of retaining at least one complete E.F.T.S. intake (roughly 250 pupils for four schools) in the I.T.W. was introduced and a special pool was established in addition to the I.T.W. course for that purpose. The pupil capacity for the I.T.W. course itself was expanded again shortly afterwards to take a further 100 pupils making 250 in all. These rapid increases made it necessary to find a new home for the Wing and at the end of the year it moved to a former Army camp at Hillside.

The first pupils for the schools came from the United Kingdom and Southern Rhodesia - mostly from the United Kingdom because of the Colony's small population - but in November 1940 Australia agreed to provide some 40 pupils every 4 weeks and 3 weeks alternatively - 580 per year, or a little less than one sixth of the number which the Rhodesian Group would require when all its schools came mainly from the United Kingdom, and when in June 1940 it became difficult to spare experienced men from Britain, two South African schools and one in Kenya (which later moved to South Africa) were given priority over the formation of the third pair of Rhodesian schools. Consequently the third and fourth elementary and Service flying training schools were not formed until 1941.

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The Shortage of Spares

By the end of the year a good start in Southern Rhodesian training had been made and 110 pilots had graduated from the schools.(1) These achievements were not made without difficulty, however, and though the schools were free from the major troubles of finding aircraft and instructors - since the schools were sent out almost complete from the United Kingdom - they were severely handicapped by lack of spares and shortage of some items of equipment, such as bomb sights, blind flying hoods, wireless gear and camera guns. It had been agreed as early as November 1939 that schools in Rhodesia would need 18 months supply of spares, but none the less the initial supplies sent out for these were based on United Kingdom experience, and made no allowance for the special conditions of distance and enforced self sufficiency. No spares arrived at all for the first E.F.T.S. until more than a month after it had began work, and the school was able to operate only because the Southern Rhodesian Government had brought up all the de Havilland spares in the country.

Troubles over spares and equipment persisted through 1940 and 1941, and were aggravated as time went on by the limited amount of shipping space available and by unexpected losses caused through sinkings. Rhodesia, however, considered that an amazing and infuriating lack of commonsense was being shown in making up the consignments. Aircraft general stores such as split pins were sent in exiguous quantities that barely covered the initial issues to flight stores, while only one set of tools was supplied for a school with 48 aircraft. On the other hand some hundreds of empty parachute boxes (which were not needed) arrived at a time when the Rhodesian Group was seriously short of parachutes, and later when a combined air observers school was formed its Ansons were thoughtfully provided with dinghies although they were destined to fly exclusively over land. It took considerable time to set these matters right, partly because of distance and shipping difficulties, and partly because the details of what Rhodesia wanted and what the Air Ministry was proposing to send had to be reconciled before anything could be shipped. Unexpected factors also occurred. For example, the consumption of Oxford and Harvard tail wheel tyres and tubes was surprisingly heavy: the effect of dust, especially on Oxfords,

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(1) See Appendix 79.

set an awkward problem; and the high altitude tended to increase the accident rate, particularly at the schools equipped with Tiger Moths or Oxfords.

Southern Rhodesia tackled this state of affairs with energy and enterprise and in spite of the handicaps the syllabus was carried out thoroughly. Local purchase, local manufacture of spares, local design of air cleaners, cannibalism of unserviceable aircraft - any means of providing the flying hours needed for the planned pilot output - were used. Due attention was paid to considerations of safety, but little regard to established methods and precedents - a procedure which caused many queries, criticisms and deprecations when the Air Ministry auditors arrived.

Instructors in Southern Rhodesia had consistently arduous work. When aircraft were delivered they had to be ferried from South African ports, and apart from some S.A.A.F. pilots, instructors were the only available ferry pilots. The fine weather made it possible to cover the syllabus in a short time and meant that flying was constant and unremitting, and the heat and altitude made it even more trying. It also gave no opportunity for bad weather flying and special attention had to be given to Link Trainer and instrument flying instruction. Regular leave and rest were essential, but the schools were below establishment and there were no replacements apart from pilots from operations in the Middle East who had received no training as instructors.(1)

The Opening of a Combined Air Observers and Air Gunners School

During the first half of 1941 the Rhodesian training scheme developed according to plan and the four remaining schools, two E.F.T.S.s and two S.F.T.S.s were opened by the middle of the year.

In January 1941, chiefly to cater for the training as other aircrew of pupils eliminated at the various stages of pilot training in Rhodesia, the projected air observers school was widened by the proposal to open a combined school at Moffat to train both observers and air gunners. It was originally planned to open in April, but its formation was delayed until the middle of August, partly through shortage of Ansons, and partly because Southern Rhodesia was somewhat in doubt about the type of station to be built. Even then the

(1) E.T.S. 161/41. (A.H.B./IIIC/1).

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first courses were severely hampered by lack of navigation, armament, and signals equipment. The schools trained air observers on an 18 weeks' course, and air gunners on 4 weeks' course and had an annual output of roughly 240 observers and 380 air gunners. Apart from a few local enlistments, all pupils were provided from the wastage at the pilot training schools.(1)

An offer which Southern Rhodesia made in February 1941, to expand the Group to six E.F.T.S.s and six S.F.T.S.s was eventually declined after a period of uncertainty and contradictory decision. The offer was made at a time when the United Kingdom was anxious to plan more schools but had to reckon with the possibility of United States training (with all its political, industrial and manpower advantages) and with Canadian confidence that she could undertake all the training that was needed. Southern Rhodesia was a sterling area, and was capable of getting schools quickly into operation, but the overwhelming arguments in favour of United States schools and the steady pressure for a larger Canadian training organisation turned the scale.

Co-operation with South Africa

The Southern Rhodesia Air Training Group worked in close co-operation with the South African Training Scheme. In addition to providing facilities for the erection and delivery of aircraft through the Union, South Africa supplied pupils for Rhodesian schools and training facilities for Rhodesian graduates. In January 1941, for example, a certain number of S.A.A.F. volunteers were trained in schools in Southern Rhodesia on the understanding that on completion of their training they would serve with the R.A.F. Reciprocal arrangements were made so that some pilots from Rhodesia - most of whom normally went to the Middle East, went to South Africa for general reconnaissance, flying boat or instructor courses.

A further example of South Africa-Southern Rhodesia co-operation occurred when plans were made to reconstitute the Greek and Yugoslav Air Forces in the Middle East. In order to provide trained aircrew for squadrons of these air forces, arrangements were made to train Greek and Yugoslav aircrews in Southern Rhodesia and South Africa. The training of Greek pilots commenced in July 1941, and by October it was arranged that 16 Greek pupils every 7 weeks should be

(1) E.T.S. 194(41). (A.H.B./IIIC/1).

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accepted for training in Rhodesia. All training of Greek pupils from the I.T.W. onwards was carried out by Greek instructors in order to overcome the language difficulty. It was not until December 1941, that the question of training Yugoslavs arose. It was then arrangedthat pilots and observers should train in Rhodesia, and wireless operations in South Africa.

In addition to Greek and Yugoslavs some French and Polish aircrew were trained in Southern Rhodesia. To cater for these personnel, most of whom could speak little or no English, special English courses were started at Bulawayo in 1942. The duration of the courses varied according to the aptitudes of the pupil, but it was usually found that a fairly sound working knowledge of the language could be gained within about three months. Besides these foreign personnel numerous English speaking pupils from all parts of the British Empire, from Malta to Fiji, were trained in Rhodesia.

In September the policy of exchanging instructors as frequently as possible with ex-operational pilots from the Middle East Command was introduced - a policy which served the double purpose of relieving operational fatigue on the one hand and eliminating boredom on the other.(1) The full instructor establishment of the Rhodesia Air Training Group was roughly 300 pilots, of whom half were suitable for operational duties and an exchange rate of some 8-10 pilots per month with the Middle East was arranged. The South African C.F.S., which had been undertaking instructor's training on behalf of Southern Rhodesia, did not have sufficient capacity to undertake the additional training and refresher courses necessitated by the new policy, and it was decided to establish a small C.F.S. flight in Southern Rhodesia to meet the new commitment. The flight formed at Belvedere on 3 September 1941; it provided complete flying instructor courses for a limited number of graduates from Rhodesian schools and for ex-operational pilots from the Middle East, as well as refresher and conversion courses for former instructors.

Arrangements were also made to expand the I.T.W. at Hillside. It had been found that pupils from the United Kingdom and Australia who completed their I.T.W. before sailing for Rhodesia, tended to forget much of their initial training by the time they started their flying training. The length of this

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(1) E.T.S. 375(41). (A.H.B./IIIC/1).

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interval, which was accentuated by delays and irregularities in shipping, had already made it desirable to give most of the pupils in the I.T.W. pool at least a month's refresher training before they were ready to absorb the E.F.T.S. syllabus, and it was only one step further to provide full I.T.W. training in the colony for all pupils sent there for flying training. Accordingly on 1 November 1941 the pool and the I.T.W. course were combined and expanded to accommodate 1,200 pupils, and an I.T.W. course of eight weeks duration for all pupils was arranged.

Expansion Completed

By August 1941 the period of development which began in January 1940 was completed. During the latter half of the year, however, there remained much to be done, and it might appropriately be called a period of consolidation. In addition to the development of I.T.W. facilities, and the establishment of instructor training facilities an efficient repair and maintenance organisation was developed and a considerable amount of work completed on sundry buildings.

A central maintenance unit was opened at Bulawayo in August for the purpose of centralising the issue of all spare parts. Earlier in the year there had been acute shortages of spares especially engine components, airscrews and plywood for fuselage repairs at many schools. The chief difficulty had been that numerous spare parts were locked up at various schools in the colony and while one school might run desperately short of a particular spare, other schools might have more than enough of that same item. By holding all spares at one central unit it was hoped that there would always be an adequate supply available for immediate issue when required. The repair of aircraft and engines was also centralised at two units with the same object in mind and Nos. 31 and 32 Aircraft Repair Depots were formed at Cranbourne and Heany in September. No. 31 A.R.D. dealt with the overhauling and repair of Harvard airframes and Wasp engines, and No. 32 dealt with Oxfords and Cheetah engines. The maintenance of elementary trainers continued to be carried out by the schools themselves.

The works organisation made good progress and all building requirements had been met by the end of the year. The Southern Rhodesian Government also offered to undertake the building of married quarters to accommodate the families of R.A.F. permanent staff stationed in the colony, when in 1941 the possibility

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of moving them to join their husbands was discussed, but the shortage of shipping at that time made it difficult to provide passages and so obviated the need for married quarters.

Effect of Japan's Entry into the War

The only direct effect of the outbreak of war in the Pacific on the Rhodesian Training Scheme was the immediate cessation of the shipment of trainees from Australia. Both Australia and New Zealand stopped all shipments of aircrew trainees abroad, and although drafts to Canada were resumed within a few months, no more Australians were sent to Rhodesia. In all some 674 Australian pupils were sent to Southern Rhodesia for their training and of those 514 were trained as pilots and 61 reclassified and trained as observers and eight as air gunners.

For the next three years the size of the training organisation remained unchanged, and a steady stream of pupils from the United Kingdom, South Africa and Southern Rhodesia itself, as well as Greeks and Yugoslavs recruited in the Middle East, were trained as aircrews for service with the Royal Air Force. Although there was no further increase in the number of schools, there were constant changes in course lengths and capacities. Initially they were made to improve training standards but later they were used as a means of adjusting the flow or pilots to meet the various needs of the front line. The output of other aircrew remained steady throughout the life of the scheme, at roughly 210 observers and 400 air gunners per year, and that of pilots fluctuated between roughly 1,700 and 2,600 a year, although their output was neither steady nor constant owing to the repeated changes in the schools' organisation.

The first change was brought about just before Japan entered the War when, to improve the standard of training, the 'New Deal' was introduced by the Air Member for Training. The 'New Deal' was applied to all schools throughout the Empire, and its main object was to ensure that all pupils received at least 200 hours flying before receiving their wings. Courses reverted to their original lengths of 8 weeks for E.F.T.S.s and 16 weeks for S.F.T.S.s and the minimum flying hours per course were laid down as 70 and 130 respectively.(1)

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(1) A.C.70(41).

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Some months later, in the summer of 1942, courses were lengthened again. This time, although the extensions had the effect of raising still further the standard of training, their primary purpose was to avoid the creation of a temporary surplus of pilots. America's entry into the War had curtailed the allocation of American aircraft for the R.A.F. and the prospect of a shortage of aircraft, or rather a surplus of aircrews, was accentuated in the case of pilots by the revised crew policy and the decision to carry only one pilot in all heavy and medium bomber aircraft. The decision that schools in the African continent should be called upon to reduce their output rather than those in Canada, America or the United Kingdom was made in view of the shortage of O.T.U. facilities in the Middle East (where most of their output was sent). In June 1942 therefore courses at E.F.T.S.s and S.F.T.S.s were increased by 50 per cent to 12 and 24 weeks respectively, the effect of which was to stop the output of pilots for two months. The prospect of a surplus was only temporary and to ensure that when output recommenced it would continue as before (at the rate of about 1,700 pilots a year) arrangements were made to increase the schools' capacities to compensate for the longer courses. Accordingly E.F.T.S.s were expanded to 160 pupils and S.F.T.S.s to 240. Flying hours per pupil were raised from 200 to 225, the additional time being devoted to improving the standard of bad weather and night flying training.(1) It was planned that courses would be reduced to their normal length some time in 1943.

The possibility of setting up A.F.U. or O.T.U. facilities in Southern Rhodesia to relieve the pressure on the Middle East O.T.U.s was considered but rejected through lack of aircraft. Had more aircraft been available facilities in the Middle East would have been expanded. To establish O.T.U.s in Rhodesia would merely be robbing Peter to pay Paul. The same argument applied to the formation of A.F.U.s; they could only be opened at the expense of the S.F.T.S. aircraft.

The other results of the new crewing policy - the splitting of the observer category into those of navigator and air bomber, and the revised demands for wireless operators/air gunner and air gunners - did not have much effect on the Rhodesian scheme. The old observer courses continued unchanged although the output was now called navigators/bomber, and the only innovation was the addition of an E.A.N.S. course to improve their basic ground training.

(1) A.M. File S.67123.

/ Formation

Formation of Auxiliary Services

While these extensions were being implemented, further improvements were introduced in the general scheme for air training in the colony. Two auxiliary services were formed to release airmen for more active work. The first, the Women's Auxiliary Air Services was inaugurated in January 1941, to take over duties such as teleprinter operating, instrument repairing and parachute packing at the training schools. The second auxiliary force, the Rhodesian Air Askari Corps, was a native force raised in August 1941, and divided into two sections: one for guard duties and the other a labour section for aerodrome work. To encourage the recruitment of local personnel for flying duties, and to foster a general interest in air matters, an Air Section of the Southern Rhodesian Cadet Corps was started, organised on similar lines to the Air Training Corps in the United Kingdom. The section was formed at the end of 1941 and eighteen months later, in May 1943, it was expanded to form the Air Training Corps of Southern Rhodesia.

Reorganisation of Initial and Instructor's Training Facilities

More attention was also paid to the initial training of aircrew pupils, and steps were taken to bring the pre-flying training courses in the colony into line with those in the United Kingdom. The I.T.W. syllabus was extended from 8 to 12 weeks in June, and an elementary air navigator's course introduced which provided an eight weeks' course for navigator and bomber pupils before they commenced the air navigation course proper. The E.A.N.S. was instituted by expanding the C.A.O.N. and B.G.S. at Moffat to accommodate an additional 50 pupils. A further expansion of the C.A.O.N. and B.G.S. had occurred a few weeks earlier when the air gunners' courses were extended by two weeks. To achieve the planned output it was necessary to increase the air gunner capacity from 30 to 50 pupils. The system of 'grading' introduced in the United Kingdom in the spring of 1942 was not reproduced in Rhodesia until some 18 months later. Its primary purpose was to weed out pupils unlikely to make the grade as pilots before sending them abroad, and it was carried out after pupils had finished their I.T.W. training. As pupils for Southern Rhodesia, were chosen at the aircrew reception centre and underwent their I.T.W. training in Rhodesia, it was felt that there was no point in 'grading' them after their

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arrival in the colony. In October 1943, however, that policy was changed and it was decided that by 'grading' pupils in the United Kingdom before sending them to Rhodesia, it would be possible not only to reduce E.F.T.S. wastage rates but to economise in shipping space and I.T.W. accommodation in the colony. By then the shipping position had improved considerably and the time between completing the I.T.W. course in England and starting flying training in Rhodesia was no longer unduly protracted. Not all of the pupils were supplied from the United Kingdom; roughly 130 of the five-weekly intake of 320 pupils (producing an output of 240) were recruited within the colony, from R.A.F. ground tradesmen in the Middle East or India, from Greek or Yugoslav forces in the Middle East, and from the Belgian and French colonies in Africa. These recruits would continue to go straight from the I.T.W. (in Southern Rhodesia) to the E.F.T.S.s and consequently their wastage rate would remain at about 20 per cent. The remainder of the intake, graded pupils from the United Kingdom, should have a much lower E.F.T.S. wastage rate - about 10 per cent - which meant that to produce a five-weekly output of 240 pupils only 140 pupils every five weeks would be needed from the United Kingdom - a reduction of 50 on the previous requirement. The first draft of 'graded' pupils arrived from the United Kingdom in September 1943, after which date it was possible to reduce the capacity of the E.F.T.S.s from 160 to 135 pupils per school. All the navigator/bomber and air gunner intakes at the C.A.O.N. and B.G.S. could still be supplied from the pilot wastage.

Steps were taken to improve the transitory facilities of pupils both to and from the colony. Now that pupils completed their I.T.W. training before leaving the United Kingdom it was essential that they arrived at their destination and started training without delay, and to bridge the gap between the I.T.W. and the E.F.T.S. arrangements were made to provide special courses of instruction on the voyage out to Rhodesia. At the other end of the pipeline similar steps were taken to avoid delays and bottlenecks. It was arranged that graduates who could not be readily absorbed into the Middle East or India O.T.U.s should be shipped to the United Kingdom instead of, as hitherto, allowed to stagnate in depots and pools.

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The policy for the employment of flying instructors in the colony was changed in the summer of 1942. The instructional tour was reduced to 12 months, which meant that a turnover of roughly 300 instructors a year was required. The existing facilities could provide only about half that number and if Southern Rhodesia was to remain self-efficient a new school would have to be provided. The Southern Rhodesian Government agreed to shoulder the cost of a new school at Norton (estimated at £96,000) and the C.F.S. flight was moved there on 1 July. It was renamed No. 33 Flying Instructors' School and trained 48 pupils on an 8 weeks' course.(1)

The following spring saw a further change in the policy for the employment of flying instructors, when it was laid down that the tour of all flying instructors should be 18 months. This was done to establish a world-wide equality over their length of duty. Prior to that date while those in Canada and Southern Rhodesia were serving a 12 months tour of duty, the larger increase in the number of A.F.U.s in the United Kingdom had meant that instructors there had been kept on for as long as two years. This extension of the tour for Rhodesia flying instructors did not allow a reduction in the F.I.S. training capacity. On the contrary the reduction of course lengths at E.F.T.S.s and S.F.T.S.s in 1943 was accompanied by an increase in the flying instructor establishment in order to complete the same syllabus in a shorter time. As a result No. 33 F.I.S. had to be more than doubled in capacity in April 1943 and the course length extended to 10 weeks. By running two pairs of staggered courses simultaneously this increase was achieved without adding to the aircraft establishment.

Adjustment in Pilot Output

The year 1943 began with the decision to shorten pilots' courses in order to increase output. The course extensions made in the previous year had achieved the desired effect of breaking the bottleneck at the O.T.U.s, and it was now planned to resume maximum outputs. It was not possible for courses to revert to their original lengths and at the same time maintain the higher standard of instruction until the Tiger Moths at the E.F.T.S.s were replaced with aircraft more suitable for Rhodesian conditions. The general altitude of

(1) A.M. File S.67123.

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the colony was roughly 4,000 feet above sea level - parts of the 'high veldt' were as high as 8,000 feet - which meant that aircraft had to fly at much higher altitude than in most other places when training was carried out. Accordingly E.F.T.S.s were shortened to 10 weeks and S.F.T.S.s to 20 instead of to 8 and 16 respectively, and flying hours per pupil remained unchanged at 75 and 150 respectively.

In September a new elementary trainer was introduced - the Fairchild P.T.19, known as the Cornell - it had slightly more power than the Tiger Moth and was much more satisfactory for operating at higher altitudes. The new aircraft was shipped direct from America and the surplus Tiger Moths sent to South Africa to replace wastage there. As a result of this re-equipment it was possible for courses to revert to normal and on 22 October 1943, E.F.T.S.s were reduced to 8 weeks and S.F.T.S.s to sixteen. The capacity and syllabus remained unchanged and the estimated rate of output, which had now reached its maximum, was 2,612 pilots a year.

No sooner had courses resumed their normal working than it became necessary to reduce pilot output. By the end of the year there was a large pool of pilots in the United Kingdom awaiting entry into O.T.U.s - not just a temporary surplus resulting from inadequate O.T.U. facilities, but an overproduction due to the diminution of the enemy's air effort and the consequent lower wastage rates, particularly in Bomber Command. Both Southern Rhodesia and South Africa were asked to stop outputs for one month by adding four weeks to the S.F.T.S. course (and two weeks to the E.F.T.S.), so that the surplus in the United Kingdom could be fed into the Middle East O.T.U.s.(1)

Reduction in the Training Organisation

The extension took effect from 1 February 1944, the month in which a comprehensive review of the world wide training organisation was made to decide the best way of utilizing existing resources to expand the front line. Very substantial reductions in the Canadian training organisation had already been agreed and in March 1944 proposals for reducing their training organisations by about 40 per cent were transmitted to both Southern Rhodesia and South Africa.(2)

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(1) A.C.79/42 and 90/43.

(2) A.M. File S.98849.

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In Southern Rhodesia it was planned, on the basis of the existing course lengths with S.F.T.S. intake of 60 pupils per school every five weeks, to reduce the pilot training capacity from four pairs of schools to the equivalent of $2\frac{1}{2}$ pairs.(1) To effect an immediate reduction in output, however, courses were yet again extended, this time the E.F.T.S.s by 4 weeks to 14 weeks and S.F.T.S.s by 8 weeks to twenty-eight. When the organisation was reduced and working to its new size, courses would revert to 10 and 20 weeks respectively. The extension of courses took place in October 1944 and the reduction of schools was effected at the same time. No. 25 E.F.T.S. Belvedere ceased intakes on 1 October and closed on 20 November, and No. 26 Guinea Fowl was reduced in size by 50 per cent (to 68 pupils) on 3 November and moved to Thornhill on 30 March 1945. No. 21 S.F.T.S. Kumalo started to reduce intakes in December 1944 and closed on 16 May 1945 and No. 20 S.F.T.S. was to be halved in capacity at the same time. It was still the intention to send the output of the schools to O.T.U.s in the Middle East except for a small number of twin-engined trained pilots sent to South Africa for a G.R. course.

It was also decided to cease training other aircrew in Southern Rhodesia. Navigator/bomber intakes ceased on 12 January 1945 and air gunners a few weeks later. The school disbanded on 13 April 1945. These changes led to further reductions in the Rhodesian organisation. The I.T.W. at Hillside was reduced to 700 pupils by December 1944 and to 380 two months later. The Aircraft Erection Detachment at Cape Town which dealt with the unpacking and erection of incoming aircraft for the schools was closed on 15 August, and South Africa assumed responsibility for the small amount of traffic now needed, although Southern Rhodesia continued to supply ferry pilots to deliver the aircraft.

The Flying Instructors' School was also affected by the reductions. Although fewer flying instructor courses were now needed the school did not reduce its capacity; instead a refresher course, based on that instituted at the E.C.F.S. in the United Kingdom was introduced for both elementary and Service instructors. It was also renamed the Central Flying School so as to be in line with the C.F.S.s in the Dominions.

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(1) A.C. 17/44.

/ Further

Further Training Reductions November 1944

By November 1944 the war situation had changed so much that the assumptions on which the reductions planned in the spring of 1944 were based (a 490 Squadron Force for the Japanese War, and a target date of October 1945 for the defeat of Germany) were out of date. The target force for the Pacific war was reduced to 390 squadrons and no further R.A.F. expansion was to take place after December 1944. In addition new wastage rates, lower than the previous ones, were introduced.

These new factors meant that there were already sufficient aircrew trained to cover requirements for at least 12 months, and further cuts could therefore be made in the training organisation.(1) It was consequently planned to reduce the Rhodesian scheme to the following:-

Group Headquarters	Salisbury	
I.T.W. and Personnel Depot	Cranbourne	Capacity 150
E.F.T.S. (No. 28)	Mount Harpden	" 134
S.F.T.S. (No. 22)	Thornhill	" 240
C.F.S.	Norton	" 36
Central Maintenance Unit	Bulawayo	
Aircraft Repair Depot	Cranbourne	

Elementary and Service flying training school courses were to revert to 10 and 20 weeks respectively and the output would therefore be roughly 600 pilots a year.

It was therefore planned to close 1½ pairs of schools: No. 26 E.F.T.S. Guinea Fowl (a half sized school), No. 27 E.F.T.S. Indura, No. 20 S.F.T.S. Cranbourne (planned as a half size school) and No. 23 S.F.T.S. Heany. The I.T.W. was to be reduced to 150 pupil capacity and the C.F.S. Norton to 36 pupils.

By January 1945, however, a number of difficulties remained unresolved. Protracted discussions on the eventual size and location of the peace-time training organisation and the probable date of the end of the Japanese war, and the unavoidable delay in re-opening S.F.T.S.s in the United Kingdom all prevented a final decision being taken on the size of the R.A.F. training organisation eventually required; and this might have caused a serious gap in the production of pilots towards the end of 1945 unless some steps were taken to prevent it.

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(1) E.T.S. 772(44) and 782(44). (A.H.B./IIIC/1).

/ Accordingly

Accordingly Southern Rhodesia was asked not only to delay the closing of the $1\frac{1}{2}$ pairs of schools but to expand the half-sized schools so that there were three E.F.T.S.s and three S.F.T.S.s in operation once again, and to keep them in operation until the equivalent capacity had been established in the United Kingdom. This was agreed to, and the schools were expanded by the spring of 1945.

The End of the War

When, in May 1945, The German War finally came to an end, the size of the overseas training organisation to meet the needs of the Japanese War was again considered and it was decided to reduce the Southern Rhodesia Training Organisation to one pair of schools by the end of the year. Two E.F.T.S.s (Nos. 26 and 27) would close in August and two S.F.T.S.s (Nos. 22 and 23) twenty weeks later. The remaining pair of schools were used to complete the training of all cadets already in the colony or on their way there. These would provide intake for the E.F.T.S. up to at least September 1945. Unless it was decided to send further drafts (this decision was left open in May 1945) the schools would close as the last course passed out. This would mean that the E.F.T.S. at Mount Harpden would close in November and the S.F.T.S. at Cranbourne twenty weeks later, in April 1946. The I.T.W. would also close when the last course entered the E.F.T.S., and the C.F.S. was reduced still further to train 21 pupils.(1)

With the sudden surrender of Japan in August 1945 it was decided to bring training in Rhodesia to an end as soon as possible. The 500 R.A.F. cadets already under training in the colony were given the option of enlisting for regular service and continuing their training or returning immediately to the United Kingdom. Roughly 10 per cent chose to continue training and these, together with some Greek pupils (36 in all), were all concentrated at No. 20 S.F.T.S. Cranbourne as soon as they completed their E.F.T.S. course. The two E.F.T.S.s closed as planned and the two S.F.T.S.s, the C.F.S. and the I.T.W. closed at roughly the same time. No. 28 E.F.T.S. Mount Harpden closed in October when its last course passed out and the S.F.T.S. at Cranbourne in April 1946.(2)

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(1) E.T.S. 817(45). (A.H.B./IIIC/1).

(2) A.M. File S.98849.

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Thus April 1946 saw the end of the Rhodesian Air Training Group. During its six years' life it had made an invaluable contribution to the War effort. Southern Rhodesia had the distinction of being the only colony to run an extensive aircrew training organisation and it produced over 10,000 trained personnel during its existence, approximately 400 of whom were Southern Rhodesian volunteers recruited in the colony. So well did the organisation function that when the time came to consider the future of the peace-time training organisation, Rhodesia was chosen as a permanent home for part of the pilot training system.

CHAPTER 12

BASIC TRAINING IN THE UNITED STATES OF AMERICA

America as a source of supply for aircraft and equipment was always a major factor in planning. Shortly after the outbreak of war, in May 1940, when a shortage of some 450-500 pilots in the Royal Air Force, at the end of the year seemed likely, it was suggested that the elementary and intermediate stages of pilot training might be done in the United States under Royal Air Force supervision; the advanced (military) training being carried out by the Service flying training schools in Canada. This suggestion was put forward by Air Marshal E.L. Gossage (AMP) on the advice of Air Commodore Critchley who had discussed the idea with Colonel Scanlon of the US Embassy. A factor in favour of the scheme was the effect of the recently imposed embargo on export of aircraft from the United Kingdom which would retard the Empire Air Training Scheme (EATS) and so make 'ready-made' United States training capacity more than ever desirable.(1)

The proposal was raised by the Foreign Office with the United States Ambassador, and a plan was worked out for the United States to turn a blind eye to the training of Royal Air Force pilots as private pupils (in contrast with instruction en bloc as organised courses) in American schools. This scheme was to be investigated unofficially. The British Ambassador in Washington (Lord Lothian) would discuss it with Mr. Sumner Welles, after Air Vice-Marshal McKean, Head of the United Kingdom Air Liaison Mission in Canada, had examined the adequacy and suitability of training facilities in the United States, and providing that Canada agreed to the scheme. In Canada there were criticisms about delays in getting the Empire Air Training Scheme under way, and it was felt that any approach by Britain to use training facilities in the United States might throw Canada's apparently slow progress into sharper relief. The Canadian Government agreed, however, that the matter should be raised with the United States and this was done on 27 May 1940.(2) On 5 June Mr. Sumner Welles replied that the US Government

(1) AM File S.61719 (AHB/ID/46/1162(A))

(2) AM File S.61719 (AHB/ID/46/1162(A))

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could not take British or Canadian pupils, except in a few special cases, because there were shortages of instructors and equipment, and the United States own training organisation was expanding. It was then suggested, on the instigation of the Air Attache in Washington (Air Commodore G.C. Pirie) that the United States might make two or three aerodromes available, so that the United Kingdom Government could undertake flying training on civil aircraft, employing civil instructors, and training civilians only. The matter was reconsidered by the American Government, but on 27 June the British Ambassador was informed that the President felt that it would be better for British and Canadian pupils to be trained in Canada where it would be possible to employ American instructors and use American aircraft obtained from private interests. Mr. Roosevelt ended, however, by saying 'I do not mean to indicate that training of British and Canadian civil pilots in this country should not be done, but I am merely advising you that in my judgement it would be better if it were done in Canada'.

This was a definite check, but the idea of training in the United States was by no means abandoned, and in the meantime a few American aircraft, and about 120 instructors, and staff pilots were employed in Canada as Mr. Sumner Welles had suggested.(1)

The Balfour Proposals

In August 1940, at the height of the Battle of Britain, Captain Harold Balfour, the Under Secretary of State for Air, re-opened the question of United States training for the Royal Air Force with Mr. Roosevelt and Mr. Harry Hopkins.(2) It was proposed to use American civil schools with elementary trainers being provided by the United States. The supply of advanced trainers would be difficult as they were as scarce in the United States as elsewhere. These would have to be supplied by the United Kingdom or by the US Army and Navy.

On 28 August Captain Balfour was warned by the Air Ministry of the heavy cost in dollars which the scheme would involve, estimated at between 50,000

(1) ETS 104(40) (AHB/IIIC/1)

(2) AM File S.61719 (AHB/ID/46/1162(A))

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and 250,000 dollars per school, and of the danger of more than exploratory conversation.

Tentative plans were worked out whereby the civil schools already working for the US Army would set up new schools to train for the Royal Air Force. The chief requirements were capital to build the schools and advanced trainers to use them; payment would be on an hourly basis according to the amount of instruction provided.

When Captain Balfour returned to London in September the plan was discussed, and it was decided to go ahead through Mr. Morgenthau, the Secretary of the Treasury, who was entrusted with the supervision of American help for Britain. The project would have to be on a civilian basis politically acceptable in the United States. For example, no military subjects could be taught and pupils would have to enter the United States in plain clothes via Canada. It was hoped to establish 8 schools, each with 30 elementary and 60 advanced trainer aircraft, training 180 pupils on an 18 weeks' course. Output would be roughly 3,000 a year and it was thought that training could commence in December 1940. It was far from easy to go ahead however. Shortage of advanced trainers was the inevitable obstacle - the United States could not find enough for its own growing training scheme, and at the beginning of October 1940 even tried to borrow some from Great Britain. At the end of October, in an endeavour to find some way of making advanced trainers available, Air Vice-Marshal McKean went to Washington to see whether some more economical method of using their trainer aircraft could be suggested to the United States authorities.(1) This visit failed to induce the Army or Navy to release any aircraft: they had far too few for their own needs and it was obvious that they would be unable to spare any for the United Kingdom before the summer of 1941. The fact that this shortage of trainers was known in Congress meant that any attempt to help Great Britain at the expense of the United States would be likely to bring a congressional investigation into 'secret war commitments', and with the Presidential election impending no diversion of aircraft to Great Britain

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(1) AM File S.61719 (AHB/ID/46/1162(A))

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could be contemplated until it was over. This put an effective end to the proposal - at least until early 1942 when the possibility of Lease-Lend assistance began to appear.

Institution of Refresher Courses

In the meantime plans went ahead for a smaller scheme of giving refresher courses to United States citizens who volunteered for service with the Royal Air Force. Arrangements already existed under which United States citizens with at least 250 hours flying experience to their credit were accepted, subject to examination in Canada, for service with the Royal Air Force.[1] During his visit to the United States in August 1940, the Under Secretary of State (Captain Balfour) had ascertained that there could be made available at certain civil schools in the United States, small 'pockets' of training capacity for giving refresher courses to pilots who did not have the necessary flying hours. These were the 'few special cases' referred to by Mr. Welles in June 1940, and the scheme was advocated as the 'thin end of the wedge'. As the dollar expenditure was relatively small Treasury authority was obtained, and negotiations were opened in September. Originally it was thought that 50 pilots could be recruited and given an average of 70 hours flying training each at a cost of $15 per hour - roughly $50,000 in all. By November, however, it was anticipated that as many as 250 pilots could probably be recruited and as it was found that the flying costs had more than doubled, the scheme would cost approximately $800,000 in all. Approval for this extension was granted by the Treasury on 25 November 1940.[2]

Four schools were contacted and three of them (at Dallas, Tulsa and Glendale near Los Angeles) started on the scheme before the end of 1940. The fourth school, planned to start at Chicago, was held up by lack of suitable aircraft, and the project there was eventually dropped. Each school was equipped with three elementary and three advanced trainers and instructed courses of approximately 10 pupils at a time up to the Royal Air Force 'Wings' standard on a six months' course providing a maximum of 80 hours flying per pupil. They actually commenced training as follows:-

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(1) AM File S.64952

(2) AC 41/40

School	No. of Pupils (First Course)	Commenced Training	Aircraft		
			Type	No. of	Provided by
Dallas	10	20 November 1940	Fleet	3	Dallas
			Beechcroft	3	HM Government
Tulsa	11	2 December 1940	Fairchild	3	Tulsa
			Spartan	3	Tulsa
Glendale	8	2 December 1940	Stearman	3	HM Government
			Spartan	3	HM Government

The recruitment and enlistment of personnel presented a difficult problem. American neutrality laws prevented any publicity being given to the scheme, and it had to be camouflaged as a plan for training civilian ferry pilots. It was difficult to make sure that the pilots would be allowed to leave the United States after their training was finished owing to the Selective Service Act which required all males between the ages of 21 and 35 to register for military service and prevented them leaving the country without a special permit issued by local draft boards. It was desirable to introduce some form of contract between the British Government and the pilots concerned, otherwise there was nothing to stop them going through the refresher course and then accepting a position on an American airline and refusing to leave the United States. Unfortunately it was not possible to introduce a binding contract and the undertaking given by the candidates amounted to little more than a gentleman's agreement. Volunteers for the Royal Air Force with the necessary flying hours and medical standards were told that under the Neutrality Laws it was impossible to enlist them in the Royal Air Force in the United States. It was, however, possible for them to enrol in a civilian company called 'British Aviation' which gave advanced flying instruction in the United States to any promising employee. The function of 'British Aviation' was to undertake odd jobs of flying in England, ferrying etc., and any employee after serving a period of satisfactory service was allowed to volunteer for service with the Royal Air Force. This information was usually supplemented by confidential advice as to the actual position, and all volunteers joined on the understanding that they

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would serve with the Royal Air Force. Those volunteers interested in the scheme were advised to contact an organisation known as the Clayton Knight Committee at the Waldorf Astoria Hotel in New York or at any of their branches throughout the country.

Thus, in spite of these serious drawbacks the scheme was launched and by March 1941 sixteen pilots had arrived in the United Kingdom. So great was Great Britain's need for pilots at this time that all sources of supply had to be cultivated and exploited.

Offer of Assistance by Pan American Airways (PAA)

Whilst these refresher courses were being established in America, enquiries made by the air attache resulted in an offer being made in October 1940 by Pan American Airways to provide navigation training facilities for the Royal Air Force.(1) They had already started giving navigation training to US Army Air Corps personnel in August 1940 on a non-profit basis and were anxious to co-operate with the Royal Air Force provided all students were sent to the school as civilians and were ostensibly training as air navigators for a civil transport company.

The Royal Air Force agreed to send batches of 10 pupils to the school to be trained as observers. As the school taught navigation purely from a civil aspect, it would be necessary for these pupils to carry out the remainder of their training in armament either in Canada or the United Kingdom. The course lasted 12 weeks, and was exactly the same as that provided for the US Army pupils. Just before the first course was due to commence difficulties arose over the supply of pupils. To avoid infringement of the neutrality laws it was ruled that the first two courses at any rate should be filled by pupils drawn from the American continent. Plans to supply them from Canada were frustrated by the Canadian Covernment's objection to sending Canadians to the United States for training whilst they themselves were operating a vast training machine and attempts to obtain the necessary number of pupils from the West Indies failed because of the restrictions of the American colour bar and lack of suitable white personnel.

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(1) AM File S.65478

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In the meantime the US Army Air Corps (USAAC) had increased their requirements at the school and Pan American Airways announced that they were unable to train any personnel for the Royal Air Force until the intake commencing 22 March, by which time it was agreed that pupils could be supplied from the United Kingdom providing they went 'disguised as civilians'. Pupils were selected after their completion of the initial training wing course, released from the Service in the United Kingdom to proceed to Canada as civilians in plain clothes, and were re-entered into the Royal Air Force on their return to the United Kingdom.

The syllabus was laid down by Pan American Airways, who had their own conception of how navigation should be taught. The ground instruction was very thorough, although it covered navigational instruction only (no signalling, reconnaissance, photography, or methods of search were given) but the amount of flying was only four hours per pupil as first navigator and could not be increased because Pan American Airways, were themselves short of aircraft.(1)

The financial agreements were signed in Washington during the first week in March and were the same as those for US Army students, and the cost worked out at approximately 500 dollars per student. The school was situated in the University of Miami at Coral Gables, seven miles south west of Miami, and the flying part of the course was carried out at the Pan American Airways base at Dinner Key, some five miles from Coral Gables. Royal Air Force pupils were housed and fed at the San Sebastian Hotel where the US Army lived and messed and the board and lodging bills were paid weekly by the British Vice Consul. The Miami College was co-educational and in all ways the reception given to the British cadets was extremely friendly. The second course of 10 pupils began on 3 May and, as a result of enquiries made by the air attache at Washington, it was proposed to allocate 60 vacancies to United Kingdom personnel on the next course beginning 5 July. It will be seen later in the narrative that General Arnold's offer of US Army training facilities resulted in a further increase to 150 pupils per intake beginning with the third course.(2)

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(1) AM File S.65478 and ETS 240(41) (AHB/III C/1)

(2) ETS 223(41) (AHB/III C/1)

/ Formation

Formation of 'British Flying Training Schools'

On 5 March 1941, General Arnold informed the Air Attache at Washington that as soon as the Lease-Lend Bill was passed the US Army proposed to offer 260 elementary and 285 advanced trainers to the United Kingdom Government for training Royal Air Force pupils in American civil schools. General Arnold went on to say that tentative plans had been worked out for the initiation and operation of a British Training Scheme at six schools. Although the operators had no facilities to spare at existing establishments they were all willing to build special schools, complete with all facilities, at a cost of $400,000 - $500,000 each, accommodating 140 students at a time (70 primary and 70 advanced). Thus on a twenty-week course, and assuming approximately 20 per cent wastage, the six operators could expect to turn out a total of about 1,300 pilots a year, and they would charge $25 per hour for primary training and $35 per hour for advanced instruction.(1) This offer was the result of an order from the President following various talks on the subject of immediate help to Great Britain on training, particularly between Air Chief Marshal Portal and Mr. Harry Hopkins. The manner in which it was made was notably open-handed and helpful. In the words of Air Commodore Pirie, the Air Attache:

> 'The story starts with a telephone conversation on 5 March when General Arnold, Deputy Chief of Staff and Chief of the Air Corps, called me and said "when can you come and talk training with me". I told him I was just leaving for the War Department and would be with him in twenty minutes. Entering the General's rooms at the department I found a crowd of about fifteen people assembled there. All of them I knew. Without any preliminaries, the General, in his usual bluff fashion, indicated with a wave of his hand the assembled people and said, "I think you know all these people. Now lets talk turkey. You've been worrying me for about a year and a half about what you call Harvards. We're now going to give you 260 primary and 285 basic trainers, and here are six of our best civilian school operators who are prepared to put up schools for you. Is this of any interest?"' (2)

In spite of the manifest advantages of this scheme, it had its disadvantages. Though it provided advanced trainers, they were all single-engined types, (AT-6's known to the RAF as Harvards), because even the US Army themselves had no twin-engined trainers. The proportion of single-engined to

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(1) ETS 219(41) (AHB/III C/1)

(2) Liaison letter to AMT dated 13 March 1941. ETS 237(41) (AHB/III C/1)

/ twin

twin-engined trained pilots being produce under the Empire Training Schools was already too high and the new scheme would considerably increase that proportion. Though the schools would be built and in operation quickly (the estimate was 45 - 90 days), their capital cost (roughly $3,000,000) would have to be met by the United Kingdom, and the United States insisted that they should have amenities on the same generous scale as similar schools built for the American Army Air Force, which included, for example, a swimming pool and tennis courts at each school. The scheme used a fresh, previosuly untapped, source of instructors and facilities, but the price (of $25 per hour primary and $35 per hour advanced instruction) was high. Though 285 advanced trainers would be made available, they would be in substitution for, and not in addition to, 200 which the United Kingdom had been trying to buy in America for use in Great Britain and the Empire. Though the scheme promised a means of training American volunteers for service with the Royal Air Force (it was hoped that two out of the six schools might be devoted to training these volunteers), there was no legal way of giving publicity in the United States to attract them. Nevertheless, the offer was considered at the Air Ministry on 7 March and was, in effect, accepted the next day.(1)

Various details were worked out during the next month. Pupils were to have ITW training in the United Kingdom before going to America via Canada; the school's chief flying instructors were to be given courses on RAF training methods at the Canadian Central Flying School, Trenton; night flying instruction was to be given, but armament and SBA instruction were not practicable. Although it was intended to fill two of the schools with personnel recruited in America, the unlikelihood of attracting enough volunteers soon became apparent and it was eventually decided to train British cadets at all the schools.

The six operators in America submitted their detailed proposals and by the middle of June all the six schools had been located, and officially named British Flying Training Schools:-(2)

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(1) AM File S.61719 (AHB/ID/46/1162(A))

(2) AC 8/41

/ BFTS

BFTS No.	Location	Operated by
1	Terrell, Texas	Major Long
2	Lancaster, California	Major Mosely
3	Miami, Oklahoma	Captain Balfour
4	Mesa, Arizona	Mr. Connelly
5	Clewiston, Florida	Mr. Riddle
6	Ponca City, Oklahoma	Mr. Darr

Each had a capacity of 200 pupils on a 20 weeks' 'all-through' course, combining both EFTS and SFTS training, and their total output (150 pupils per month) was equal to that of 2½ standard sized SFTSs. Good progress was made with the arrangements for the commencement of the scheme and the first 100 pupils for these schools were to leave the United Kingdom in mid-April and would commence training on 31 May.

Review of the Overall SFTS Programme

The BFTS arrangements were regarded as a form of insurance against under production and as such did not cause any reduction in the overall number of RAF and Empire SFTSs needed. At the beginning of February 1941 there still remained nine for which homes were being sought.(1) Canada was anxious to have them and was confident that she had the resources to run them; Southern Rhodesia also offered to take two more. The Air Ministry, however, was convinced that the Canadian training organisation as it stood, would require all the existing Canadian resources, and any further development there would be undesirable and impracticable. It was, therefore, decided in February to establish two schools in Rhodesia, and to consider the possibility of establishing the remaining seven schools in the United States.(2)

Although there would be difficulties over bombing and gunnery training, dollar expenditure, and the shortage of trainers, they were not prohibitive. The trainer shortage and dollar expenditure would still arise even if more training were carried out in Canada - and with lease-lend it was preferable to do it in the United States. The idea of putting SFTSs in the United States was attractive, and it was decided to pursue it by unofficial conversations. A statement of Britain's need for more training facilities

(1) ETS 204(41) (AHB/III C/1)

(2) ETS 213(41) (AHB/III C/1))

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was handed to the US Ambassador (Mr. Winant) and a copy sent to the United States for consideration by the 'Big Five' (Mr. Cordell Hull, Mr. Morgenthau, Mr. Harry Hopkins, Colonel Stimson and Colonel Knox). As a result of these overtures General Arnold visited the United Kingdom in April 1941 to discuss Britian's training requirements. In general, said Air Marshal Garrod, the Air Member for Training, Britain wanted short term help to increase the RAF's hitting power in 1941 by reducing the number of men who would have to be withdrawn from the first line to instruct, and long term help to ease the strain on her newly expanding training organisation. There was a shortage of advanced trainers and difficulty was being experienced in giving instruction, especially at night in an operational base. The particular directions in which Great Britain asked for assistance were training facilities for pilots and the provision of ferry pilots (for the Atlantic and Takoradi supply routes as well as for internal ferry duties), and experienced instructors, the latter to avoid using too many ex-pupils for teaching. Navigation training aircraft and radar mechanics were also needed.(1)

The 'Arnold' and 'Towers' Proposals

This straightforward statement of need was met by a response from General Arnold which Air Marshal Garrod described as magnificent. Ferry crews could and would be provided; so would maintenance crews for ferry work. Navigation training facilities would be increased by giving the RAF the full use of the Pan American Airways School at Miami, while General Arnold would see whether 100 observer training aircraft could be provided. The most important form of assistance, however, came with this statement that one-third of the United States Army's training capacity would be put at Britain's disposal, and the first intakes could start in June.(2) By June the US Army's training organisation would consist of 30 schools, which meant that the RAF could have the use of ten, (equivalent to five SFTSs) producing roughly 4,000 pilots a year. He actually promised one-third of the

(1) ETS 225(41) (AHB/III C/1)

(2) ETS 225(41) (AHB/III C/1)

/ expanding

expanding capacity of the US Army Air Corps which, by the end of the year, would have risen to 46 schools, which meant that 15 would be set aside for use by the Royal Air Force.(1) The whole cost of the training, except the elementary stage at civil schools, the board and maintenance of pupils, and the fuel and oil used, would be borne by the United States. This offer, which was accepted, was made on 13 July 1941 and obviated the need for the transfer of any SFTSs to the United States.

The Arnold Scheme was not the end of American offers to help in training: on 29 May 1941, Admiral Towers intimated that if an official request were made to the US Navy he would agree to training pilots (either RAF or FAA) for flying boats and carrier borne aircraft at the rate of 100 per month. This number could probably be extended to cover the training of observers and wireless operators.(2) The request was duly made, and arrangements were made to send the first batch of pupils for training in July 1941.

Summary of RAF Training Facilities in America

Thus, by June 1941, there were five different schemes either projected or already in operation for training Royal Air Force and Fleet Air Arm personnel in the United States. Taken in chronological order they were:-

a. The Refresher Schools - civil schools for training United States citizens who volunteered for service with a mythical civil company called British Aviation, but who were invariably accepted for service with the Royal Air Force when they reached the United Kingdom. These schools started in November 1940, and turned out roughly 55 pilots per month (660 per year).

b. The Pan American Airways navigation courses at Miami, which trained observers at an estimated rate of some 840 per year. This training commenced in March 1941.

c. The British Flying Training Schools - the all-through scheme for six civilian operated schools training for the Royal Air Force, financed largely by Lease-Lend and turning out roughly 2,300 pilots per year. This scheme commenced in May 1941.

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(1) The entry of America into the War, however, prevented the complete implementation of that promise and the RAF never obtained more than the original ten schools, and these by the middle of 1942 represented less than one-ninth of the Army's training capacity.
ETS 361(41) (AHB/III C/1)

(2) ETS 276(41) (AHB/III C/1)

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d. The Arnold Scheme - for using United States Army Air Corps schools, both civil and service, to train Royal Air Force pupils. This too was financed largely by Lease-Lend and aimed at producing roughly 4,000 pilots per year. The first intakes under this scheme commenced training in June 1941.

e. The Towers Scheme - for using United States Navy schools to train Royal Air Force and Fleet Air Arm pilots, and possibly observers and wireless operators. Financed mainly by Lease-Lend, and turning out pilots at the rate of 1,200 per year. This scheme commenced work in July 1941.

It was not all plain sailing after the various United States offers had been made and accepted. On the British side there were doubts and uncertainties about the American syllabus and methods of instruction, whilst on the American side there were legal difficulties in the way of putting the scheme into operation. The British accepted the incertitudes, and the American authorities were determined that the legal position should not stop the schemes, and went ahead before the legal side had been formally cleared.(1)

Development of the British Flying Training Schools (BFTSs)

The BFTSs were originally intended to commence on 17 May, but their organisation and the details of Lease-Lend took longer to resolve than was expected. At one time, in order to accelerate their development and to overcome a legal difficulty in the Arnold Scheme, there had been a suggestion that the six school scheme should be replaced by an extension of the Arnold Scheme, the US Army taking over the administration of the civil schools and providing the RAF with equivalent capacity in US Army schools. It will be seen later in the narrative, that this project unifying the BFTSs and the Arnold Scheme proved impracticable and was soon abandoned.(2)

Once the legal difficulties were overcome and the sites selected for the six schools, rapid progress was made, and construction had started by the end of May. The contracts provided that the civilian operators should be responsible for constructing the schools, the United Kingdom advancing 60 per cent of the building costs. It was hoped that the schools would be finished and operating within two or three months.(3)

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(1) ETS 263(41) (AHB/III C/1)

(2) AM File S.61719 (AHB/ID/46/1162(A))

(3) ETS 292(41) (AHB/III C/1)

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The sites for the first five schools were quickly selected and approved by the operators, the US War Department, and the Royal Air Force. At Terrell, for example, a small town some 30 miles east of Dallas, a site which had previously been used by a small flying club was chosen, and the local town council were so enthusiastic about the scheme that they offered to put in all facilities free of cost, and the school was ready within eight weeks of the selection of the site. Lancaster, 50 miles north of Los Angeles, was chosen as the site for the second school and the third was located at Miami, Oklahoma, a small town 100 miles north-east of Tulsa. This latter site was also used by a small aero club which was prepared to move elsewhere, and there too the local authorities were anxious to provide facilities. This school was constructed with amazing speed, and an auxiliary field was in use three weeks after work began on it. The site for the fourth school was eventually chosen at Mesa, near Phoenix, Arizona, and Clewiston, at the foot of Lake Okeechobee, Florida, 95 miles north-west of the famous resort of Miami, was selected as the site for No. 5 BFTS. It is interesting to note that the school was only 40 miles away from Arcadia, an aerodrome used for training RAF pilots in the first world war and now in use as a US Army primary school (and was later to train RAF pupils under the Arnold scheme). The selection of a site for the sixth school met with rather more difficulty. Numerous sites were examined and no fewer than four nearly materialised but had to be abandoned for one reason or another before a suitable one at Ponca City, Oklahoma was found.

While the schools were being located and developed, the US Army made a further offer of assistance. Once it was clear that the schools would not be able to start work on the original date planned (17 May 1941) they allowed the first BFTS pupils to be trained in the civilian operated primary schools working for the US Army until the British schools were ready.(1) Arrangements were made to send the first course (of 200 pupils) to schools at Dallas Glendale, Tulsa and Phoenix, all of which were situated near the British schools and operated by the same civilian companies. Each school took 50 pupils. Those for Dallas and Glendale left England in April, arrived in

(1) ETS 244(41) (AHB/III C/1)

/ Canada

Canada on 24 May and started training in the United States on 9 June. Those for the other two schools followed a week later. The second course (of 250 pupils) arrived five weeks later and went to the same four schools together with one other, at Arcadia, Florida. By the time the third course, comprising 300 pupils arrived, the six RAF schools had started and pupils went direct to these schools. The details of the opening dates of the BFTSs were as follows:-

No. 1 Terrell Texas. The first 50 pupils commenced training on 9 June at the US Army Primary school at Dallas. The school at Terrell commenced work on 11 August.

No. 2 Lancaster, California. The first 50 pupils commenced training on 9 June at the US Primary school at Glendale, Los Angeles. The school at Lancaster opened on 17 July.

No. 3 Miami, Oklahoma. The first 50 pupils commenced training on 16 June at the Army School at Tulsa. The school at Miami opened on 13 July.

No. 4 Mesa, Arizona. The first 50 pupils commenced training on 16 June at Thunderbird Field, Phoenix, Arizona. The school at Mesa opened on 14 August.

No. 5 Clewiston, Florida. The first 50 pupils commenced training on 17 July at the Army Field at Arcadia. Training at Clewiston commenced on 23 August.

No. 6 Ponca City, Oklahoma. The first 50 pupils commenced training on 23 August.

The syllabus for training was laid down on RAF lines, and one chief flying instructor and two chief ground instructors for each pair of schools were to be supplied by the Royal Air Force. The only other Royal Air Force staff to be supplied were an adjutant and a NCO i/c discipline. Each school had a capacity of 200 pupils; the course was of 20 weeks' duration with intakes of 50 pupils every 3 weeks. The course was divided into two stages each 10 weeks in length. The first stage, known as the Primary stage, involved 70 hours flying on elementary trainers and corresponded roughly to the RAF elementary flying training school course, and the second, the Basic-Advanced stage, roughly equivalent to the ServiceFlying Training School syllabus, involved 80 hours flying on basic advanced trainers.(1) The pupil wastage was estimated to be 28 per cent giving an output of 36 pupils per course, or a total output for the six schools of roughly 2,250 pilots per year. The

(1) ETS 278(41) (AHB/III C/1)

/ aircraft

aircraft in use at the school were Stearmans or Fairchilds for primary training, 35 per school, and Harvards and Yales for basic and advanced training with an establishment of 40 per school.

Pupils were specially selected after completing the ITW course in the United Kingdom; they were warned that the instruction they would receive would differ from that given by the RAF, and the importance of the heavy responsibility they would carry while in America was impressed upon them. Hints on the American attitude to the war and American hospitality were also given, and pupils were reminded that they represented the RAF in America, that reference to the war should be guarded, and that criticism of American ways of life should be avoided.(1)

The cadets wore Royal Air Force uniform whilst in Canada, but because of the neutrality laws they had to wear civilian clothes on entering the United States. This consisted of a grey suit, issued in Canada, to be worn whilst off duty; RAF blue or khaki uniforms (also issued in Canada) were worn whilst at work in the schools.

The BFTSs produced pilots trained up to OTU entry standard. The only drawbacks were some doubts about night and instrument flying equipment, and a probable difficulty about armament training. The total absence of twin-engined trainers and SBA equipment was, of course, another disadvantage, but it was an unavoidable one. It was possible to improve the instrument and night flying deficiencies and to include some armament instruction in the syllabus and arrangements were made in July to provide a RAF armament instructor at each of the six schools. So successful, in fact, were RAF representations about the value of link trainers for instrument instruction that the United States promptly bought up the whole output before the RAF could supply its own schools. The advanced stage was satisfactory in itself but one difficulty was met in the provision of instructors. There were plenty of elementary instructors available, but very few competent to teach on basic and advanced types. This difficulty was overcome by obtaining the advanced trainers before the training of pupils was due to commence, so that instructors needing familiarisation in those types could be checked out by the RAF Chief Flying Instructor.

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(1) AC 8/41

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Once the schools had started they continued to work smoothly. The wastage rate became stabilised at roughly 20 - 25 per cent - slightly lower than had been anticipated - and compared very favourably with the wastage rate in the Arnold Schools which was 40 - 50 per cent. The standards of training were roughly the same for both schemes, and the success of the BFTSs was due largely to the enthusiasm of the school operators who had a sincere desire to help Britain by making the most of British manpower. For example, on the early courses at one of the schools (No. 2 BFTS Lancaster) Major Mosely, the operator, went as far as to make nearly every pupil successful by paying out of his own pocket for whatever extra tuition was necessary.

In December 1941 the Air Member for Training introduced his 'New Deal' which aimed at raising the standard of pilots by providing more flying hours in their pre-OTU stages of training; the training syllabus for RAF elementary and Service flying training schools was extended and the flying hours raised to 200. To conform to the new syllabus the BFTS course length was raised from 20 to 28 weeks in January 1942, and the flying hours increased from 150 to 200. The primary stage now lasted 14 weeks and gave 91 hours on primary trainers, and the basic-advanced stage 14 weeks with 109 hours flying. It was not possible to increase the ratio of advanced flying to primary flying because of the shortage of advanced trainer aircraft. It had also been hoped to expand the capacity of schools from 200 to 240 pupils so as to maintain the previous rate of output but this was impracticable at that time and the capacities remained unchanged, with intakes of 50 pupils every 7 weeks. Output was accordingly reduced to about 1,600 per year.

The Commencement of the Arnold Scheme

As soon as General Arnold's offer of facilities for pilot training in US Army schools was accepted, arrangements were made to get the scheme under way as quickly as possible. The Royal Air Force was offered a ready-made training organisation and pupils were to be taught the same syllabus as the American students. The course was of 30 weeks' duration, divided into three periods of 10 weeks each covering the following stage:- (1)

(1) See Appendix 80

/ Primary

Primary - roughly equivalent to the EFTS stage, and involved 60 hours flying on primary trainers.

Basic - covered the earlier portion of the SFTS course and involved 70 hours flying on basic trainers.

Advanced - covered the later portion of the SFTS course and involved 70 hours flying on advanced types.

The total course length was nearly twice as long as the corresponding course in RAF schools (16 weeks at that time, June 1941, although it was raised to 24 in December 1941) and at first there were ideas in London that the course might be shortened and brought more into line with the RAF syllabus, especially in view of General Arnold's expressed intention of organising United States training in the light of British methods and British war experience, but General Johnson, the US Director of Training, made it clear that America had no intention of lowering the standard of training and was perturbed by the comparative heaviness of the British accident rate during training. The United States did, however, agree to follow the British system of elementary flying training more closely. In actual fact, it was little different from the American primary stage, except that it meant teaching more instrument flying. Night flying should also have been included, but this was impossible because the primary trainers were not equipped for night operating. The standard of training given in the basic and advanced stages was excellent, except that bad weather flying was almost entirely neglected. Great emphasis was laid on precision flying by the Americans, but it was agreed that the standard could be relaxed somewhat for British pupils.(1)

All was not plain sailing, however, and several vicissitudes occurred both before and after training started. The primary stage was carried out in six civilian operated schools, the contracts for which were signed on 16 May, and intakes of 550 pupils every five weeks were planned to commence on 7 June. The basic and advanced stages were to be carried out in US Army schools, but in May these were ruled illegal by the US Attorney General. The American Air Force authorities were determined to carry on with the

(1) ETS 225(41) and 292(41) (AHB/III C/1)

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scheme, however; intakes into the primary schools proceeded as planned, and if necessary the BFTSs could be combined with the Arnold Scheme so that all RAF students, i.e. 850 every five weeks, (550 Arnold and 300 BFTS pupils) could go to the existing Army civilian schools for 10 weeks primary training, and the six BFTSs used to give advanced training on a 10 weeks' course. In the meantime, however, Mr. Harry Hopkins had been taking energetic steps to get the ruling reversed, and after a few days delay he was successful. The US Department of Justice pronounced the training of British pupils in US Army schools to be legal and the proposed reorganisation of the BFTSs was dropped.(1)

The way was not clear and the scheme proceeded according to plan. Ten weeks after the first RAF pupils entered the primary schools they arrived at the three Army basic training schools, and on 26 October (20 weeks after the commencement of the scheme) British pupils entered advanced training schools.(2)

The cost of the scheme was high, but not as high as had at first been feared. The original estimate, framed on General Arnold's interpretation of Lease-Lend arrangements amounted to $51,000,000 in a full year. If this had been accurate the Treasury would have been unable to face the liability, and after a further study of lease-lend rulings the estimated cost was reduced to about $18,000,000 for the first year's work.(3)

The schools at which RAF pupils were trained were under the command of the Commanding General, Southeast Air Corps Training Centre, with Headquarters at Maxwell Field, Montgomery, Alabama. A senior RAF administrative officer (Wing Commander H.A.V. Hogan) was attached to this Headquarters, and a flight lieutenant administrative officer was attached to each of the 12 schools training British pupils. British pupils were subject to the military customs and courtesies of the USAAC and were under the direct control of the Commanding Officer of the school. Pupils were treated strictly as cadets, and the system of discipline, which was extremely strict, was unexpected and seemed rather childish to many of the RAF pupils, particularly the early

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(1) AM File S.70902

(2) AM File S.61719 (AHB/ID/46/1162(A)

(3) AC 8/41

/ courses

courses, who had been led to believe that discipline was lax and an easy time was ahead. At Macon, for example, the discipline took the form of a system of 'Hazing' which was carried out on the new students by the upper class. Newcomers had to be initiated in a number of cadet rules, such as sitting on only three inches of the form at meals, no talking, looking nowhere except at the plate etc, and being confined to their rooms when not on organised duty. These customs were largely relaxed when their unfortunate effects on RAF pupils were realised.

The building layout and amenities, such as canteen, swimming pool, tennis courts and ample sized airfields, all of which were newly built, were first class and the food was good, although the diet was arranged with a strong medical bias. At Lakeland for instance there was the 'overweight table' and the 'underweight table' where pupils who were getting too fat or staying too thin had to sit and eat a special diet. British cadets were given a great welcome by the local inhabitants, and were entertained extremely well by people in the surrounding towns.

It was soon apparent that the wastage rates were not going to be far short of those planned by the USAAC - 36 per cent during primary training, 8 per cent of the original primary intake during basic, and 1 per cent during advanced - giving an overall elimination rate of 45 per cent which compared very unfavourably with those at RAF schools. Although General Arnold had pointed out that USAAC wastage rates was nearly 50 per cent of the intake the Air Ministry had hoped that the instruction given to RAF pupils at ITWs would reduce that figure to about 20 per cent. The American Army, with its abundant supply of manpower, could afford to reject all but the most naturally suitable men, and the American Army system of training was an inflexible 'tough' method of weeding out all but the best. American instructors had no standardised training in how to teach, (there was no American equivalent of the CFS) and were not persuasive enough in their methods to get the best out of the British pupils. Furthermore, British pupils needed time to become acclimatised to American conditions. The

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climate was extremely hot in summer; the American food, because of its richness compared with the normal RAF diet, tended to make pupils airsick; difficulties were experienced at first in understanding the American instructors whilst flying, owing to the minor differences in dialect and the slow southern drawl. British pupils also compared unfavourably with the American cadets (most of whom had previously driven cars) in simple common-sense over the use of engines and brakes. Not that wastage rate for British cadets was higher than for American pupils; the heavy elimination rate was just part of the American system of pilot training.

To achieve the original output from the primary schools to fill the basic and advanced schools, intakes into primary schools had to be increased from 550 to 750 pupils every five weeks commencing with No. 4 Course on 4 October 1941. This disquietingly high elimination rate (by RAF standards) had several consequences. It set an awkward problem in disposing of the rejected pupils, it wasted passages across the Atlantic at a time of marked shipping difficulty, and it lowered the morale of pupils on their way to later courses in the Arnold schools. To help remedy this situation it was arranged to give pupils selected for training in the USA some previous flying in the United Kingdom. From 1 November, it was arranged that cadets selected for training in the United States should be drawn from pupils at EFTSs who had completed up to 15 hours flying and who were reported as likely to make good. The first course to arrive in America with previous flying experience was No. 7 Course, which started training at the Replacement Centre on 18 December 1941. It is interesting to note that the idea of providing flying experience for pilot trainees and selecting those with the most aptitude later developed into the highly specialised system of Grading which in May 1942 was introduced as part of the selection and classification procedure for all pilots.(1)

It had also been arranged for Royal Air Force pupils to have an acclimatisation course in the United States before starting their flying training. The US Army had started pre-flight schools (known as Replacement Centres) roughly equivalent to the RAF, ITW course, in August 1941 and,

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(1) AM File S.70902

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starting with the fifth course commencing on 4 October, all RAF 'Arnold' trainees proceeded first to the Replacement Centre at Maxwell Field, Montgomery, Alabama. Subsequently, on 24 January 1942, this training was transferred to the Replacement Centre at Turner Field, Albany, Georgia. The instruction lasted five weeks and consisted of drill, physical training, customs of the United States Army, American history and geography, and American terminology used in flying. Pupils were also given experience in driving motor cars to make up for their short comings in mechanical knowledge. They were subjected to the strictest form of American discipline based on that of the Military Academy at West Point, and although it had its merits, it was found most irksome by the RAF trainees. The main purpose of the course was to make the first few weeks of American training more amenable to RAF pupils, and it was hoped that this might assist in lowering the elimination rate.

Pupils for the Arnold Schools proceeded to the USA via Canada in the same way as the pupils destined for the BFTSs and were similarly equipped with grey suits, RAF uniform and tropical kit. They were treated as civilians when off-duty although they came under USAAC discipline whilst at the schools. The first course had been late in arriving due to shipping delays and last minute changes and requirements, causing considerable inconvenience to the United States authorities. Subsequent courses were therefore scheduled to arrive in Canada two or three days early to ensure their arrival at the American schools at the right time. The introduction of the course at Maxwell Field, which was flexible in duration, acted as a cushion and compensated for late arrivals.

The Towers Scheme

When on 18 June 1941, Admiral Towers of the US Navy made his offer to train 100 pilots for Great Britain it was immediately accepted. The President had agreed in principle that the US Navy Air Service could train some pilots and aircrews for the Royal Air Force and the Fleet Air Arm, and although this initial offer was limited to 100 it was accompanied by an enquiry as to what other training facilities were required by the British Forces.

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They were prepared to start training these first 100 pilots in July providing a few aircraft from British orders in America could be made available to them to help overcome the acute shortage of aircraft. They proposed to train, up to full operational standard, 60 pilots on flying boats and 40 pilots on carrier borne types, and to do this 6 Catalinas and 12 Martlets would be required in the advanced stages of training. The Air Ministry gratefully accepted this offer, and agreed to release the 18 aircraft, and asked when the pupils should arrive in the United States. In reply the US Navy stated that the first intake could take place any time after 15 July 1941. They would extend the scheme by accepting 100 pilots every month, and were willing to train observers, radio operators and flight engineer personnel as well, commencing at the same time as the pilot intake. It was also suggested that some RAF and FAA supervisory personnel would be welcomed in the Navy schools.(1)

The Air Ministry requirements for flying boat crews to be trained up to full operational standard by the US Navy was estimated at 30 crews per month (i.e. 60 pilots, 30 observers, and 30 wireless operators/air gunners. It was not considered economical to train the remainder of the crew in the United States (air gunners and flying engineers) owing to the comparatively short duration of their courses. The Fleet Air Arm requirements were set at 30 carrier borne pilots per month. These requirements were made known to the US Navy on 2 July, and they agreed to train these 150 personnel per month. A tentative request that a further 200 pilots and 200 observers for general employment (i.e. not up to flying boat operational standard) should be trained was not pursued because of the US Navy's acute shortage of advanced trainer aircraft.

The first draft (consisting of 60 RAF pilot pupils, 30 observer pupils, 30 W Op/AG pupils and 40 FAA pilot pupils, together with one RAF adjutant and one naval adjutant) left England on 6 July 1941, and commenced training on 24 July. The pilots' course for both RAF and FAA pupils lasted 30 weeks and provided 200 hours flying. The first 24 weeks were spent at the US Naval Air Station at Pensacola, Florida, and included 120 hours flying on land-planes - 70 on primary trainers, Stearman (PT-17's), and 50 hours on single-

(1) AM File CS.9659

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engined advanced trainers, North American (AT-6's). RAF pupils completed a further six weeks training at Pensacola with roughly 80 hours flying on flying boats, after which they were qualified as 2nd pilots on Catalinas and were also capable navigators. It was then intended that they should be crewed up with their observers and wireless operators and given some operational training. Fleet Air Arm pupils, after completing the 24 weeks' course at Pensacola, went to the US Naval Air Station, Miami, Florida, for six weeks for the completion of their advanced landplane training on Service types, after which arrangements were made to post them to the US Atlantic Fleet to carry out two months operational training on an aircraft carrier.(1) These courses, although stated to last 30 weeks, were flexible in duration, and pilots were only passed out as and when they were considered to have reached the required standard. In practice this varied from six to nine months, and allowed a more personal interest to be taken in individuals, whereas RAF schools and the US Army schools worked to a definite schedule, with a ruthless elimination system.

The US Navy had no specialised observer syllabus and their pilot training course covered the US Navy observer requirements. It was therefore arranged that RAF observers should do the navigation part of the pilots course which would be modified to include as much of the RAF observers syllabus as possible. Two RAF GR instructors were posted to Pensacola to assist in the training. The course consisted of eight weeks ground training and four weeks practical training, carried out at the US Naval Base, Pensacola, after which pupils were to be sent to patrol squadrons with the Atlantic Fleet for operational flying duties. This would last roughly 12 weeks and could be terminated to match the pilot output.

The wireless operator/air gunner courses were of 16 weeks' duration; eight weeks at the US Naval Air Station, Jacksonville, for ground signals training, and eight weeks at Pensacola for practical wireless operating and air gunnery training, although through lack of facilities and ammunition the practical air gunnery experience was severely limited.

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(1) AM File CS.9659

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The wastage rates at the US Navy schools were expected to be fairly small. That for US Navy pilot students at Pensacola was only 8 per cent and very little wastage was expected from the observer and wireless operator/air gunner courses. The US Navy pilot students, however, had undergone an elimination course prior to their posting to Pensacola, and as the RAF pupils had not had any previous flying experience their wastage would be rather higher than the Americans.(1) Beginning with the fourth course, it was arranged that pupils should pass through the US Naval Base at Grosse Ille, Detroit, Michigan, for an elimination course. The course was four weeks in duration and the first RAF pupils commenced training there on 15 September. Pupils carried out 10 hours dual and one hour solo flying on elementary trainers and those considered unsuitable as flying boat pilots were returned to Canada for recategorisation. To allow for wastage at the elimination course and maintain the output of 60 pupils per month from Pensacola it was necessary to increase the RAF intakes to 88 a month, although Fleet Air Arm pupils continued to go direct to Pensacola and their quota remained at 30 per month.(2)

Because of the short notice given for the commencement of the scheme, the shipment of the first courses was rather erratic and it was not until October 1941 that a regular flow of pupils was maintained. To reduce the number of aircrew personnel to be sent to the United States to a minimum and at the same time utilise fully all those who were sent it was decided that observer and wireless operator/air gunner pupils should also be drawn from pilot eliminees in America, and only two courses of the former and one of the latter were in fact sent direct from the United Kingdom. Thus by October 1941 the intakes into the Towers Scheme was 178 pupils per month, (comprising 88 RAF and 30 FAA pilots, 30 observers and 30 wireless operators/air gunner), but only the 118 pilot pupils were despatched directly from the United Kingdom .

The organisation for the scheme corresponded roughly to that for the Arnold Schools. RAF administrative officers were supplied to each school and pupils came under US Navy discipline. This discipline, however, was not

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(1) ETS 331(41) (AHB/III C/1)

(2) AM File CS.9659

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so rigid as at some of the Arnold schools, and no 'caste' system existed between upper and lower classes. As in the other American schemes the training facilities, recreational arrangements and food were ideal. Pupils for the United Kingdom proceeded via Canada and, until October 1941 when the ruling was relaxed, they were required to wear civilian clothes whilst travelling in the United States.

Expansion of the Pan American Airways School

As a result of Britain's request for more training facilities in the United States, General Arnold, on 13 April 1941, besides providing pilot training facilities at US Army flying training schools offered the RAF the full use of the Pan American Airways (PAA) school at Miami for observer training. The offer was accepted, although for political reasons PAA insisted on retaining 50 US students per course, and so when the next course began on 5 July the RAF supplied 150 pupils per intake.(1) At the same time, as a result of earlier criticisms of the course by Air Commodore Mackworth, who had visited the school in November 1940, the course length was extended from 12 to 15 weeks. Intakes took place every 8 weeks and 7 weeks alternately and the school had a capacity for 300 British cadets together with 100 American. Wastage was about 20 per cent giving a planned output of 840 RAF observers per year.

Although they had extended the course because of RAF criticism, Pan American Airways were resolute in maintaining their own conception of how navigation training should be taught. When General Arnold's offer of the complete facilities of the school was accepted it was hoped to run the school, under RAF supervision as an Air Observer Navigation School (AONS) but this proved impossible. In June 1941, Wing Commander Oulton visited the school with a view to effecting some improvement. The school's staff, however, still maintained that any graduate of theirs should measure up to their own standard of training. The ground training was very thorough but as the course had originally been started by PAA for their own personnel, it had a definite astro-navigation bias, with a great deal of time spent on theory of astro and DR navigation. PAA's conviction was that if a place had

(1) AM File S.65478

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a latitude and a longitude any of their pilots, with a sound theoretical background of training behind them, could get there. This was all right for trans-oceanic work, but in Europe map reading or rule-of-thumb methods were also important. The amount of practical flying carried out was very small (only four hours as first navigator) and although a total of 50 hours flying was given in all, it was carried out in batches of ten pupils at a time in four obsolescent flying boats (Commodores) with a top speed of 80 - 85 knots, and it was impossible to increase this amount of flying because PAA were short of aircraft. It was agreed, however, that some British instructors should be added to the staff, and they could utilise lecture periods not needed by PAA (who only needed five hours per day) to deal with AONS subjects not covered in the PAA syllabus. It was also arranged to give instruction with British instruments, maps, charts and publications, and British technical terms should be adopted in lieu of American ones.(1) Efforts were also made to introduce armament training, but this met with little success. To get first hand knowledge of navigation under war conditions, the chief instructor at the school visited the United Kingdom in August 1941 and made a tour of Bomber, Fighter and Flying Training Commands.(2)

Considerable difficulty was experienced in providing bombing and gunnery training for the output of Miami. Canada was asked to provide facilities but was unable to take the whole output without forming a new school. Although the first two courses (each of ten pupils) - the first of which graduated on 27 June 1941 - received training at No. 2 B & GS Mossbank, Canada, it was arranged that all subsequent graduates should return direct to the United Kingdom and receive any further training there.(3)

The planned output was 120 observers every two months (every 7th or 8th week alternately) one-third of whom were selected for observer radio duties and sent to the Radio School at Prestwick for a four weeks' radio course before being posted to night fighter squadrons. The remainder completed a six weeks' bombing and gunnery course, after which 32 were posted to a

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(1) ETS 290(41) (AHB/III C/1)

(2) ETS 305(41) (AHB/III C/1)

(3) AM Files S.65478 and S.72841

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bomber OTU and the other 48, destined for Coastal Command, carried out a three weeks' general reconnaissance course at the GR School, Squires Gate, before proceeding to a coastal OTU.(1)

Progress of the Refresher Schools

The refresher courses in the United States for American volunteers recruited for service with the Royal Air Force continued throughout 1941. In March 1941 plans were made to expand the scheme by doubling the size of the three existing schools and forming a fourth. The fourth Refresher School was duly formed at Bakersfield, California on 20 April 1941, but this was soon offset by the closure of the school at Dallas on 31 May 1941, so that it could be converted into a US Army primary training school. The operator, Major Long, opened the first British Flying Training School at Terrell a few miles away.

Subsequent offers of American aid, precipitated largely by the advent of Lease-Lend, overtook the idea of expanding the size of the schools, and the refresher schools in effect continued to operate unchanged throughout the year, turning out about 600 pupils per year.

General Arnold's offer of trainer aircraft which led to the formation of the six British flying training schools, also meant that a few Harvards were available for use at the refresher schools, and all subsequent courses were given some experience on them. In August 1941 Cessna Crane twin-engined advanced trainers were also introduced at two of the schools, but they proved unsatisfactory and had to be withdrawn.

The schools were gradually reorganised on a more business like footing. Each school had a regular intake of pupils (Tulsa 10 every two weeks, Glendale 8 every three weeks, and Bakersfield 15 every four weeks) and the course was fixed at 12 weeks. On completion of training graduates went to the United Kingdom, via Canada, and were posted either to the Eagle Squadron or to the Air Transport Auxiliary for ferrying duties. The standard of instruction varied considerably. The first courses from Dallas, for instance, pupils passed out with only 30 hours flying, and at Glendale there

(1) AM File S.72841

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was no organised syllabus and much of the ground training was incorrect. The school at Tulsa, on the other hand, gave thorough instruction both in the air and on the ground. When the schools' intakes were stabilised, courses regularised and a syllabus planned, the quality of instruction gradually improved, especially after Harvards for advanced training had been provided, although this was offset to some extent by a lowering in the standard of volunteers, due to the difficulty in giving the scheme any publicity.(1)

Problems of Personnel Reception and Reselection

The development of RAF training in the United States was notable for the speed with which it came into existence after the various schemes were agreed and put in hand. Whereas other training theatres had to build up their organisation gradually, America had 'ready made' resources in instructors, manpower and equipment. Of the five schemes only the refresher schools trained American volunteers for the RAF; all the others trained Royal Air Force personnel supplied from the United Kingdom, travelling via Canada and by the end of the year the five schemes were turning out roughly 7,000 pilots, 1,200 observers, and 380 W Ops/AG together with 600 American volunteer pilots per year. Various attempts were made during the year to widen the field of recruitment in the United States. Plans were drawn up to provide ab initio training for American volunteers at the BFTSs, and to form an initial training wing in America for these recruits, but by the end of the year they were still under consideration. It was not easy to recruit American volunteers in the United States. The American Army was naturally anxious to have the first call upon American manpower, and the Royal Air Force could not trespass on that territory. American neutrality laws, too, severely restricted recruiting and the impossibility of publicising the scheme made it difficult to increase the flow of suitable recruits. The whole question, however, was decisively settled in December 1941, and America's entry into the war assured tremendous support in men and material for the Allied Air Forces.

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(1) AM File S.70588

/ Canadian

Canadian sensitiveness about training in the United States was allayed before the flow of pupils began, and the Dominion gave valuable assistance by providing a transit camp (originally at Dartmouth and later at Moncton) for pupils entering and leaving the United States and by establishing facilities for reselection for pupils eliminated in American schools.(1) The transitional arrangements for pupils going to America were difficult until October 1941; all RAF personnel travelling in the United States were required to travel in civilian clothes. The first courses not knowing in the least where they were going were presented with £5 and told to buy a suit of clothes - with varying and sometimes disastrous results. The overcoat problem was solved by replacing the brass buttons on the RAF greatcoats with plain ones. Pupils were also issued with khaki drill uniform to wear while actually on duty inside the schools. Later courses were issued with grey flannel suits in Canada instead of the five pounds, and their working dress, for which RAF khaki drill proved unsuitable, was replaced by blue uniform and subsequently with American khaki uniform.

One of the early difficulties of these schemes was to find a satisfactory method of dealing with the pupils eliminated from the various schools. It was obviously desirable that as far as possible they should be re-categorised and trained in North America before returning to the United Kingdom - the acute shortage of shipping made it essential to utilise to the greatest advantage all personnel sent for training to the North American continent.(2) At first pupils who failed their courses were often given another chance at different schools, but in August 1941 it was arranged that all aircrew pupils undergoing training in the United States who failed in their courses should be posted to the Composite Training School at Trenton in Canada for reselection to another aircrew category and then continue training in Canada or America (usually at the Towers or PAA schools). Those personnel remustered to ground trades were, if possible, retained in Canada to fill vacancies in the establishments of the transferred schools there, or given trade training in Canada or America before returning to the United Kingdom. Those suitable only for discharge were, of course, returned directly to the United Kingdom.

(1) ETS 370(41) (AHB/III C/1)

(2) ETS 291(41) (AHB/III C/1)

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All five schemes were operated by American personnel and equipped with American aircraft, and the only RAF personnel sent, apart from the trainees, were for administrative or specialist duties. During the year there had been other attempts to get help in the form of training facilities from America, chiefly for operational and heavy conversion training of crews for American aircraft delivered to the Royal Air Force. In February 1941 four crews for the first Fortress aircraft delivered to the United Kingdom were given conversion training at a US Army Air Corps Station in California, and in June there was a proposal to give four-engined heavy conversion training at the TWA school in America for graduates from Canadian or American schools. This project, however, fell through because the USAAC took over the contract of the school, although the USAAC subsequently provided conversion training for a few crews (24 in all) on Liberator and Skymaster aircraft. At the end of July 1941 Sir Archibald Sinclair asked Mr. Harry Hopkins for help over operational training. American operational aircraft were being supplied to Great Britain by the United States and if crews for these aircraft could be given OTU training in America it would not only reduce the demands on United Kingdom training but would also help in ferrying them across the Atlantic. Behind the request was a hope that the United States would provide additional aircraft and the staff for the OTUs. America, however, had no operational aircraft to spare, and the proposed OTUs could therefore be equipped only from Great Britain's existing allotment. Although discussions continued throughout the year little progress was made.

Effects of America's Entry into the War

By the beginning of 1942 all the various schemes had settled down. Training was well under way, and the first fruits of the schools were appearing. Two courses from the British flying training schools, totalling 334 pilots, together with the first output from the Arnold schools, comprising 230 pilots, as well as 60 observers and 30 wireless operators from the Towers scheme, had all arrived in Canada on their way back to the United Kingdom. Outputs from the PAA School, Miami, from the refresher schools had been flowing for some time, and by January 1942 just over 300 observers from Miami, together with nearly 400 refresher pilots had been trained under these two schemes.

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This was not to be the beginning of an ever increasing flow, however; America's entry into the war in December 1941 was to have repercussions on all forms of assistance to the United Kingdom. The effects on RAF training were both immediate and long term. The former led to course changes, school movements, and the acceleration of training, and the latter, which at first seemed to pave the way for an enlarged training organisation extending to cover both initial and operational training, eventually resulted in a large scale reduction in American training facilities.

The first direct effect of America's entry into the war upon the Royal Air Force facilities in America was the transfer of the refresher schools from Glendale. Flying restrictions were imposed on all coastal areas, and this school, on the Californian coast, was moved to Lancaster on 20 December 1941 where No. 2 BFTS, also operated by Major Moseley (the operator at Glendale) was already functioning. To accelerate the output of its training schools the USAAC reduced the pilots' course length from 30 to 27 weeks in January 1942 (each of the three stages being shortened by one week). At the same time, in order to overcome the shortage of instructors arising from the acceleration and expansion of their training organisation, the Air Corps arranged to train the majority of their students passing out of advanced schools as instructors. Shortly afterwards it was agreed that up to 25 per cent of the British graduates at the Arnold schools could be trained as instructors and would be retained on those duties for six months.(1) Thirty-four pupils were selected as instructors from the first Arnold output; all were commissioned and sent to Canada on 6 January where they kitted themselves out with uniform etc. They returned to HQ South East Air Training Command on 17 January to report for duty. One was sent to each of the five primary and three advanced schools training British pupils, and the remaining 26 were sent to the basic school at Montgomery. There was no standard method of flying instructor training comparable to that given by the RAF at the Central Flying School. Pupils were simply selected as either primary, basic or advanced instructors and sent to the appropriate school where they would be given a three or four weeks' refresher course (30-45 hours), after which they were

(1) AM File S.77755

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allotted pupils nearing the completion of their training. As the instructor gained experience he was given less experienced pupils until eventually he was competent to train new pupils. The emphasis lay more on the instructor's flying ability rather than his aptitude for teaching. Subsequently, in September 1942, the USAAC formed a flying instructors training school at Maxwell Field and all RAF personnel selected for instructor duties were sent there for a four weeks' course.

A few months after the first request was made, it was arranged that part of the BFTS output should also be retained in the United States as instructors and employed at Air Corps schools, and by June 1942 there were roughly 250 RAF pilots employed as instructors in the Arnold schools and nearly all RAF pupils as well as many Americans were being taught by RAF instructors.

The employment of British instructors in the Arnold schools and the provision of flying instruction in the United Kingdom for pupils going to America for training helped to reduce the elimination rates at these schools. This and the reduced course lengths meant that, while still maintaining the output at the rate of 4,000 pupils per year, the intakes could be reduced by nearly 30 per cent. With effect from the ninth course, which arrived at the Replacement Centre, Albany on 25 February 1942, intakes were reduced from 750 to 509, and this enabled the number of primary schools to be reduced from five to four.

The Towers scheme had also been disrupted by America's entry into the War. The original scheme for producing fully trained Catalina crews for the RAF was no longer possible - the US Navy were hard pressed to meet their own new training requirements - and arrangements were made to carry out operational training of the observers and wireless operators in Canada before crewing them up with the pilots. Shortly afterwards, however, it was found impossible to provide operational training for pilots at Pensacola. There was little point in training matching observers and wireless operators in America if they could not be crewed up until the pilot had returned to the United Kingdom for operational training and intakes of these two categories ceased in April and June respectively. The last course of observers passed out in July 1942 and wireless operators two months later. In all 538 observers and 602 wireless operators/air gunner were trained under the Towers scheme.

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The Navy's pilot training organisation was modified to meet war conditions and after May 1942 it comprised a 12 weeks' ground training course (equivalent to the RAF ITW), followed by 12 weeks at a primary school and 14 weeks at an advanced school. RAF and FAA pupils continued to complete their initial training in the United Kingdom before proceeding to Grosse Ille for the primary course and Pensacola for advanced training. Pupils graduated at a standard equivalent to the SFTS output, the only difference being that part of their Service flying training was given on Catalinas. Fleet Air Arm pupils returned direct to the United Kingdom and RAF pupils completed a GR course at No. 31 GR School in Canada before returning to the United Kingdom. At first only 24 of the monthly output of 60 went on the GR course, but in October 1942 it was arranged to send the whole output there. By that time Pensacola was meeting all pilot requirements for flying boat squadrons, and as some of these were Dominion (Article XV) squadrons (three RCAF, three RAAF and one RNZAF) it was agreed that an appropriate proportion of the monthly intake (which had been increased from 88 to 90 a few months earlier) should be composed of Dominion personnel. After September 1942 the monthly intake consisted of 62 RAF, 12 Canadian, 12 Australian and 4 New Zealand pupils.(1) The Fleet Air Arm intake was also increased (from 30 to 50 per month) and the total pilot output under the Towers scheme amounted to 1,080 a year, of which 720 were RAF and Dominion personnel.

The extension of the BFTS course lengths from 20 to 28 weeks (under AMT's 'New Deal') and the reduction of the Arnold courses to 27 weeks brought the two schemes, turning out the majority of the American trained RAF pilots, roughly into line. This led the American Army authorities in February 1942 to suggest absorbing the BFTSs into the US Air Corps programme, giving the Royal Air Force a corresponding increase in training capacity in the Arnold schools.(2) Although the proposal had several commendable factors it did not find favour with the RAF authorities who felt that the advantages were considerably outweighed by the disadvantages and the idea was eventually dropped. The proposed amalgamation would simplify administration, but so

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(1) AM File CS.9659

(2) AM File S.61719 (AHB/ID/46/1162(A))

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did the plans to form a RAF group HQ in America (which will be discussed later in the narrative). Although the trainer aircraft would come from American Army sources instead of, in the case of the BFTSs from British allocations, it was likely that compensating reductions would be made in the overall aircraft allocation to the Royal Air Force. Moreover, the Royal Air Force was unwilling to forgo the BFTSs (using the RAF syllabus) in lieu of the American system of training. Admirable as the Air Corps system was, it differed from that of the RAF in many respects, and meant that Arnold students needed converting to RAF methods on their arrival in the United Kingdom.

The long term effect of America's entry into the war led to proposals for extending training facilities in America to cover both initial and operational training, and it will be seen how plans were laid down to obtain these facilities, only to be frustrated at the last moment by the reduced allocations of American aircraft. America's entry also led to closer co-operation between herself and Great Britain and fostered a more realistic appreciation of the task ahead. It was particularly gratifying to note that experience gained through 2½ years of war was now more readily accepted and was resulting in a more standardised form of training. Both the Air Corps and the Navy, in February 1942, asked to send instructors to the proposed Empire Central Flying School in the United Kingdom. The US Navy, in particular, was anxious to benefit by the RAF experience. It has already been shown how their pilot training courses were remodelled on RAF lines, and operational training units were formed in America for Navy personnel based on the syllabi of RAF Bomber, Fighter and Coastal OTUs.

Proposal to establish an Initial Training Wing

The idea of setting up an Initial Training Wing in America had been favoured for some months past but various difficulties impeded and finally prevented its formation. The idea germinated in July 1941 shortly after the formation of the British flying training schools, when it was proposed that two of the six schools should be filled with volunteers recruited in America who could be given an initial training wing course equivalent to that given to pupils recruited in England before proceeding to a BFTS for training as

/ pilots

pilots. Volunteers for the refresher schools could also pass through the proposed ITW. Similarly it would be able to train Free French, Polish, Dutch, and other allied personnel volunteering in the United States.

Treasury authority for the expenditure of up to $150,000 per year was received but a few weeks later, (in August 1941) objections by the State Department on the grounds that such a scheme might deprive the US Army Air Corps of potential recruits severely restricted the scheme. It was, however, planned to continue with the plan for an ITW to accommodate 200 refresher pupils, and it was hoped to extend it to 600 to cover ab initio pupils for the BFTSs at a later date but up to the time of America's entry into the war nothing further had been accomplished.(1) In early 1942 further attempts were made to establish the ITW. America's entry into the war disposed of one of the main difficulties - that created by the Neutrality legislation - and although this was somewhat counteracted by America's own increased needs of manpower, it was thought that this factor was a less restricting one than had been the Neutrality Laws. British and Allied personnel could be recruited and there were considerable numbers of suitable American personnel who were of a lower medical category than the USAAC standards but who came within RAF standards.

Accommodation was found at Houston, in Texas, and the Wing was planned to open in the spring of 1942, with intakes of 200 pupils every seven weeks on a 14 weeks' course.(2) Arrangements were also made for the combination of the three refresher schools into a seventh BFTS as soon as the ITW was working in order to regularise the training of these refresher personnel. The staff for this Wing left the United Kingdom at the end of March, and arrived in the United States in the beginning of April.

On 15 April, however, a telegram was received from the Royal Air Force delegation at Washington announcing two unexpected difficulties. One was the withdrawal of the offer of accommodation at Houston owing to US Navy requirements there and the other was the reluctance, if not opposition, by the US Air Corps to the idea of recruiting sub-standard American nationals

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(1) AM File S.78784

(2) AM Files S.65214 and S.78784

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for the RAF, on the grounds that it was at the expense of the American Army since such personnel could be enlisted either in the Air Corps for other forms of aircrew training or for Army Service. As a result the question of recruitment of American personnel and the formation of an ITW was further considered, and it was eventually decided to drop the project. The three refresher schools, however, were amalgamated as planned and No. 7 BFTS was opened at Sweetwater, Texas, on 18 June. The first course of 50 pupils was supplied from the United Kingdom, and a further 40 pupils from the refresher schools went straight to basic and advanced stages of training. The refresher schools, which finally closed on 1 July 1942, had supplied roughly 600 American volunteers for the RAF since their inception, and had enabled the formation of two 'Eagle' squadrons.

There were various other reasons for the decision to drop the ITW proposal. In addition to accommodation difficulties and American opposition, there was the fear that if the USAAC medical standards were ever lowered the RAF would have trained personnel only to have them transferred to the American Air Force at some later date. The final straw came when the Air Corps argued, not without a certain amount of logic, that as they were already providing the trainer aircraft, schools and instructors for the pupils and operational aircraft for the trained product (not to mention their financial assistance), any extension of the recruitment of American personnel might just as well be capped by putting the whole organisation under the American flag.

Effects of the Arnold/Towers/Portal Agreement

Once the Arnold/Towers/Portal (ATP) agreement was signed it was evident that some of the Royal Air Force training organisation would be surplus to requirements, and it was decided to give up much of the training capacity developed in America.(1) There were several reasons leading to the choice of America for the reduction in training: the OTU scheme there had collapsed, schools could not work as closely to the RAF syllabus as did those in the Empire, they involved heavy dollar expenditure, and perhaps most important of all, the US Army and Navy had initiated rapid expansion programmes and would be glad of more training facilities for their own personnel.

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(1) See Appendix 81

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It was found possible to relinquish the whole of the 'Arnold' capacity and that provided by Pan American Airways at their school at Miami. The new BFTS (No. 7) at Sweetwater was no longer required, and as the USAAC were anxious to take over No. 2 BFTS Lancaster, to use as a basic training school, it was agreed that both schools should be turned over to the USAAC on 10 August 1942. Pilot training at Pensacola under the 'Towers' scheme continued unchanged and the five remaining BFTSs also continued to function. These schools could not have been given up without establishing equivalent training capacity elsewhere - a process which would have taken several months to accomplish - and the American authorities agreed to their continued use. The two schemes would turn out approximately 2,420 pilots a year, 1,080 (720 RAF and 360 FAA) of whom would be trained at Pensacola.

The last intake into the Arnold schools entered the Replacement Centre at Albany on 1 July 1942 and graduated from the advanced schools on 15 February 1943. The last intake of observer pupils into the Pan American Airways School at Coral Gables, Miami, took place on 3 July 1942 and graduated on 17 October 1942. Both the Arnold and the PAA schemes provided valuable assistance to the Royal Air Force at a time when it was most needed and personnel trained under these schemes saw service in every theatre of war. A total of 4,370 pilots out of 7,800 entrants graduated from the Arnold schools, 3,099 of whom were single-engined trained and 1,271 twin-engined trained. Nearly 700 of these graduates served a tour of 6-12 months as instructors before returning home. Of 1,225 entrants into the PAA School, 1,177 completed their training as observers.(1)

Projected RAF Group HQ

The pursuance of the effects of the ATP agreement has taken the narrative somewhat ahead of the strict chronicle of events. Following the revival of the proposal to form operational training units in the United States consideration had been given to means of co-ordinating the administration of all RAF training capacity in America. In addition to the eleven projected OTUs and the ITW there were the Arnold, Towers and BFTS pilot training schemes which were equivalent to eleven normal RAF schools of 240 pupils each,

(1) AAF Historical Study No. 64

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together with other schools training observers and wireless operators, besides the refresher schools training American volunteers. The administration of these numerous units was no small matter and it was proposed to form a Group Headquarters in the United States which would directly command the purely British training units (ie the OTUs and the ITW) and would take over from the RAF Delegation Washington the responsibility, in so far as finance and policy questionswere concerned, for the other schools training personnel on behalf of the Royal Air Force, (ie BFTSs, Arnold, Towers, and PAA schemes and the Refresher Schools). The formation of the Group Headquarters was planned to coincide with the opening of the first OTUs but when in June 1942, the reduced American aircraft allocations caused the OTU project to be dropped and the Arnold capacity relinquished, all thoughts of a Group Headquarters in the United States vanished.

Expansion of the BFTSs

Compared with the US Army schools, the BFTSs were not running at their maximum capacity, and as the USAAC was known to be short of pilot training capacity it was thought that this situation might move the Americans to revive their proposals for absorbing these schools into their own training organisation. To avoid any unfavourable comparison, RAF pilot training requirements in the United States were reviewed in September 1942, so that either capacities could be increased or the number of schools reduced. It was decided that to meet immediate requirements only a small increase in the existing output of 1,340 a year was needed, but as a safeguard against future expansion it was wished to retain the five existing schools. To avoid American criticisms they would have to be expanded and it was decided to offer half the additional capacity to the US Air Corps. Besides helping to overcome their training difficulties, the training of Americans in the British schools would be valuable in furthering co-operation and interchange of ideas between the two services.(1) The prediction proved correct; in accepting the proposal the American Government offered to supply the additional aircraft required. On the British side it was decided to shorten the course length to 27 weeks so as to phase intakes with the USAAC programme, and to

(1) AM File S.92157

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exchange all basic trainers (which were in short supply in the US schools) for advanced trainers (of which there was now a surplus). These changes suited the RAF admirably and enabled the BFTSs to be brought more into line with the normal RAF system of training. The primary course was reduced from 14 weeks to nine with 70 hours flying and did not require any additional aircraft, and the advanced course extended from 14 to 18 weeks with 130 hours flying; the aircraft establishment being increased from 20 basic and 20 advanced trainers per school to 64 advanced trainers. The capacity of each school was raised from 200 to 300, and, with effect from 12 November 1942, intakes took place every 9 weeks instead of 7 weeks and consisted of 83 RAF and 17 USAAF pupils. As a result of this reorganisation the annual output was increased to roughly 2,200 per year, of which one-fifth were American cadets.(1) The personnel establishment at the schools was also increased. One USAAC administrative officer (to look after the American pupils), three RAF flight lieutenants (two assistant flying supervisors and a navigation instructor) and one RAF sergeant wireless operator/aig gunner (signals instructor) were posted to each school.

For about eighteen months the five schools continued to operate without interruption, and it was not until the spring of 1944 when there was a general reduction in the RAF overseas training organisation that further changes were made. There had been a slight modification in the autumn of 1943 when, as a temporary expedient, the intake was increased from 100 to 110 pupils (90 RAF and 20 USAAF). A further increase to 130 was planned for the following intake (of 9 December 1943) but subsequent events rendered it unnecessary. The increase was made as a result of an urgent request by the Air Ministry for an increase in pilot output. Canada was asked to supply the additional requirements but the additional SFTS to meet them could not be opened until the winter of 1944, and the BFTS increases were designed to bridge the gap until that time.(2) As it happened, only one intake was increased - but this is looking too far ahead.

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(1) AM File S.61719 (AHB/ID/46/1162(A))

(2) ETS 625/43 (AHB/III C/1) and AM File S.61719/II (AHB/ID/46/1162(B))

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The Towers scheme also continued with few changes throughout this period. In May, in response to the US Navy's suggestion that the standard of training would be improved if more RAF instructors with operational experience on flying boats were posted to Pensacola, the number was increased from six to twelve. The intakes were re-allocated between the RAF and FAA in September 1943. As many of their operational aircraft were American types the Admiralty wanted as many naval pilots as possible to be trained in America. Although in theory all the RAF output was required to fill the flying boat OTUs (in fact it was inadequate since OTU requirements had grown to 72 per month compared with Pensacola's output of 60 a month), in actual practice, owing to the erratic flow from the school, large numbers of Pensacola trained pilots were sent on GR landplanes and quite a large part of their training accordingly wasted, while the flying boat OTU requirements often had to be met from Canadian schools when there were no pilots from Pensacola available. In view of this, the RAF quota was reduced from 90 to 74 per month and the extra 16 places allotted to the Fleet Air Arm, bringing its quota up to 66 every four weeks.(1)

Reduction of Pilot Requirements

Towards the end of 1943 it was evident that with the favourable changes in the war situation it would soon be possible to reduce the size of the overseas training organisation. In November, therefore, a comprehensive review of aircrew requirements was carried out, as a result of which it was decided to reduce pilot output. The acute manpower shortage, coupled with the fact that American training was financed under lease-lend, made it desirable to retain both the Towers schools and the BFTSs and to close RAF operated schools in Canada and South Africa, and so release RAF ground and instructional staffs for other duties. It was no longer necessary for the BFTSs to be expanded. Plans for increasing intakes to 130 were cancelled and, with the course commencing on 11 February 1944, intakes reverted to 100 pupils every 9 weeks. Before reducing intakes the spare capacity (10 pupils per intake - ie 30 per school) was offered to the USAAF, but they too were reducing pilot outputs, in fact they had already decided to stop sending any

(1) AM File CS.9659

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more pupils to the BFTSs. The last intake of American pupils (20 per school) took place on 8 December 1943 and graduated on 14 June 1944. In all some 610 American pupils passed through the BFTSs; 452 graduated as pilots.(1)

Flying boat pilot requirements were also reduced and intakes under the Towers scheme were accordingly decreased from 74 to 45 pupils every four weeks commencing with the intake on 30 December 1943. The capacity given up by the RAF was offered to the Fleet Air Arm but it was not required and their intakes remained at 66 pupils every four weeks. At the time of these reductions the primary course at Grosse Ille was extended to 14 weeks which allowed the first two weeks to be used as an acclimatisation period for cadets before they commenced flying training. A further review of training requirements was carried out in February 1944, and it was estimated that there were already sufficient flying boat pilots trained to meet requirements for some time to come. Training under the 'Towers' scheme could therefore be discontinued and the last intake into Grosse Ille took place on 24 February 1944, passing out on 20 September 1944. In all 1,784 RAF pilots were trained by the US Navy. Fleet Air Arm pupils continued to be trained under the scheme. In fact, in September 1944, intakes were increased from 66 pupils to 80 every month.(2) Training ceased when the Japanese war ended, and a total of 2,081 FAA pilots were trained under the Towers scheme.

The review of February 1944 led to considerable reductions being made in the overseas training organisation, but the BFTS capacity was retained because to close schools would not relieve the manpower shortage. The cessation of USAAF intakes, however, meant that one school could be closed and its capacity made up by filling the American quota at the other four schools with RAF pupils. No. 6 BFTS, Ponca City, was chosen as the school to be closed, and its last intake took place on 8 December 1943. The school actually closed on 17 April 1944, and its last intake was sent to the remaining schools for the second half of the advanced course. Commencing

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(1) AM File S.61719/II

(2) AM File CS.9659

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in February the total BFTS intake was 400 RAF pupils divided equally between the four schools (instead of 400 RAF and 100 USAAF for five schools). In order to bring the BFTSs into line with the schools in Canada - when courses had been extended by four weeks in order to delay outputs and so relieve the congestion at the PRCs in the United Kingdom - courses were extended by three weeks (to 10 weeks primary and 20 weeks advanced) commencing with the courses graduating after June 1944. The flying hours per pupil, which had already been increased by the addition of 10 hours gunnery training in November 1943, were extended by a further 10 hours, bringing the total up to 220 hours.(1)

Closure of the BFTSs

The BFTSs continued on this basis until the end of the war. In May 1945, when the war in Europe ceased the Americans had promptly discontinued all Army Air Force pilot training at civilian operated schools and were anxious to close the BFTSs. They agreed, however, to allow intakes to continue up to 20 August 1945 in order to allow the RAF to re-establish a training organisation in the United Kingdom, which meant that the last output would graduate in early 1945. With the sudden ending of the Japanese war on 15 August and the consequent cessation of lease-lend, these arrangements were rescinded and no more flying training was carried out after No. 25 course passed out on 27 August 1945.(2)

The last two courses, one of which had completed 10 weeks' training and the other 20 weeks, were returned to the United Kingdom where they were given an opportunity to complete their training. The course due to start on 28 August was returned to the United Kingdom without having commenced training In all, 25 courses were trained at the BFTSs and 6,921 RAF and 558 AAF pilots received their wings at these schools.

Thus, on 27 August 1945, four years after the first British cadets arrived in the United States, all flying training in America on behalf of the Royal Air Force came to an end. The various schemes, Army, Naval and Civil, were a practical example of mutual co-operation and the exchange of

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(1) AM File S.61719/II (AHB/ID/46/1162(B))

(2) AM File S.61719/II (AHB/ID/46/1162(B))

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ideas and experience between both pupils and instructors was of great value to both Services. The Royal Air Force, which trained under almost perfect flying conditions remote from enemy interference, were received with a warm hearted friendliness by the American people. The most generous hospitality was offered to pupils in all parts of America and on their side the cadets responded equally whole-heartedly, never abusing the kindness of their hosts, and winning their affection by their eager response to proferred friendship.

In all, about 16,000 RAF pupils were trained in America, including the 600 American volunteers trained for the RAF in the refresher schools, an invaluable contribution to the strength of the Royal Air Force, without which war in the air could not have been won.

CHAPTER 13

BASIC TRAINING IN INDIA AND THE FAR EAST

Formation of the Indian Air Force

Before the Second World War air power was recognised as an important corollary to Imperial Defence in India and the Far East, and was proved to be the decisive factor during the war, but no serious attempts were made to tap the vast resources of eastern manpower for aircrew material or to establish RAF basic training facilities anywhere in Asia.

Plans for the formation of a small Central Flying School in India had been made as long ago as 1914 when a school to train British personnel stationed in India was due to open at Sitapur in September of that year.(1) The outbreak of the First World War frustrated this project and its aircraft and staff, which had been assembled in the United Kingdom, were diverted to the Middle East.

In 1931 the Sandhurst Committee considered plans for the inauguration of an Indian Air Force (IAF). Twelve months later on 8 October 1932 the Indian Air Force was formally constituted but the Committee decided that its small size did not justify flying training facilities. The IAF was under the command of the Air Officer Commanding, RAF, India and consisted of one squadron of Wapitis which, on the outbreak of war, was not up to full strength. The aircrew - all pilots - did a two year training course at the RAF College, Cranwell followed by a month on a RAF unit in the United Kingdom, after which they returned to India. A few pupils were also sent to No. 4 FTS in Egypt for their training. Tradesmen were trained at the RAF Depot at Drigh Road, Karachi. Shortly before the war a proposal to form an Indian Volunteer Reserve organisation, on similar lines to that operating in the United Kingdom, was mooted, but it was not actually constituted until late 1939.

Proposed RAF School in India

The establishment of RAF flying training schools overseas to relieve the growing congestion of aerodromes in the United Kingdom was considered in

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(1) H.A. Jones The War in the Air, Vol VI, Chap 6 and AP 125 Chaps 4 and 5

May 1936 and, amongst other places, Bangalore in India was suggested. The proposal was shelved in favour of other locations (Canada was most favoured) on account of probable financial and political complications. A year later the possibility of establishing an RAF school in India was re-examined but because of the heavy cost involved, and the length of time it would take the idea was again dropped.

Other areas did not prove any more fruitful and in November 1938 the Air Council, now acutely conscious of the necessity of training expansion outside the United Kingdom, decided that a more determined effort should be made to establish flying training schools abroad. Bangalore was again considered as well as a new site at Ambala, but there still remained considerable strategical, political and organisational difficulties.(1) Moreover, there was always the disquieting thought that it was unwise to back the Metropolitan Air Force by schools east of Gibraltar, because of transportation difficulties in the event of war with Italy. No. 4 FTS Egypt could already supply all replacements required for squadrons in India and the Middle and Far East. This fear was more capricious than real, and providing a suitable site could be found, the Air Council considered that the risk was justified. As it happened the question did not arise. Bangalore was ruled out because it was in the Native State of Mysore, and Ambala was eventually declared unsuitable because of an inadequate water supply. By early 1939 it was accepted that India was not a suitable location for RAF flying training schools.(2)

Establishment of a Reserve School at Hong Kong

Elsewhere in the Far East small local training schemes were taking shape, ostensibly as a result of Air Ministry policy but in reality as a result of the efforts of the people on the spot. It is not quite true to say that training schemes were started in spite of Air Ministry policy, but at no time was consideration given to the establishment of permanent flying training schools anywhere east of India, and no attempts were made to recruit native personnel or even foster interest in aeronautical affairs.

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(1) EPM 169(38)

(2) AM File S.38427

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The first move came in 1935 when it was decided to establish refresher training facilities for members of the RAF Reserve of Officers residing overseas. It was hoped to start such schools at various centres throughout the Middle and Far East, but only one school was actually formed. At Hong Kong an agreement was reached with the Far Eastern Aviation Company, commencing on 31 December 1935, to provide refresher courses on a part-time basis involving roughly 20 hours flying per year for ex-RAF pilots living in Hong Kong. Training was carried out on the aerodrome at Kai Tak and was similar to that provided by civil schools in the United Kingdom. The Company supplied the aircraft (five Avro Cadets) and the instructors. Some flying instruction was also given to members of the Air Section of the Hong Kong Volunteer Defence Force.

The Straits Settlements Volunteer Air Force

Although the Reserve Training Scheme was not extended to the Malayan States, a few members of the Singapore Flying Club were anxious to form their own flying service and, as a result of this local initiative, the Straits Settlements Volunteer Air Force (SSVAF) was formed on 26 March 1936. It was purely a local force formed with the express purpose of co-operating with the fixed defences of Singapore base. Although it owed no allegiance to the Royal Air Force it was generally understood that it would be available for service with the RAF in the event of war. On this understanding the RAF provided the aircraft and equipment (five Audaxes for spotting and two Tutors and two Harts for training purposes) as well as two officers and 38 airmen for instructor and maintenance duties. The members of the SSVAF, apart from the RAF personnel who were of course regular personnel, were civilians recruited from the Singapore Flying Club, together with a few volunteers from other clubs at Kuala Lumpur, Ipoh and Penang, all of whom had already obtained a pilot's 'A' licence at their own expense. In 1936 these amounted to 15 officers and 113 airmen.(1)

Proposals to establish VR Centres

Nothing more was done until 1938, when the Air Ministry decided to establish a reserve of locally enlisted pilots, observers and wireless operators/air gunner in the Far East, so that in an emergency they would bridge the gap until reinforcements could be shipped out from the United

(1) AM File S.32537/I

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Kingdom. It was proposed to form centres in the Straits Settlements, Singapore, Hong Kong and Ceylon, using the facilities of local flying clubs and schools, to recruit and train a total of roughly 170 pilots and 200 other aircrew on the lines of the RAFVR organisation in the United Kingdom. India and Burma were not included in the scheme, the former already had its own air force, and the formation of an auxiliary squadron in Burma was under consideration.(1)

Air Ministry representatives were sent out to the three areas in 1938 and a certain amount of progress was made. In the Straits Settlements and Malaya the services of the SSVAF were utilised, centres were established at the civil flying clubs at Singapore, Penang, Ipoh and Kuala Lumpur, and by July 1939, 110 applications to join the RAFVR had been received. Initially only pilots were to be trained, and later, providing sufficient volunteers were forthcoming, observers and wireless operators/air gunner.(2)

Elsewhere no progress was made. In Hong Kong it was felt that all available resources were already utilised for local defence; the only available flying club was already carrying out refresher training for RAF Reservists as well as for the Hong Kong Volunteer Defence Force pilots. In Ceylon a scheme for the recruitment of local personnel, both Cingalese and European, for local defence was already progressing and it was suggested that the Air Force VR scheme should be incorporated in this. As a compromise - for the RAFVR scheme excluded coloured personnel - it was proposed to form an Auxiliary Air Force unit which might in part be organised for local defence, and in part provide for the training of white personnel with an Imperial Defence commitment. The Aero Club of Colombo was approached to carry out this commitment, but no concrete progress had been made by the outbreak of war.

A similar position occurred in Burma. The proposal to form a locally enlisted Ancillary Air Force Squadron for the defence of Rangoon had been recommended in 1938 and as a first step it had been decided to form a

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(1) EPM 107(38)

(2) EPM 76(38)

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training flight, equipped with five Tiger Moths supplied by the RAF and staffed by two RAF instructors and four maintenance personnel, for the elementary training of local volunteers. The Burmese Government agreed to meet the costs of the scheme, but progress was hamstrung by protracted discussions concerning the future role of the squadron and the type of aircraft with which it was to be equipped. As a result no results had been achieved by September 1939.(1)

The IAF on the Outbreak of War

After the outbreak of war the progress of flying training in Asia was torn between two currents. On the one hand was the sense of urgency which demanded that something should be done to develop training schools, while on the other was the inevitable shortage of suitable aircraft and experienced instructors without which schools could not be formed. In India the strength of the IAF in September 1939 was 16 officers and 602 airmen, with 3 cadets under training at Cranwell. In addition to No. 1 Squadron IAF, there were six RAF squadrons stationed in India. The only training carried out was ground training for IAF personnel at the Depot at Drigh Road, Karachi.

Within a month of the outbreak of War it was decided to expand the IAF to four squadrons by 1942, and to establish a training school in India to provide the aircrew for the new squadrons. No. 27 Squadron, RAF stationed at Risalpur was employed as a temporary flying training school and started training on 11 November 1939. Roughly 38 pilots and 20 observers were trained at a time but at first only elementary instruction could be provided and pupils, who comprised both RAF and IAF personnel, had to be sent to No. 4 FTS, or to the United Kingdom to complete their training. It was not until mid-1940 that pupils were fully trained in India and most of these were for the newly formed VR flights.

The IAFVR was formed to supplement the regular forces and five flights were established at the five big ports of India, Karachi, Bombay, Cochin, Madras and Calcutta. Approximately 75 per cent of the personnel were to be Indian, both regular and IAFVR, and the remainder British. The British

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(1) AM Files S.45196, S.34487 and S.9663

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element was to be recruited and trained in India. These flights - increased to six in 1941 with the formation of a flight at Vizagapatam - were to take over the duties of coastal defence from No. 60 Squadron as soon as sufficient personnel had been recruited and trained. Although the flights were officially constituted on 11 November 1939, each equipped with four reconnaissance and three Spotter aircraft, it was not until December 1940 that they were up to full strength. Some were equipped with Audaxes and Wapitis and others with Valentia and Atlanta aircraft.

Recruiting centres were established at each of the five cities destined to support a flight, and a scheme for recruiting a reserve of 300 VR pupils was started early in 1940, somewhat on the lines of the pre-war RAFVR. Recruits, mainly Indian but with a sprinkling of British volunteers, most of whom had previous flying experience, were trained at civil flying clubs on a four months' course followed by an FTS course at Risalpur. There were ten clubs in the scheme, each planning to train 10 pupils at a time. Twenty-five Tiger Moths were supplied from the United Kingdom to supplement the aircraft already in use at the clubs.

Later in the year it was decided to establish a permanent flying training organisation in India, based on the RAF system. An initial training wing was formed at Lahore on 15 July 1940 with an output of 50 pupils every 12 weeks. The temporary FTS at Risalpur ceased training on 1 December 1940 as it was too small to meet the new requirements. It was replaced by two EFTSs and one SFTS. It was arranged for the first output from the ITW comprising 24 pupils to be sent to England to complete their training. All subsequent courses were to be trained in India. Each of the EFTSs (No. 1 opened at Secunderabad on 24 February 1941 and No. 2 at Jodhpur on the same date), was equipped with 24 Tiger Moths and trained 24 pupils at a time on a 10 weeks' course which provided 80 hours flying. The SFTS which was formed at Ambala from No. 27 Squadron, which was a flying training school, trained 50 pupils on a 21 weeks' course on the old ITS-ATS system; it was equipped with a variety of aircraft, 64 all told, all obsolescent Service types, including Audaxes, Wapitis, Leopard Moths and Harts. Shortly afterwards the training organisation was expanded by the addition

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of a third EFTS which opened at Delhi on 7 April 1941. It was the same size as the other two schools and necessitated the expansion of the SFTS to a capacity of 80 pupils twelve weeks later.

Towards the end of 1940 it had been suggested that the IAF should be expanded to a total of 15 squadrons, excluding the VR flights, but as this could only have been accomplished by sending out a larger training staff from the United Kingdom to train the additional personnel needed for the extra eleven squadrons the scheme had to be abandoned.

Once the ITW was established and the flying training schools reorganised, the VR flying clubs were utilised to provide pre-entry training for all pilot candidates. Recruits for the IAF were enrolled in the VR and underwent a training course lasting between 6 and 10 weeks at one of the ten flying clubs. This was followed by the 12 weeks' ITW course, on the completion of which pupils were commissioned as officer cadets. From the ITW, cadets went to the EFTS and SFTS courses, lasting 36 weeks in all. Pupils took roughly 12 months to complete their training and graduated with between 150 - 200 flying hours. Those candidates not selected for regular service continued to be trained at the flying clubs and eventually joined the VR flights. It was estimated that roughly 150 regular pilots a year would be trained, and by March 1941 fifty pupils had entered the flying clubs.

The move of the FTS to Ambala was accompanied by the navigation flight from Risalpur. This flight, equipped with eight Wapiti aircraft continued to function as a special section of No. 1 SFTS and trained observer pupils at the rate of about 50 a year. Most of the observer pupils were supplied from the pilot failures, but later in the year arrangements were made for observer candidates to be recruited direct from civil life (in the case of IAF personnel) or from ground trades (RAF personnel) and these pupils passed through the ITW before going to Ambala.

A few months later a further reorganisation was carried out, when the three EFTSs were combined into two schools. The overall capacity remained unchanged and No. 2 EFTS Jodhpur was expanded from 24 to 36 pupils, while

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Nos. 1 and 3 at Secunderabad and Delhi respectively were moved to Begumpet on 6 October 1941 where they were combined into one school, also training 36 pupils.

The possibility of establishing RAF schools in India for the training of RAF personnel was again considered in 1940, but it was eventually decided to concentrate all RAF training into the schemes already operating in Canada, Australia, New Zealand, South Africa and Southern Rhodesia.(1) There were no ready made facilities available in India, nor were there large numbers of suitable aircrew candidates who could be trained for service with the Royal Air Force. In spite of India's vast population no little difficulty was experienced in obtaining even the relatively small number of volunteers needed to man the Indian Air Force Units. Educational and medical requirements were high by Indian standards and with so little aviation activity in India, there was little public interest in the Air Force and most of the suitable candidates preferred to join the Indian Army. It was this shortage of suitable candidates that prevented Indians being sent to Canada, Australia and New Zealand for training under the EATS. Even the Indian training schools were not running to their full capacity.

The Burma Volunteer Air Force

In Burma the outbreak of war did little to accelerate progress in the establishment of the proposed auxiliary squadron, and more than 12 months had passed before the training flight actually commenced work. The force was eventually raised by a Government of Burma order in July 1940 and was called the Burma Volunteer Air Force. A training flight was formed with five Tiger Moth aircraft supplied by the RAF, assisted by RAF officers and NCOs from India. Training to the equivalent of elementary flying training school standard was arranged and the flight came into active operation on 11 November 1940. Courses lasted 13 weeks each with a complement of 12 pupils, and it was hoped to produce roughly 40 pilots a year.(2) For political reasons it was essential that all communities in the country should be represented and the quota of Europeans to native races was fixed

(1) AC 96/40

(2) ETS 129(40) (AHB/IIIC/1)

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at 1 to 2. On this basis the first course of 12 acting pilot officers comprising four Europeans, one Anglo-Burmese, one Chinese and six Burmese commenced training at Mingaladon aerodrome, near Rangoon, on 11 November 1940. When their EFTS course was completed, the problem arose as to where these personnel should complete their training. Burma was part of the Far East Command and there were no training facilities in that Command. It was hoped to provide facilities in India but, owing to the inability of the Air Ministry to provide instructional personnel and trainer aircraft in sufficient numbers to meet the demands of both India and Burma, that area was closed after the first batch of trainees had been trained.(1)

The first course, nine of which passed out at Mingaladon on 18 February 1941, were sent to No. 1 Service Flying Training School at Ambala, India, and commenced training on Harts and Audaxes towards the end of the month. The course finished in August 1941 and was followed by a three weeks OTU course which took the form of tactical exercises, bombing, interceptor exercises etc. In the meantime a second course of 12 officers commenced training at Mingaladon on 22 February 1941. They finished their course on 20 May 1941, but, owing to the inability to provide intermediate and advanced training facilities for them outside Burma, arrangements were made to provide a post - EFTS training course pending the provision of intermediate and advanced trainer aircraft. This, of course, prevented the intake of further courses.(2) In October 1941 the Government of Burma arranged to purchase some advanced trainer aircraft (two Harvards from China, three Wirraways from Australia and a Curtiss Wright aircraft from the Inter-Continental Corporation at Singapore) but the commencement of the Japanese war before these aircraft arrived put an effective end to training.

Difficulties also arose concerning the disposal of the nine pilots who had completed their training in India. Eventually it was decided to absorb them in one of the RAF bomber squadrons operating in the Far East, which necessitated a conversion course on twin-engined aircraft.(3) Arrangements were made to send them to New Zealand for a six weeks' conversion course,

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(1) AM File S.45196

(2) AM File S.45196

(3) AM File CS.11529

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before returning to the Far East Command for duties in a RAF bomber squadron until it was possible for Burma to man completely a unit of her own. The party left India in September and proceeded to New Zealand via Rangoon, Singapore and Sydney, arriving in Wellington, New Zealand, on 24 December 1941. In New Zealand the pilots were split into three groups and sent to the three Service flying training schools. On completion of their courses in February 1942 they returned to Wellington to await disposal instructions, which, owing to the chaotic state of the communications in the South West Pacific theatre of operations at that time, were considerably delayed. At the beginning of April it was decided to return these personnel to India; a few days later these instructions were cancelled owing to the Japanese activity in the Indian Ocean, and some of the party eventually sailed for England on the 18 May, where they were commissioned in the RAFVR and posted to RAF units. The remaining two pilots stayed in New Zealand as instructors.(1)

Meanwhile discussions were continuing regarding the ultimate aim of the Burma Volunteer Air Force. In October 1940 the Director of Plans, Air Ministry, had ruled that the squadron should be a fighter squadron,(2) but twelve months later the Air Ministry, whilst agreeing that the ultimate aim of the BVAF should be to form a fighter squadron, pointed out that they could hold out no hope of supplying the necessary aircraft for some time to come. The Japanese invasion of Burma and Malaya, occurred shortly afterwards, and with no operational aircraft of their own available it was decided to place the personnel and facilities of the Burma Volunteer Air Force at the disposal of the Air Officer Commanding India. They were absorbed in one of the VR Flights of the Indian Air Force where they carried out ferry and reconnaissance duties which did not require advanced training but which were of great assistance to the Air Force in Burma.

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(1) AM File CS.11529

(2) ERP 56 (23 October 1940)

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The Malayan Volunteer Air Force

In the rest of the Far East the outbreak of war put an end to the various reservist training schemes. At Hong Kong the contract with the civil company had not been renewed and training ceased after the middle of 1940, while in Ceylon the proposed auxiliary unit, although discussed on several occasions during the war, never actually came to life. In June 1940 the Governor of the colony offered to meet all expenses, apart from the cost of the aircraft, in the training of 100 Cingalese pilots for service with the RAF, but shortage of aircraft prevented the implementation of this offer, although subsequently a number of Ceylon personnel, about 70 in all, during the course of the war were recruited for aircrew duties in the RAF and were sent to the United Kingdom for training.

The RAFVR scheme in Malaya and the Straits Settlements collapsed on the outbreak of war although a few volunteers who were eligible for the RAF were sent to No. 4 SFTS Iraq for training early in 1940. The SSVAF also came to an end when on 14 September 1939 it was embodied into, and all its aircraft and all suitable personnel transferred to, the RAF.(1) No further developments occurred until June 1940 when the Governor of the Straits Settlements decided to establish a Government flying training school in Singapore for the training of local volunteers, and to revive the local volunteer air force. Thus the Malayan Volunteer Air Force, as it was now called, came into being in August 1940, with personnel recruited from the flying clubs of Singapore, Kuala Lumpur, Penang and Perak, and the local airline company, Wearness Air Services, each of which was formed into a separate flight. It was a self-contained force, having its own administrative organisation and its own 'wings'. The personnel of the flights were all, on account of age, physical condition, etc, ineligible for service with the RAF, and had not therefore been called up when the old SSVAF was embodied. They all had considerable experience on light aircraft, however, and were given further practice in bombing and reconnaissance work. When the Japanese invaded Malaya the five flights were fully mobilised and they did valuable work in Malaya and the

(1) SSVAF, ORB

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Dutch East Indies. The MVAF had a total strength of about 150 personnel and 35 aircraft, the largest of which were two DH Rapides and one Dragonfly; the remainder were DH Moths and Avro Cadets. They lost nearly all their aircraft and suffered 24 casualties before being evacuated to the United Kingdom or South Africa.(1)

The training school, which was run by the MVAF, undertook to train suitably qualified personnel for service with the Royal Air Force. The school was staffed by the MVAF assisted by some RAF instructors, and the Government of the Straits Settlements provided the necessary training aircraft - six DH 60's. The RAF, AOC assisted in the establishment of recruiting and selection machinery, and it was hoped to recuit and train batches of 16 pupils every two months. Suitable volunteers were enrolled as cadets in the Malayan Volunteer Air Force, and were lodged at RAF Station, Kallang for the duration of the course. The school was to follow the standard RAF, EFTS syllabus, and successful pupils were to be attested and enlisted into the RAF on completion of the course before being sent to an RAF, SFTS for Service training. The first course commenced on 16 August 1940, and all sixteen pupils passed out on 10 October; they were enlisted into the RAF on 17 October and sailed for Canada two days later for completion of their training. The scheme continued to operate up to the time of the Japanese invasion of Malaya. In all some 110 pupils successfully completed air training and went to Canada, South Africa or Iraq for their Service training.(2)

The RAF also established a small training unit in Malaya. The need for operational training facilities for personnel in the Far East Command had been evident ever since the outbreak of war, and in spite of the Air Ministry's reluctance to approve the formation of such a unit, a makeshift OTU was formed at Kluang in September 1941 from Command resources. It was equipped with Wirraways and Blenheims and gave operational training to ex-SFTS pilots from New Zealand and coverted the pilots of Nos. 36 and 100 Squadrons to twin-engined aircraft in anticipation of the re-equipment of these squadrons from Vildebusters to Beauforts - a plan which never

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(1) Report on the MVAF

(2) AM File S.62699

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materialised. The unit had to be disbanded on 8 December but during its short life valuable work was done.(1)

Effects of the Japanese Offensive

Thus by 1942 Japan's sudden, but not unexpected, entry into the war had put an end to all the Asian training schemes outside India. In India a programme of expansion was drawn up involving a considerable increase in the size of the basic training organisation. The IAF, in March 1942, consisted of four squadrons and the six VR flights which had now been mobilised for coast defence duties. The expansion programme planned to increase the number of squadrons to ten by the end of 1942, five to be equipped with Vengeance aircraft and the remainder with Hurricanes. No concrete plans were made for the VR flights, although it was visualised that they would continue on coast reconnaissance duties and would be re-equipped with Hudsons and eventually be expanded into GR squadrons, bringing India's ultimate target up to 15 squadrons. This, however, was a long term plan and the primary objective was to form ten IAF squadrons.

To support the expanded force the training organisation had to be reshuffled and expanded to accept an intake of 60 pilots, 34 observers and 80 wireless operators/air gunner and air gunners every four weeks, which, it was estimated, would produce approximately 200 pilots, 90 observers and 200 wireless operators/air gunner or air gunners per year. Up to that time the Indian training organisation had produced 263 pilots, 77 observers, 4 air gunners and 29 wireless operators/air gunner since the beginning of the war, of whom 92 pilots and 19 observers were RAF personnel. The size of the organisation, which by June 1942 had grown to six schools by the addition of an armament training unit (ATU) to provide bombing and gunnery training to Indian aircrews and a link trainer instructors' school (both formed in March 1942), was to be expanded to eight schools. Although both pilots and observers were already being trained - the few wireless operators and air gunners had been trained at the technical training school for ground trades and in operational units - only the pilots received satisfactory instruction, and it was not until the ATU had been formed at Peshawar that their training

(1) Brook-Popham Dispatch on the Far East

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was deemed satisfactory. Formerly, after completing their SFTS course, pupils had gone to the bombing and gunnery ranges at Drigh Road, Karachi, for armament experience. Facilities there were limited, however, and training had never reached the desired standard, and with the increasing use of the station as a staging post for reinforcement aircraft, the use of the ranges there had to be discontinued.

Expansion of Indian Training Schools

To meet the new requirements the pilot training capacity was increased in July 1942 by expanding the two EFTSs to take 44 pupils each and increasing their aircraft establishment to 30 per school, and enlarging the SFTS to a capacity of 108 pupils, at the same time re-equipping it with 24 Harvards and 24 Harts. Course lengths at the schools were extended to 12 and 24 weeks respectively. The training of observers, or navigators as they were now called, was to be divorced from the SFTS and special schools were established for the training of navigators, wireless operators/air gunner and air gunners. A combined air observers' and air gunners' school was formed at Baroda in July 1942, equipped with Ansons and Dominies, where it was planned to provide bombing and gunnery training for 70 air gunners and wireless operators/air gunner at a time on courses lasting 16 weeks, and observer training for roughly 100 pupils at a time on 24 week courses. Wireless training for the wireless operators/air gunner and for some observer pupils was to be provided at No. 1 Signals School at Andheri. The school had been formed in June 1942 to train ground wireless operators, and it was planned to start courses for observers and wireless operators/air gunner in September, with a capacity for 30 of the former and 96 of the latter on a 22 weeks' course. To provide specialist navigation training, an air navigation school was established at Juhu near Bombay on 3 August 1942.(1) Twelve pupils at a time were to be trained on courses of three weeks' duration. To cater for the possible Indianisation of some RAF GR squadrons (after the VR flights were disbanded) a general reconnaissance school was formed at Andheri, also near Bombay, on 27 June 1942. It was equipped with four Dominies and was to provide GR

(1) ANS Juhu, ORB

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courses (of five weeks' duration) for 16 pupils (eight pilots and eight observers) destined for GR work. Its intake comprised both IAF personnel trained in India and RAF personnel from the United Kingdom or the Middle East.

To provide operational training facilities in India two OTUs, Nos. 151 and 152, were formed - one equipped with Hurricanes and the other Vengeances - and they trained chiefly aircrew produced in India, although some personnel from the United Kingdom and Africa were trained there.

Reorganisation of IAF Training

Before these new arrangements could be put fully into effect the IAF expansion plans were revised. Difficulties in obtaining sufficient numbers of the right kind of aircrew volunteers meant that it was unlikely that the target of 10 squadrons would be hit even by the end of 1943. Only nine squadrons were actually formed and three of these had to be partially manned by RAF aircrews. To ease the recruiting problem the target for 1942 was lowered to seven squadrons, the remaining three to be formed in 1943 and it was now planned to establish the majority of the IAF squadrons with Hurricanes, which needed only one pilot per aircraft, instead of forming Vengeance squadrons (needing a pilot and a W.Op/AG or observer), and in fact only two Vengeance squadrons were formed. The position of the VR flights was also reviewed. One squadron had actually been formed (the CD flight at Calcutta had become No. 353 Squadron), but most of the personnel were British. In November 1942 the squadron was transferred to the RAF and the remaining flights were disbanded, their personnel being utilised to form the two Vengeance squadrons.(1)

These changes meant that the plans made for the basic training organisation would have to be revised. Pilot requirements remained unchanged, but fewer air gunners and wireless operators/air gunner were required and no more training facilities for observers were needed. Very few of these latter categories were in fact trained in India during the war. The last course of observers passed out at No. 1 SFTS on 12 March 1943 (no observer training

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(1) AM File CS.16994.

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was actually carried out at the new schools) and in all 114 were trained there during the war. The training of wireless operators/air gunner also stopped in March 1943 when a total of 72 had been trained, although training in the category was recommenced in December 1943.

The Combined Air Observers and Air Gunners School at Baroda was closed on 14 March 1943, and the capacity for training air gunners was replaced by converting the Armament Training Unit (which had been moved from Peshawar to Bairagarh near Bhophal, on 10 June 1942) into No. 1 Air Gunnery School on 12 May 1943.(1) The new school was planned to provide a variety of training courses. Sixteen IAF air gunners were to be trained on a sixteen weeks' course, with intakes every six weeks; IAF flight mechanics were to be given five weeks conversion courses in air gunnery to qualify them as flight engineers at the rate of 15 every five weeks (although only one such course was actually trained, 14 pupils graduating on 1 June 1943); refresher courses were provided for qualified RAF air gunners; and bombing and gunnery training was given to aircrew personnel of IAF squadrons. To carry out all these tasks the school was equipped with nine Blenheims, nine Vengeances, eight Defiants, two Harvards and four Hurricanes.(2) The signals school at Andheri was reorganised and did not undertake any more aircrew training courses until the end of the year. The air navigation school was combined with the GR school and these units were subsequently known as the GR & ANS. Besides GR and ship recognition courses, specialist navigation courses were carried out there, mainly for RAF personnel.

These changes marked the end of the expansion of the basic training organisation in India and for the rest of the war only pilots, together with a few air gunners (and subsequently wireless operators/air gunner) were trained. The training of RAF pupils ceased after 1943, the last course to include RAF personnel graduated at No. 1 SFTS on 1 December 1943, when 22 of the 45 graduates were RAF. After that date only IAF personnel were trained in India.

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(1) No. 1 AGS, ORB

(2) AM File S.93345

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The question of providing flying instructors for duty in Indian schools was considered in November 1942 after it had been agreed that the civilian instructors employed at the EFTS should be allowed to return to civil aviation. When all schools were Service manned roughly 60 flying instructors were required every year (the instructional tour was 12 months in India) which meant that allowing for 15 per cent wastage in training, 72 instructor pupils would have to be found every year. To meet this requirement a special flying instructors training flight was formed as a section of the SFTS at Ambala in January 1943. It was equipped with six Tiger Moths and eight Harvards and planned to run six 8-week courses per year, each of 12 pupils, 10 of whom were expected to qualify. Later OTU instructors were also trained there. In June 1944, this flight was expanded to become the Indian Central Flying School comprised of an examining flight as well as the flying instructors' course.(1) An advanced flying unit was also formed within the establishment of No. 1 SFTS on 13 December 1943. It was equipped with 14 Harvards, four Vengeances and four Hurricanes and provided intermediate refresher courses for Indian pilots between the SFTS and OTU. The courses lasted 10 weeks and provided 50 hours flying, and trained 30 pilots at a time. A reserve flight was also formed to accommodate pilots who were awaiting posting to an OTU after completing the AFU training.

Administrative and Personnel Problems in the IAF

Although after mid-1943 the basic training organisation in India consisted virtually of only four schools (the ITW, Nos 1 and 2 EFTSs and No. 1 SFTS) their training was still below the required standard and it was some time before it improved. There were in addition a few air gunners (and after 1944 wireless operators/air gunner) being trained at the AGS, but that school trained mainly qualified personnel, (both IAF and RAF) on refresher courses. The shortage of aircraft and spares was not so serious in India as it had been in some of the other training theatres, but it still had its effect on training. It was not until 1943 that the SFTS was completely re-equipped with Harvards, and the EFTSs were not re-equipped with Cornells until

(1) AHQ India ORB, 1944

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June 1944. A few Ansons were added to the establishments of the EFTSs in November 1943 to improve the standard of navigation training by providing more map reading and cross country flying experience. The Cornells, were not entirely satisfactory and had to be considerably modified before use. It was found that the climatic conditions in India caused numerous defects, such as wood shrinkage, skin lifting, etc and in January 1945 their unserviceability rate was so high that all aircraft had to be grounded until these defects were remedied. The Oxfords at the CFS also suffered through the climate and had to be extensively modified.

The position was not improved by the administrative system, which, particularly in the early stages of training, was rather muddled. The rapid expansion of the IAF, whose officers were all Indians - unlike the Indian Army no Europeans were allowed to hold commissions in the IAF - meant that there was a lack of suitable officers to hold important commands. A small Group (No. 2 Indian Group) had been planned at Lahore in 1941 with the intention of administering the training of all personnel in India, but it was not until March 1942, when No. 2 Group was replaced by No. 227 Group that satisfactory control was effected. Some eighteen months later, on 15 November 1943, when AHQ India became HQ Air Command South East Asia, a new smaller AHQ India was established, responsible only for the general control and development of the IAF when still further improvements in supply and organisation were made.

Recruitment of suitable personnel for aircrew duties created many difficulties. The official language of the IAF was English (it was Urdu in the Indian Army) and thus the field of recruitment was narrowed to those with a working knowledge of that language. Although this had the advantage that the average IAF recruit was of a higher standard than his Army counterpart, he was harder to obtain. Moreover there was a noticeable unwillingness of Indians to volunteer for flying duties, and the political effect of the slowing down of the ten squadron expansion programme caused a sharp drop in recruiting figures. Added to these difficulties was the fact that wastage of IAF personnel under training was considerably higher than in the RAF. Wastage at EFTSs alone was anything up to 50 per cent and at the SFTS it was often higher than that. The high wastage rate was largely due to the fact that the few young men of good education and the necessary character had

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already joined the Services, and by 1943 the IAF recruiting organisation was 'scraping the bottom of the barrel'. After that time not only was it necessary to raise the educational standard of recruits before they could be taught to fly, it was essential to nurture a spirit of leadership and self-discipline. The real need was for a cadet college similar to that of Cranwell, but the opening of such a college was not practicable in time of war and the IAF training school had to undertake the types of training in addition to their normal duties.

To help overcome the educational deficiences a Cadets Education Wing (CEW) was opened at Bombay at the beginning of 1943. Pupils underwent a six weeks' educational training course at the new wing before commencing their ITW training. Later in the year, after both the ITW and the CEW had moved to Poona - it was decided to disband the Educational Wing and extend the ITW course from 12 to 18 weeks, the first six weeks being devoted to the former CEW syllabus. Intakes were unchanged at 45 every 6 weeks and the capacity of the new courses was 135 pupils.

An Indian Air Training Corps (IATC) was formed with flights at nine Indian universities in December 1942 and 14 more units were formed by the end of the war. Pre-entry courses were arranged and aircraft of civil flying clubs used to provide some flying experience. In all some 60 courses were held during the war. It was hoped to foster interest in aviation and thereby encourage recruiting, at the same time raising the educational standard of recruits. Not a large proportion of the youth of India became airminded, however, although those who did join the IATC were of a high quality.

Recruitment of Volunteers from Ceylon

A similar scheme was started in Ceylon the following year when a special section of the Ceylon Cadet Battalion was created to deal with air training. This scheme had rather more success than that in India and a considerable number of youths joined the scheme. It had been hoped to establish a small training organisation in Ceylon in 1940 in place of the pre-war proposal for the formation of an Auxiliary Air Force Unit. The Governor of the colony offered to pay for the training of 100 Cingalese pupils as pilots for

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service in the RAF. It was proposed that initial and elementary flying training should be provided in Ceylon, utilising the services of the Ratmalana Flying Club, after which pupils would proceed to the United Kingdom for their Service and operational training. The Ceylon Government offered to pay all costs of training, both in the United Kingdom and Ceylon as well as the passages to and from the United Kingdom. The first batch of 14 pupils underwent their EFTS training in Ceylon and proceeded to the United Kingdom in 1941 where they completed their training and were posted to RAF squadrons by 1942. Shortage of aircraft prevented the second batch of 12 pupils from completing their training and the flying club was closed in mid-1942 and its remaining aircraft taken over by No. 222 Group. The question of providing EFTS training in India for these, and any subsequent volunteers was considered in October 1942, but the heavy commitments of the IAF at that time made the proposal impossible, and in future any volunteers recruited in Ceylon were sent to the United Kingdom for all their training. A total of about 70 aircrew were recruited in Ceylon during the war and were trained and served in the RAF.

Training of Indians in the United Kingdom and Canada

To identify the IAF with the air war in Europe and to provide operational experience for Indian Air Force personnel, arrangements were made in 1940 to send 24 Indian pupils to the United Kingdom. They were nearly all experienced civil pilots, but it was agreed that they should undergo the full RAF pilots training course, serve a tour on operations and then return to India. They arrived in the United Kingdom in September 1940, and eventually 14 of them graduated as pilots; seven of them were killed on operations and the remaining seven returned to India in 1942. In May 1943 another batch of 25 pupils were sent to the United Kingdom for training. These, however, had all passed their SFTS course and were sent to the United Kingdom as qualified pilots and were to receive only AFU and OTU training. They returned to India after completing their operational training. Subsequently, further small groups of Indian pupils were sent to the United Kingdom for training, both for air and ground trades. Between July 1943 and February 1945 a total of 14 Indians were trained as aircrew in the United Kingdom: they comprised

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the following categories - one pilot, four navigators, one air bomber, six wireless operators/air gunner and two air gunners.(1)

In the meantime a number of Indian pilots had gained their wings in Canada. The idea of India's participation in the EATS had been considered at various times during the preceding two years. It was originally suggested in January 1941 that India should send 20 pilots and 10 observers for training under the EATS. Owing to the pressure of expansion, Canada could not take them and by the time arrangements had been made to train them in Australia and New Zealand, India was finding difficulty in supplying enough pupils to fill her own schools and could not take advantage of the arrangements.

In 1942 Canada offered to undertake the training of Indian pilots and when, in 1943, the slowing down of the planned IAF expansion became apparent and the intake into the Indian schools reduced, it was possible to supply recruits. The offer visualised accepting 80 pupils every three months as part of the United Kingdom quota of pupils sent to Canada for training.(2) After completing their training the pilots would proceed to the United Kingdom for employment in fighter squadrons. India was unable to supply such a large number of pupils and proposed to send 25 cadets every three months. It was planned to give these pupils their preliminary ground training together with a flying aptitude test at an EFTS before they sailed for Canada. Assuming a wastage rate of 20 per cent for this training, it was necessary to recruit 15 additional pupils every 6 weeks to produce 100 cadets per year for training in Canada. Accordingly the capacity of the Cadets Education Wing, where the pupils underwent a six weeks' pre-ITW course, was increased from 45 to 60 pupils; the ITW where the course was 12 weeks was increased by 30 to 120 pupils; and the two EFTSs each had to take an additional 15 pupils on a two weeks aptitude testing course. The first batch of 24 cadets left India on 7 May 1943 en route to Canada, via the United Kingdom and 23 pupils started training in Canada on 11 July (one fell sick in South Africa). The results of the first course were most disappointing and only seven pupils actually graduated as pilots. One pupil was

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(1) AM File S.102808

(2) AM File CS.8058

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killed while under instruction and the remainder were returned to India and remustered in ground trades. Owing to the decline in recruiting, it was not possible for India to supply pupils for the second quarter and only 13 were available in the third quarter - these pupils leaving India in December 1943. Eleven pupils of the second batch sent to Canada passed out as pilots in 1945. Because of the high rate of wastage in the first courses it was proposed to give all future pupils their EFTS training in India before sailing, which would have delayed their date of sailing until May 1944. By that time, however, the capacity of the SFTS at Ambala had been expanded from 108 to 180 pupils and it was possible to train all pupils in India and no further drafts were sent to Canada.(1)

Training of Chinese Pilots in India

Another chapter in the history of India's training effort concerns the facilities provided for the training of Chinese pilots in India. The establishment of Chinese schools in India, however, is not strictly within the scope of this monograph since the product of the school did not operate in or with the Royal Air Force or the Indian Air Force. For this reason only a brief summary of this training will be made. The story opens in October 1942 when the Chinese Government came to the conclusion that China could only develop her Air Force if training facilities were provided outside China.(2) The Japanese occupation and the chronic shortage of equipment made it impossible to direct valuable materials to training. Accordingly, in response to an appeal from the Chinese Government, arrangements were made to establish a Chinese EFTS at Lahore for the training of pupils from China. The school was outside the scope of the Indian training organisation and, although much assistance was provided by the Indian Air Force, it was manned and operated by the Chinese Air Force, although nominally under RAF control. An RAF liaison staff was attached to the school. The aircraft, 40 Stearman and 15 Ryan primary trainers, and spares were supplied by America, and all other necessary supplies and services such as rations, petrol, oil, accommodation, etc were supplied by the British Government on a lease-lend basis.(3) The school started training on 8 March 1943, and it was hoped to

(1) AM File CS.8058

(2) AM File A.63091/50

(3) AM File CS.18589

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train 150 pupils at a time, although the first course comprised only 82 cadets. After completing the elementary training pupils went to the United States for the advanced training before returning to China. It was planned to provide OTU facilities for these pilots at Karachi so that on completion of their advanced training in the United States pilots would return to China via India, and after completing their OTU training they would fly American aircraft (shipped to India and then assembled) to China. The projected OTU was eventually formed, by America however who took over responsibility for operational training. The school at Lahore was doubled in capacity in October 1943, and later on 4 December 1944 it was further expanded by the addition of a Chinese Navigation and Bombing School, training 60 pupils at a time. Shortly after the War ended and the lease-lend arrangements were brought to an end the schools at Lahore were moved to Hanchow in China.

A further measure of assistance to China in the form of training facilities was provided by the despatch of an RAF Training Mission to China in 1942, with the object of assisting the Chinese in giving modern instruction on the training and operation of air forces. The Mission, headed by Air Vice-Marshal Pattinson, who was succeeded by Air Vice-Marshal MacNeece-Foster, in October 1944, was mainly concerned with the Chinese Air Force Staff College - it was actually located at Chengtu - but it also assisted in the development of flying and other training schools in China. In remained there throughout the war and returned to the United Kingdom in March 1946.(1) A number of Chinese Air Force officers were sent to the United Kingdom for training in 1945. Most of them were ground officers, however, and only two were actually sent for flying training.

Further Expansion of India's Training Organisation

By the end of 1943 nine of the ten IAF squadrons planned under the 1942 expansion programme had been formed, and in the following year the IAF really came of age as a fighting service, when all its squadrons saw service against the Japanese. The two year period between the beginning of 1942 and the end of 1943 had been one of expansion and development, during which time five new squadrons had been formed. Apart from service on the NW Frontier, few IAF

(1) AM File CS.14758

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squadrons saw active service during this period and most of the squadrons' activities were concerned with tactical and refresher training. The time had now arrived when the IAF was to take its place in the front line, and for the basic training organisation this meant that a greater output of aircrews would be called for in order to replace wastage. Seven of the nine squadrons were equipped with Hurricanes, and the problem was therefore one of greater pilot production. The W Op/AG output was needed only to supply two Vengeance squadrons.

At one time it was thought that when the IAF front line expansion was completed two SFTSs would be needed to meet the requirements of ten squadrons. With the cessation of RAF recruitment in India for aircrew duties (the last RAF pupils graduated in September 1943), and the fact that only nine IAF squadrons were actually formed, however, it was found that requirements could be met by expanding the existing school.

The Cadets Education Centre and the ITW course proper had been amalgamated into an 18 weeks' course in July 1943 and a few weeks later its capacity had been increased from 135 to 180 pupils and subsequently to 315 with intakes of 105 every 6 weeks. The EFTSs, which had already been expanded from 44 pupils to 59 to provide pupils for Canada were further expanded to 88 pupils, and when in 1944 the despatch of cadets to Canada was discontinued, arrangements were made to give all pupils the full EFTS course. At the same time their aircraft establishments were raised to 83 Tiger Moths per school. The SFTS was planned to expand from 108 to 210 pupils in 1944, but recruiting difficulties and high wastage rates at EFTSs reduced the capacity needed and the school was only expanded to take 180 pupils.(1) It was estimated that wastage would be 10 per cent on the ITW course, 30 per cent on the 12 weeks' EFTS course, and 15 per cent on the 24 weeks' SFTS course, thus producing roughly 42 pilots every 6 weeks out of an intake of 105. In practice, however, it was found that the actual wastage rates were considerably higher than the estimates and output averaged approximately 24 every six weeks - just under 200 pilots a year. As a result of these high wastage rates the flying training schools, particularly the EFTSs which had

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(1) AHQ India ORB

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been expanded to meet the maximum requirement, were not always working to their full capacity, and it was sometimes possible for other training commitments to be undertaken.

Training of Army Pilots in India

In October 1943 it was arranged to provide EFTS training for a number of Army officers wanted as AOP pilots in No. 656 Squadron. Four out of twelve Royal Artillery officers sent to No. 2 EFTS for training successfully passed out in January 1944, and a few months later a second batch of seven officers was trained, all of whom successfully completed the course. Operational training for these pilots was provided by the AOP squadron, but after it became operational training ceased, and future requirements had to be trained in the United Kingdom at No. 22 EFTS and No. 43 OTU.(1) Later in 1944, arrangements were made to include Army personnel in all intakes into No. 2 EFTS for training as glider pilots for No. 10 Independent Glider Squadron. This commitment which lasted until mid-1945, was extended in January 1945 to include intakes into No. 1 EFTS. In all about 70 Army personnel were given elementary flying training to qualify as Army glider pilots.

After the expansion of 1943, the basic training organisation in India remained unchanged for the rest of the war. The bulk of the aircrew trained were pilots, although some wireless operators/air gunners and air gunners were trained to meet wastage in the two Vengeance squadrons. The pilot training organisation was never troubled by the constant fluctuations in course lengths and capacities that were a confusing and complicated feature of all other overseas training schemes. In India the EFTS and SFTS course lengths were fixed at 12 and 24 weeks respectively in 1940 and they remained unchanged throughout the war. The 'revises' instituted throughout the RAF and EFTS schools to accelerate pilot output in the months following the Battle of Britain were not introduced, mainly because the supply and maintenance position would not have allowed it - and it is doubtful whether sufficient recruits would have been forthcoming locally - but also because the IAF itself did not require greater output and India was too far from the scene of European operations to supply pilots at short notice. Similarly the course

(1) AM File S.2982/II

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extensions which were designed mainly to retard output to relieve bottlenecks in the United Kingdom, were not applied to the schools in India, since their output was, by that time, meeting only the needs of the IAF and there was never the same overproduction of aircrews in India.

Reduction of IAF Training Requirements

By 1945 the IAF had gained its full stature as a fighting force and all of its nine squadrons had been in action. On 19 April of that year recognition of its achievements was proclaimed by the granting of the prefix 'Royal'. Expansion was completed (it had been decided not to form the tenth squadron at that stage) and the task of the training organisation was merely to replace operational wastage.

By June 1945 it was found that the wastage rates in training were falling particularly at the SFTS stages, and it was possible to meet all SFTS intakes with one EFTS. The commitment for training Army glider pilots ceased after the war in Europe - all requirements in SEA could not be met from the United Kingdom - and it was therefore possible to disband No. 1 EFTS Begumpet on 7 June 1945. A few weeks later, on 1 July 1945, No. 1 AGS Bhopal was disbanded and all air gunner and W Op/AG training in India ceased. The Signals School at Andheri had been closed nine months earlier (on 30 September 1944) and the training of the few wireless operators needed had been undertaken by No. 10 School of Technical Training at Hakimpet. By July there were sufficient Indian instructors available to meet requirements for some time to come and the Central Flying School Ambala was accordingly closed on 7 July 1945.

After the end of the war in August 1945 the Indian training organisation continued to train pilots for the nine squadrons. No. 1 (India) Group was re-formed on 15 August 1945 and responsibility for aircrew training was one of its commitments. The ITS, EFTS and SFTS were transferred to the new Group on that date.

During the war over 1,300 aircrew personnel received their basic training in India, of whom 200 were RAF personnel.

CHAPTER 14

BASIC TRAINING IN THE MIDDLE EAST

Formation of No. 4 Flying Training School

Before the war No. 4 Flying Training School, located at Abu Sueir, in Egypt, was the only RAF flying training unit located overseas. It was formed on 1 April 1921, to supply pilots for RAF units stationed in the Middle East. It was equipped with Avro 504N's and trained roughly 80 pilots a year on courses lasting nine months. Pupils were sent out from England after passing through the RAF Depot, Uxbridge, and on completion of their training at Abu Sueir were posted direct to squadrons.

The school continued to operate without change - apart from a few minor alterations (it was re-equipped with Tutors and Audaxes in 1935 and expanded, under Scheme 'A' to 96 pupils in July 1935) - until 1936, when under the new two-stage system of RAF training, civil schools were utilised to provide the ab initio stage of flying training and the FTSs reorganised so as to concentrate purely on the more advanced Service flying training. At No. 4 FTS the course length was reduced to six months with an intake of 48 pupils every three months, and the school was re-equipped with Service aircraft (65 Audax and Harts together with 4 Tutors). Its pupils now arrived after completing their ab initio training in the United Kingdom.

The possibility of locating additional FTSs in the Middle East was first considered in May 1936 when expansion Scheme 'F' was introduced. Cyprus was considered but its strategic situation was too bad and its weather too good for training purposes. For the same reasons a second FTS in Egypt was ruled out as it was desirable that pupils should be trained under similar conditions to those prevailing in the United Kingdom where they would have been sent after passing out. The needs of the Middle East could be met from the existing school.

In the following year Kenya and Palestine were also considered as sites for FTSs but strategical vulnerability and political difficulties caused these schemes to be shelved also. In the winter of 1937-8 the possibility of putting a second FTS in Egypt was again examined. A site at Suez was provisionally selected, but the project was dropped because the Air Staff considered it strategically unsound.

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In October 1938, after a training mission sent to Canada to negotiate the establishment of RAF schools in the Dominions had returned without achieving any success, the question of locating schools in the Middle East was again considered. It was undesirable to back the Metropolitan Air Force with schools east of Gibraltar since, in the event of war, communications and transport would become extremely difficult. On the other hand if war did break out more than one school would be needed to feed the Middle and Far East, and on these grounds another school in the area would be desirable. Politically both Egypt and Iraq were unacceptable. In Iraq any RAF expansion would have to be done within the existing cantonments, and this was hardly feasible at either Habbaniyah or Shaibah, while in Egypt Abu Sueir could not be expanded any further, and another station in the Canal Zone would present awkward problems. The AOC Middle East solved the difficulty by recommending Kenya as a suitable location. The Government of the colony welcomed the proposal to establish a school there and a site was chosen at Nakuru, ninety miles from Nairobi. The establishment of a school there was approved in May 1939.

The possibility of providing facilities for the training of observers and air gunners in the Middle East to match the output from No. 4 FTS was explored in early 1939, but the only progress made by the outbreak of war was the selection of a site at Amman for a projected air gunners' school.(1)

Proposed VR Centres Overseas

There had also been various attempts to establish facilities for the training of Reservist personnel in the Middle East during the two years preceding the outbreak of war, but very little progress had actually been made. In November 1938 the proposal that training facilities for reservists should be established in the Middle East at Aden, East Africa, Iraq, Egypt, Palestine and Sudan to train a total of roughly 500 reserve pilots, and 550 observers, air gunners and wireless operators/air gunner was accepted in principle.(2) It was planned as a first step to establish centres, organised as far as possible on the lines of the VR centres at home, at

(1) AM File S.50300

(2) EPM 143(38)

/ Alexandria

Alexandria and Cairo in Egypt, at Nairobi in Kenya, and at Khartoum in the Sudan. Details of the scheme were worked out by January 1939, and Air Ministry representatives proceeded overseas the following month to discuss the details with the Command and any civil companies who might be interested.

Within six months arrangements had been made with a civil company in Egypt to carry out training at both Alexandria and Cairo; but political difficulties owing to Egypt's independent status, delayed any further progress being made. In East Africa a suitable company had been found at Nairobi, Kenya, and a scheme for providing further training in Service units was under consideration. A small auxiliary unit was also formed in Nyasaland. In West Africa, providing suitable candidates in sufficient quantity were likely to be forthcoming, VR Centres were to be prepared utilising existing civil flying club resources at Takoradi and Accra in the Gold Coast and at Lagos in Nigeria. Malta had also been considered as a possible location for a VR centre, but was finally rejected because of the lack of suitable recruits.

Effects of the Outbreak of War

By the outbreak of war, although a good deal of attention had been given to the development of both regular and reservist training in the Middle East and various plans had been drawn up, very little material progress had been made, and the only flying training carried out there was at No. 4 FTS. Strategical consideration and possible political inspired disturbances led to the move of that school from Egypt to Habbaniyah in Iraq on 4 September 1939 when it began working to the 16 weeks course as laid down in the War Training Organisation (WTO). Its capacity, however, remained unchanged at 96 instead of going up to 160 as planned under the WTO and its pupils, who were drawn from the Middle East and Far East and were trained at the rate of about 300 a year, fed RAF squadrons in those areas.

The same political and strategical considerations resulted in the abandonment of the proposed VR training schemes in Egypt, Sudan and West Africa. Only in East Africa was any progress made. The Nyasaland Auxiliary Air Unit which had been formed shortly before the war utilising the facilities of the Aero Club of Nyasaland which consisted of one Moth Major aircraft, was disbanded because its members were needed for essential civilian services and industries, but in Kenya the VR scheme lived and, in September 1939, it developed into the Kenya Auxiliary Air Unit (KAAU).

/ Training

Training in Kenya

All civil aircraft in the colony were requisitioned, including those of the Aero Club of East Africa and Wilson Airways (the local civilian company), and the Kenya Auxiliary Air Unit came into being with three flights: No. 1 Communications Flight, No. 2 Training Flight (both at Nairobi) and No. 3 Reconnaissance Flight which formed at Nairobi and at once moved to Mombasa. The Unit's strength comprised 16 officers (eight of whom were RAF) and 71 airmen and its equipment amounted to 19 aircraft of eleven different types. An air defence unit was also formed at Dar-es-Salaam, Tanganyika for communication duties and 13 officers and men and six aircraft as part of the KAAU. The KAAU was administered by RAF Station Nairobi and was under the operational control of the RAF. The training flight, equipped with two Puss Moths, one Swallow, one Moth Major and one Gypsy Moth started work in September 1939, and nine pupils successfully completed the course in November 1939 and were sent to No. 4 FTS for their Service training. Pupils were recruited in Kenya and the neighbouring territories of Uganda, Tanganyika, Nyasaland and Northern Rhodesia, and the training given was equivalent to the normal RAF, EFTS. It was hoped that it would eventually be possible to provide Service flying training facilities in Kenya - it will be remembered that plans to open an RAF, FTS in Kenya was approved a few months before the War.

Nothing was done about the formation of the FTS until December 1939. Before the War progress was delayed over negotiations regarding the requisition of the site at Nakuru - there was some doubt as to whether it was Crown land or whether it would have to be bought - and after War broke out the decision to go ahead with the school was delayed pending a final decision on the ultimate size of the Empire Air Training Scheme and RAF training organisation.(1) When the target first-line force and its training backing was approved, which called for 60 SFTSs compared with the 25 planned under the EATS and 15 existing RAF schools, work on Nakaru was started, and it was hoped to have the airfield ready by July 1940 and the buildings a few months later. It was hoped to start SFTS training there in August 1940. At one stage it was planned to move No. 4 SFTS from Habbaniyah to Nakuru, but plans were changed in April and it was decided to retain the school at Habbaniyah and open a new school in Kenya.

(1) AM File S.50935

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To supply pupils for the SFTS, arrangements were made to form a RAF, EFTS in Kenya utilising the services of the training flight of the Kenya Auxiliary Air Unit. By June 1940 the flight had been moved to Eastleigh and expanded by the addition of five Tiger Moths and two Tutors from RAF sources and there were 40 pupils under instruction. Courses were of ten weeks' duration with intakes every five weeks, and by ~~the~~ August the capacity of the school had grown to 48 pupils - equivalent to a half-sized EFTS, and it was hoped eventually to expand it to a full-sized school in order to feed the projected SFTS at Nakuru. Until the Kenya SFTS opened pupils were sent to either Habbaniyah or Southern Rhodesia for their SFTS training.(1)

Before these plans for training expansion could mature, Italy had entered the War and by the summer of 1940 offensives in Somaliland and Abbyssinia had started.(2) Kenya was now too near the scene of operations to be suitable for flying training, and both the EFTS and SFTS to form in Kenya were eventually set up in South Africa as No. 30 EFTS and No. 16 SFTS. The KAAU training flight continued for a few months after Italy's intervention but on 1 November the whole Unit disbanded and its personnel were absorbed into the Royal Air Force. This marked the end of basic flying training in Kenya, although later in the war operational training units were formed in the colony. After the summer of 1940, by which time 68 pupils had been sent to No. 4 FTS, all aircrew candidates from Kenya were enlisted at the RAF Station at Nairobi and sent to schools in the nearby colony of Southern Rhodesia for their training.

Training in Egypt and Iraq

No. 4 SFTS at Habbaniyah remained rather a backwater of training. It continued to be the only RAF school overseas until others were opened in Southern Rhodesia, and, unlike those in the United Kingdom, it was not subjected to a series of emergency measures to increase output. Indeed, on 27 December 1940, by which time the 'Third Revise' had shortened SFTS courses in the United Kingdom to 10 weeks, courses at Habbaniyah were extended from 16 to 20 weeks.(3) The climate in Iraq was not really suitable for flying training and in hot weather it was not possible to complete all the syllabus,

(1) RAF Station Nairobi ORB

(2) AM File S.60755

(3) AM File S.59272

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even after the courses were extended. Its size was strictly limited and it was hoped to find a new location for the school so that it could be expanded and brought into line with the other RAF schools. Both Kenya and South Africa were considered, but a new school was given preference in Kenya, and the inauguration of the Joint Air Training Plan in South Africa in June 1940 cancelled plans to move it to that area. The supply of EFTS trained pupils presented the most difficult problem. Very few pupils were sent out from the United Kingdom after war was declared and pupils had to be recruited from different parts of the Middle and Far East. As a result considerable difficulties were experienced in co-ordinating the intake of pupils, and even when this could be achieved it was found that the standard of pupils varied considerably.(1) All pupils had to have either completed an elementary flying training course in accordance with the RAF syllabus or have at least 25 hours solo civil flying to their credit, but as all overseas commands were invited to send pupils there was little wonder that intakes were mixed in all senses of the word.

Plans for the projected air gunners school at Amman were reconsidered in November 1939 and replaced by a proposal to form a bombing and gunnery school capable of training 40 pupils at a time on an eight week course. Half were to be observers sent out from the United Kingdom after completing their navigation training and the remainder volunteers for air gunners locally selected from ground tradesmen. Unfortunately in January 1940 the Battles with which it was intended to equip the school were urgently required elsewhere (for the EATS in Canada and the AASF in France) and the proposal lapsed through lack of aircraft and eventually part of No. 4 FTS had to be used to train observers and air gunners.(2)

In Egypt a small training unit, known as the Pilots Training Unit, was formed at Abu Sueir on 8 September 1939, a few days after No. 4 SFTS moved to Habbaniyah. It provided a variety of makeshift training courses - ab initio training for pilot volunteers who joined the RAF in Egypt, and refresher and conversion courses as well as navigation and instrument flying courses for newly trained pilots awaiting posting to squadrons. The Unit started with

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(1) AM File S.58474

(2) AM File S.50300

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five tutor aircraft and four instructors, but as training expanded the unit amassed a heterogeneous collection of aircraft including Valentias, Blenheims, Hardys, Gauntlets, Ansons, Magisters and Wellesleys. Shortly after Italy's entry into the War the Unit was moved to Ismailia where it became known as the Training Unit Reserve Pool. Ab initio training ceased - about 25 pupils had been trained and sent to No. 4 SFTS - and the unit concentrated on providing training for graduates from the SFTS awaiting posting to squadrons. Eventually, on 15 December 1940, the Unit, which in effect had already been providing OTU training since 1939, was renamed No. 70 OTU.(1)

Expansion of No. 4 SFTS

Meanwhile No. 4 SFTS carried on with its mixed courses. In addition to the pupils from Egypt and those from Kenya, EFTS trained pupils were sent from Rhodesia, India and the Straits Settlements, while other suitably qualified personnel (with 25 hours solo civil flying) were recruited from South Africa, Malta, Aden and Egypt. In addition, Indian Air Force and South African Air Force personnel were sent for training as well as Greek and French pupils from the Middle East. Training was carried out on the old ITS-ATS syllabus - there were no OTUs in the Middle East to which part of the ATS training could be transferred (as was done in the United Kingdom) and after completing the course pupils were posted to Abu Sueir (later Ismailia) for further training or direct to squadrons in the Middle East. Some Oxfords had been added to the establishment of the school shortly after the beginning of the War to enable training on twin-engined aircraft to be undertaken. A few Gordons for use as target towers were also provided so that gunnery practice could be carried out.(2)

In August 1940, in order to meet urgent requirements in the Middle East Command, half of the school's facilities were turned over to the training of observers and air gunners. This was not the first time that other aircrew had been trained at Habbaniyah. Air gunner training on a small scale had been carried out earlier in the year after the Amman scheme had been abandoned and six air gunners were trained. In August, however, a series of

(1) No. 102 MU, ORB

(2) No. 4 SFTS, ORB

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courses was arranged. Pilot intakes were reduced to 24 every 10 weeks, and it was arranged to train 14 observers on a 9 weeks' course and 14 air gunners on a 4 weeks' course. Some of the pupils were provided from the pilot training wastage and others were sent direct to the school. The first observers started training on 26 August and graduated on 30 October 1940, and the first air gunners started training on 4 October 1940 and passed out four weeks later. These courses stopped early in 1941, and in all some 38 observers and 52 air gunners were trained at Habbaniyah.(1)

By the spring of 1941, the training schemes in Southern Rhodesia and South Africa were beginning to produce sufficient pilots to meet the needs of the Middle East and it was decided that No. 4 SFTS was no longer required. Habbaniyah had never been satisfactory as a training base and as there was no longer the need to transfer it elsewhere, plans were made to close the school in September 1941, after No. 7 course, due to start training in May, had graduated. Before these plans could be put into effect, however, a revolt, led by Rashid Ali, started, and on 1 May the school was transformed into an improvised operational unit. Its aircraft, 34 Audaxes, 27 Oxfords, together with some Gordons, Gladiators and Blenheims - (the latter had been supplied for the observers and air gunners training) were adapted to carry guns and bombs and formed into an air striking force of four squadrons. The revolt was brought to an end by 2 June, after more than 90 tons of bombs had been dropped and nearly 200,000 rounds of ammunition fired. A few days later the victorious school was closed and its aircraft and instructors sent to reinforce schools in Rhodesia. Since the beginning of the war, the school had trained a total of 273 pilots, as well as 38 observers and 52 air gunners.

Proposals for Training in Palestine

At the height of the Battle of Britain when the RAF's need for pilots was acute, the Jewish Agency for Palestine proposed that a Jewish squadron should be formed with personnel recruited and trained in Palestine.(2) There was already a small flying training school, located at Ramleh in the Jordan

(1) No. 4 SFTS, ORB and AM File S.62497
(2) AC 96/40

/ Valley

Valley, operated by Aviron Company Ltd (a local flying club) and it was suggested that this school might be expanded to provide elementary and Service training for suitable recruits. The location of the flying club, however, was not considered suitable for flying training (for much the same reasons as Habbaniyah) and both the Air Staff and the AOC-in-C Middle East were against the idea of forming a purely Jewish squadron. The idea was therefore dropped although recruiting in Palestine was encouraged and over 2,000 Palestinians were recruited for the RAF during the War including some aircrew candidates. In October 1942 special arrangements were made for the recruitment of Jewish aircrew in Palestine and for their training in schools in Southern Rhodesia.

Training of Air Gunners in Egypt

For more than two years after the closure of No. 4 SFTS in May 1941 no basic training was carried out in the Middle East, although a considerable operational training organisation was built up - the details of which are outside the scope of this chapter. In the autumn of 1943, however, it was decided to establish facilities for the training of air gunners and wireless operators/air gunner in the Middle East Command. Four new bomber OTUs, together with a heavy conversion unit, were to be formed in the Middle East to back the planned strength of four heavy and five medium bomber and eighteen GR squadrons in the Middle East and Indian Ocean region. Sufficient pilots, navigators and air bombers would be available to feed these units (mainly from schools in South Africa and Southern Rhodesia) but additional capacity was needed to produce the necessary number of air gunners and wireless operators/air gunner. There was only one AGS training RAF personnel in the African continent (No. 24 AGS Moffat, Southern Rhodesia) and it was impossible to expand that to produce the additional requirements. Apart from the obvious advantage in training personnel in the theatre of the future operations, it was desirable to locate new units overseas to relieve the pressure on airfields in the United Kingdom. Moreover, it would be possible to recruit at least some of the pupils from ground personnel already serving in the Middle East and so save shipping space.

/ Initial

Initial training wing, elementary air gunners school, and air gunners school facilities were needed and it was possible to centralise all training at one station, Ballah in Egypt. No. 51 Air Gunners Initial Training School (AGITS) was opened as a combined ITW and EAGS on 8 September 1943, and No. 13 AGS was formed a few weeks later on 21 November 1943.(1) The AGITS course was of 12 weeks' duration (six weeks ITW and six weeks EAGS) and provided basic air gunnery training for airmen from the Middle East and South East Asia Commands remustering as air gunners. Intakes were 65 every 6 weeks, giving a total population of 130, and it was planned to maintain an output of 60 every 6 weeks. It was not always possible to fill intakes with personnel recruited locally and drafts of u/t air gunners were also dispatched from the United Kingdom. Successful pupils passed on to the AGS where, after completing a further six weeks air gunnery training, they were awarded their air gunner's badge and posted to OTUs. The AGS also provided air gunnery training for wireless operators (air) from the United Kingdom who had completed their radio school course and had already been awarded their wireless operator's brevet. They completed the same six weeks' air gunnery course as the straight air gunners before proceeding to a Wellington (GR) OTU in the Middle East. Intakes were 80 every two weeks making a total capacity of 240. In addition, ground gunnery courses, lasting two weeks, were given to trained wireless operators (air) from the United Kingdom destined for bomber squadrons. These 'emergency' courses as they were called trained 30 pupils at a time. In all, therefore, No. 13 AGS trained 60 air gunners and 240 wireless operators/air gunner on a six weeks' course and 30 wireless operators (air) on a two weeks' course.(2) To carry out this training the school was equipped with 29 Ansons and 31 Lysander target towers, the latter being replaced by Harvards during 1944.

By mid 1944 the supply of air gunner recruits from local sources had diminished considerably and nearly all intakes were filled entirely with recruits from the United Kingdom. As a result the 'straight' air gunner training organisation at Ballah was reorganised in June 1944, to bring it into line with that in the United Kingdom. The AGS was already working to

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(1) AM Files S.94221 and S.94222

(2) AM File S.93870

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the standard RAF syllabus and therefore remained unchanged but courses at the AGITS were reduced from twelve weeks to six and in future its pupils arrived having completed a six weeks course at an aircrew reception centre in the United Kingdom.

Training at Ballah continued on these lines until the end of the War in Europe, when it was decided to centralise all RAF air gunnery training in the United Kingdom. No. 51 AGITS was closed on 30 April 1945 and the last output from No. 13 AGS took place two months later on 29 June 1945. In all 1,109 straight air gunners were trained in Egypt and 1,430 wireless operators/air gunner received their air gunnery training there. In addition a further 679 wireless operators (air) underwent the emergency two weeks courses.(1)

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(1) AM File S.93870

CHAPTER 15

TRAINING IN THE WEST INDIES

The conception of carrying out flying training on behalf of the RAF in the West Indies first arose shortly before the outbreak of war when plans were being made to establish Volunteer Reserve Centres in various parts of the British Empire. It was hoped to open centres in Trinidad and Bermuda utilising the services of local flying clubs, and the Colonial Office was asked in July 1939 to ascertain how many suitable recruits were likely to be forthcoming. The war intervened and killed the idea almost before it was born and arrangements had to be made to send suitable aircrew volunteers to England for training.

The West Indies, however, were anxious to do all they could to give some practical form of assistance to the Royal Air Force and by 1940 the Governments of Jamaica, Trinidad and Bermuda had each worked out schemes for providing flying training courses for local volunteers, using schools run on the lines of RAF, EFTSs and operated by local flying clubs.(1) The cost of the schemes was to be borne entirely by the local governments and the only assistance asked of the United Kingdom was the supply of a small number of elementary trainer aircraft to assist in the expansion of the existing facilities, which comprised a few light aircraft in Jamaica and Trinidad and two seaplanes in Bermuda.

All of these schemes received the general approval of the Air Ministry. Although in their existing form the schools could not hope to replace the EFTS course entirely, they would at least serve to eliminate unsuitable candidates and reduce the period of elementary training in the United Kingdom. They also had a considerable political value, besides constituting an attractive form of recruiting, and it was hoped that they could eventually be further developed in order to provide a definite, though modest, dividend.

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(1) AC 67/40

/ Proposed

Proposed School in Jamaica

The first offer came from the Governor of Bermuda in April 1940 and was followed within a few weeks by similar offers from Trinidad and Jamaica. From Jamaica came the proposal, on 19 June 1940, that a flying training school should be established at Palisadoes aerodrome utilising three or four light aeroplanes already in the colony and supported by private subscriptions. The offer was welcomed by the Air Ministry but had to be abandoned in October 1940, when it was found that the Royal Navy intended to establish units of the Fleet Air Arm at Palisadoes. There would not be sufficient room for the local flying school to carry out training there as well.(1) Two years later the proposal was revived but by that time plans were afoot for the expansion of the Trinidad school to train other West Indians and it was undesirable to open further schools in 'penny packets'.

The Bermuda Flying School

The schemes for Bermuda and Trinidad, however, made better progress. The Bermuda project which was officially submitted to the Colonial Office by the Governor of the Colony on 16 April 1940, was made possible through the generosity of certain local residents who agreed to purchase a seaplane for use at the local flying school and to pay the salary of a flying instructor for a year.

Training was duly started in May 1940, and it was hoped that the school would produce between 40 to 50 pupils per year. Many young Bermudians who had been educated in Canada were keen to join the RCAF and it was hoped that their further training could be arranged in Canada under the Empire Air Training Scheme. Unfortunately the RCAF were unable to comply with the suggestion because they already had long waiting lists of pilot candidates, and arrangements had to be made for the Bermuda trainees to proceed to the United Kingdom with passages paid by HM Government. The school, known as the Bermuda Flying School, was formed at Darrells Island, Hamilton, and the aircraft equipment consisted of one Luscombe two seater 65 HP seaplane. The course lasted three months and provided between 30 and 50 hours flying, and

(1) AM File S.5064/I

/ intakes

intakes consisted of between 10 and 20 pupils at a time. The idea was that up to 50 per cent of the pupils would receive training at reduced charges, or free of charge as circumstances warranted, and these personnel were required to signify their willingness to join the RAF. The other pupils paid for their flying at the rate of £2 10s 0d per hour. The syllabus was similar to that of a RAF EFTS although, owing to the type of aeroplane in use and the geographical conditions, no aerobatics and little cross-country flying could be carried out. Towards the end of 1940 the question of supplying additional aircraft for the school arose. A proposal to use Tiger Moths fitted with floats was turned down as impracticable and arrangements were made to purchase any further aeroplanes required in the United States. Another Luscombe seaplane was added to the school in October 1940.

By the beginning of 1941 the flow of suitable candidates for the Bermuda Flying School had dropped to about 15 a year and to keep the school operating at its maximum capacity arrangements were made to send some of the American volunteers, who were being recruited through the Canadian National Bureau, to Bermuda for flying experience.

The Trinidad Air Training School

Whilst arrangements for the Bermuda school were going ahead, a further offer put forward by the Government of Trinidad to the Colonial Office on 11 June 1940, suggested that candidates for pilot training from Trinidad should be given 50 hours flying instruction on light types of aircraft by the newly formed Trinidad and Tobago Light Aircraft Club before being posted for Service training to the Royal Air Force. The Trinidad Government offered to pay the cost of the training and the proposal was gladly accepted by the Air Ministry. With the aircraft already available (two Tiger Moths and one Taylor Cub) roughly 50 pupils per annum could be trained and plans were afoot to increase the school to a total of 12 aircraft in order to produce 150 pilots per year.(1)

The first intake of eight pupils pupils commenced training on 9 September 1940 at the airfield at Piarco, Trinidad, and it was arranged to train further intakes, each of eight pupils, every eight weeks, during which

(1) AM File S.5064/I

/ time

time pupils were given fifty hours flying on Tiger Moth aircraft. The course approximated roughly to the normal RAF, EFTS syllabus carried out in the United Kingdom and in the Empire schools, although link trainer and signals instruction could not be provided. Six successful pupils graduated from the first course and were sent to the United Kingdom in February 1941 to carry out their Service flying training. It was arranged that pupils from both Trinidad and Bermuda, in view of their lack of previous RAF disciplinary training and possible shortcomings of the elementary training, should be posted to an ITW for a short ground course, and then to an EFTS for an accelerated flying course (dependent upon their standard of training) mainly on link trainer, navigation and signals instructions before proceeding to an SFTS.

Shortly after the school started, the Admiralty transferred a Fleet Air Arm air observer school to Trinidad and at one time it looked as if this would force the closure of the training scheme. The Admiralty agreed to its continuance, however, and proved most co-operative by arranging for trainees to undergo instruction in armament and signals and link trainer exercises at the Royal Naval Air Station. An ITW course was started in November 1940 and the pupils then carried out 16 weeks training before proceeding to the United Kingdom (eight weeks ITW and eight weeks EFTS).(1)

Proposals for Extending Training

In September 1940 it was suggested that a self contained flying training organisation should be set up in the West Indies. The great material advantages of climate, fuel supplies, and aerodrome sites, together with its close proximity to the United States which would facilitate the provision of aircraft from there or Canada, were cited in support of the scheme. The possibility of training volunteers from America was a further attractive factor, and trainees could, if necessary, be sent from Canada to supplement the supply of locally enlisted volunteers. It was suggested that an initial training wing should be set up in Bermuda to provide ground training for all personnel and an EFTS, and an SFTS should be formed in each of the colonies of Jamaica, Trinidad and Barbados. The cost of these schools and the ITW feeding them would be borne by the colonies concerned and the cost of training

(1) AM File S.5064/I

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the pupils (roughly £3 - 4,000 per pilot) would be provided from a fund started in the West Indies. In addition to these schools, further aerodrome sites in Trinidad, Tobago, Leeward Islands, Bahamas, Barbados, Jamaica, Windward Islands, British Honduras, British Guiana and Bermuda were also surveyed with a view to their possible use in the future.

The scheme, though desirable in many ways, did not materialise. The granting of leases in Bermuda and Bahamas to US Forces and the growing intensity of Fleet Air Arm activities meant that the danger of overcrowding would be a very real one; it was not practicable to split the organisation up into small 'pockets' located in various colonies - there was no single colony large enough to house the scheme in its entirety; finally it cut across the Air Ministry policy of grouping all new schools where a training organisation already existed.(1) The schools at Bermuda and Trinidad were not considered large enough to be called a training organisation). A few months later a second proposal for this extension of training in the West Indies was put forward. It was suggested that Trinidad should become the training centre for pilots from the West Indies generally and from other nearby colonies. The proposal, however, was turned down on the same grounds as the earlier one. It was the Air Ministry policy to establish schools overseas only in areas where there were sufficient sites available to form an economical block of units and, as the two main aerodromes in the West Indies, Piarco (Trinidad) and Palisadoes (Jamaica), were already being used by the Admiralty and most of the other sites were too close to projected US bases, it was not practicable to establish a training group of economical size either in Trinidad or the whole of the West Indies.

There had also been proposals from the Bahamas and British Honduras to establish small units giving instruction to local or RAF personnel at local flying clubs (the former at Nassau and the latter at Belize) but both were rejected on the grounds that further small units requiring extensive development and supplies of aircraft and equipment were undesirable.

The value of the Trinidad Air Training School was recognised, however, and it was regarded as of sufficient importance to warrant the posting of a

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(1) AC 96/40

/ flight

flight lieutenant flying instructor out to Trinidad as commanding officer of the school at a time when the RAF placed a very high premium on its instructor personnel.(1)

Both existing schools made good progress and by the middle of 1941, 38 pupils had arrived in the United Kingdom from the two schools - 16 from Bermuda and 22 from Trinidad. Bermuda, owing to the type of aircraft in use, really only provided flying experience for potential pupils and the course was designed primarily as a test of ability to fly rather than to provide actual flying training. Trinidad, on the other hand, carried out well organised courses on the lines of the RAF, ITW and EFTS syllabus, and both schools provided valuable flying facilities at a time when the British Commonwealth Air Training Plan was experiencing teething troubles whilst getting into its stride.

Disbandment of Flying Schools

Towards the end of the year, however, the school at Bermuda ran into difficulties, not only of supplying pupils but of disposing of them. The growth of the Empire Air Training Scheme, the entry of the United States into the war and the necessary alterations of policy by the RCAF and the RAF in recruiting and training, all affected Bermuda's school. With the transfer of all EFTS training from the United Kingdom to Canada, facilities ceased to be available for training in the United Kingdom and Canada, owing to her own long waiting list, was able to provide only 10 places a year in her schools for pilots from Bermuda. There was a further difficulty over the fact that the RCAF standards at that time were rather higher than those laid down in the RAF and candidates had to travel to Canada at their own risk and expense with no guarantee of acceptance.(2) It was thought that candidates from Bermuda might be sent to Trinidad for training but difficulties over costs of transportation caused the proposal to be dropped.

These difficulties led to the closure of the Bermuda Flying Training School in January 1942, and the process of locally enlisting aircrew candidates for the RAF was brought to a temporary standstill. The Bermuda

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(1) AM File CS.5064/II

(2) AM File CS.5064/II

/ school

school had the distinction of being the only school ever to provide elementary flying training for RAF pilots entirely on seaplanes and between 50 and 60 pupils trained at Bermuda enlisted in the RAF during the war. Subsequently, starting in November 1943, the Island was allowed an annual quota of pupils in Canada's ITW.

The closure of the Bermuda school was followed a few months later by the disbandment of the school in Trinidad. The Fleet Air Arm, which had priority over all other services in the West Indies, underwent considerable expansion in 1942 and eventually the airfield at Piarco was too congested to allow flying training to continue there. American forces were sent to Trinidad soon after America entered the war and were joined shortly afterwards by No. 53 Squadron, RAF. These units occupied all available aerodromes and attempts to find an alternative airfield for the school in either Trinidad or Tobago failed, and the school had to be closed in July 1942 after it had trained about 70 pupils.(1)

This was an unfortunate end to the West Indies flying training scheme, particularly as, in January 1942, the Air Ministry had agreed to the extension of the Trinidad school so as to provide ITW and EFTS training for all West Indian volunteers. The standard of training had been recognised as conforming to the standard RAF syllabus and successful pupils were to have been sent direct to Canadian SFTSs.

Training of West Indian Candidates in Canada

After the schools disbanded, the question of providing training facilities for West Indian volunteers was reconsidered. In view of the growing manpower shortage in the United Kingdom and the high standard of many of the candidates from the West Indies, it was obviously desirable to tap this source of recruits. After protracted negotiations, arrangements were made in November 1942 for West Indian aircrew candidates to be sent to Canada for enlistment in the Royal Air Force. Volunteers were provisionally selected by local selection and medical boards sent to Canada as civilians, and attested into the RAF after passing the necessary tests there. Pilot/navigator/bomb aimer entrants were sent to Canada for enlistment under a quota

(1) AM File A.259968/41

/ system

system, afterwards undergoing training in the Dominion under the British Commonwealth Air Training Plan. An allotment of up to 240 places a year was secured in Canadian Initial Training Wings, and was divided between the various colonies as follows:-

	No. of places per year
Bahamas	8
Barbados	20
Bermuda	27
British Guiana	15
British Honduras	5
Jamaica	80
Leeward Islands:-	
Antigua) St. Kitts) Monserrat) Virgin Islands)	7
Trinidad	70
Windward Islands:-	
Grenada) Dominica) St. Vincent) St. Lucia)	8
Total	240

Other West Indian volunteers for wireless operator or air gunner training were enlisted in Canada and sent to the United Kingdom for training.

Thus, after the summer of 1942, no further basic flying training for the RAF was carried out in the West Indies. An operational training unit was opened at Nassau in the Bahamas later in 1942, but this unit did not train local personnel.(1) The Fleet Air Arm Observer School continued to function at Piarco throughout the war and produced 1,208 observers. The training, however, was not carried out under RAF arrangements and is therefore also outside the scope of this chapter.

The total number of West Indian aircrew who served in the RAF during the war is not accurately known, because they were not allotted special numbers but were simply absorbed into the RAF without distinction. Their number was over 400, including the 120 who received some kind of flying instruction in Bermuda or Trinidad before joining the RAF. About 100 of these West Indian aircrew volunteers gained commissions and many were awarded decorations for gallantry in air operations. Their record is worthy of the highest praise.

(1) The history of No. 111 OTU Nassau is discussed in Chapter 19, Operational Training: Coastal Command

CHAPTER 16

RESERVE TRAINING OVERSEAS

Early Proposals

In the summer of 1935 the Air Ministry decided that it was desirable, whilst carrying out a programme of rapid expansion at home, to provide facilities for the flying training of Reserve Officers overseas. It was proposed to enter into a contract with the Far Eastern Aviation Company to provide such facilities in the Colony of Hong Kong.(1) The proposal was referred to the Treasury on 17 June 1935, and after some discussion it was approved on 9 July 1935.

The scheme was therefore put into operation, and an agreement was entered into with the Far Eastern Aviation Company with effect from 31 December 1935, and was to continue until such time as determined by either party by three months notice in writing. The company supplied both the necessary aircraft and instructors, and training was carried out at Kai Tak aerodrome which was owned by the Hong Kong Government.

For three years little else was done regarding the maintenance of a Reserve Organisation Overseas.(2) In November 1938, however, a survey of reserve requirements for overseas units was carried out, relating to the measures necessary to ensure an adequate reserve of pilots and aircrews to maintain squadrons at war strength during the period that would inevitably elapse between the outbreak of hostilities and the earliest date on which reinforcements from home could reach the theatres of war.

It was disclosed that a period of three months would elapse before the Commands in the Middle and Far East could be supplied with reinforcements, and on this basis it was estimated that the total number of pilots and aircrews required to bridge the gap in the possible theatres of war overseas pending

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(1) AM File A.70599/40

(2) EPM 167(38)

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the arrival of reinforcements, would be in the order of 700 pilots and 750 aircrew.(1)

To meet these requirements, therefore, the only effective arrangement was for the recruitment and training of Reserves to be undertaken in parts of the Empire within easy reach of overseas units which were likely to need reinforcements and for this purpose it was proposed that local Volunteer Reserve Centres should be established under the control of the AOC's concerned. This proposal had several advantages:-

a. It would fulfil the operational requirements of overseas Commands in providing Reserves of flying personnel which would be available at short notice.

b. It would help to relieve the congestion of training centres in the United Kingdom.

c. It would provide training facilities which would be capable of expansion in war.

d. It was likely to give considerable satisfaction in those Colonies which had been pressing for the development of military aviation in their territories.

e. It would draw from a reserve of promising personnel which would not otherwise be available.

A preliminary investigation had been carried out, and such a scheme appeared practicable and that a sufficient number of applicants for entry into the Volunteer Reserve could be anticipated.

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(1) The territories concerned were the following:-

Middle East	Aden, E. Africa, Iraq, Malta, Egypt, Palestine, Sudan	Pilots	529
		Observers	141
		Air Gunners	184
		W/T Operators	232
Far East	Hong Kong, Penang, Ceylon, Singapore	Pilots	171
		Observers	5
		Air Gunners	88
		W/T Operators	100

TOTAL	Pilots	700	
	Observers	146	750
	Air Gunners	272	
	W/T Operators	332	

/Establishment

Establishment of VR Centres Overseas

The Air Council approved these proposals in principle on 15 November 1938, and it was decided to push forward with the formation of VR Centres in overseas countries, other than India where RAF Units already existed.(1)

It was envisaged that the proposed centres abroad would be organised as far as possible on a basis similar to the RAFVR Centres at home, subject to adaptation to meet local conditions as regards operational and recruiting possibilities. The following centres were proposed as a first step:-

Middle East	Egypt	(Alexandria (Cairo
	Kenya	Nairobi
	Sudan	Khartoum
Far East	Hong Kong	
	Singapore	
	Kuala Lumpur	
	Penang	

In addition it was proposed to expand the Air Section of the Southern Rhodesian Defence Forces and also to set up a small training centre in Burma, which would act as a nucleus for the formation of an auxiliary air force squadron which was proposed to be formed at Rangoon. In the Far East the services of the Straits Settlements Volunteer Air Force were to be utilised in forming the VR Centres.

As the RAF would not be able to undertake the initial and elementary stages, it was agreed that it would be necessary for these stages to be covered by civil operated schools. It was visualised that advance training facilities would be given by the RAF.

In January 1939, details of the scheme were forwarded to the various areas, stating that the Air Ministry were considering a proposal to provide flying training for British persons resident in the areas concerned, including details of contract arrangements for aircraft and equipment required etc, and requesting tenders from interested companies.

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(1) It had been proposed to form centres in India (at Bombay, Calcutta, Madras and Karachi) but this was turned down owing to the fact that Indian Air Force personnel would have to be included. (EPM 143rd Meeting).

/ Representatives

Representatives of the Air Ministry proceeded overseas in February 1939 for preliminary discussions with the relevant RAF Commands and companies, and arrived back in England in July 1939.

Progress in July 1939

Discussions with the Foreign and Colonial Offices ensued during the summer and by 1 July 1939, the position regarding the Volunteer Reserve Overseas was as follows:-

Straits Settlements A co-ordinated scheme was being worked out for the establishment of Volunteer Reserve Centres in Malaya, together with other centres at Hong Kong, Singapore and Ceylon.(1) In Malaya and the Straits Settlements it provided for centres operated by Government assisted light aeroplane clubs, on similar lines to the organisation at home. The scheme in its initial stage would train pilots, but it would later be capable of extension to the training of aircrew, if sufficient volunteers were forthcoming. A batch of 110 applications to join the VR had already been received. Centres were to be established at the flying clubs at Penang, Ipoh in Perak, Kuala Lumpur and Singapore.

Hong Kong At Hong Kong, negotiations with the Far Eastern Aviation Company had reached a stage at which early agreement could be obtained. The Governor and the AOC, however, had so far felt unable to support the RAFVR scheme as in their view all available resources were required for local defence. (Note the local company was already carrying out reservist training to this end). The AOC was hoping to overcome this objection, and an early start was anticipated.

Ceylon In Ceylon a scheme for recruitment of local personnel, both Cingalese and Europeans, for local defence and it was suggested that any VR scheme should be incorporated in this. As a compromise - for the VR scheme excluded coloured personnel - it was proposed to form an AAF unit which might in part be organised for local defence, and in part provide for the training of white personnel with an Imperial defence commitment. The Aero Club of Colombo had been approached to carry out this training.

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(1) EPM 76(39) and 109 (38)

/ Egypt

Egypt The proposal for VR Centres in Egypt gave rise to very considerable difficulties owing to the independent status of Egypt as a foreign though allied country and the operation of the Anglo-Egyptian Treaty. It was hoped, however, that in co-operation with the Foreign Office, these difficulties would be resolved. Airwork Ltd had been approached to carry out flying training at Cairo or Alexandria or both, and it was proposed to make additions to the station flights at Heliopolis and Aboukir for the purpose of training individual members of the British population in Egypt.

Kenya Proposals for a Volunteer Reserve Centre at Nairobi had reached a state at which a contract could be concluded with Wilson Airways Ltd, a subsidiary company of Imperial Airways. The Governor however, suggested that for disciplinary reasons the training of VR personnel in Kenya should be undertaken by the RAF as soon as they had reached 'A' licence standard. This would be impracticable at this time owing to the heavy demand already made on regular personnel, and the Governor's concurrence to the original scheme was being sought.

West Africa VR Centres were prepared at Takoradi and Accra in the Gold Coast, and Lagos, Nigeria. The Governor was investigating the number and types of recruits available for training. Providing the intake promised to be adequate, it was proposed to start with these three VR Centres using, if possible, the local flying clubs. A club had been established at Accra which could probably also deal with Takoradi, and it was considered likely that the proposal to form a club at Lagos would be revised, given the promise of Royal Air Force Volunteer Reserve support. There was also an alternative proposal to utilise an Imperial Airways subsidiary company, Elder Colonial Airways, and Sir John Reith had offered the assistance of his Corporation. It was apparent, however, that whichever scheme was adopted the whole of the equipment and most of the training organisation would have to be obtained from home sources. As there was no Royal Air Force unit in West Africa, the proposal was that the immediate and advanced training of VR personnel should be conducted in courses of full-time

/ continuous

continuous training during their leave of absence in England. In anticipation of training facilities being made available in West Africa, arrangements were being made to enter candidates who were at this time (July 1939) in England who would ultimately continue their training in West Africa. Applications for personnel residing in West Africa had also been invited.

Southern Rhodesia There was already in existence a small Home Defence Volunteer Air Force Organisation in Southern Rhodesia, and it was proposed to augment this by providing VR facilities. Negotiations were delayed on this matter, however, because Treasury authority was needed before any scheme involving financial assistance from the United Kingdom could be put formally to the Southern Rhodesian Government. Treasury authority to open discussions was obtained at a meeting of the Treasury Inter-Services Committee on 6 July 1939, and the proposals were submitted. The Air Ministry proposal was to build up on the existing arrangement whereby pilots trained by the Southern Rhodesian Unit with Royal Air Force assistance accepted an imposed liability on attaining 'Wings' standard and were commissioned in the Royal Air Force Volunteer Reserve. The broad intention was that the Southern Rhodesian Government would bear the costs arising in Southern Rhodesia whilst the Royal Air Force would assist with aircraft and instructors. The possibility of making use of the local flying clubs to supplement the service organisation in Southern Rhodesia, and if possible in Northern Rhodesia, was not excluded.

Malta It was originally proposed to establish a Volunteer Reserve Centre in Malta, but owing to a lack of suitable personnel the AOC Malta, did not consider it practicable to establish a VR pilot or aircrew centre there. It was, however, proposed to establish a centre for the training of Maltese personnel for duty in the ground section of the Volunteer Reserve, and by July plans were being proceeded with.

Bermuda The Colonial Office had been asked to ascertain what number of suitable candidates could be obtained for a Volunteer Reserve Centre in Bermuda. The intention being to enter into an agreement with the local flying club to operate the scheme on a civil basis on behalf of the Royal Air Force, when an indication was obtained regarding the probable size of the centre.

Channel Islands The Governors of both Jersey and Guernsey were informed that from the Air Ministry point of view a Volunteer Reserve Organisation would be very desirable in the Channel Islands if sufficient numbers of personnel could be obtained. The Home Office had forwarded particulars of the Volunteer Reserve scheme to the Islands and meetings between the Air Ministry, the Home Office and the Channel Islands representatives were due to take place at an early date.

India Reconsideration of the earlier discussion not to form Royal Air Force Volunteer Reserve Centres in India was being undertaken by the Air Staff from the policy aspect. It was recognised that should a decision to proceed be given there would not be any insuperable difficulties after the supply of equipment or organisation of training aspects.

Burma Plans were going ahead with the formation of a centre at Rangoon, which would later be transferred into an Auxiliary Air Force Squadron when sufficient numbers of trained personnel and equipment were available.

Progress by the outbreak of War

By the outbreak of war little further progress had been made, at various places personnel had been enlisted, but no contracts with civil companies had actually been let, and no flying training had started. In the course of investigation into the Volunteer Reserve problem overseas, it had become apparent that estimates of the probable field of volunteers, which did not take sufficient account of local conditions, were likely to be very deceptive. In most Colonies a high proportion of white personnel were in high positions and the Colonial Officer had advised Governors that the

/ Government

Government Service and key industries would have to be maintained and certain classes of personnel exempted from military service. Local Defence Forces, and Army and Navy requirements had already earmarked a considerable proportion of the remaining effort and the high medical standard and a somewhat comprehensive training requirement of the VR would further restrict the entry.

On the outbreak of war nearly all these schemes collapsed and all available and suitable personnel residing overseas desiring to fly were sent to the United Kingdom for training. In certain instances, however, these early VR arrangements laid the foundations for subsequent war-time training schemes. Southern Rhodesia was developed as a training area for thousands of RAF pilots, throughout the war years, and small numbers of personnel were also trained in the early part of the war in Burma, Straits Settlements, Bermuda and Trinidad. At Hong Kong the contract for training small numbers of local people to fly, taken out in 1935, was concluded in 1940.

APPENDIX 61

PRINCIPAL DETAILS OF THE EMPIRE AIR TRAINING SCHEME AGREEMENT

(a) Personnel

Annual Intake				Annual Output			
Source	Category	Percentage	Total	Canada	Australia	New Zealand	Total
United Kingdom and Newfoundland	Pilots	5·2	811	546	-	-	546
	Observers	5·5	436	338	-	-	338
	W.Ops/A.G.	-	-	-	-	-	-
	Total	3·0	1,247	884	-	-	884
Canada	Pilots	46·8	7,301	5,200	-	-	5,200
	Observers	50·0	3,932	3,198	-	-	3,198
	W.Ops/A.G.	56·0	7,488	6,032	-	-	6,032
	Total	51·0	18,721	14,430	-	-	14,430
Australia	Pilots	36·0	5,616	884	3,094	-	3,978
	Observers	37·5	2,938	442	1,976	-	2,418
	W.Ops/A.G.	37·0	5,096	754	3,185	-	3,939
	Total	37·0	13,650	2,080	8,255	-	10,335
New Zealand	Pilots	12·0	1,872	442	-	884	1,326
	Observers	7·0	546	442	-	-	442
	W.Ops/A.G.	7·0	936	754	-	-	754
	Total	9·0	3,354	1,638	-	884	2,522
Totals	Pilots		15,600	7,072	3,094	884	11,050
	Observers		7,852	4,420	1,976	-	6,396
	W.Ops/A.G.		13,520	7,540	3,185	-	10,725
Grand Total			36,972	19,032	8,255	884	28,171

(b) Aircraft Requirements

	Tiger Moths	Harvards or Wirraways	Ansons or Oxfords	Battles	Other Aircraft	Total
Canada	702	720	1,368	750	116	3,656
Australia	486	315	591	336	24	1,752
New Zealand	162	67	126	-	-	355
Total	1,350	1,102	2,085	1,086	140	5,763
	Source of Supply					
United Kingdom for:-						
(a) Canada	-	553	1,368	750	-	2,671
(b) Australia	-	233	591	336	-	1,160
(c) New Zealand	-	67	126	-	-	193
Total		853	2,085	1,086	-	4,024
Canada	702	167	-	-	116	985
Australia	486	82	-	-	24	592
New Zealand	162	-	-	-	-	162
Grand Total	1,350	1,102	2,085	1,086	140	5,763

Notes:- (a) Annual aircraft wastage was estimated as 15 per cent of the initial requirements, most of which was to be supplied by the United Kingdom.

(b) The United Kingdom was to supply two-thirds of the engines required for the 1,350 Tiger Moths.

(c) The Ansons for Canada and Australia were to be supplied without wings, which were to be manufactured locally.

(d) All the 315 Wirraways required for Australia were to be manufactured in that Dominion, but the United Kingdom was to bear financial responsibility for 233 of them.

(e) 'Other aircraft' were required for wireless schools and consisted of Norseman's and Menasco Moths in Canada and D.H.89's and D.C.2's in Australia.

(c) School Requirements

Type of School	Canada	Australia	New Zealand	Total
I.T.S.	3	5	1	9
E.F.T.S.	13	9	3	25
S.F.T.S.	16	7	2	25
A.O.S.	10	4	-	14
B. & G.S.	10	4	-	14
A.N.S.	2	1	-	3
Wireless	4	4	-	8
Total	58	34	6	98

APPENDIX 62

THE PLANNED E.A.T.S. ORGANISATION IN CANADA

	Pilot Training		Observer Training			Wireless Operator/Air Gunner Training	
	E.F.T.S.	S.F.T.S.	A.O.S.	B. & G.S.	A.N.S.	W.S.	B. & G.S.
Total Number of Schools	13	16	10	10	2	4	10
Course Length (in weeks)	8	16	12	6	4	16	4
Pupil Capacity	96	160	126	53	170	720	60
Intake every four weeks	48	40	42	35	170	180	60
Output every four weeks	40	34	35	34	170	150	58
Pupil Wastage per Intake	8	6	7	1	NIL	30	2
Total Intake every four weeks:-							
Canadian Pupils	624	520	336	280	272	576	480
Australian Pupils	-	80	42	35	34	72	60
New Zealand Pupils	-	40	42	35	34	72	60
Total Output every four weeks:-							
Canadian Pupils	520	442	280	272	272	480	464
Australian Pupils	-	68	35	34	34	60	58
New Zealand Pupils	-	34	35	34	34	60	58
Aircraft Initial Establishment (Reserve was 50% of I.E.)	36 Tiger Moths	30 Harvards 42 Ansons	16 Ansons	50 Battles	48 Ansons	19 Menasco Moths or Norsemans	50 Battles
Total Aircraft Requirements (I.E. and I.R.)	702 Tiger Moths	720 Harvards 1,008 Ansons	240 Ansons	750 Battles	140 Ansons	116 Menasco Moths or Norsemans	750 Battles
Aircraft Wastage per year	9	18	4	12·5	12	5	12·5

Notes:-

(a) Ten per cent of the Canadian quota for pilot and observer training was to be filled with trainees from the United Kingdom and Newfoundland.

(b) All pupils from the United Kingdom were to have completed I.T.W. training before proceeding to Canada.

(c) All pupils from Newfoundland were to receive I.T.S. training in Canada.

(d) Pilot pupils from Australia and New Zealand were to have completed I.T.W. and E.F.T.S. training, and observer and wireless operators/air gunner were to have completed I.T.W. training, before proceeding to Canada.

(e) The original scheme provided for the last two weeks of the S.F.T.S. course to be devoted to bombing and gunnery training by attachments to B. & G.S.s. Subsequently, however, the attachment was dropped and B. and G.S. requirements were accordingly reduced to nine. Observer intakes were increased from 35 to 40 per school but W.Op./A.G. intakes remained unaltered. The Wireless School output was reduced to meet the requirements of nine B. & G.S.s and courses were extended to 20 weeks.

APPENDIX 63

THE E.A.T.S. AND R.A.F. TRAINING ORGANIZATION PLANNED IN CANADA IN AUGUST 1941

Schools	E.A.T.S.	R.A.F.	Total	Remarks
Initial Training	3	-	3	
Elementary Flying Training	13*	8	21	*Formed as four full sized and 18 half sized schools.
Service Flying Training	16	14	30	
Air Observers	10	-	10	
Air Navigation	2	3*	5	*The two A.O.N.S.s to be transferred to Canada were actually opened as A.N.S.s
Bombing and Gunnery	10	1	11	
Wireless	4	-	4	
Operational Training Units	-	5*	5	*The T.T.U. to be transferred was opened as an O.T.U.
General Reconnaissance	-	2	2	
Personnel Depot	-	1	1	
Radio	-	1	1	
	58	35	93	

APPENDIX 64

E.A.T.S. AND R.A.F. TRANSFERRED SCHOOLS, CANADA, DECEMBER 1941

Schools	E.A.T.S.	Transferred	Total
Initial Training	7	-	7
Elementary Flying Training	22	2	24
Service Flying Training	16	8	24
Air Observer	10	-	10
Astronomical Navigation	2	-	2
Air Navigation	-	3	3
Bombing and Gunnery	9	1	10
Wireless	4	-	4
Radio	-	1	1
Personnel Depot	-	1	1
Operational Training Unit	-	2	2
General Reconnaissance	-	1	1
Total	70	19	89

APPENDIX 65

REORGANISATION OF E.F.T.S.s IN CANADA, 1942

Schools Disbanded (1)

E.F.T.S. No.	Location	Disbanded (1942)
1	Malton	3 July
3	London	3 July
14	Portage de la Prairie	3 July
16	Edmonton	17 July
18	Boundary Bay	25 May
21	Chatham	14 August
22	Quebec City	3 July
36	Pearce	14 August

Schools Formed

23	Davidston	9 November

Schools Moved

10	Hamilton to Pendleton (2)	24 August

R.A.F. Schools Civilianised

		Personnel from E.F.T.S. No.	1942
31	De Winton	1	6 July
32	Bowden	16	20 July
33	Caron	18	25 May
34	Assiniboia	14	6 July
35	Neepawa	21	17 August

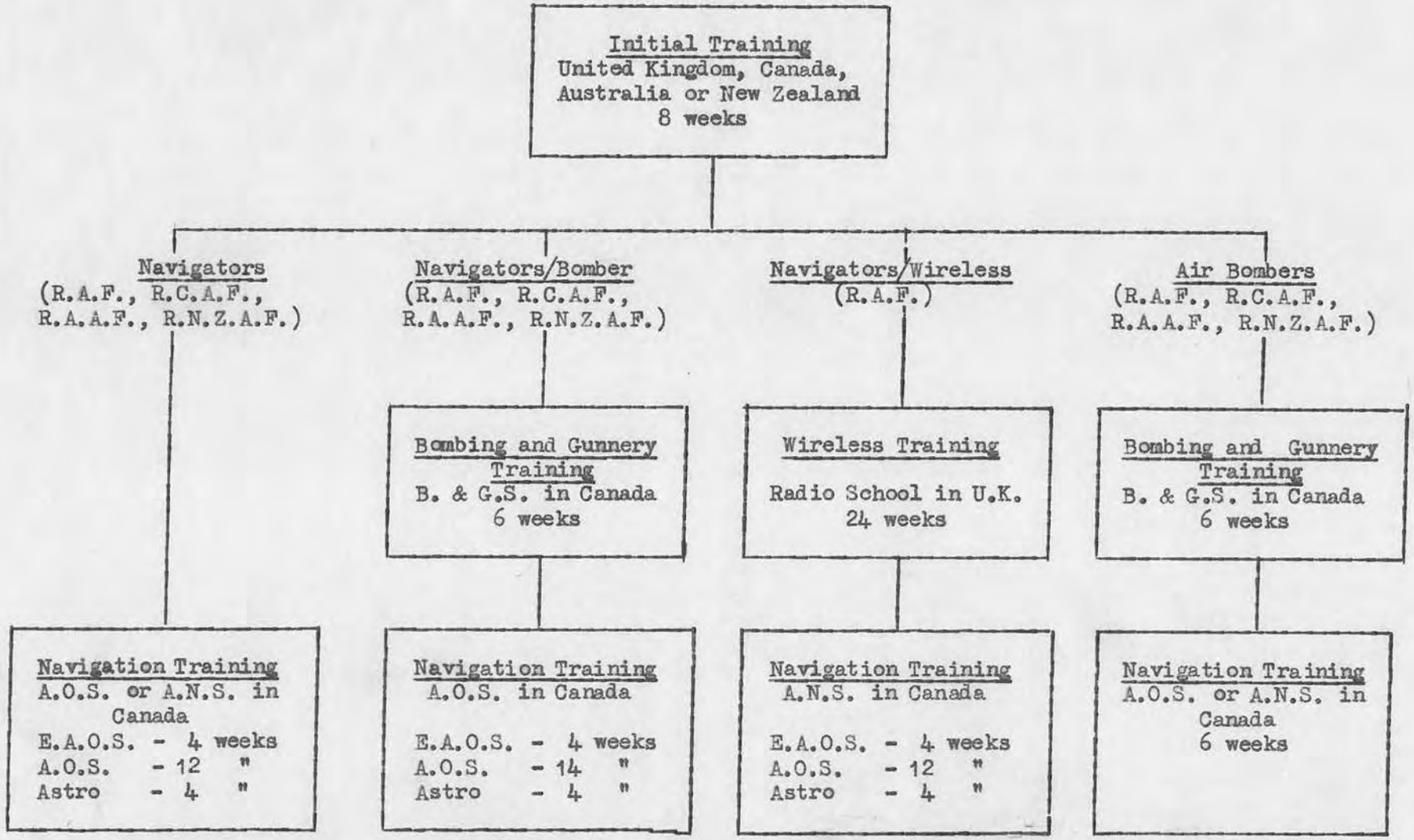
---

(1) The school at Boundary Bay was disbanded because the aerodrome was wanted for the Canadian Home War Establishment, the remainder were needed for the expanded air observer schools.

(2) To allow the formation of No. 33 A.N.S. at Hamilton.

APPENDIX 66

SEQUENCE OF TRAINING IN CANADA FOR NAVIGATORS AND AIR BOMBERS AS PLANNED IN JUNE 1942



APPENDIX 67

REORGANISATION OF THE CANADIAN TRAINING SCHEME AS PLANNED IN NOVEMBER 1943 (1)

Elementary Flying Training Schools

Schools Closed

E.F.T.S. No.	Location	Disbanded (1944)
9	St. Catherines	14 January
11	Cap de la Madaleine	11 "
17	Stanley	14 "
33	Caron	14 "
34	Assiniboia	30 "
35	Neepawa	30 "

The former R.A.F. schools at Assiniboia and Neepawa were closed and re-opened as R.C.A.F. Schools (Nos. 25 and 26 E.F.T.S.s respectively) to replace Nos. 9 and 11 E.F.T.S.s.

Schools Reduced in Size

E.F.T.S. No.	Location	Capacity Reduced From	To
6	Prince Albert	240	180
7	Windsor	120	90
15	Regina	240	180

Service Flying Training Schools

Schools Closed

S.F.T.S. No.	Location	Disbanded (1944)
35	North Battleford	25 February
37	Calgary	10 March
38	Esteven	11 February
39	Swift Current	24 March
41	Weyburn	22 January

The schools at Swift Current and Esteven were to be converted into Air Navigation Schools.

Schools Moved

S.F.T.S. No.	Location	Moved to	Date (1944)
8	Moncton	Weyburn	22 January
13	St. Hubert	North Battleford	25 February

Air Navigation Schools

Schools to be opened

A.N.S. No.	Location	Due to Open (1944)	Capacity
2	Charlottetown	21 February	520
3	Esteven	10 March	260
4	Swift Current	24 March	260

General Reconnaissance School

G.R.S. No.	Location	Disbanded (1944)
31	Charlottetown	21 February and to be replaced by an A.N.S.

Flying Instructors School

F.I.S. No.	Location	Disbanded (1944)
3	Arnprior	28 January

(1) E.T.S.658(43), 660(43), 685(44), 703(44), 713(44) and 718(44). A.H.B./IIIC/1

APPENDIX 68

TOTAL OUTPUT OF AIRCREW IN CANADA DURING THE WAR

Period	Nationality	Pilots	Observers & Navigators/B	Navigators/W	Navigators	Air Bombers	Wireless Operators (Air Gunner)	Air Gunners	Flight Engineers	Naval Air Gunners	TOTAL
3 September to 31 December 1939	R.C.A.F.	96	-	-	-	-	-	-	-	-	96
1 January to 31 December 1940	R.C.A.F.	276	115	-	-	-	149	19	-	-	559
	R.A.F.	-	-	-	-	-	-	-	-	-	-
	R.A.A.F.	37	-	-	-	-	-	-	-	-	37
	R.N.Z.A.F.	-	-	-	-	-	-	-	-	-	-
	TOTAL:	313	115	-	-	-	149	19	-	-	596
1 January to 31 December 1941	R.C.A.F.	5,812	1,473	-	-	-	2,327	455	-	-	10,067
	R.A.F.	2,178	639	-	-	-	94	24	-	-	2,935
	R.A.A.F.	1,025	331	-	-	-	687	21	-	-	2,064
	R.N.Z.A.F.	418	330	-	-	-	604	38	-	-	1,390
	TOTAL:	9,433	2,773	-	-	-	3,712	538	-	-	16,456
1 January to 31 December 1942	R.C.A.F.	6,769	2,195	-	1,240	661	3,240	2,156	-	-	16,261
	R.A.F.	6,049	1,483	454	1,454	1,047	123	354	-	-	10,964
	R.A.A.F.	926	255	-	120	38	374	42	-	-	1,755
	R.N.Z.A.F.	580	357	-	187	89	469	138	-	-	1,820
	TOTAL:	14,324	4,290	454	3,001	1,835	4,196	2,690	-	-	30,790
1 January to 31 December 1943	R.C.A.F.	7,081	591	3	2,621	3,039	2,617	4,170	-	-	20,122
	R.A.F.	7,167	746	1,458	1,969	2,819	106	533	-	132	14,930
	R.A.A.F.	1,009	97	-	368	340	732	71	-	-	2,617
	R.N.Z.A.F.	545	49	-	285	264	397	145	-	-	1,685
	TOTAL:	15,802	1,483	1,461	5,243	6,462	3,852	4,919	-	132	39,354
1 January to 31 December 1944	R.C.A.F.	4,828	616	305	2,809	2,582	2,986	5,369	842	-	20,337
	R.A.F.	5,208	970	1,801	3,062	3,484	365	466	-	466	15,822
	R.A.A.F.	676	15	-	375	350	814	92	-	-	2,322
	R.N.Z.A.F.	575	78	11	238	280	529	96	-	-	1,807
	TOTAL:	11,287	1,679	2,117	6,484	6,696	4,694	6,023	842	466	40,288
1 January to 17 August 1945	R.C.A.F.	1,056	164	113	610	377	1,425	748	1,071	-	5,564
	R.A.F.	1,484	377	285	1,080	231	67	15	-	106	3,645
	R.A.A.F.	372	1	-	81	71	268	18	-	-	811
	R.N.Z.A.F.	102	15	19	14	1	123	26	-	-	300
	TOTAL:	3,014	557	417	1,785	680	1,883	807	1,071	106	10,320
TOTAL OUTPUT 3 September 1939 to 17 August 1945	R.C.A.F.	25,918	5,154	421	7,280	6,659	12,744	12,917	1,913	-	73,006
	R.A.F.	22,086	4,215	3,998	7,565	7,581	755	1,392	-	704	48,296
	R.A.A.F.	4,045	699	-	944	799	2,875	244	-	-	9,606
	R.N.Z.A.F.	2,220	829	30	724	634	2,122	443	-	-	7,002
	TOTAL:	54,269	10,897	4,449	16,513	15,673	18,496	14,996	1,913	704	137,910

NOTES:

(a) The actual output of personnel under the E.A.T.S. Agreements (i.e. excluding those trained by the R.C.A.F. before the commencement of the E.A.T.S., those trained at R.A.F. 'transferred' schools prior to 1 July 1942, and those trained after 31 March 1945) was 131,553.

(b) There were 171 R.C.A.F. pilots trained between 3 September 1939 and 31 March 1940.

(c) The following R.A.F. personnel graduated from R.A.F. transferred schools prior to 1 July 1942 (when these schools became part of the B.C.A.T.P.).
4,139 Pilots, (81 of whom received S.F.T.S. training at E.A.T.S. schools)
1,006 Navigators/Bomber
151 Navigators/Wireless

(d) The following personnel (all R.A.F.) graduated after 31 March 1945:- 151 Pilots, 96 Navigators/Bomber, 643 Navigators

(e) The total figures include:-
(a) 407 E.A.T.S. pilots trained in 'transferred' schools before 1 July 1942.
(b) 641 wireless operator (air gunner) trainees who were graduated in March 1945, without bombing and gunnery training. R.A.F., R.A.A.F. and R.N.Z.A.F. pupils were classified as wireless operators (air) and R.C.A.F. pupils as wireless operators (air gunner
(c) 207 flight engineers who graduated in Canada without type training and subsequently received it in the U.K.

(f) The figure for R.A.F. personnel include 3,088 Fleet Air Arm pilots and 704 air gunners and 18 R.I.A.F. pilots.

(g) This table does not include the 617 personnel trained at the Norwegian Air Force Training Camp in Canada.

APPENDIX 69

AUSTRALIA - PLANNED OUTPUT (IN DECEMBER 1940) OF FULLY TRAINED AIRCREW PERSONNEL TO 31 MARCH 1943

	For Training In:-			
Aircrew Category	Australia	Canada	Rhodesia	Total
Pilots	7,170	2,372	840	10,382
Observers	3,037	850	-	3,887
W.O.s/A.G.	5,616	1,508	-	7,124
	15,823	4,730	840	21,393

Of the above, 1,656 pilots, 60 observers and 240 W.O.s/A.G. were required to meet Australia's home defence requirements leaving a balance of 19,437 available for service with the R.A.F.(1)

In order to produce the above output it was necessary to recruit in Australia the following personnel:-

Pilots	-	12,858
Observers	-	4,812
W.O.s/A.G.	-	9,032
		26,702

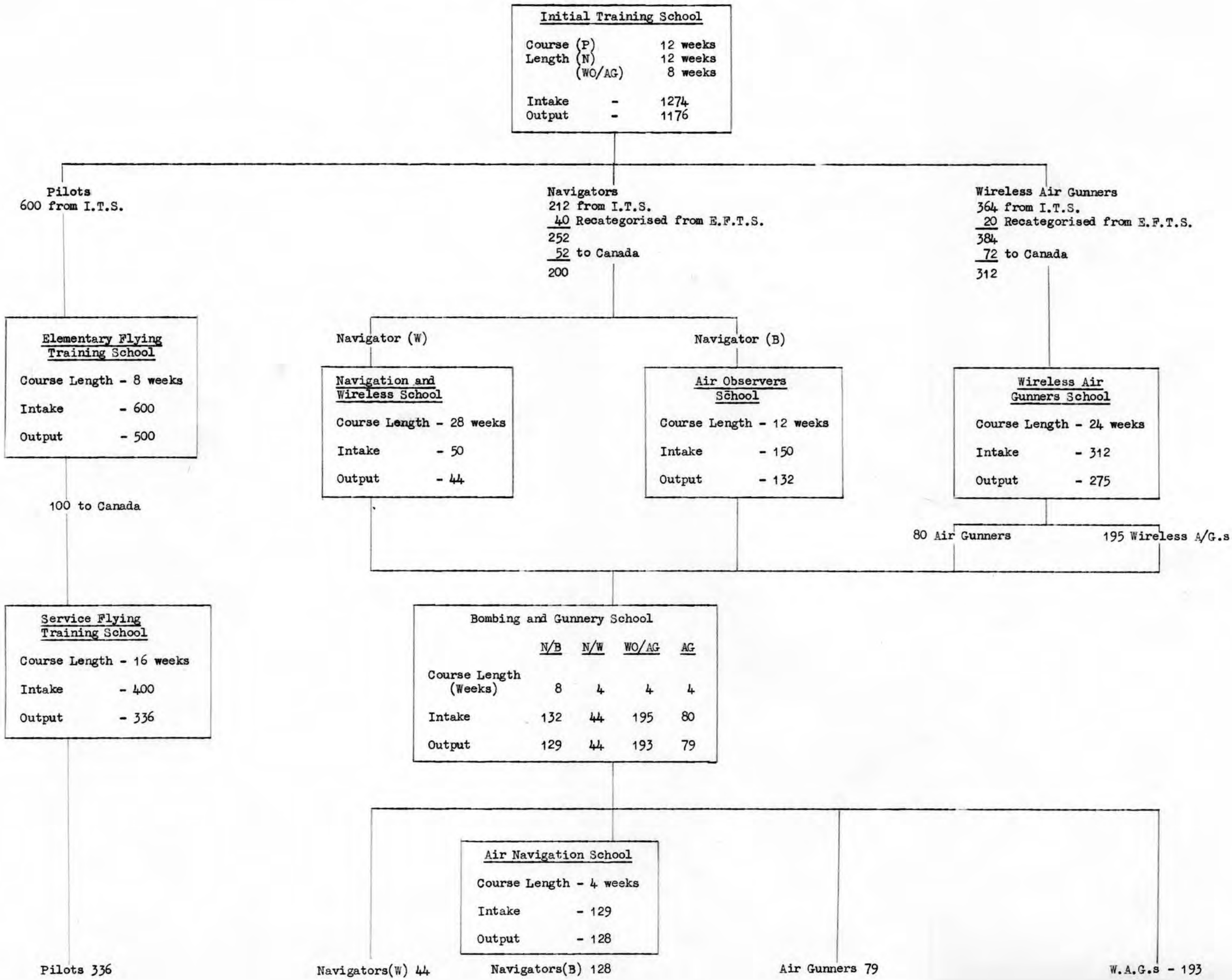
And it was necessary to despatch the following partially trained personnel to Canada and Southern Rhodesia to complete their training:-

Pilots	-	4,020	(2,820 to Canada (1,200 to S. Rhodesia
Observers	-	1,092	
W.O.s/A.G.	-	1,872	
		6,984	

(1) E.T.S.294(41). (A.H.B./IIIC/1).

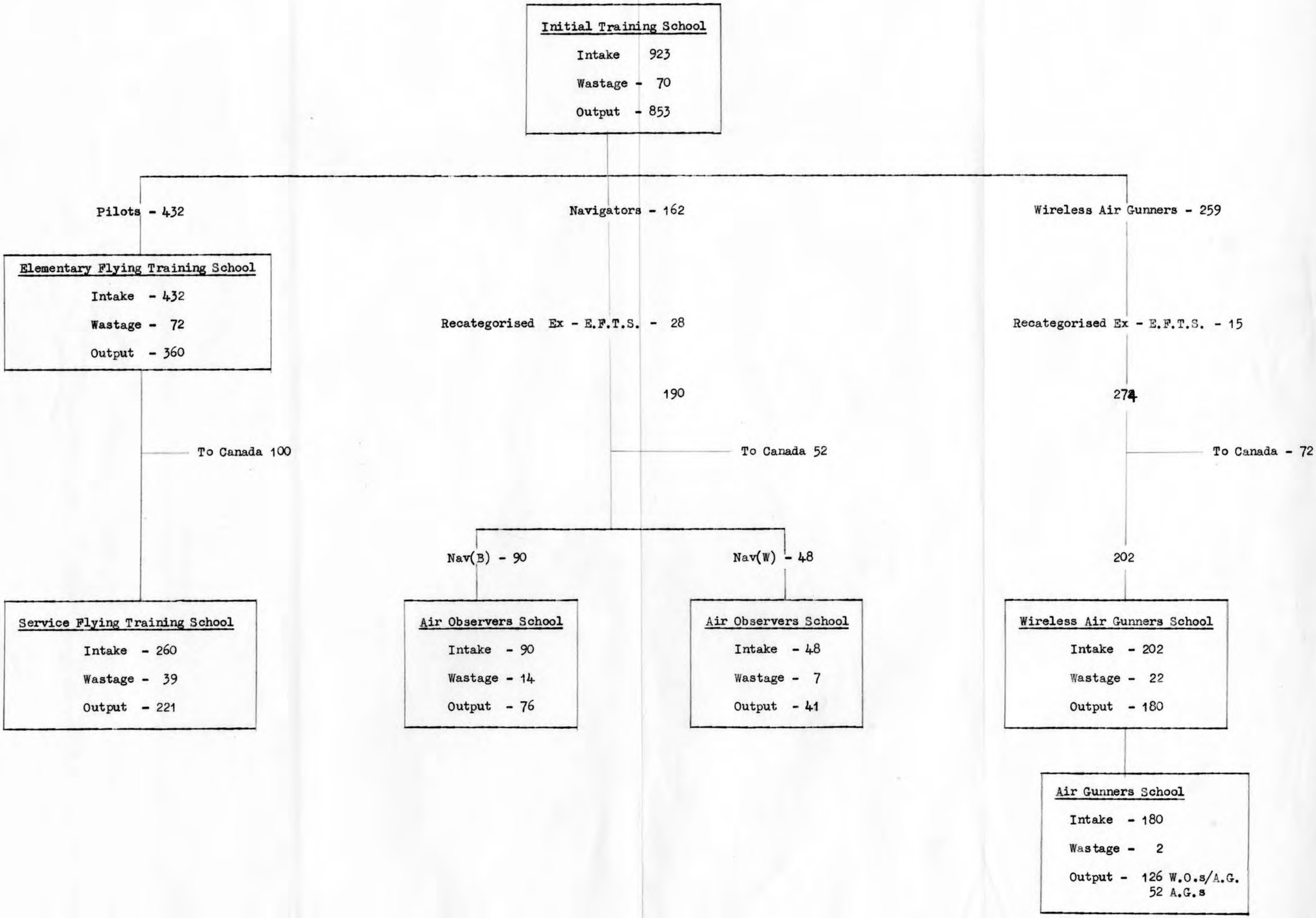
APPENDIX 70

E.A.T.S. SCHOOLS IN AUSTRALIA - PLANNED FLOW OF TRAINEES - MARCH 1943



APPENDIX 71

E.A.T.S. ORGANISATION IN AUSTRALIA ON THE BASIS OF 1,000 TRAINEES PER CALENDAR MONTH OR 923 PER FOUR WEEKS INTAKE TO I.T.S., DECEMBER 1943



APPENDIX 72

E.A.T.S. REORGANISATION IN AUSTRALIA, 1944

Initial Training Schools

No. 4 I.T.S. Victor Harbour disbanded 3 December 1944.
No. 6 I.T.S. Bradfield Park disbanded 8 December 1944.

Elementary Flying Training Schools

No. 1 E.F.T.S. moved from Parafield to Tamworth on 29 May; disbanded 12 December 1944.
No. 5 E.F.T.S. Narromine disbanded 14 August 1944.
No.10 E.F.T.S. Temora ceased E.F.T.S. training on 15 September 1944 and reorganised as a grading school.

Service Flying Training Schools

No. 1 S.F.T.S. Point Cook disbanded 15 September 1944. Half the Oxford training at Point Cook was transferred to No. 6 S.F.T.S. Mallala, which reduced its Anson establishment and carried out half Oxford and half Anson training.
No. 7 S.F.T.S. Deniliquin was reduced to half size on 1 October and part of the school was used as an Advanced Flying and Refresher Wing.

Air Observers Schools

No. 1 A.O.S.	Evans Head. Trained Navigators and Air Bombers	) Capacities
No. 2 A.O.S.	Mount Gambia. Trained Navigators/Wireless	) reduced on
No. 3 A.O.S.	Port Pirie. Trained Navigators/Bomber	) 16 September 1944

Wireless Air Gunners Schools

No. 2 W.A.G.S. Parkes closed 3 February 1944.
No. 3 W.A.G.S. Maryborough closed 12 October 1944.

Air Gunners School, West Sale

Capacity increased on 11 September to 322 - 240 A.G.s., 30 W.O.s/A.G., 52 Flight Engineers.

APPENDIX 73

SUMMARY OF THE ANNUAL OUTPUT OF R.A.A.F. PERSONNEL 1939-1945

Category	1939	1940	1941	1942	1943	1944	1945	Total
Output in Australia								
Pilots	56	120	1,082	3,924	3,713	1,884	219	10,998
Observers and Navigators/Bomber	-	56	639	1,618	1,688	834	67	4,902
Navigators	-	-	-	-	-	97	71	168
Navigators/Wireless	-	-	-	-	195	528	136	859
Air Bombers	-	-	-	-	-	92	67	159
Wireless Operators (Air Gunner)	-	64	937	1,899	2,692	1,338	228	7,158
Air Gunners	-	10	253	565	1,252	949	257	3,286
Flight Engineers	-	-	-	-	21	224	124	369
TOTAL	56	250	2,911	8,006	9,561	5,946	1,169	27,899
Output in Canada								
Pilots	-	37	1,025	926	1,009	676	372	4,045
Observers and Navigators/Bomber	-	-	331	255	97	15	1	699
Navigators	-	-	-	120	368	375	81	944
Air Bombers	-	-	-	38	340	350	71	799
Wireless Operators (Air Gunner)	-	-	687	374	732	814	268	2,875
Air Gunner	-	-	21	42	71	92	18	244
TOTAL	-	37	2,064	1,755	2,617	2,322	811	9,606
Output in Southern Rhodesia								
Pilots	-	-	233	281	-	-	-	514
Observers and Navigators/Bomber	-	-	9	52	-	-	-	61
Air Gunners	-	-	3	5	-	-	-	8
TOTAL	-	-	245	338	-	-	-	583
Total R.A.A.F. Output								
Pilots	56	157	2,340	5,131	4,722	2,560	591	15,557
Observers and Navigators/Bomber	-	56	979	1,925	1,785	849	68	5,662
Navigators	-	-	-	120	368	472	152	1,112
Navigators/Wireless	-	-	-	-	195	528	136	859
Air Bombers	-	-	-	38	340	442	138	958
Wireless Operators (Air Gunner)	-	64	1,624	2,273	3,424	2,152	496	10,033
Air Gunners	-	10	277	612	1,323	1,041	275	3,538
Flight Engineers	-	-	-	-	21	224	124	369
GRAND TOTAL	56	287	5,220	10,099	12,178	8,268	1,980	38,088

APPENDIX 74

SUMMARY OF THE TOTAL OUTPUT OF AUSTRALIAN PERSONNEL DURING THE WAR

A. Trained in Australia

(i) Fully Trained

		Disposal	
		R.A.A.F.	R.A.F.
Pilots	10,998	5,489	5,509
Navigators	168	168	-
Observers and Navigators/Bomber	4,902	1,302	3,600
Navigators/Wireless	859	691	168
Air Bombers	159	159	-
Wireless Operators/Air Gunner	7,158	2,984	4,174
Air Gunners	3,286	991	2,295
Flight Engineers	369	369	-
TOTAL	27,899	12,153	15,746

(ii) Partially Trained

(a) Despatched to Canada:-	
Pilot Pupils (ex E.F.T.S.)	4,760
Observer and Navigator (ex I.T.S.)	2,282
W.Op./A.G. (ex I.T.S.)	3,309
TOTAL	10,351
(b) Despatched to S. Rhodesia:	
Pilot Pupils (ex I.T.S.)	674

B. Completed Training in Canada

Pilots	4,045	
Navigators	944	
Observers and Navigators/Bomber	699	- All available for service
Air Bombers	799	with the R.A.F.
Wireless Operators/Air Gunner	2,875	
Air Gunners	244	
TOTAL	9,606	

C. Completed Training in S. Rhodesia

Pilots	514	
Observers and Navigators/Bomber	61	- All available for service
	8	with the R.A.F.
TOTAL	583	

Notes:

(a) The figures showing the output of fully trained personnel in Australia include 116 pilots, 17 observers and 10 air gunners who were trained between the outbreak of war and the beginning of the Empire Air Training Scheme.

(b) The 369 flight engineers received their flying training at operational training units, and were therefore outside the scope of the Empire Air Training Scheme.

(c) The actual number of aircrew fully trained in Australia under the E.A.T.S. agreements was 27,387.

APPENDIX 75

PLANNED SEQUENCE OF TRAINING IN NEW ZEALAND, JULY 1941

Pre-Entry Training

Lasting 4-6 months according to educational standard of candidates

Initial Training School

	Pilots	Observers	W.Ops/A.G.
Course Length (Weeks)	6	8	4
Capacity	380	96	72
Intake *	190	48	72
Output *	172	42	72

* Pilots every 3 weeks; Observers & W.Ops/A.G. every 4 weeks

Pilots

E.F.T.S. (4 schools)

E.F.T.S. Nos.	1 and 2	3 and 4
Course Length (Weeks)	6	6
Capacity	76	100
Intake *	38	50
Output *	32	42

* Every 3 weeks

Observers and W.Ops./A.G.

Observers	42 every 4 weeks
W.Ops/A.G.	72 every 4 weeks

Pilots

S.F.T.S. (3 schools)

Course Length (Weeks)	12
Capacity	128
Intake *	32
Output *	27

* Every 3 weeks

To Canada

Pilots (52 every 4th and 8th weeks
(104 every 12th week

Planned Output Per Year

In New Zealand

Pilots - 1,464

In Canada

Pilots - 752
Observers - 442
W.Ops/A.G. - 754

APPENDIX 76

SUMMARY OF OUTPUT OF R.N.Z.A.F. AIRCREW PERSONNEL, 1939-1945

Category	1939	1940	1941	1942	1943	1944	1945	Total	Remarks
A. Output in New Zealand									
Pilots	20*	807*	1,253	1,377	1,105	1,030	526	6,118	* Includes 509 trained prior to the E.A.T.S.
Navigator/B.	-	165	-	-	-	-	-	165	Trained prior to the E.A.T.S.
Air Gunners	-	208	-	-	-	-	-	208	
Total:	20	1,180	1,253	1,377	1,105	1,030	526	6,491	
B. Output in Canada									
Pilots	-	-	418	580	545	575	102	2,220	
Navigator/B	-	-	330	357	49	78	15	829	
Navigator/W	-	-	-	-	-	11	19	30	
Navigator	-	-	-	187	285	238	14	724	
Air Bomber	-	-	-	89	264	280	1	634	
W.Op./A.G.	-	-	604	469	397	529	123	2,122	
Air Gunner	-	-	38	138	145	96	26	443	
Total:	-	-	1,390	1,820	1,685	1,807	300	7,002	
C. Overall R.N.Z.A.F. Output									
Grand Total	20	1,180	2,643	3,197	2,790	2,837	826	13,493	

APPENDIX 77

THE REDUCTION OF THE SOUTH AFRICAN TRAINING ORGANISATION

Unit	Location	Date Closed
I.T.W.	Lyttleton	11. 9.45
E.F.T.S. No.		
1	Baragwanath	8. 3.44
2	Randfontein	5. 8.44
30	Wonderboom	5. 8.44
4	Benoni	24. 6.45
5	Witbank	11.11.44
6	Potchefstroom	6.10.45
7	Kroonstad	16.12.44
S.F.T.S. No.		
1	Kimberley	2.12.44
2	Vereeniging	8.12.45
16	Waterkloof	7. 6.44
4	Nigel	8. 3.46
5	Standerton	17. 3.45
6	Pietersburg	18.11.44
7	Bloemspruit	17. 3.45
E.A.N.S.	East London	29. 4.45
C.A.N. & B.G.S. No.		
1	East London	31. 3.45
2	Port Elizabeth	31. 3.45
3	Youngsfield	27. 1.45
4	Grahamstown	21. 4.45
5	Oudtshoorn	21. 4.45
43	Port Alfred	23. 7.45
7 A.N.S.	Queenstown	17. 2.45
Air Armament School	Youngsfield	21. 8.45
Signals School	Bloemfontein	29. 9.45

APPENDIX 78

Summary of the Annual Output of Aircrew under the Joint Air Training Scheme in South Africa

Category	R.A.F. or S.A.A.F.	24. 2.41 to 31.12.41	1942	1943	1944	1945	1.1.46 to 8.3.46	Total
Pilots	R.A.F.	-	575	1,512	1,764	412	50	4,313
	S.A.A.F.	761	902	1,015	1,027	418	-	4,123
Navigators/Bomber and Observers	R.A.F.	597	1,602	1,203	1,114	601	-	5,117
	S.A.A.F.	166	413	582	701	210	-	2,072
Navigators	R.A.F.	-	527	1,675	1,811	1,040	-	5,053
	S.A.A.F.	-	-	-	-	-	-	-
Air Bombers	R.A.F.	-	170	873	892	469	-	2,404
	S.A.A.F.	-	-	-	-	56	-	56
Wireless Operators (Air Gunner)	R.A.F.	-	-	-	-	-	-	-
	S.A.A.F.	137	445	551	584	192	-	1,909
Air Gunners	R.A.F.	-	-	128	194	123	-	445
	S.A.A.F.	109	123	166	147	77	-	622
Flight Engineers	R.A.F.	-	-	-	-	-	-	-
	S.A.A.F.	-	-	-	42	37	-	79
TOTAL	R.A.F.	597	2,874	5,391	5,775	2,645	50	17,332
	S.A.A.F.	1,173	1,883	2,314	2,501	990	-	8,861
GRAND TOTAL		1,770	4,757	7,705	8,276	3,635	50	26,193

Notes (1) No precise figures of the aircrew output in South Africa during the period between the outbreak of war and the commencement of the J.A.T.S. are available. It is estimated however, that approximately 650 pilots, 200 observers and 100 wireless operators (air gunner) were trained between September 1939 and December 1940.

(2) The R.A.F. figures in the above table include all Allied personnel trained in South Africa. These amounted to 45 pilots, 127 navigators/bomber and 118 air gunners, most of whom were Greeks and Yugoslavs.

(3) The output under the J.A.T.S. during the war was 26,107 aircrew, 86 R.A.F. pilots were trained after 2 September 1945, the last course graduating on 8 March 1946.

APPENDIX 79

SUMMARY OF THE ANNUAL OUTPUT OF AIRCREW IN SOUTHERN RHODESIA

3 SEPTEMBER 1939 - 9 APRIL 1946

Category	Nationality	3. 9.39 to 31.12.39	1940	1941	1942	1943	1944	1945	1.1.46 to 9.4.46	Total
Pilots	R.A.F.	15	110	1,051	1,385	2,083	1,571	1,036	28	7,279
	R.A.A.F.	-	-	233	281	-	-	-	-	514
Navigators/Bomber	R.A.F.	-	-	14	166	224	228	85	-	717
	R.A.A.F.	-	-	9	52	-	-	-	-	61
Air Gunners	R.A.F.	9	-	107	415	452	439	169	-	1,591
	R.A.A.F.	-	-	3	5	-	-	-	-	8
Total	R.A.F.	24	-	1,172	1,966	2,759	2,238	1,290	28	9,587
	R.A.A.F.	-	-	245	338	-	-	-	-	583
Grand Total		24	110	1,417	2,304	2,759	2,238	1,290	28	10,170

Notes: (a) Personnel who graduated in 1939 were trained by the Southern Rhodesian Air Force Training Flight, before the Rhodesian Air Training Group was formed. A further 62 pilot pupils (not included in the above table) were given elementary instruction and sent to No. 4 S.F.T.S., Habbaniya to complete their training before the flight disbanded in March 1940.

(b) Southern Rhodesian personnel, totalling approximately 400 were enlisted into the R.A.F.V.R. and therefore included as part of the R.A.F. output.

(c) The R.A.F. figures also include approximately 200 personnel of the Allied Air Forces, chiefly Greeks, Yugoslavs, French and Belgians, trained in the colony.

(d) S.A.A.F. personnel (about 50 in all) who were trained in S. Rhodesia and subsequently served with the R.A.F. are also included in the R.A.F. figures.

(e) The actual number of aircrew trained during the war was 10,107. Sixty-three pilots graduated after 2 September 1945, the last course graduating on 5 April 1946.

APPENDIX 80

THE ORIGINAL ARNOLD SCHEME - JUNE 1941

Location	Capacity	Intake at each school	Course length	Output at each school	Aircraft
		Primary Schools (civilian operated)			
Albany, Georgia	300	550 every 5 weeks	10 weeks	440 every 5 weeks	Stearman PT-17's or Fairchild PT-19's
Lakeland, Florida	180				
Tuscaloova, Alabama	202				
Americus, Georgia	106				
Camden, S. Carolina	106				
Arcadia, Florida	206				
		Basic Schools (Service operated)			
Macon, Georgia	340	440 every 5 weeks	10 weeks	440 every 5 weeks	Vultee BT-13's or North American BT-14's
Montgomery, Alabama	340				
Augusta, Georgia	200				
		Advanced Schools (Service operated)			
Albany, Georgia	280	440 every 5 weeks	10 weeks	440 every 5 weeks	North American AT-6's
Montgomery, Alabama	280				
Selma, Alabama	320				

There were various modifications to the original plan:-

a. The Primary School at Camden ceased training RAF pupils after the first course passed out on 16 August, and all further intakes were concentrated into the five remaining schools.

b. Intakes into basic training were concentrated at two schools (Macon and Montgomery) instead of three.

c. The advanced school at Albany trained only one course of RAF pupils (from 5 November 1941 to 3 January 1942). This commitment was taken over on the commencement of the 2nd intake at Dotham, equipped with AT-6's, on 17 December 1941.

APPENDIX 81

THE TRAINING ORGANISATION IN THE UNITED STATES AT THE TIME OF THE SIGNING OF THE ATP AGREEMENT

Unit	Location	Aircraft	Pupil Capacity	Course Length (Weeks)		RAF Staff	Remarks
				Primary	Basic-Advanced		
The All-Through Scheme - Pilot Training							
BFTSs							
No. 1	Terrell, Texas	Stearman Vultee Harvard	200	14	14	1 CFI 1 CGI 1 Adjutant 1 NCO (PTI) 1 NCO (Armament)	
No. 2	Lancaster, California	Stearman Vultee Harvard	200	14	14	1 CFI 1 CGI 1 Adjutant 2 NCOs	
No. 3	Miami, Oklahoma	Fairchild Vultee Harvard	200	14	14	1 CFI 1 CGI 1 Adjutant 2 NCOs	
No. 4	Mesa, Arizona	Stearman Vultee Harvard	200	14	14	1 CFI 1 CGI 1 Adjutant 2 NCOs	
No. 5	Clewiston, Florida	Stearman Vultee Harvard	200	14	14	1 CFI 1 CGI 1 Adjutant 2 NCOs	
No. 6	Ponca City Oklahoma	Fairchild Vultee Harvard	200	14	14	1 CFI 1 CGI 1 Adjutant 2 NCOs	
No. 7	Sweetwater, Texas	Stearman Vultee Harvard	200	14	14	1 CFI 1 CGI 1 Adjutant 2 NCOs	This school formed on 18 June 1942 by the combination of the three Refresher Schools.

Unit	Location	Aircraft	Pupil Capacity	Course Length (Weeks)	RAF Staff	Remarks
The Arnold Scheme - Pilot Training						
Replacement Centre	Albany		509	4½	1 Admin Officer	
Primary School	Tuscaloosa	Stearman (Pt-17))	1,018	9	1 Admin Officer & RAF Flying Instructor	When the pupil intakes were reduced from 700 to 509 in February 1942 it was not necessary to use all five Primary Schools, and no more RAF pupils were sent to Arcadia. Primary Wastage: 23%
" "	Albany	Stearman ")		9	" "	
" "	Americus	Stearman ")		9	" "	
" "	Lakeland	Stearman ")		9		
Basic School	Macon	Vultee (BT-13))	750	9	" "	Basic Wastage: 6%
" "	Montgomery	Vultee ")			" "	
Advanced School (SE)	Selma	Harvard (AT-6))	280	9	" "	In the beginning of June the policy of sending 60% of the basic output to Twin Engined Advanced Schools was adopted. Albany and Valdosta commenced training RAF pupils on 2 June. The SE Advanced School at Montgomery became redundant and no further intake of RAF pupils took place.
" " (SE)	Dothan	Harvard "))		9	" "	
" " (TE)	Albany	(Cessna (AT-17)) (Curtiss(AT-9))	420	9	" "	
" " (TE)	Valdosta	(Cessna (AT-17)) (Curtiss(AT-9))		9	" "	
The Towers Scheme - Pilot Training						
Primary School	Grosse Ille	Stearman	270	12	1 Admin Officer	This school had a capacity for 90 Fleet Air Arm personnel.
Advanced School	Pensacola	Harvard Catalina	280	14	1 Admin Officer & Training Staff	Also trained 100 Fleet Air Arm personnel.
		(Observer Training (Wireless Operator/ Air Gunner Training)				Courses for these personnel were discontinued in April and June respectively.
The Pan American Airways Scheme - Observer Training						
PAA School	Miami	Commodore	300	15	1 Admin Officer & 7 Training Staff	
The Refresher Courses Scheme						
	Tulsa Lancaster Bakersfield				)))	These schools closed on 1 July 1942 and pupils proceeded to No. 7 BFTS.

RAF Operational Training Units

It was intended to form eleven units at the following locations:-

OTU	Location	OTU	Location
No. 110	Alamogordo	No. 116	Liberal
No. 111	Nassau	No. 117	Garden City
No. 112	La Junta	No. 118	Dodge City
No. 113	Las Cruces	No. 119	Wink
No. 114	Lordsbourg	No. 120	San Antonio
No. 115	Pratt		

APPENDIX 82

SUMMARY OF THE OUTPUT OF RAF AIRCREW IN THE UNITED STATES

Scheme	Category	1941	1942	1943	1944	1945	Total
Refresher	Pilots	425	173	-	-	-	598
Arnold	Pilots	230	3,401	739	-	-	4,370
Towers	Pilots	-	503	698	583	-	1,784
	Observers	60	478	-	-	-	538
	Wireless Operators/ Air Gunner	30	632	-	-	-	662
PAA	Observers	307	870	-	-	-	1,177
BFTS	Pilots	349	1,612	1,862	1,587	1,511	6,921
TOTAL	Pilots	1,004	5,689	3,299	2,170	1,511	13,673
	Observers	367	1,348	-	-	-	1,715
	Wireless Operators/ Air Gunner	30	632	-	-	-	662
GRAND TOTAL		1,401	7,669	3,299	2,170	1,511	16,050

Notes

(i) There were also 558 American cadets trained at the BFTSs, 303 graduating in 1943, and 255 in 1944.

(ii) There were also 2,081 Fleet Air Arm pilots trained under the Towers Scheme.

APPENDIX 83

OUTPUT OF THE TRAINING ORGANISATION IN INDIA, 1940-1945

		1940	1941	1942	1943	1944	1945	Total
Pilots	IAF	48	142	161	164	159	150	824
	RAF	24	25	61	55	-	-	165
Observers	IAF	17	19	52	5	-	-	93
	RAF	7	8	6	-	-	-	21
W Ops/AG	IAF	13	19	24	43	52	34	185
Air Gunners	IAF	-	4	5	2	6	-	17
Flight Engineers	RAF	-	-	-	14	-	-	14
TOTAL	IAF	78	184	242	214	217	184	1,119
	RAF	31	33	67	69	-	-	200
GRAND TOTAL		109	217	309	283	217	184	1,319

Output of IAF Personnel in the United Kingdom and Canada

United Kingdom	15	pilots
	4	navigators
	1	air bomber
	6	wireless operators/air gunner
	2	air gunners
	28	
Canada	18	pilots

APPENDIX 84

SUMMARY OF AIRCREW OUTPUT IN THE MIDDLE EAST

	3.9.39 to 31.12.39	1940	1941	1942	1943	1944	1945	Total
Pilots	39	156	78	-	-	-	-	273
Observers	-	14	24	-	-	-	-	38
WOs/AG	-	-	-	-	59	1,307	743	2,109*
Air Gunners	-	33	19	-	-	788	321	1,161
TOTAL	39	203	121	-	59	2,095	1,064	3,581

* Received gunnery training only. 1,430 received 6 weeks' air gunnery course and 679 received 2 weeks emergency ground gunnery course.