The ROUNDEL

VOL. 3, No. 5
APRIL 1951

ROYAL CANADIAN AIR FORCE

The ROUNDEL

Issued on the authority of
THE CHIEF OF THE AIR STAFF
Royal Canadian Air Force

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* * * CONTENTS * * *

This Month's Cover

Approximately 1100 recruits are entering the R.C.A.F. each month. Three of them are shown on our cover enjoying their first meal in the Manning Depot at St. Johns, P.Q.

EDITORIAL OFFICES:
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Ottawa, Ont.

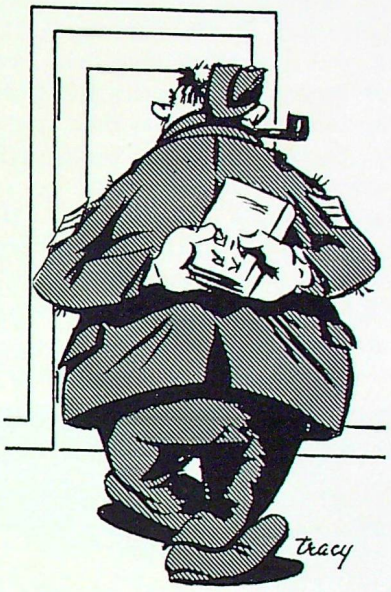
Sgt. Shatterproof Feels No Surprise

Sir:

It was with horror — though not with surprise — that I read Engineering Order 00-25-1.* It had, I confess, hitherto escaped my notice. Even an eagle has but two eyes. Even Shatterproof cannot detect and parry every thrust made by the Brass. I would therefore ask you to thank Flt. Sgt. Gates for his timely vigilance. With such men as he guarding my back, I feel confident that the plight of the boys in the field, grave though it may be, is not yet desperate beyond all hope of amelioration.

I have said that I felt horror, but no surprise. After all, Sir, it was only to be expected that the Brass would strike early in the year. In 1950 they had experienced several set-backs — notably their historic failure to undermine the airman's will-power by the introduction into his diet of such low-protein dishes as woolly lousewort, rock tripe, and certain of the less palatable lichens that adorn our arctic tundra.** Rankling under defeat, they resolved that 1951 should be a year of triumph. Ever shrewd tacticians, they decided to move in while the boys in the field were still semi-comatose from the New Year's revelry. With the Brass, to think is to act. E.O.00-25-1 is dated "2 Jan 51." There is, I think, no need for further comment.

You will be interested to hear that young Cudgel Fetlock is now an A.C. 2 in the R.C.A.F. You probably recall my having mentioned the lad on more than one occasion in the past. He is the son of my old friend Farmer Fetlock, whose property adjoins the aerodrome and with whom I dine every Sunday evening. He is a rather high-spirited boy, and when he was sixteen I frequently served as an unwilling target for his slingshot. In fact, so irresistible to him did my 240 lbs. of



bone and muscle seem to be, that I more than once considered abandoning my weekly visits until he should have reached more mature years. However, my natural fortitude — and the shortcomings of the Mess diet — prevailed, and I continued to press on undaunted through the hail of lead pellets.

But we Shatterproofs have more in common with the elephants than mere bulk and strength. We never forget. Thus, when Cudgel's eighteenth birthday arrived last January, my scars began to tingle. I saw my opportunity to kill three birds with one stone. "I will," I told myself, "serve my Country, make a man out of a hooligan, and at the same time remove a dyspeptic influence from the Fetlock table. Young Cudgel shall join the Service."

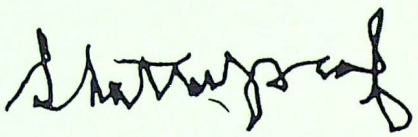
Using that honey-tongued rhetoric which once earned me the title of "The Demosthenes of

*See page 48.

**See Sgt. Shatterproof's polemic in "The Roundel" for April 1950.

Medicine Hat," for three weeks I painted the delights of Air Force life to young Cudgel. At first he refused to listen, but his interest was eventually aroused when I began to speak of the trips to Hawaii and Tahiti which are everyday occurrences in an airman's career, of the fortunes that have been amassed by hundreds of ambitious A.C.2's at the game of "Ace-away" in the town of Whitehorse, and of the alarming numbers of R.C.A.F. personnel of all ranks who have been lost to the Service simply because British peeresses and American heiresses would insist on marrying them . . . When last I heard of young Cudgel, he was doing thirty days' detention.

In closing, I would like to draw your attention to the fact that the February issue of "The Roundel," not content with once more holding up the R.C.A.F. to the mockery of all cultured people in our country, is also attempting to plunge Canada into a war with the United States. On page 1 I find a word which could not appear even in a dictionary written by an insane illiterate, and on page 42 I find the makings of an international incident. What, may I ask you, Sir, does "re-resolved"* mean? And when did Canada have a "War Department"** to which anyone applied, fifty years ago, "for experiments with military automobiles"?



*Nothing. It's a misprint. – Editor.

**Never. Acknowledgement to U.S. "Army Navy Air Force Journal" was accidentally omitted.

Flying Man

Whatever is impossible to him, whatever is forbidden him by his own very nature, remains for man an eternal temptation. He can imagine nothing worse than living just as himself. That is why he envies the fish the freedom with which they play in the sea, delighting in its depths no less than upon its surface.

Even more jealous are we of those beings whose kingdom is the air and who seem to us so happy in it. Their daily task is our flight of fancy. Their destined way of life is the very pattern of our dreams.

Therefore we have done what we must in order to liken ourselves to these flying creatures. Out of wood and cloth we have made machines, and we have provided them with a rushing stream of air which drives them into the lofty heavens; and thus we venture into the thin atmosphere far above the highest clouds. Death flies with us. He follows us into the sun, he crosses the oceans, he passes over the faces of all maps. He looks down upon Paris as upon a mere blob of spittle. But, proud though he may be, and drunk with his new opportunities, he is a very small potato in the eyes of this flying man who counts him as less than nothing.

This contempt is the true secret of man's flight.

(*Paul Valéry: in "Forces Aériennes Françaises".*)

A.M.E.S. 894: PART I

The Story of a Mobile Radar Unit in South Africa

By Marshall S. Killen

("The Roundel" is fortunate in having obtained from Mr. Killen permission to present to its readers his story of a typical mobile radar unit during the North African Campaign of the Second World War. Mr. Killen, who is now back with the Western Union Cable Company in North Sydney, N.S., has had a long and varied career in telecommunications. From 1922 to 1925 he was a radio operator with the British Army in Northern Ireland. After this he served at Anzio and Rome for two years with the Italian Submarine Cable Company, and then spent thirteen years with the Western Union Cable Company at Horta in the Azores. In November 1940 he came to Canada to enlist in the R.C.A.F. Sent to England as an LAC for a four-week radar course at Cramwell in April 1941, he was commissioned in May 1942. He left the R.C.A.F. as a Flight Lieutenant in November 1945, but continues to maintain close contact with the Service through the medium of the Air Force Amateur Radio System. He is Squadron Controller of the A.F.A.R.S. Cabot Squadron, for whose organization he was himself responsible.
— EDITOR)

PREFACE

DURING THE SECOND WORLD WAR more than five thousand trained radar personnel went overseas from Canada. To most of them the subsequent years of war were to bring nothing but monotony and loneliness in remote stations on the rugged coasts of the British Isles. To many more they brought an even less enviable life at isolated spots on the east and west coasts of Canada and in Newfoundland — less enviable because its hardships were greater and because there was not much chance of its dreary routine being broken by contact with the enemy. But for those few hundred of us who were sent out from the United Kingdom with mobile radar units to the Middle East, North Africa, India and Ceylon, there was no lack of excitement and action. It is with a group of men in this last category that my story deals.

The unit to which they belonged was known as A.M.E.S. 894. The letters A.M.E.S. stood for "Air Ministry Experimental Station," and all mobile radar units were given an A.M.E.S. number on formation. A.M.E.S. 894 was one of the most successful of all the radar units sent to North Africa. At the conclusion of the Tunisian campaign, it had controlled eighty-five interceptions that resulted in the destruction of sixty-two enemy bombers, with a further twenty-three "probables" or "damaged." Honesty prompts me to add that our success was very largely due to the fact that we happened to find ourselves in the right places at the right time.

Although an R.A.F. unit, A.M.E.S. 894 was universally regarded as a Canadian outfit, because the Commanding Officer, the Adjutant, and all but one of the mechanics were Canadians. The fact that all the key personnel were Canadians

had quite an effect on those who were not. In the course of time they began to think of themselves too as being Canadian — although I sometimes wondered if the occasional issue of free cigarettes from Canada may not have had something to do with this!

THE UNIT IS BORN

The story of A.M.E.S. 894 begins in Northern Ireland in 1942, while I was serving on a radar station used in the defence of the city of Belfast. One morning in August an urgent signal arrived ordering me to proceed to No. 21 Signal Training Unit at Renscombe Down, near Swanage, in Dorsetshire.

On arrival there, I found that radar men from all over the United Kingdom were pouring in. Since all of us were volunteers for overseas service, it was evident that something very much out of the ordinary was being planned. Sure enough, on the following morning all the radar officers were paraded and informed that a number of special mobile units were to be formed and trained on the Down prior to being sent overseas on a special mission. The officers present were to form the nuclei of the units from among the radar mechanics and operators who had already arrived at No. 21 S.T.U. Non-technical personnel were to be drafted in later and posted to the various units. For my own crew I naturally picked as many Canadians as I could. My unit officially came into being on 23 August 1942. Pending the allocation of an A.M.E.S. number, it was known as "GE" crew. Eight other crews were in training at the same time and more were being formed as personnel became available.

Renscombe Down was the old home of the Telecommunications Research Establishment, and some of the most brilliant scientists in Britain had formerly worked there. It was, indeed, the real birthplace of British radar, and many and weird were the contraptions which had issued forth from its well-guarded compounds. At the time of our arrival the camp was practically deserted, as T.R.E. had been moved to the Midlands in order to escape the watchful eye of the Germans.

Flt. Lt. M.S. Killen.

Training was carried out with mobile equipment of various types, and our unit was trained on what was known as GCI/COL (Ground-Controlled Interception/Chain Overseas Low) gear. This equipment, when located on high cliffs overlooking the sea, could be used for the detection at long range of low-flying enemy aircraft and surface vessels. Alternatively, it could be placed on any flat terrain and used in conjunction with night-fighter aircraft to intercept enemy bombers. As well as receiving instruction on how to erect and dismantle our equipment quickly, we engaged in field exercises and commando training, listened to technical and other lectures, and were given practice in handling motor transport of various kinds. It goes without saying, of course, that we were also dragged out for the inevitable before-breakfast P.T. from the very day of our arrival.

Another crew ("GA", later to become A.M.E.S. 893) had been formed some months earlier and had been training by itself in various parts of

England. To this unit fell the task of imparting to us newcomers the results of its training and to attempt to bring us up to its own standard of efficiency in the few short weeks available. The senior N.C.O. of the unit was Flt. Sgt. William Cox, M.M., the hero of the Bruneval radar raid. Perhaps some of my readers have read the story of this raid, and of how Flt. Sgt. Cox sang "The Rose of Tralee" before making his jump from the Whitley bomber. This N.C.O. was later to become my Senior Warrant Officer in North Africa and Italy. He possessed the rare virtue of being a fine disciplinarian without losing his popularity. It was a sad parting when I said good-bye to him in Leghorn before returning to Canada.

"GA" crew demonstrated to each unit, once only, how to drive the vehicles on to the operation site, how to align them, how to erect the equipment, and finally how to dismantle everything, pack, and drive away. Thereafter it functioned purely in an advisory and trouble-shooting capacity. Its own time for the whole procedure was incredible: it took fifty-three minutes from the moment of moving on to the site to the moment of driving away. At first, "GE" crew trod rather haltingly in the masters' footsteps. After struggling for more than two hours, with much shouting and confusion, we found ourselves in a complete state of chaos. Nuts and bolts which we knew to be essential were, none the less, "left over"; inter-vehicle cables wandered in and out among the wheels of the trucks and were certainly not joined to the sockets for which they were intended; and the rotatable aerial was susceptible of no movement whatsoever.

Following this exhilarating experience, an informal meeting of all our technical personnel was held in the corner of the training-field and a plan was worked out whereby each man, irrespective of rank, was to perform a certain job in the erection and dismantling of the convoy. We determined that, instead of attempting to break any time records, we would start by really learning where all the bits and pieces fitted. Within three days our drill was producing results, and by the end of the first week we had managed to become operational in about one hour. Two days before training on the Down ceased, our erection time was thirty-two minutes. The convoys themselves took a pretty bad beating. The equipment had not been designed to stand being erected and pulled apart five or six times daily, and by the time the training of the first eight crews was completed, it was in rather sorry shape.

Meanwhile, the non-technical personnel for the various units were arriving in a steady stream. The administrative officers (or "adjutants" as they were generally called) arrived in a group, and the one with whom I teamed up was Pilot Officer Ralph Hurcombe, from Hamilton, Ont. A former announcer at several Canadian radio stations, he had gone to Radio Normandie at Fécamp in 1939, as a commercial announcer, and had managed to escape from France just one step ahead of the Nazi irruption in June 1940.

Our defence section consisted of fifteen gunners of the R.A.F. Regiment. Though this was the only section which came to us ready-formed as a group, they turned out to be a fine bunch of lads. Before the end of August, our unit had reached its establishment strength of fifty-six men.

It was only after the arrival of an M.O., who had recently returned from Tobruk to give us lectures on conditions in tropical countries, that we discovered that our ultimate destination was not to be the North Pole. We received from him the impression that life overseas was going to be anything but a picnic, and that we need not expect to find any little girls waiting on the beaches to welcome us when we landed. Too intimate friendship with native girls, indeed, was one of the dangers that he most particularly stressed. Apart from the evident delight with which he stuck needles into us, we all liked him — until, finally, he gave us all several extra-heavy shots and then told us we would have to march with full kits to Swanage, several miles away, the next morning at 0600 hours. Go we did, but we at least managed to obtain transport for the kit and some of the fellows who were too ill to march.

Meanwhile, field exercises and commando training continued. It was great fun — except for the unfortunate individuals who had to carry the Vickers machine guns. After supper each night,

there were M.T. driving exercises and road tests. Only three trained drivers were supplied to each unit, so ten men (plus thirteen "reliefs") from every crew had to be trained quickly to drive heavy three-ton Crossleys. Our first road test was a flop. We started out with seven Crossleys and returned to camp with one. Driving a Crossley was quite an experience. The driver was perched high up, with the engine located inside the cab itself. Since the steering column was vertical, the driving wheel was horizontal, and the driver had to sit bolt upright all the time. The noise was deafening: everything rattled. Cruising speed was twenty miles per hour, though in emergency the terrific speed of thirty miles per hour could be reached.

During the second week of our training, German bombers came over several times at low level and bombed Swanage severely. They were followed on two successive mornings by reconnaissance planes. The Germans must have realized that something was afoot from the number of wheel tracks that rutted the fields — as well as from the sight of the convoys themselves. Since, therefore, we were now considered to have been sufficiently trained technically, it was decided that we could complete our field training elsewhere. I was asked where I would like to take my unit for dispersal training, and I picked Cornwall from the choices offered. Flt. Sgt. Maxim (our senior technical N.C.O.) and I were then sent to Kidbrook Maintenance Unit near London to inspect the technical convoy which was to be ours and which we would not see again until we "hit the beach," wherever that might be. While we went to London, the remainder of the crew was to proceed to Drytree, in Cornwall, and continue field training under Pilot Officer Hurcombe.

* * *

Brief sketches of some of the more prominent personalities among our crew may not be out of place at this point. First of all there was Pilot Officer Hurcombe, our Administrative Officer. He was a great man on R.A.F. rules and regulations, and he ran a very efficient orderly room. After we had arrived in North Africa, his efficiency soon became evident to higher authority; and he was quickly made unofficial Court of Enquiry Officer for our section of Algeria and Tunisia. The other officers called him "Hurky," and borrowed his whisky at every opportunity. I met him again in Naples after the war was over: he was Flight Lieutenant in charge of the British Army Broadcasting Service in Italy.

Flt. Sgt. Andrew Maxim hailed from Niagara Falls, Ont. He was only nineteen when he was selected for our crew, but he had already been through more adventures than most people cram into a lifetime. In 1941 he had been sent to Russia to train Russian crews in the use of mobile radar unit equipment. On the return trip to the United Kingdom in 1942, his ship was one of ten surviving out of thirty which left Russia. As long as Maxie was around, the aggressive spirit of the unit remained at a consistently high level. Besides being a good all-round mechanic, he could turn his hand to almost anything. He was one of the two adventurous boys who crossed the 1600-foot span of the wrecked Falls View bridge in January 1938 just for a lark, and who was arrested by the U.S. immigration authorities for illegal entry. He always felt undressed without his forty-five pistol and a couple of grenades in his pocket. His tent was a small arsenal, and the other sergeants were always complaining because they were afraid they might be blown up at any moment. When Maxie wanted to be alone, he would quietly start to take apart a grenade or a German land-mine. One of the few things he could not do, however, was march in step. Being an individualist of the first order, he did not see why he should cultivate a step that did not suit him. Therefore, on route marches and on parades I invariably put him at the rear of the column. Life for Maxie since his return to Canada must have been a very dull experience.

Sgt. Pacifico Valeriote, from Guelph, Ont., had been a radio operator for the Department of Lands and Forests up in northern Ontario before joining the R.C.A.F. as a radar mechanic. He looked deceptively quiet, was an excellent organizer, and spoke French and Italian fluently. He carried out his liaison duties between the French and ourselves so thoroughly that more than one mademoiselle

fell in love with him. Known as "Puss," he served as an excellent foil to Maxie's boisterousness. After the war, he attended Western University at London, Ontario.

Among the mechanics, our strong silent man was Cpl. Oscar Stevenson, a Torontonian. I often wonder how he has managed to settle down again at his old job of working in a furniture store after all his adventures in Italy and Africa.

We also had among us a school-master, LAC A. W. Stinson, from Port Arthur, Ont. His specialty was radio theory, but first and last he was a born teacher — above all when it came to playing bridge! He is now a Flight Lieutenant in the permanent R.C.A.F.

Possibly our most remarkable radio operator was A.C. 2 Brian Allwood, a South African. This lad could detect aircraft echoes long before most of us could see them, and he could give the height at which the aircraft was flying with a degree of accuracy which meant a great deal to fighter pilots who were intercepting hostile aircraft. Mentioned in despatches for his excellent work, Brian was eventually killed in Italy along with Cpl. Hart, N.C.O. in charge of radio telephone equipment, and LAC Strut, our No. 2 M.T. driver.

Space forbids individual mention at this point of more than one other member of our crew, namely our Senior Controller, Sqn. Ldr. Brown, who was later killed in action in the Arnhem airborne landings, as a Group Captain. Sqn. Ldr. Brown was an ex-pilot from the Battle of Britain, and, before coming to us, his score of successful interceptions was 106. Before he returned to England in late 1943 it was well over the 250 mark. He had been awarded the M.B.E. for shooting down a German bomber when the King came to inspect his G.C.I. station in England. Just as His Majesty was looking at the radar screen, the German obligingly appeared and provided the fitting touch to the royal visit. While an interception was in progress, Sqn. Ldr. Brown would swear like a trooper, and heaven help anyone who was not pulling his weight! Rank meant nothing to him when he was on duty. One night when the operating tender was overcrowded, he told two very senior officers to "get the hell out of here." For some reason, his greatest ambition was to kill a German or an Italian with a rifle — an ambition that he eventually realized when he went ashore with the first troops on the Sicilian landings.

* * *

To return to my narrative. While the rest of the unit was making its way to Drytree, Flt. Sgt. Maxim and I were busy familiarizing ourselves with our future equipment at Kidbrook. Various changes and modifications suggested by us were to be effected before the vehicles left for port of embarkation. I noticed that our destination was coded "Hamble." Though that signified nothing to us then, it turned out later to mean the second invasion convoy destined for Algiers. On the way down to Cornwall, Maxie and I called in at R.C.A.F. Headquarters in London. When I mentioned that I was taking a unit overseas, the officer in charge of comforts gave us ten thousand cigarettes, cartons of chocolate bars and chewing gum, and lots of items such as pajamas, scarves, etc. Needless to say, our welcome was a warm one when we reached Drytree the next evening.

Training at Drytree was comparatively restful. Each night we sent radar operators and mechanics to G.C.I. and C.O.L. stations in the area for a few hours' practical experience, while during the day the entire crew went on route marches and practiced at the buttes with .303 rifles and the then newfangled Sten guns. The route marches were rather pleasant, as they were conducted in battle order on account of the enemy aircraft which were flying over on frequent reconnaissance. Battle order consisted of sections of eight men marching in single file close to the edge of the road, alternate sections being on opposite sides of the road and fifty yards apart. The Cornish countryside was at its best: the blackberries were ripe and there were plenty of country inns at which the men were able to take a rest. We could march for hours without meeting a single motor vehicle of any kind on the road, for gasoline in those days was as scarce as snow in summer.

THE UNIT SAILS

After two weeks of this peaceful life, orders came to proceed immediately to No. 1 Personnel

Despatch Centre at Wilmslow, near Manchester. The Drytree trucks took us into Penzance, and from there we travelled by special train up through England to Wilmslow. The unit stopped at Plymouth for a few hours. At that time it was the most bombed and battered city that any of us had seen. I went along to visit an uncle of my wife who was a doctor in the city, but when I arrived at where his home should have been there was nothing but a hole in the ground. (In order to forestall unnecessary sympathy, let me assure the reader that I was able to locate him elsewhere before proceeding north.)

At one point on the trip up to Wilmslow, our train was held up for two hours while a railroad block, caused by an enemy sneak-raid, was being cleared away. As the train passed through the damaged village steam was still hissing from a locomotive that had been cannon-shelled, while the village church and several houses appeared to be badly damaged. The railroad station was well plastered with cannon shells, but the local people did not seem to be the least excited about it all. By this time they had become used to such experiences.

Wilmslow was a highly organized camp and one of the largest personnel despatch centres in the United Kingdom. Close upon five thousand Air Force personnel must have been there in the fall of 1942, undergoing final training for the task ahead. Being only about fifteen miles from Manchester, where the sun is said to shine on only one day of every year, we had very little fine weather. In fact, it rained almost every day, and if it did not rain, there was usually a thick pea-soup fog to remind us of where we were.

Training at Wilmslow was once again strenuous — route marches of from ten to twenty miles and often with full packs, and there was at least one each day. We were subjected to several assault courses. They were really tough. On the first day two men suffered broken limbs and had to be removed from the draft. In addition, the men had to spend at least one hour drilling on the parade ground every day under the instruction of a disciplinarian N.C.O. Everyone, irrespective of rank, was required to put in many hours at the rifle buttes, and finally there were lectures on camouflage, hygiene, and security. The highlight of the security lectures was the showing of the film "Next of Kin." Just to make sure that everybody fully understood the dangers of talking too much and to the wrong people, it was shown us no less than six times.

Cpl. Plaster, one of the radar operators, had lived near Wilmslow in civilian life. This proved very useful to us, as he knew lots of the local people and where to find tea-shops along the country roads. There was one little old-world tea-shop about six miles from camp which was most popular, and we made sure that we had to pass it on all our route marches. Sgt. Valeriote and I generally got behind the counter and helped the old lady who ran the establishment to hand out cups of tea, buns, and biscuits. After the fifty-odd men were satisfied, a volunteer fatigue party washed the cups. There was also an orchard which attracted us immensely, as the trees were laden with ripe apples, and nobody seemed to be picking them. It was not long until the owner noticed that we halted for a rest near his orchard every day. Apparently he had no means of selling or distributing the fruit, so he came out one morning and told us to take as many as we wished — which was just what our lads had been angling for all the time.

Early in October, arms, ammunition, tropical equipment and khaki battle dress were issued to all personnel. Kitting-out was made to a special scale, and by the time it was completed each man had a heavy load to carry. Then, at the end of October, tropical issues were suddenly withdrawn. This gave us much food for thought, but it turned out to be merely a blind to fool the enemy in case there had been a leakage of information.

During the Wilmslow training, every man was given at least two periods of embarkation leave. The last week of October saw A.M.E.S. 890 and 893 move off to unknown destinations. It transpired that the former went with the first invasion convoy to Oran and the latter to Algiers. Kit-bags, tool kits, and various other cases and boxes belonging to 894, were painted at the beginning of November with code groups which at the time

meant nothing to us. "Hamble," as I have said, turned out to be Algiers, and "P-35" indicated the ship on which we were to embark. Other groups indicated the deck on which the crew would live while on board and the priority of disembarkation at the end of the voyage. All members of the crew were paid up to the end of October and we had to make our wills before leaving Wilmslow.

By November 7th, A.M.E.S. 894 was the last radar unit left at Wilmslow, and we began to wonder what was in store for us. Then, on the eighth, came the great news that the Allies had invaded Vichy-held North Africa at Casablanca, Iran, and Algiers. Although everyone was delighted, each of us felt that we had missed the big show; but, as it turned out, we who were destined for operations east of Algiers, saw far more excitement than any of those who had shared in the original landings.

On November 11th the unit was called on draft, and the next morning at 0200 hours, preceded by a man carrying a green light, we marched (or rather staggered) with our kit for two miles to the railroad station. Flt. Sgt. Maxim tagged along behind with a red lantern. The procession looked most ghostly, especially as there were other R.A.F. units in front and behind us.

After an eight-hour train journey, during which we picked up more Air Force units, we arrived at Greenock on the Clyde, not far from Glasgow. In the loch was the largest collection of ships I had ever seen. Every kind of vessel was represented, from thirty-thousand-ton modern liners down to rusty-looking tramps of less than three thousand tons that were obviously long overdue for a trip to the ship-breakers. We were fairly lucky, as "P-35" turned out to be the S.S. "Leopoldville," a Belgian liner of about 15,000 tons. In peace-time she ran between Antwerp and the Belgian Congo, but for a ship used on the West African run the ventilation was nothing to boast about. All the ship's crew were Belgians or West Coast negroes, and very few of them spoke English.

Already on board when we arrived were the 3rd Battalion of the British Grenadier Guards and No. 241 Spitfire Squadron of the R.A.F. The former impressed us very greatly with their general bearing and discipline. We were lucky in having space allotted to us on the main deck, but even then the men were packed like sardines. At night, when all the portholes were closed because of the blackout regulations, the air was stifling. It must have been much worse for the soldiers on the troop decks, where there were no portholes to open at any time. No beer or spirits was sold in the canteens, but I noticed that several boxes marked "Explosives" were suspiciously light when we reached our destination.

On November the 14th we sailed.

(To be continued)

Red China's Strategy

In Edgar Snow's "The Battle for Asia" there are quoted these words of Mao Tse-tung, uttered in 1936:

"The strategy should be that of a war of maneuver, over an extended, shifting, and indefinite front: a strategy depending for success on a high degree of mobility in difficult terrain, and featured by swift attack and withdrawal, swift concentration and dispersal. It will be a large-scale war of maneuver rather than the simple positional war of extensive trench-work, deep-massed lines and heavy fortifications . . . Fortified warfare must be utilized, but it will be of auxiliary and secondary importance . . . (the enemy's) economy will crack under the strain of a long expensive occupation of China and the morale of her forces will break under a trial of innumerable but indecisive battles."

Questions and Answers

By LAC H. Ziglin, N.W.A.C. Headquarters

I HAVE COMPILED the following list of questions and answers after innumerable discussions with puzzled colleagues all across Canada. It is my earnest hope that they will be of assistance to all who may be called upon to pass tests in what is commonly known as "Service knowledge."

Q. Is there any danger of my freezing to death if I am posted up north?

A. Any airman who tells you he froze to death up north is lying.

Q. Why is our marriage allowance only thirty dollars?

A. This is the maximum allowance for risk pay.

Q. I am a comm. op. Lately I seem to have been making a lot of mistakes with my zeros — sending "500" instead of "5000," etc. I think I am developing a complex about it. How can I overcome my fear?

A. Stop worrying. After all, what's a zero? A mere nothing.

Q. What makes our breakfast eggs taste so unpleasant?

A. The night before.

Q. I have been getting "joe-d" quite often because of my inability to distinguish the S.W.O. from the other N.C.O.'s. How can I correct this fault?

A. When you get that close it's too late to worry about trivialities.

Q. I have been posted to A.F.H.Q. Have you any Mitchells or Daks there?

A. We have checked our nominal roll thoroughly and find we have one Mitchell but no Daks.

Q. I have been awarded 28 days' detention. Will they cut off my long wavy hair in the digger?

A. I have some reassuring news for you. Your hair will not be cut off in the digger. It will be shaved off before you leave the station.

Q. I would like to remuster to air-crew. What are my chances of becoming a belly-gunner?

A. Pull-eeze! Watch your language! We are trying to run a cultured magazine. (You will have to write A.F.H.Q. enquiring as to what vacancies exist for Marksmen Abdominal.)

Q. I have recently acquired my top grouping. Do you think it will be o.k. for me to ask my girl to marry me now?

A. Definitely not. She might say "Yes."

Q. On pay-parade a short while ago I was paid $25.00 too much. I have already talked to the pay-master twice about this and he insists that I have not been overpaid. Shall I take this matter up to higher authority?

A. Yes. Then you'll probably get what's coming to you.

Q. As a cypher-clerk, I am often asked, "MNPRT XTSVU LQTMV RTLJH?" What is the correct reply?

A. "TSK TSK!"

AN INTRODUCTION TO LOGISTICS

("Logistics" is a word with whose sound most of us are much more familiar than we are with its sense. We are therefore proposing to publish a series of five articles designed to give our readers a reasonably comprehensive picture of what the science of logistics really is. Arrangements for preparation of the series were made by the author of the present introduction to the subject. Wing Cdr. Murray, who learned to fly at Camp Borden in 1933 immediately after his graduation from the University of Manitoba, has had considerable experience in the Supply Branch. When the war broke out in 1939, he had already served as a supply officer at all of the R.C.A.F.'s six Stations. Much more recently, he attended the thirteenth course at the R.C.A.F. Staff College, and is now — as he expresses it — "serving his first sentence at A.F.H.Q." in the Directorate of Supply Services. — EDITOR)

By Wing Cdr. W. M. Murray

A WORD TOO LIGHTLY USED

DANIEL BOONE, according to a recent magazine advertisement, never heard of logistics. He was fortunate. No member of the R.C.A.F. (or, for that matter, of any other modern armed service) has been able to escape the word. It glares at us from the newspapers. It is bellowed at us by the radio. And it has even made more than one appearance on the chaste pages of A.F.R.O.'s.

What, though, does it mean?

About a hundred years ago a great Swiss military theorist, Baron Jomini, divided the science of war into three branches: strategy, tactics, and logistics. Strategy and tactics* are (or should be) well recognized, but logistics has been too often ignored or misunderstood — despite the fact that its vital importance has been established without question. To quote General Eisenhower: "Logistics controls all campaigns and limits many."

Definitions of logistics are plentiful, but our need here is to define the term in its broadest aspect. Let us, then, say that logistics is the total process by which the resources of a nation are mobilized and directed to the accomplishment of military aims.

A NATION'S RESOURCES

To wage war with any hope of success, or even to enjoy a reasonably prosperous peace, a nation must be well provided with certain natural resources as listed under the following headings:

Geographical. A good climate, a terrain permitting of a sound transportation system, and safe and convenient harbours.

Natural. Food, iron, coal, oil, and bauxite.

Human. An adequate labour force between the ages of 15 and 65 — *i.e.* about half the population.

Technological. A high average of skilled persons in its labour force.

Mechanical. A well-organized and productive heavy industry.

*Strategy is "the art of military command, of projecting and directing a campaign." Tactics is "the art of handling forces in battle." — (Edward Meade Earle: "Makers of Modern Strategy.")

Transportation. Communications that are able to withstand disruption caused by the enemy — or by nature.

Psychological. A carefully planned propaganda organization. The influence of propaganda, both domestic and from the enemy, on the morale of citizens cannot be over-emphasized.

* * *

In a democracy at peace, only about 20% of the total resources can be diverted from the civilian economy to provide the nation's logistical potential. In war, the limit is about 50%. If it exceeds that figure, the nation will go "broke." It should be remembered, too, that the government must allot shares of the logistical potential to the nation's armed forces, her allies, and to neutrals.

ECONOMIC MOBILIZATION

In order effectively to direct the utilization of its resources during war, a nation must plan and organize the allotment of its logistical potential during peace. This latter process is known as economic mobilization. Let us consider some of its more important aspects.

Intelligence. Information (both military and economic) about the nation and the enemy must be accurate and up-to-date.

Total War. Plans must be made for a "full-out" effort.

Government Controls. Controls on the civilian economy must compensate for war-time disruptions.

Post-war Planning. The release of these controls must be phased with the conversion from war to peace, and with programmes such as the European Recovery Programme.

Procurement Planning. The mobilization requirements of the armed forces must be given priority. Wherever possible, equipment should be standardized between the nation's military and civilian components, and between the nation and its allies.

Strategic Planning. Military aims must be limited by the share of logistical potential allotted to the armed forces.

Conservation Programme. Stockpiling and synthetic plants must be made to compensate for some inadequacies in resources. Reduction of the civilian standard of living must be balanced between the requirements of total war and post-war planning.

Research. A heavy share of the military budget must be spent on devising the best possible tactical weapons.

Allocation of Manpower. Manpower must be controlled by a single agency to ensure an equitable labour force. Since the other half of the population are economic parasites in wartime, the production of food requires about 22% of the population, and industry about 20%. This leaves only 8% for the armed forces.

Governmental Agencies. A minimum of agencies, with full authority and well defined responsibilities, is essential.

Dispersion of Industry. Industry is a primary target for strategic bombers, and should therefore be dispersed. (This is one reason for the development of an aluminum industry in British Columbia.)

Public Opinion. Without the support of public opinion, a democracy cannot even declare war. The mobilization of public opinion is mandatory: economic mobilization plans must be sold to the citizens.

* * *

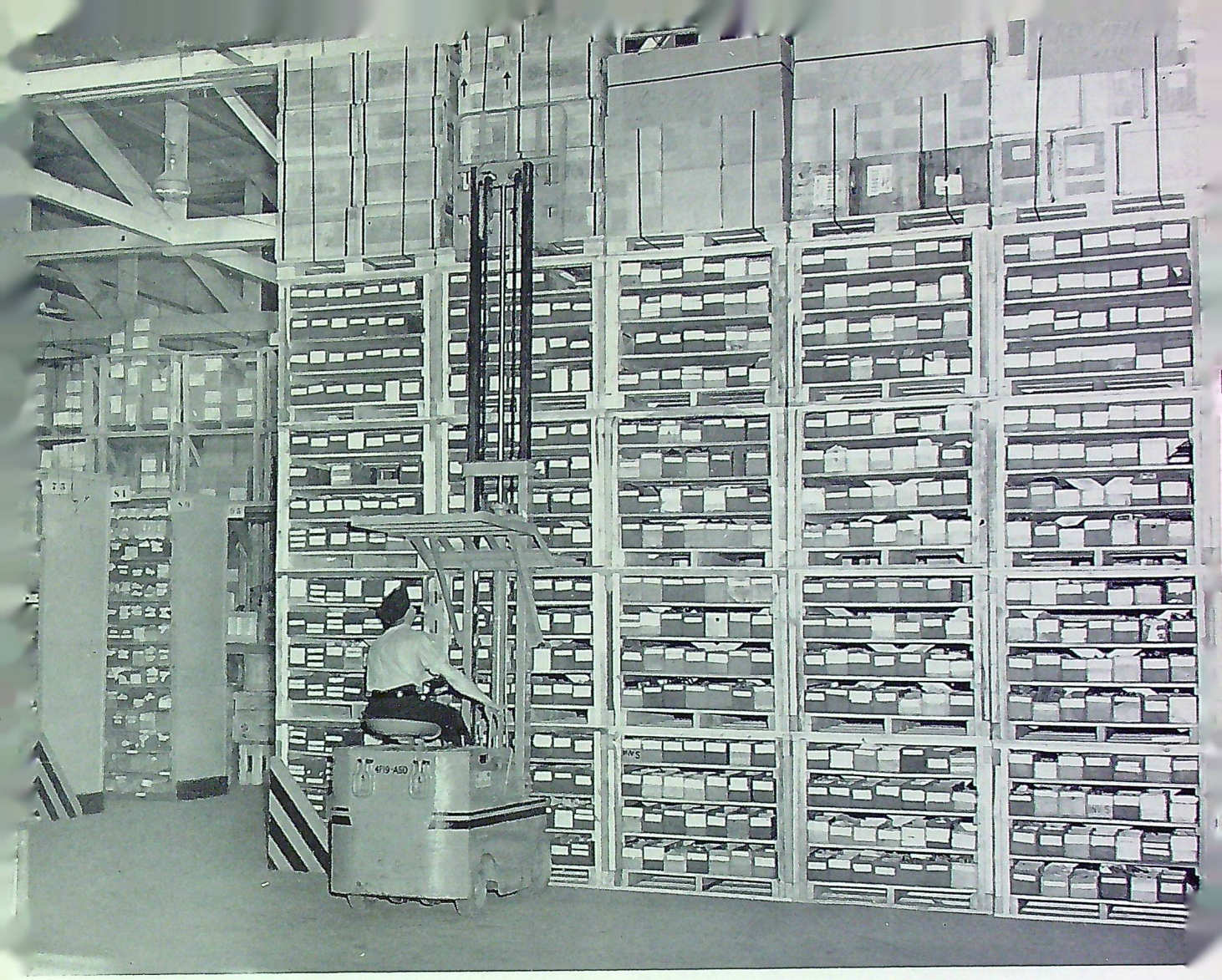
We can see that logistics starts on the farms and in the forests, in the mines — and in the cradles! The nation's resources are mobilized, then processed, converted, and finally transported into the hands of its civilians, military, allies, and also into the hands of neutrals.

MILITARY LOGISTICS

Certain basic principles must be followed in the logistical support of all military operations. They are eight in number.

Mobility. Fighting units, when they move to a new base, should only be encumbered with their immediate requirements and an emergency reserve.

Forward Movement. Logistical units must be located in rear areas so that they may provide the bulk requirements for the bases. The flow of replenishment is forward to the bases. The flow



Old and new warehousing methods at No. 1 Supply Depot, Weston, Ont. Box pallets, 48" x 40" x 40", are tiered four-high, giving a total height of 160". Flat pallets, placed on top of the box pallets, bring the height up to 205". A forklift truck is used to handle materials. In comparison, the bins shown at left of photograph, have a total height of only 117". Their construction precludes high tiering of any weights. Box palletization gives approximately 90% more cubic storage space.

to the rear (which includes requisitions for future requirements) is a comparatively unsteady trickle.

Simplicity. The flow of requisitions or "demands," like all logistical procedures, must be standardized in order to eliminate misunderstanding; and the system must be simplified so as to minimize paper work for the user.

Control. There is never "Enough." It is human to hoard, and the greedy user will make things difficult for the honest one. Controls, such as strength returns and stock reports, are necessary for an equitable distribution of personnel and equipment, respectively.

Economy. Economy is a principle of war that applies to logistics as much as to strategy and tactics. Almost everyone in the R.C.A.F. is dollar-conscious because they are taxpayers. Military logistics must, however, look to the end result to appreciate true economy. By spending a few dollars more for an item with a longer

life or a greater capacity, the overload during the mobilization period can be met.

Flexibility. Strategic plans must be long-range and firm. They are the basis for the calculation of requirements and procurement. Tactical plans are short-range and must be changed to exploit local temporary situations. The distribution pipeline must incorporate a "cushion" (in the form of reserves and overload capacity) to compensate not only for changes in tactical plans, but also for disruptions in industry and transportation.

Time and Space. Every planner must be time-conscious. The strategic planner should appreciate the total "lead-time" (which includes the calculation of requirements, procurement of authorities and bids, and finally production) before equipment may be distributed to user units. This lead-time is twelve months for an average item! Similarly, the time-lag in supplying personnel and facilities will affect the date of a planned operation. The tactical planner must therefore know the aggregate of the time-lag from date of requisition to delivery at base. If the item is not immediately available in the rear areas, it may be days or even weeks before it can be delivered.

Space applies to the geographical area of operations, and although distance can be translated into time, transportation has definite limitations. For example, R.C.A.F. squadrons in Europe must have logistical units in their immediate vicinity (*e.g.* for Sabre spares) because it is impracticable to extend a distribution pipeline indefinitely.

Co-ordination. Logistical activities must be co-ordinated with operational activities. This is a lesson the R.C.A.F. has learned the hard way. To neglect logistics in planning — at any level — is an invitation to disaster.

* * *

Military logistics must apply the above principles to solve the war-time problems of Uncertainty, Magnitude, Distance and Time. Each air force has its own particular problems. U.S.A.F. or R.A.F. experience or methods cannot always be applied directly to the R.C.A.F. Many of our solutions to the problems of the Second World War can no longer be considered adequate. Let us, therefore, look at logistics from the viewpoint of our own Service to-day.

LOGISTICS IN THE R.C.A.F.

Fundamentally, of course, R.C.A.F. logistics is the administration of its resources. Logistics spends all of the R.C.A.F. budget. The planners or strategists can only think, talk and write; and by the time the users or tacticians go to work, the logisticians have spent all the money. In the table that accompanies this article the resources of men (personnel), space (facilities), and materiel are shown in the following time phases:

Requirements — planning the right things.

Procurement — getting the right things in proper quantity and quality.

Distribution — putting the right things in the right place for the right people at the right time.

Maintenance — sustaining the right things.

Evacuation — removing the right things.

Personnel

The official R.C.A.F. definition of logistics* may well be interpreted as including the administration of personnel. In practice, this is not considered as part of the logistics function in the R.C.A.F. For example, logistics policy is the responsibility of the Air Member for Technical Services. However, policy concerning personnel is split between the respective Air Members for Personnel (manning, postings and hospitalization), Air Planning (establishments), Operations and Training (training), and Technical Services (messing).

Facilities

Facilities are meant to include land as well as buildings and utilities. Utilities include the systems for communications, electricity, gas, water and sewage, in addition to air strips, roads, and all other works and fixed station equipment (or "plant") — all empty and unmanned.

The requirements of facilities should be programmed for several years so that they may be sited and developed for war-time expansion. Designing is done by the construction engineering

*See A.F.R.O. 496/49. "Logistics. — That part of military science which embraces the planning for, and the preparation of, all means and facilities required and the implementation of the plan evolved to make an armed force operative and capable of sustaining its actions."

	REQUIREMENTS	PROCUREMENT	DISTRIBUTION	MAINTENANCE	EVACUATION
PERSONNEL R.C.A.F. W.D. Civilians	Establishments	Manning	Training Postings	Messing Medical Welfare	Postings Hospitalization
FACILITIES Land Buildings Utilities	Programme Designing	Contracts Specifications	Construction	Plant Repair Rentals	Plant Removal
MATERIEL Equipment Supplies	Research Development Calculation	Contracts Specifications Production Inspection	Warehousing Transportation	Equipment Repair	Overhaul Salvage Disposal

staff at A.F.H.Q., supplemented by consultant engineering and architectural firms. The contract demand with the plans and specifications is submitted to Defence Construction Limited, a crown company for new construction projects, under the Department of Defence Production. During the Second World War and after, some jobs have been done by Construction and Maintenance Units of the R.C.A.F. to save time or money. Plant repair is done by unit construction engineering sections, C.M.U.'s, or contractors. Rental of services, and of property for temporary activities, is a heavy cost which increases greatly in war time. Only those items of plant which are in short supply are removed from units for redistribution as materiel.

Materiel

The term "materiel" applies to supplies as well as to the ready-for-use "end items" of equipment. Supplies are processed raw materials — rations, stationery, coal, beer, as well as the electricity, gas, water, oil, etc., required by facilities. In fact, materiel includes everything that is used or consumed by military personnel, except fresh air.

Research constantly seeks to improve or supersede items of materiel. Development starts with the research idea or model and, after months or years, ends with a sealed sample. The calculation of requirements is based on the R.C.A.F.'s annual Programme of Activities and consumption statistics. There are various sources for materiel: rations come from the Army, stationery from the King's Printer, canteen and other non-public fund items direct from trade — but other materiel is procured by A.M.C.H.Q. A.M.C.H.Q. does not deal direct with industry but submits contract demands to the Canadian Commercial Corporation, a crown company for purchasing materials and services, under the Department of Defence Production. Air Materiel Command H.Q. must specify to the C.C.C. in writing precisely what is required: reference to samples, photographs, or catalogues has proved in the past to be quite inadequate. Industry must have complete details or specifications before it can quote intelligently and honestly. Mass production does not start immediately on receipt of an acceptance of tender

from the C.C.C.: the production must be planned in detail, jigs set up, production completed before the items can be made, inspected, and shipped to R.C.A.F. Supply Depots.

Warehousing is a modern art. The methods of handling materials in Supply Depots were developed during and after the Second World War. Packaging is most important. It is true economy to spend several dollars on "export packing" for a critical item which may cost only a few cents, just to ensure that it is serviceable when it reaches the user. Transportation has been called the "instrument of supply." The movement of materiel is the major logistics problem in a global war, and the proper choice of the carrier will usually save precious time. It is estimated that the overall cost of airlift is about one-third that of surface transportation on account of the savings in pipeline quantity, packaging, breakage, and losses, to say nothing of time. However, the lack of transport aircraft makes it necessary to restrict airlift to expensive, fragile, and urgent items.

Servicing and periodic inspection by unit personnel forestall equipment repair. When modifications or repair work cannot be done on the site by unit personnel, or by mobile parties from contractors or Repair Depots, it is evacuated. Overhaul involves dismantling the assemblies — that is, looking for repair work. Salvage involves the recovery of those serviceable or repairable components which are worth the cost of dismantling the assembly. Disposal of surplus materiel is the sale, by the Crown Assets Disposal Corporation, of items "in the whole state" or as scrap material.

SUMMARY

All that the writer has tried to do in the foregoing introduction to logistics is to give the reader a rough idea of the enormous field covered by the subject. Every aspect of it requires intensive specialization, much of which is a mathematical nightmare. It demands steady and wearisome work, and carries with it no reward other than the realization that without logistical support there could be no effective air force. Just how logistical support is provided to the R.C.A.F. will be made apparent in the four articles that are to follow in subsequent issues of "The Roundel."

Dangerous Fatalism

Extensive writings (have) stated that drunkenness, phobias, hysterias and the common mental ailings are sicknesses brought about by the pressures and tensions of modern civilization. Such ailments (they maintain) are not the results of a person's sins against himself and society; they are phenomena for which the individual himself was not responsible.

This degrading concept of man reaches its climax in the teachings of social study. We are told that men and women are the victims of their economic environment. According to many students, there is little or nothing which individuals can do for themselves. . . . Man is encouraged to think that he is a small cog in a big machine; in short, that he is anything but the master of his fate and the captain of his soul. There was something noble in the Calvinistic doctrine of predestination and the Oriental religions. But the fatalism of our times is not the fatalism of faith, but the fatalism of despair . . .

Social movements toward a more abundant life ennoble mankind; the great leaders of history were men and women who inspired their followers to a fuller life through struggle and courage. Moses delivered the people of Israel and led them into a land of milk and honey, but only through an epic of starvation, thirst and self-discipline. The tragedy of this twentieth century, which was to ring in the millenium for mankind, is that this world has forgotten God . . .

(The Rt. Rev. R. J. Renison, in "The Globe and Mail": Toronto)

ROYAL CANADIAN AIR FORCE Association

WING NEWS

Nos. 108 and 109 Wings, P.E.I.

Two of our most recently formed Maritime Wings, Nos. 108 (Summerside) and 109 (Confederation), Charlottetown, have been quick to assume air cadet responsibilities. Not only have both Wings taken on the civilian sponsorship of the air cadet squadrons, but at a meeting in Summerside on February 19th the following members of the two Wings were appointed as the Prince Edward Island Provincial Committee of the Air Cadet League:

Chairman:	Roy Johnston, Summerside Wing
Vice-Chairman:	A. G. MacMillan, Charlottetown Wing
Secretary:	J. Harry Waugh, Summerside Wing
Treasurer:	J. Russell Phaneuf, Summerside Wing
Directors:	W. Stuart Chandler, Charlottetown Wing
	Stanley M. McInnis, Charlottetown Wing

No. 252 (Fredericton) Wing

Due particularly to the organizational work of ex-W.D. Mrs. Reta Sveinson, No. 252 (Fredericton) Wing was formed in November 1949, with an initial membership of fifteen. Early meetings and socials were held in the Lord Beaverbrook Hotel.

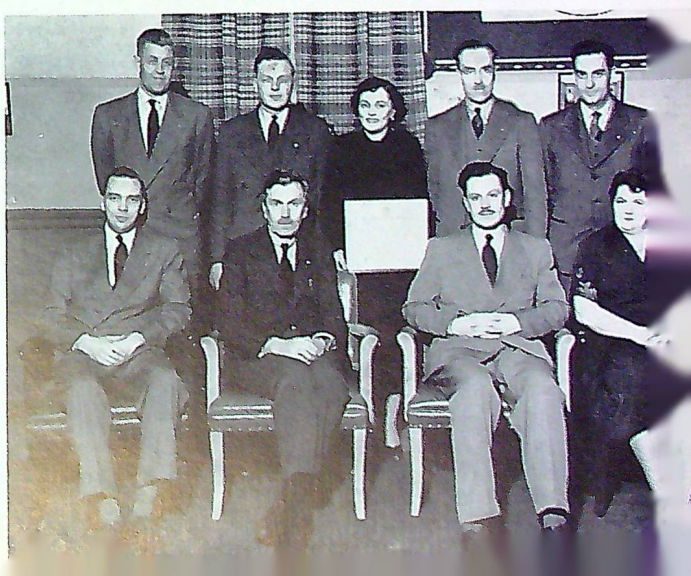
In June 1950 the Wing was able to rent its own quarters, and since then the rapidity of the Wing's growth has surpassed that of any other in Canada. By 31 December 1950, No. 252 Wing had grown from fifteen members to a membership of 285. The Wing is justifiably proud of its first year's achievements.

During the summer of 1950, the Wing sponsored an air show at the Lincoln Airport, N.B., with the assistance of jet 'planes from R.C.A.F. Station Chatham, N.B. "We were prepared for perhaps 500 people," says the report, "but by three o'clock the cars were lined bumper to bumper for eight miles, back to the city of Fredericton itself." Their next venture was a donkey-baseball game, and this too received great support from the residents of Fredericton.

On November 11th the Wing paraded with the Canadian Legion to the Cenotaph for the Remembrance Day services. This was the first time in Fredericton that the Air Force had a flight in the parade.

When Christmas rolled around, the Wing took on welfare work and helped some needy families in the area, and also prepared boxes for the Children's Home and Municipal Home. It has decided to carry on this type of work to the best of its ability. It also held a Christmas party in the Club for the children, with a tree and Santa Claus. About 160 children attended, and it was a big success.

No 252 Wing. Front row (l. to r.); James G. Wigle, Treasurer; Dr. Conrad P. Wright, Vice-Pres.; Paul E. Burden, President; Lavinia M. Foley, Secretary. Back row (l. to r.): Gerald Cherry, J. B. Estey, Dorothy F. Black, George A. Jamer, Edward G. Perkins.



A New Year's Eve dance was held, with local talent for a floor show. This was also a great success, and from all reports was the best "do" of the evening in the City.

Congratulations and best wishes to No. 252, and to its enterprising executive pictured in this issue.

No. 420 (Oshawa) Wing

Installation of the new executive of No. 420 Wing was made at the Wing club-rooms recently by the guest speaker of the evening, Wing Cdr. H. C. Ledoux, D.F.C., member of the Directing Staff at the R.C.A.F. Staff College, Toronto. Photos of the retiring executive and new executive are published in this issue.

NEW WINGS

Resulting from the personal interest and enthusiasm of Mr. H. L. Simpson, No. 803 (Rocky Mountain) Wing was formed at Cranbrook, B.C., in October 1950. The Wing was presented with its charter by the Dominion President at a well-attended charter banquet last November.

First objective of the Wing is the sponsorship and formation of an air cadet squadron.

The executive of the Wing is as follows:

President:	H. L. Simpson
1st Vice-President:	M. D. McFadyen
Secretary-Treasurer:	S. R. W. Horwood
Rules and Regulations Committee:	I. V. McNaughton
Programme Committee:	Rev. Cyril Clarke
Membership Committee:	Ian B. Hoy
Additional Members:	L. G. Truscott
	Robert Allan
	Allen Key
	G. A. McDermid

No. 803 Wing. Sqn. Ldr. J. H. Giguère, O.B.E.; Air Vice-Marshal A. L. Morfee, C.B., C.B.E., (ret'd); Mr. H. L. Simpson, Wing President; and Wing Cdr. F. W. Ball, D.F.C. Photograph taken after charter banquet.

No. 420 Wing: retiring executive: Standing (l. to r.): G. Slocombe, 2nd Vice-President; A. Burr, Treasurer; O. H. Dell, additional member. Seated (l. to r.): E. C. Stewart, Secretary; C. Moran, President; S. Fraser, 1st Vice-President.

No. 420 Wing: new executive. Front row (l to r.): Harley Carr, Sec'y; Wing Cdr. H. C. Ledoux; S. Fraser, President; S. Wilson, executive member. Rear row (l. to r.): R. Andrews, Treasurer; Thomas Murphy, executive member; Charles Parkin, 2nd Vice-Pres.

No. 253 (City of Moncton) Wing

Greetings to two new Wings of the quickly-growing Maritime Group. J. M. Lutes, President of No. 253 (City of Moncton) Wing, whose charter has just been approved, advises that Wing quarters have already been arranged.

Executive:

President:	J. M. Lutes
1st Vice-President:	Ralph W. Nickerson
2nd Vice-President:	F. D. Mitton
Secretary:	Miss Georgia O'Brien
Treasurer:	D. Billing
Additional Members:	J. Ralph Wood
	Loran Farris
	Burnley W. Stewart

No. 110 (Yarmouth) Wing

At Yarmouth, N.S., No. 110 Wing has been formed with the following executive:

President:	E. Rhuda
1st Vice-President:	George Herrington
2nd Vice-President:	Wilfred Bishara
Secretary:	Jules Pottier
Treasurer:	A. Starr
Additional Members:	C. E. Clarke
	D. F. Filleul
	Hubert Hatfield

AIR CDRE. A. D. BELL-IRVING, O.B.E., M.C. (ret'd. res.)

The talk from which the following excerpts are taken was given on 17 January 1951 by Air Cdre. Bell-Irving, President of the B.C. Group, at the 30th Anniversary Dinner of the United Services Institute of Vancouver, in reply to the toast to Air Force members.

"Perhaps no period in history has seen so great a change in military technique as we have witnessed in our time.

"If we compare Canada's industrial capacity, present and potential, with her limited resources in manpower, it appears to me that in determining Canada's contribution to N.A.T.O., to U.N., or to any future conflicts, emphasis must be placed on our contribution in the air — on a force which will contribute the most with the fewest personnel, and a force which we have the industrial capacity and 'know-how' to equip.

"The case for Canadian contribution of air power is being interpreted by the Government with such due regard to democratic principles as may seem to encourage a confusion of thinking among those interested in the defence of our way of life.

"We, with an air tag, only submit that the existing physical framework of Canadian defence organization is the framework built up in virtually every city, town or hamlet over the last century. In regard to its physical properties and its psychological inspiration it requires modernization similar to that which has been arranged at the time of various great changes and developments in military technique.

"We of the air would like to see a greater proportion of the men on the ground actively engaged in promoting the military activities of the men in the air. We rest our case for support toward our thinking by the Senior Services, on their appreciation of the basic principles of war: CONCENTRATION . . . ECONOMY OF FORCE . . . SURPRISE . . . MOBILITY . . . OFFENSIVE ACTION . . . CO-OPERATION . . . SUPPLY. All these principles still apply: they were laid down when the conflict of men had only a surface concept. I commend to your attention how potently the first five of the principles have taken to the air. To-day the last two have become perhaps the most important, since they (Co-Operation and Supply) represent the basic foundations from which our effort is launched."

Making a Terrain Model

ABOUT A YEAR AGO we published an article by ex-Flt. Lt. H. V. Thompson entitled "Topographical Models." In it was described briefly the use of such models for the briefing of air or ground forces and the method of manufacture then employed by civilian firms.

As a sequel to that article, we are reproducing here a series of photographs showing a large terrain model in the course of construction by pupils of the Joint Air Photo Interpretation School at the Joint Air Training Centre, Rivers, Man. The model represents part of the Nijmegen-Wesel section of Holland and Germany, and its scale is approximately 4 inches to the mile. Photographs and captions were supplied by Sgn. Ldr. A. J. Simpson, D.F.C.

Mixing the plaster. Labels show proportions of ingredients.

Making trees out of sponge rubber soaked in paint.

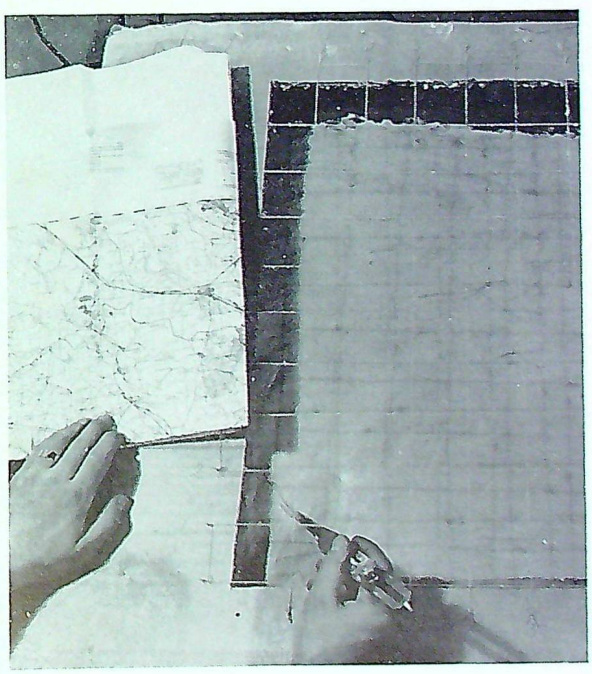
Testing paint colours on samples of hardened plaster

Making bridges out of toothpicks. Houses were made of wood or rubber.

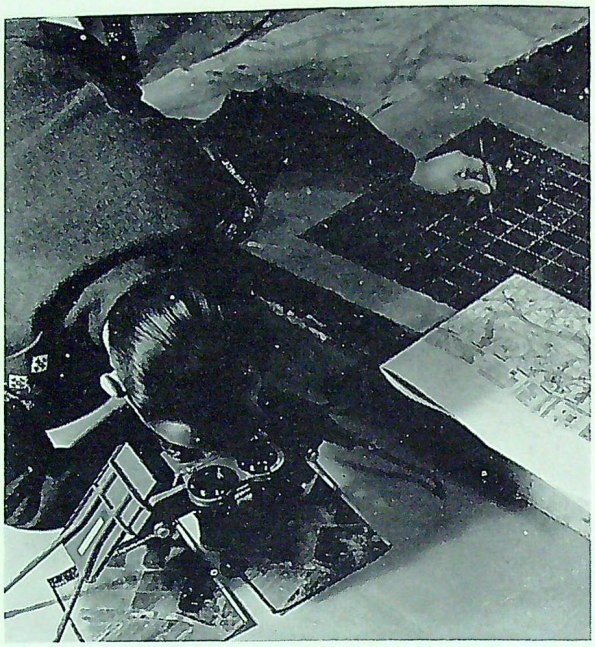
Sqn. Ldr. Simpson nails cardboard contour forms on to burlap-covered frame.

Marking roads and railways on fresh plaster with dividers.

Painting the houses.

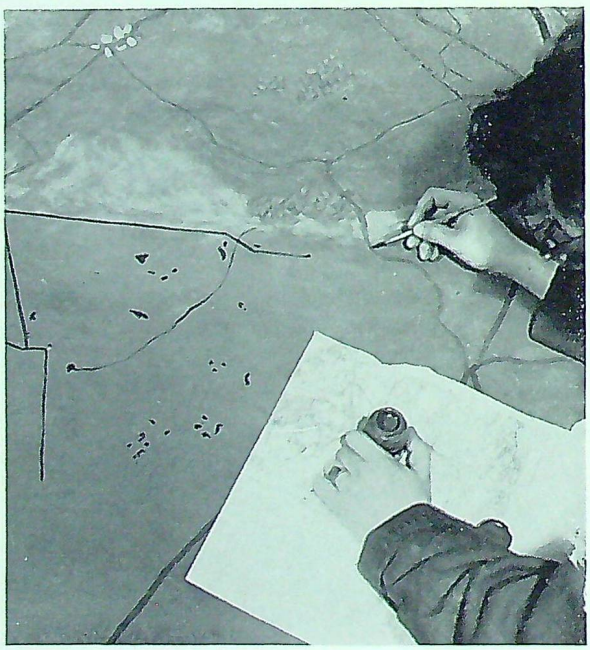


Shading and plastering.

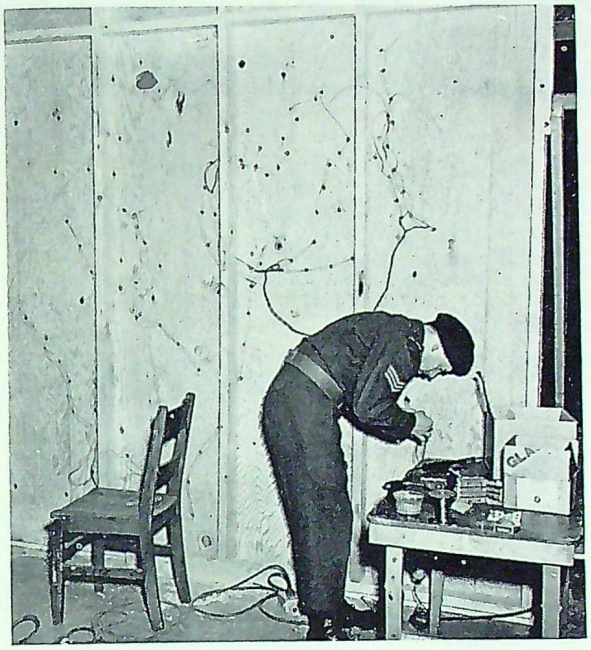


Putting in detail with aid of stereoscope.

Painting roads.



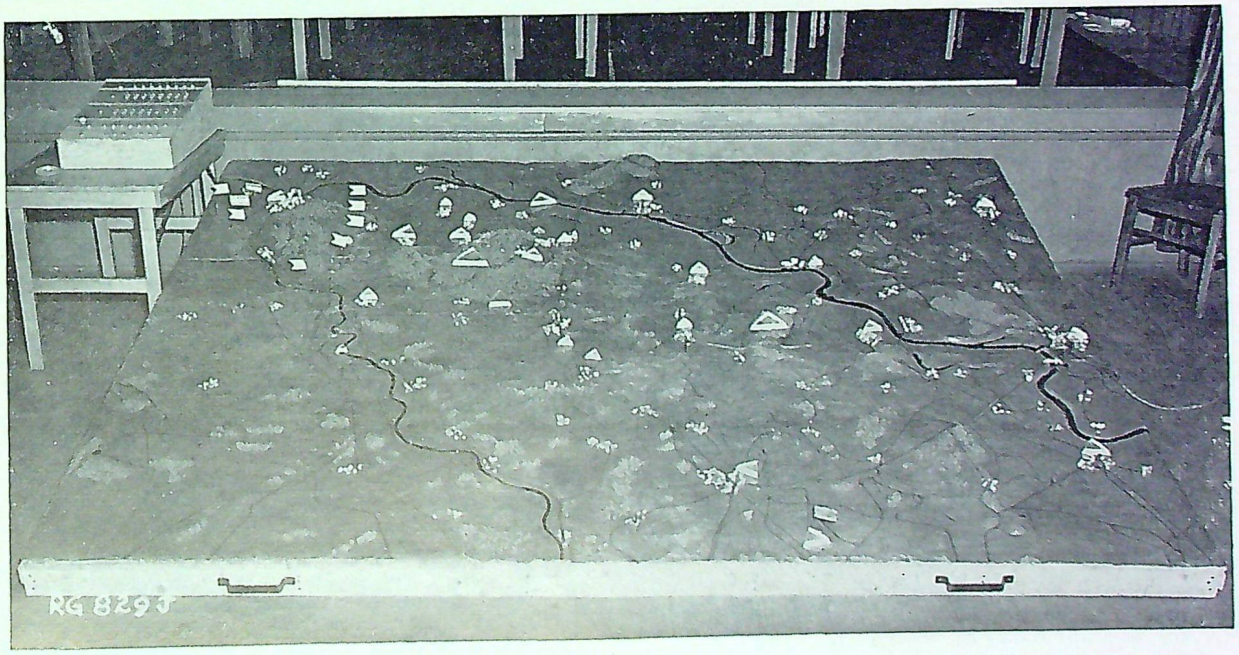
Sticking houses on to shellacked model.



Wiring underside of model for position-indicating lights.

"Planting" trees.

The finished model.



What's the Score?

Abbreviations have become a vital part of both Service and civilian jargon and correspondence. Here are some questions to test the reader's knowledge in this contracted field. Most of the abbreviations, with their correct meanings, can be found in C.A.P. 460, and everyone should be familiar with those that can't.

Previous questionnaires have given four answers to choose from. This time (to make things a bit easier) the choices have been cut down to three. We decline to say what was the average score of the Editorial Committee. Correct answers are shown on page 48.

1. W.A.C.
   (*a*) C.A.S.
   (*b*) War-time operational Command of the R.C.A.F.
   (*c*) Organization to dispose of surplus war materials.

2. P.O.
   (*a*) Where a female gets her mail.
   (*b*) The type of R.C.N. man the girls like to go out with.
   (*c*) Percy Prune.

3. M.C.
   (*a*) What A.M.C. used to be.
   (*b*) The chap who runs things at a "do."
   (*c*) Decoration for gallantry.

4. R.N.
   (*a*) The Silent Service.
   (*b*) Branch of the Aircrew List.
   (*c*) Authorized to record our pulse and temperature.

5. B.C.
   (*a*) Part of Canada famed for liquid sunshine.
   (*b*) When Greeks and Romans did a lot of things.
   (*c*) M.N.D.

6. A.M.
   (*a*) The boys who did the work in the old R.F.C.
   (*b*) When they began to do it.
   (*c*) There's only one on active service in Canada.

7. A.C.
   (*a*) At the opposite end of the scale from 6 (c).
   (*b*) An aerodyne.
   (*c*) In a wire it may be shocking.

8. D.C.
   (*a*) U-boat buster.
   (*b*) Also has shocking potentialities.
   (*c*) Where you'll find both capitol and capital.

9. A.T.C.
   (*a*) Carries anything anywhere in the R.C.A.F.
   (*b*) U.K. equivalent of R.C.A.F.
   (*c*) Found at Rivers after C.J.

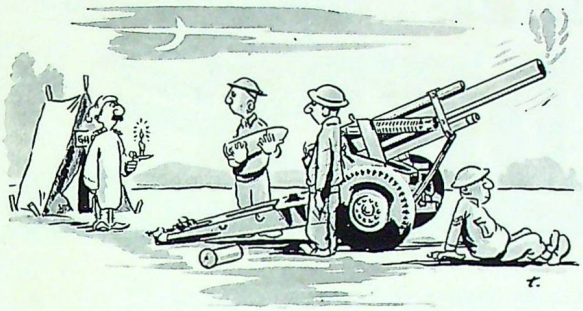
10. P.C.
    (*a*) Not S.S.
    (*b*) Mr. G. A. Drew, K.C., M.P.
    (*c*) His "lot is not a happy one."

11. P.M.C.
    (*a*) This chap is in a mess.
    (*b*) Tri-service group of officers concerned with personnel.
    (*c*) Earns 3c. per mile on T.D.

12. M.D.
    (*a*) The boys' gateway to the field.
    (*b*) Formerly a Canadian Army Command.
    (*c*) M.O. on Civvy Street.

13. A.P.
    (*a*) The best place to shout "Bombs away!"
    (*b*) An Air Force gen-book.
    (*c*) Often in the news.

14. C.B.
    (*a*) Service equivalent to being "kept in after school."
    (*b*) High order of chivalry.
    (*c*) Alias "Seabees" in U.S.N.



15. R.C.A.

(*a*) The noisiest lads in the Canadian Army.
(*b*) Empire of the ether.
(*c*) Member of organization of outstanding Canadian artists.

16. P.M.

(*a*) One operation for which no anaesthetic is required.
(*b*) 1201-2359.
(*c*) Service Chief of Police.

17. T.A.B.

(*a*) A shot in the arm.
(*b*) Two of them test our airmen's proficiency.
(*c*) Often attached as appendices — but without periods.

18. 30

(*a*) Twice better than love.
(*b*) A reporter's last words.
(*c*) XXX

19. N.S.

(*a*) Home of the bluenose.
(*b*) Usually associated with such operations as 17(a).
(*c*) When followed by F., it bounces.

20. S.N.A.F.U.

(*a*) State of the world.
(*b*) Compiler's mental state when he concocted this.
(*c*) Your probable mental state now.

(*Prepared by Wing Cdr. F. H. Hitchins*)

Another Eleusinian Mystery

RATHER MORE than two thousand years ago, worshippers used to gather at the Greek city of Eleusis to celebrate the mysteries of Demeter, goddess of the crops. Recalling this fact, we were quite amused the other day when Wing Cdr. A. L. Bocking, D.F.C., happened to tell us the following little anecdote. There must be something about the atmosphere of Eleusis . . .

During the Greek campaign of 1940 (said Wing Cdr. Bocking) we were operating Blenheims from Eleusis airport, some twenty miles from Athens. Although there were no runways there at that time, the hangars were surrounded by acres of glistening white tarmac. While this tarmac could be seen from quite a considerable distance, it didn't worry us much: there were various other features — geographical features — that would afford the enemy perfectly good positive identification, anyway.

However, the Greeks insisted on camouflaging the aerodrome by painting enormous green Christmas trees all over the apron. This, they decided, would effectively conceal it from the eyes of all hostile bombers. They used a sticky green paint that absolutely refused to dry, and for some days we had to follow a rather circuitous route between hangars and aircraft.

One day, while I was walking out to my aircraft with a little English air gunner, I asked him what he thought of the camouflage. He weighed the matter for a few moments, then remarked: "Well, skipper, since you ask me, I'd say the next time Jerry comes over 'ere 'e's going to look dahn and say to 'imself "Blimey! Wot a ruddy silly plice to plant Christmas trees — right in the middle o' the bleedin' tarmac'!"

The ROYAL CANADIAN AIR CADETS

By Arthur Macdonald, Air Cadet League of Canada

In Canada to-day there are close to 200 active Royal Canadian Air Cadet Squadrons. Many of these units are operating at peak efficiency with strong community support, good training accommodation, and a membership of loyal and enthusiastic cadets. Others are not so fortunate. The following report is published mainly for the benefit of this latter group. It is the story of a squadron which "made a comeback" and must now be considered as one of the top units in Ontario.

THE STORY OF 155

By Flt. Lt. G. C. MacHattie, Commanding Officer

No. 155 Squadron was formed in Sault Ste. Marie, Ontario, on 23 October 1942. The squadron was under the command of the late Sqn. Ldr. J. H. Fee and was sponsored by the Sault Ste. Marie Kiwanis Club. The Air Cadet Committee was and still is under the chairmanship of Dr. George E. Westman.

The original squadron boasted a strength of 103 cadets averaging approximately 16 years of age. The staff consisted of the commanding officer, adjutant, equipment officer and four instructors. At this time and for several years after, No. 155 maintained a high standard of efficiency and was classed by inspecting officers as one of the best in the province.

When the war ended, late in 1945, there was a noticeable let-down in enthusiasm for the sponsorship of air cadets. This lack of enthusiasm, coupled with the uncertain future of the movement, was soon reflected in the attendance and discipline of the squadron. In addition, the local school board reduced the number of meeting nights to one a week.

The severest blow hit the squadron with the death of Sqn. Ldr. Fee on 7 January 1947. He had been vitally interested not only in the squadron but in the cadets themselves. A prominent business man and Canadian Legion executive, his death was felt by officers and cadets alike. Flt. Lt. J. N. Franz then took over the functions of Commanding Officer in addition to his duties as Adjutant and Chief Instructor.

In the autumn of 1947, the command of the squadron was handed to Wing Cdr. Bernard Keenan, an R.C.A.F. veteran. At this time the squadron was down to an active membership of about 60 cadets. Lack of co-operation and of funds hindered the squadron, and by autumn of 1948 the staff had dwindled to Wing Cdr. Keenan and two instructors, F. R. Cleminson and M. Novick. While the squadron was attending camp at R.C.A.F. Station Aylmer, Ontario, the sponsoring committee announced that, due to lack of funds and shortage of training facilities, it was no longer able to support the movement effectively.

On their own initiative, instructors Cleminson and Novick inserted a notice in the paper calling a parade for September 15th. That night some 50 cadets turned up in uniform. When it was pointed out to members of the sponsoring body in attendance that these 50 boys could be expanded into a fine squadron, the committee agreed to continue with limited financial support. Squadron operations continued on this basis until 1949, when it was decided to call on the Ontario Provincial Committee for assistance.

Through the good offices of Air Vice-Marshal E. E. Middleton, C.B.E., (ret'd), Secretary-Manager of the Ontario Committee, steps were taken to reorganize the unit on both Service and civilian levels. It was decided that Graham MacHattie take the position of acting Commanding Officer, with Ronald Cleminson as Adjutant, and the late S. Hutnick as Equipment Officer.

A new sponsoring committee made up of ex-R.C.A.F. officers was formed and held its first meeting on 8 February 1950. The following executives were selected: Chairman, C. Guest (bank manager); Secretary, R. MacLeod (school principal); Treasurer, G. Smith (junior accountant).

Through the efforts of a number of citizens, including Dr. George Westman, Mr. J. Andrews and Mr. B. Keenan, financial support was gained in the form of a yearly allocation from the Community Chest and a small grant from the City.

Much of the preliminary work with the new committee was the filling in of background information about squadron organization and activities. A modest recruiting drive was started but met with little response. Equipment shortages, lack of records, and shortage of proper accommodation were problems that seemed to defy solution. As time went on, however, it became apparent that the squadron was heading for better days.

A unique organization, the N.C.O.'s Club, formed by some imaginative cadets in the blacker days of the squadron, had maintained the esprit de corps of the unit. This Club carried on the social events and entertainment and has continued to do so ever since. The necessary funds are raised by an annual draw, ticket sales being sparked by the prize of half an hour's flying for each of the ten top ticket-sellers.

The instructional staff was gradually strengthened to ease the burden carried by the three officers, who often worked far into the night on squadron business. The improved staff was able to present six different training subjects along with regular basketball practices and work on the rifle range for each cadet.

As the training picture grew brighter, efforts were made to promote extra-curricular activities of interest to the cadets. Early in 1950 a visit was made to the municipal airport in Sault Ste. Marie, Michigan, where ten cadets were given familiarization flights in Aeronca aircraft and all the lads were taken through the U.S. Department of Commerce Weather Station. Shortly afterward, the squadron visited the seaplane base of the Provincial Air Service, where some fifty aircraft were regularly overhauled.

During National Air Cadet Week, His Excellency the Governor General visited Sault Ste. Marie and inspected a cadet guard of honour. The Week, publicized by a church parade and a big display in Eaton's window, was climaxed by the visit of No. 400 (City of Toronto) Squadron which flew to the Sault in three Vampires and nine Harvards to carry on co-operative military exercises with the 49th Heavy Anti-Aircraft Regiment. Although the foregoing events aroused considerable interest, the highlight of the year, as far as most of the cadets were concerned, was the flight given by pilots Sqn. Ldr. D. V. Thomas and Flt. Lt. Shar in an R.C.A.F. Dakota.

Due to the late spring in this area, it was possible to hold only two rehearsals in preparation for the annual inspection. None the less Sqn. Ldr. Thomas reported that the 59 cadets on parade put on a remarkably good show — in spite of a steady drizzle which fell throughout the day.

During the summer, monthly "gen" meetings were held, when the recently acquired projector was put to good use. On August 12th, 36 cadets left for summer camp. Two weeks later they returned by bus (on account of the railway strike), thoroughly tired but with some very enjoyable experiences behind them.

By the time the fall expansion programme was announced, the squadron was in a position to launch an all-out publicity campaign. An attractive booth was set up at the Fall Fair, recruiting teams were organized and competed for prizes of flying instruction, and excellent publicity was obtained both through press and radio by concentrating the appeal into a single week. The drive

was climaxed by a street parade with the cadets marching behind the Sault Pipe Band.

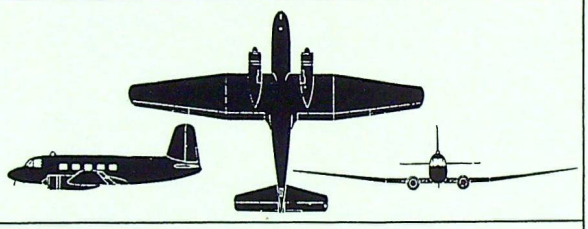
As a result of these efforts, squadron strength began to increase immediately. By the end of November it had reached 130 cadets — an increase of 100% over the previous year.

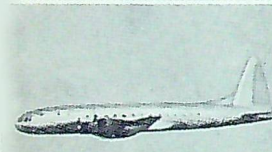
At present organized on a three-flight basis, the squadron has three W.O.'s, seven instructors, and three officers. In addition to regular syllabus subjects, the cadets are given a short course on model aircraft-building by instructor A. Faux. A gasoline model aircraft club formed in the fall now flies controlled models before and after parades. A weekly column, entitled "Air Cadet Breezes," appears in the local newspaper and has done a great deal to stimulate interest in the squadron.

Considerable credit is due to the sound financial backing of Clifford Guest and his sponsoring committee, and their sincere desire to see the squadron succeed.

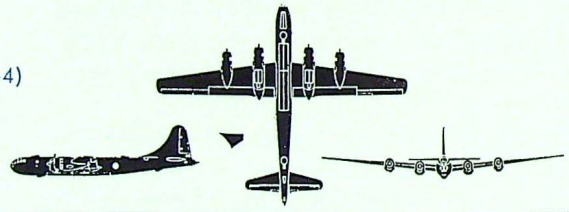
Aircraft in the News

YAK-16 (Transport)
Two ASH.21 engines
Span 56' 0" Length 36' 0"

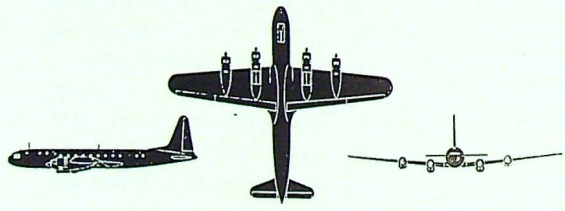




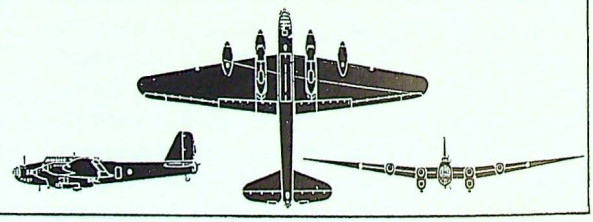
B-29 (Russian-built Bomber) (TU-4)
Probably Four Russian built
W. Cyclone engines
Span 103' 9" Length 74' 9"



IL-18 (Transport)
Four ASH.82 FNV engines
Span 110' 0" Length 86' 0"



PE-8 (Bomber)
Four AM.35A engines
Span 131' 3" Length 80' 6"



The Trade Board and You

by FLT. SGT. J. T. GATES, Training Command H.Q.

A SHORT TIME AGO, while waiting for the customary Friday morning "gen session" of No. 1 Trade Advancement Board, I was glancing back through some earlier issues of "The Roundel" and happened to come upon an article entitled "The Trade Board and I," by LAC. Ziglin. This well-written and humorous account of the author's preparation for (and subsequent behaviour in front of) the Board contained far more truth than poetry; and it ended with the simple statement that "Ziggy didn't make it."

An unhappy ending was, however, inevitable for such a story; for "Ziggy" had made three very common but invariably disastrous mistakes. First, his preparation consisted of spending more time with his nose in a glass than in a book — "getting in a mood for study," as he expressed it. Secondly, since he was convinced that the Board always asked exhaustive questions on a certain topic, that was the only topic which he studied thoroughly. And thirdly, he appeared before the Board fully convinced that he was about to be subjected to some form of mental torture . . .

The only accurate method of determining what you must know to pass your particular trade test is to study C.A.P. 7 ("R.C.A.F. Trade Qualifications") and the phase indices that have been recently compiled and distributed to units. For the benefit of those who believe that the Board is composed of trained interrogators who ferret out what a candidate does *not* know and then proceed to dwell on it, it may be added that the questions used for any test must be selected by the examiner from lists approved by specialists at A.F.H.Q., T.C.H.Q., and A.M.C.H.Q. If you know what is required in C.A.P. 7 and the phase indices, you cannot be failed by an examiner's digressions to other subjects.

The evil-intentioned trained interrogator is a complete myth. Have you ever really encountered an examiner who does not first try to put you at your ease? Any of the examiners I know will begin by telling the candidate to loosen his tunic and smoke if he wants to — anything that will make him comfortable and ease his tension. The test is an informal affair, during which you can do anything except refuse to answer the questions.

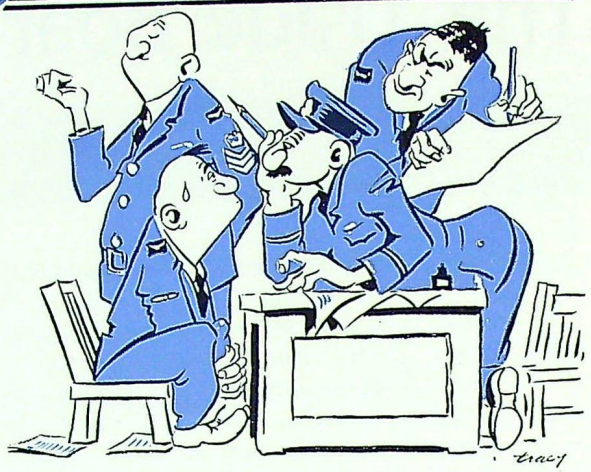
No doubt you have often asked "Why is one candidate given more time for a test than others?" There are many contributing factors. Let's suppose that you are asked a question from the approved list. If your answer is complete and accurate, the topic may not be referred to again. However, if your answer is only partially correct, the examiner will attempt to ascertain whether the mistake was due to lack of knowledge or lack of thought. He will try to find out by a series of direct questions that approach the problem from other angles. He is only interested in whether you do or you don't know, but he may sometimes have to ask quite a number of questions in order to satisfy himself — and that takes time. Then there are those who, on account of language or other difficulties, take longer to think and speak. On the other hand, there have been cases where tradesmen have completed their Group 3 tests in one-third of the allotted time. No examiner has much difficulty in assessing a person whose answers are speedy and correct, nor is there much time lost on those who are definitely "off the beam." It is the fellow "in between" that takes the time.

The opinion has often been expressed — and not always by tradesmen — that the Trade Board is a waste of everything and everybody involved. A tradesman with such an attitude can never hope to advance very far, and a section-head who expresses similar feelings can do untold harm to his subordinates. The Service is striving in every

way to meet its obligations to its members, but obviously tradesmen must qualify up to standards which past experience has proven necessary. The Trade Board is merely the method chosen to discover who is qualifying. With the help of a group of competent examiners, all using approved lists of questions, those responsible for training can be assured that LAC Tap in Whitehorse is qualified to the same degree as his fellow-tradesman, LAC Die, in Goose Bay.

One situation that seems to occasion considerable confusion among candidates is the fact that the same examiner does not always examine on the same subject. There are eighty-odd Service trades to be considered and each Board (No. 1 T.A.B. at Trenton and No. 2 T.A.B. at Edmonton) has only fifteen airmen on its strength. Each individual must therefore be responsible for several trades — which, however, are so allocated that each examiner takes care only of those allied to his own or a similar trade. If you have ever felt that your future was being jeopardized by a rank outsider, rest assured that your examiner was in every case fully qualified to examine in your trade. He has been exhaustively questioned, required to sit in on examinations, and supervised during several "test runs" before being allowed to assess on his own behalf.

"Why," you may ask, "is the test marked in code?" Once again, there are several reasons, all in favour of the candidate. Most important of them is the situation that arises with a borderline candidate. When the questions are answered correctly and with confidence, both examiner and examinee feel that a pass is the only possible outcome. Similarly, a definite failure is soon realized by both parties. But the airman who is just scraping through presents an entirely different problem, and it is most essential that his success-failure balance shall not be tipped either way by psychological influences. Marking in code helps to eliminate the possibility of the emergence of a failure complex, since neither the examiner nor the candidate, being both equally ignorant of what has been decided upon as the pass-mark, can be sure of the results until a group has been completed and the phase percentages totalled.

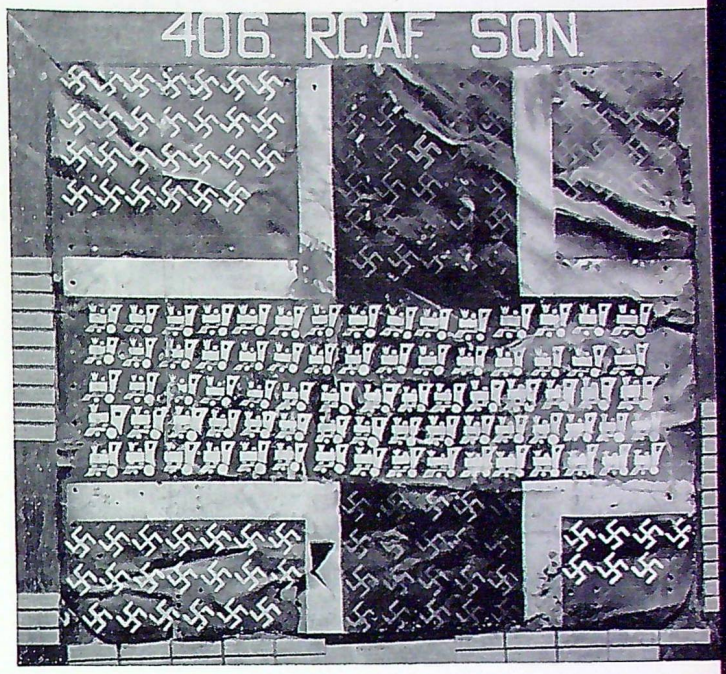


"Ziggy" should have been present during one of our recent visits, when a group of candidates were found in heated discussion about the Trade Board. Most of them seemed to feel that each unit prepares lists of eligible tradesmen some months before the Board's visit and that the Board decides in advance, from these lists, who will pass and who will not. The semi-annual visit, they agreed, was just a matter of form.

Nothing could be further from the truth than such an idea. The Board does, it is true, receive and discuss, before each visit, a nominal roll of all eligible personnel in each trade. But the roll contains only the number, rank, name, trade and grouping of those requiring a test, and it is used simply and solely to help the Board to decide on a plan of action which will enable it to complete its work in the allotted time. Futhermore (to explode yet another popular fallacy), there is no such thing as an establishment for qualified tradesmen. All those who can qualify must be passed.

I would like to conclude my remarks with a few words to the "Ziggys" of the Service. Don't forget C.A.P. 7 and the phase indices. If you thoroughly master their "musts," you will have no difficulty with your trade test. Don't regard your examiner with suspicion: he is a tradesman who has often been on your side of the table. And, finally, remember that there is only one person responsible if your tests do not turn out as you wished. Talk the whole thing over honestly with him in front of a mirror.

No. 406 (Lynx) Squadron



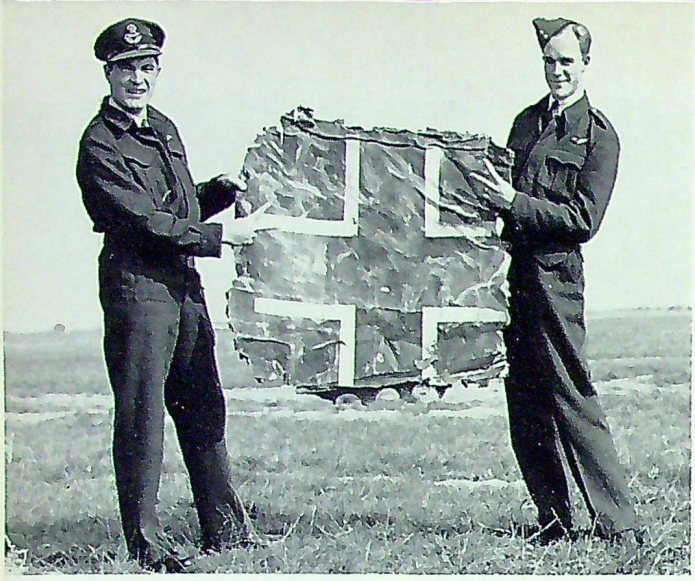
The Lynx Squadron score-board at the end of the war.

(Prepared by the Air Historian)

No. 406 (Lynx) Squadron of the Royal Canadian Air Force was the first Canadian night-fighter unit and had the distinction of winning its first victory before becoming fully operational. After three and a half years on night defensive duties over Britain, the squadron converted to offensive intruder operations over Germany and at the end of the war was the top-scoring intruder unit in Fighter Command. Painted on the black cross insignia cut from the squadron's first "kill" were 118 red, white and yellow swastikas, representing 64 enemy aircraft destroyed, 7 probably destroyed, and 47 damaged. The scoreboard also bore several rows of little white locomotives, denoting many Nazi engines blown up or battered by shells and bullets. The squadron badge depicts a lynx leaping upon its prey, and bears the motto "We Kill by Night." In more than a hundred combats over the coasts of Britain and deep within the Nazi Reich the Lynx aircrews justified their claim.

No. 406 formed at Acklington, Northumberland, on 10 May 1941, under Wing Cdr. D. G. Morris (R.A.F.) and began training on Beaufighter Mark II's, armed with four cannons and six machine-guns and equipped with A.I., the new radar device for air interception of enemy raiders The training programme had not been completed when the Germans, taking advantage of the full-moon period at the end of August, directed a series of attacks against the Newcastle area. Although

Wing Cdr. R. C. Fumerton, D.F.C.



Flying Officer R. C. Fumerton and Sgt. L. P. S. Bing holding the Iron Cross (cut from the Squadron's first kill), from which the score-board was made.

Wing Cdr. D. J. Williams, D.S.O., D.F.C. (left) and his navigator, Flt. Lt. C. J. Kirkpatrick, D.F.C.

the squadron as a whole was still under training, several Lynx crews that had been passed as operational went up on defensive patrols and, on the night of September 1st, Flying Officer R. C. Fumerton and Sgt. L. P. S. Bing won the squadron's first victory by shooting down a Ju.88 in flames.

In the next three full-moon periods No. 406 won further successes, and by the end of the year had a total of five destroyed and four damaged. In January 1942 the squadron moved to Ayr, to provide night-fighter defence for the Clyde, leaving a detachment at Scorton, in Yorkshire, to assist in the protection of the north-east coast of England. At Ayr the next five months passed without action against the enemy, but the Scorton detachment got three kills and four damaged when the Luftwaffe made "Baedeker" raids on York late in April.

In June the whole squadron moved to Scorton, to remain there until the end of August. During this period it added five destroyed, one probable and two damaged to its score, including four kills and a probable on one night, July 7th, when the Middlesbrough area was attacked. On this occasion Wing Cdr. Morris won his fourth night victory. A month later he handed over his command to Wing Cdr. R. A. Wills, another R.A.F. officer, who had been one of the flight commanders.

After a year's operations in the north, during which it had scored thirteen destroyed, one probable and ten damaged in defence of the Newcastle sector, No. 406 Squadron moved to Predannack, Cornwall, in south-western England. The air defences of the south coast were being strengthened in preparation for the movement of the great North African invasion convoys later in the year, but the seven months which the Lynx squadron spent in No. 10 Group's sector produced only three combats, in which two enemy raiders were destroyed with another counted as probable. There were, however, numerous calls for air-sea rescue sorties, which led to the rescue of many airmen down on the sea and of aircraft in distress.

In the spring of 1943, after the squadron had moved from Predannack to Middle Wallop, it undertook night "rangers" into enemy-occupied France to attack trains and vehicles. These operations were quite successful, and between March 21st and May 21st Lynx crews inflicted damage on thirty-four locomotives and two road vehicles.

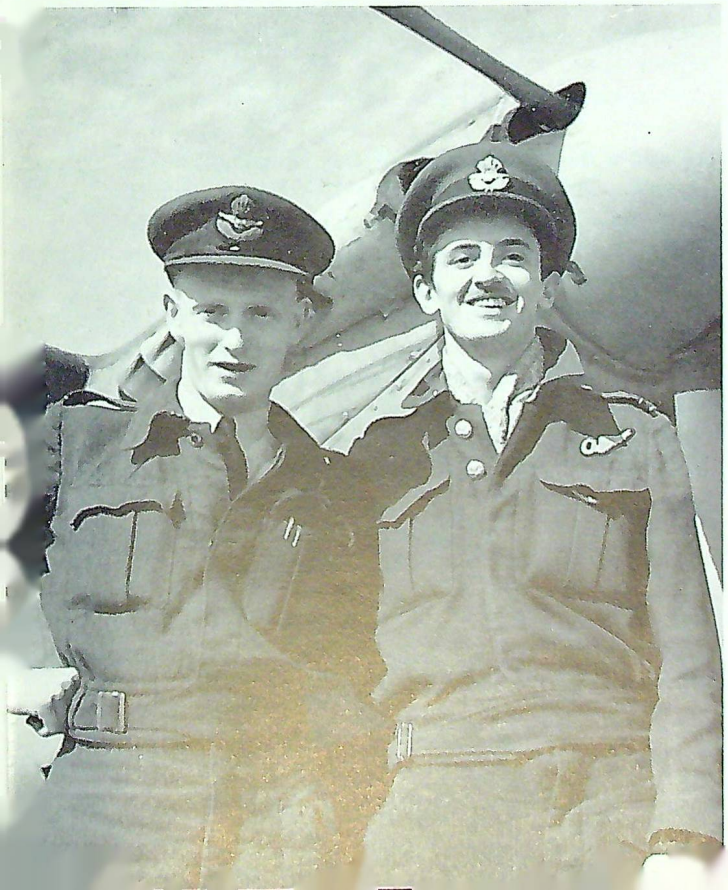
Meanwhile the squadron had changed stations again, leaving Middle Wallop late in March for a remote and comparatively inactive base at Valley, in Anglesey, covering the approaches to Liverpool. Here it remained for seven long months, carrying out defensive patrols, occasional air-sea rescue missions, numerous exercises and a continuous programme of training. But the weeks and months passed with very little "trade" and no "joy" whatever. Just before the move to Valley,

Wing Cdr. Wills had been succeeded by Wing Cdr. I. R. Stephenson (R.A.F.), and he in turn was replaced in August by Wing Cdr. R. C. Fumerton, D.F.C. and Bar. Since his first victory with the squadron in September 1941, "Moose" Fumerton had seen much service in the Mediterranean theatre and now had twelve kills to his credit.

From Valley, No. 406 returned to 10 Group in November 1943, taking up station at Exeter for five months and then at Winkleigh, a few miles away, for the next five. The squadron's luck at last had turned for, after a year without any "joy," it again encountered enemy raiders, and in four months (19 March to 21 July 1944) destroyed sixteen, probably destroyed three more, and damaged one. Most of these successes were won during Luftwaffe attacks upon the south coast in the weeks preceding D-Day. On one night (May 14th) Lynx crews beat their previous record

Flying Officer D. J. McConnell (above) with his navigator, Flying Officer M. Kazakoff.

Flying Officer J. H. Wyman (left) and Flt. Lt. J. J. Greene, D.F.C.

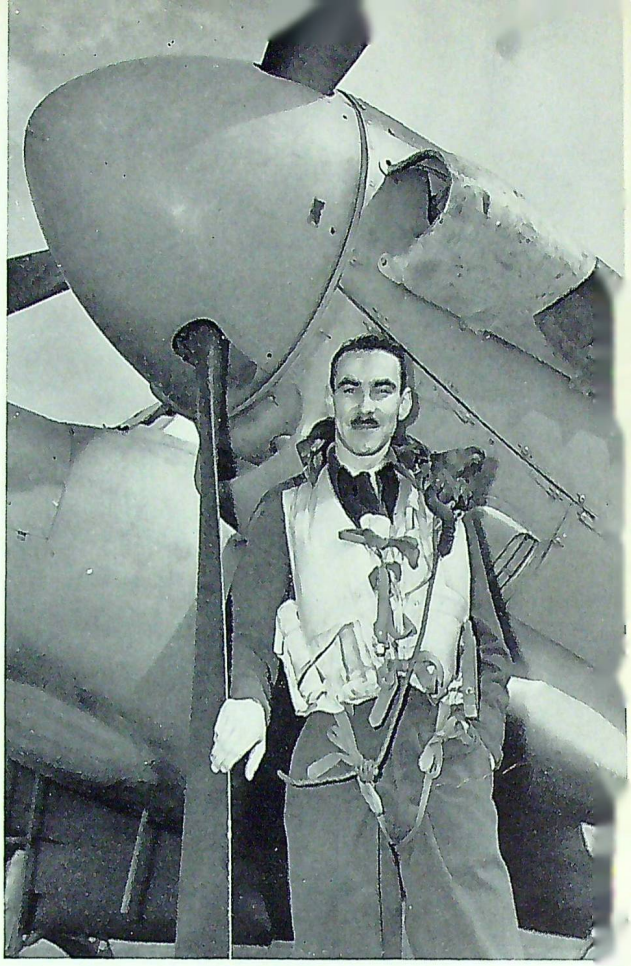


of 7 July 1942 by destroying four "bandits," probably destroying three, and damaging one. The squadron could also count a number of successful air-sea rescue missions during this period.

Its rôle in the invasion was relatively small — a series of uneventful and uninteresting patrols over the Channel. But it was able to resume ranger operations by night and day into Brittany and added many more locomotives to its score-board. One day-time ranger by six crews on July 5th was particularly noteworthy: no less than twenty-four trains were shot up in addition to a number of vehicles, barges, power stations and water towers.

When ranger operations had to be suspended after the American forces broke through into Brittany, the squadron became restless. For months it had been hoping for more modern equipment to replace the Beaufighter VI's that it had been flying since June 1942. In April 1944 a few Mosquito XII's had been received, followed by some Mk. XXX's in July, but the squadron

Flt. Lt. J. T. Caine, D.F.C.



Sqn. Ldr. D. A. MacFadyen, D.S.O., D.F.C.

Flt. Lt. W. A. Boak, D.F.C. with his C.O., Wing Cdr. R. Bannock, D.S.O., D.F.C.

was now in a relatively inactive area. Another blow was the posting of Wing Cdr. Fumerton in July. His place was taken by Wing Cdr. D. J. Williams, D.F.C., who had won five victories with the squadron and was soon to be decorated with the D.S.O.

In August, No. 406 was at last fully re-equipped with Mosquito XXX's and a month later moved to Colerne in Wiltshire. Operations here continued to be on a very limited scale, but the crews were kept busy training for a new type of work, offensive "intrusions" into enemy territory.

In November Wing Cdr. Williams was succeeded by Wing Cdr. R. Bannock, D.F.C., formerly C.O. of No. 418 (City of Edmonton) Squadron and one of the outstanding pilots in that famous intruder unit. He already had eighteen and a half flying-bombs and seven Nazi aircraft to

his credit. Under his leadership the Lynx-men moved to Manston, Kent, late in November, and on December 5th began intruder operations over Germany.

In their new rôle the Lynx crews supported heavy bombers in their night attacks upon Nazi targets, by patrolling airfields from which enemy night fighters might take off, or by flying along the bombers' course to intercept would-be attackers. In addition the Lynx Mosquitoes also made numerous rangers deep into enemy-held territory, going as far as Prague and Vienna to shoot down Germans in the air or strafe them on their airfields. If the intruders and rangers could find no enemy air activity, they sought other targets on the ground — trains or vehicles.

Wing Cdr. Bannock won the first intruder victory on December 24th. When operations ended, just over four months later, the Lynx-men had a total of twenty-three enemy aircraft destroyed in the air, ten destroyed on the ground, two probably destroyed, thirteen damaged in the air, and twenty-three more battered on the ground. They had also added to their score-board twenty locomotives, at least seventeen vehicles, many freight cars and a pair of vessels. Their last duty in the campaign was to escort naval vessels on their way to liberate the Channel Islands from five years of Nazi rule.

After operations ended Wing Cdr. R. G. Gray, D.F.C. and Bar, succeeded Wing Cdr. Bannock in command of the squadron. A month later it moved to Predannack and there it was disbanded on 1 September 1945, four years to the day after it had won its first victory in the night defence of Great Britain.

In that period of four years. No. 406 Squadron flew over 1800 sorties. As a night-fighter unit it lost eight officers; as an intruder unit its casualties were twelve killed or presumed dead, and two taken prisoner. Non-operational accidents cost the lives of thirteen officers and men. In air combat or attacks on airfields, Lynx crews destroyed sixty-four enemy aircraft, probably destroyed seven more, and damaged forty-seven; on the ground they also damaged or destroyed at least eight locomotives, many freight cars, over thirty road vehicles, and such varied items as several power stations, water towers and signal boxes, as well as some vessels at sea, including two E-boats off the English coast. Its services had won for the squadron three D.S.O.'s, one second Bar to the D.F.C., one Bar to the D.F.C., fourteen D.F.C.'s, two D.F.M.'s, and at least four Mentions in Despatches.

During the war No. 406 Squadron had been adopted by the City of Saskatoon and on 1 April 1947 it was reformed there as a light bomber unit in the Reserve component of the R.C.A.F. For a month before the squadron was officially reborn, however, the personnel of its Regular Support Unit, under the command of Sqn. Ldr. (later Wing Cdr.) D. R. Miller, A.F.C., had been hard at work laying the necessary ground work. They took over some of the buildings used during the war by No. 4 S.F.T.S., cleaned and painted them, arranged accommodation for the men and their families, and collected equipment, supplies, aircraft and vehicles. It was not until July 9th that No. 406 actually came to life when Sqn. Ldr. (later Wing Cdr.) J. Baillie was appointed commanding officer. Active recruiting then began, and in the past three years great progress has been made.

In September 1948 the squadron took part in a big combined exercise at Saskatoon in conjunction with local Navy and Army units; and in the summers of 1949 and 1950 its personnel attended summer camp at Gimli. No. 406 has also shown its wings over many parts of Saskatchewan by participating in numerous air shows, including one occasion when a formation of three of the Saskatoon Mitchells flew at three different shows on one day.

Two incidents may be cited to illustrate the keenness which animates the squadron. On 14 November 1948, as soon as news was received of the birth of Prince Charles, all aircraft took to the air and made the winter dusk vivid with a jubilant display of vari-coloured flares. The second incident was in May 1950, when floods inundated a large part of Winnipeg. Sixty members of the squadron and support unit responded to the call for help and for several days helped to man the dikes.

January Transfers

Officers

S/L L. V. Carver (C.E.) — R.C.A.F. Stn. Summerside to Air Defence Group H.Q., St. Hubert.

S/L D. K. Deyell, D.F.M. (G.L.) — No. 414 Sqn., Rockcliffe, to Air Nav. School, Summerside.

S/L P. W. A. Hamilton (Acc.) — Air Materiel Command H.Q., Ottawa, to Maritime Group H.Q., Halifax.

S/L E. R. Heggtveit (G.L.) — R.C.A.F. Stn. St. Hubert to R.C.A.F. Stn. Uplands.

S/L P. W. Holloway, A.F.C. (G.L.) — A.F.H.Q. to Can. Joint Staff, Washington.

S/L J. R. Jackson (Med.) — N.W.A.C. Headquarters, Edmonton, to Air Defence Group H.Q., St. Hubert.

W/C A. G. Kenyon (G.L.) — A.F.H.Q. to R.C.A.F. Stn. Greenwood.

W/C D. G. Malloy, D.F.C. (G.L.) — R.C.A.F. Stn. St. Hubert to R.C.A.F. Stn. Uplands.

S/L G. H. D. Mariott (C.E.) — Air Materiel Command H.Q., Ottawa, to Training Command H.Q., Trenton.

S/L S. S. Mitchell (G.L.) — R.C.A.F. Stn. Trenton to No. 2 (M) O.T.U., Greenwood.

S/L R. L. Moodie, A.F.C. (Tel.) — No 6 Repair Depot, Trenton, to A.F.H.Q.

S/L R. B. Murray, (G.L.) — Instrument Flying School, Centralia, to Flying Training School, Gimli.

S/L F. H. Nielson (Acc.) — A.F.H.Q. to Air Materiel Command H.Q., Ottawa.

W/C H. Pearce, M.B.E. (T.L.) — No. 1 Photographic Establishment, Rockcliffe, to Maritime Group H.Q., Halifax.

W/C R. O. Shaw (G.L.) — Air Transport Command H.Q., Rockcliffe, to Maritime Group H.Q., Halifax.

S/L K. J. M. Smith (Sup.) — R.C.A.F. Stn. Greenwood to Maritime Group H.Q., Halifax.

S/L H. R. R. Trepanier (Tel.) — A.F.H.Q. to Can. Joint Staff, Washington.

S/L F. H. Watkins, D.F.C. (G.L.) — Flying Training School, Centralia, to Flying Training School, Gimli.

S/L E. Wilson (G.L.) — Flying Training School, Centralia, to Flying Training School, Gimli.

Warrant Officers

W.O.1 G. A. B. Brown (M. Com. Tech.) — Training Command H.Q., Trenton, to No. 1 Radar and Comm. School, Clinton.

W.O.2 W. E. Nichol (Clk. Adm.) — Air Materiel Command H.Q., Ottawa, to No. 5 Supply Depot, Moncton.

W.O.1 T. H. K. Nicholson (Smn.) — No. 102 (M) Sqn., Dartmouth, to No. 122 (M) Sqn., Patricia Bay.

W.O.2 T. C. Porter (Sup. Tech.) — No. 11 Supply Depot, Calgary, to Air Materiel Command H.Q., Ottawa.

W.O.1 A. C. Turner (M. Com. Tech.) — R.C.A.F. Stn. Sea Island to N.W.A.C. Headquarters, Edmonton.

W.O.1 J. G. Ultican (M. Rdr. Tech.) — No. 1 Radar and Comm. School, Clinton, to Training Command H.Q., Trenton.

W.O.2 H. Vernon (Com. Tech. G.) — R.C.A.F. Station Whitehorse to Tact. Gr. H.Q., Winnipeg.

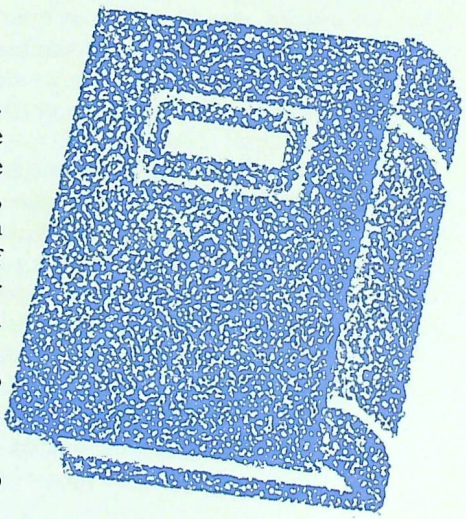
KEY TO TRADE DESIGNATIONS

Acc.	— Accounts
C.E.	— Construction Engineering
Clk. Adm.	— Clerk Administrative
G.L.	— General List
M. Com. Tech.	— Master Communications Technician
M. Rdr. Tech.	— Master Radar Technician
Med.	— Medical
Smn.	— Seaman
Sup.	— Supply
Sup. Tech.	— Supply Technician
Tel.	— Telecommunications

Books

In old age we have the pleasures of the mind. Then it is good to have made friends with the great minds. From the day we leave college we should begin our education: first, by living; second, by reading. I grant you that life is better than learning, but even the second-hand experience of reading is valuable and delightful. Just remember that in some mysterious country of the mind, all the great writers, artists, scientists, philosophers, are still there, waiting for you. All you have to do is open a book, sit before a statue or painting, and there they are.

(Will Durant)



Maginot Mentality

By Marshal of the R.A.F. The Viscount Trenchard

(Reprinted by courtesy of "Everybody's" U.K.)

I HAVE listened to many discussions and read a number of articles on plans that are being made for defence in order to prevent war, or, should war come, to ensure that the civilised powers are not placed at a disadvantage.

Much is being said about the Atlantic Pact, the Brussels Pact, and arrangements for the defence of the Far East, Korea, Formosa, Malaya and the Middle East. Papers and periodicals publish large numbers of maps of various parts of the world illustrating the positions of overseas bases, the dispositions of potential enemy forces and sources of raw material; for maps have always influenced military thought and planning, and they always will.

At the end of the nineteenth and beginning of the twentieth century, maps in British schools showed Great Britain in the centre, America on the left and Europe and Asia on the right. Moreover, the Mercator Projection (which shows the whole world on a flat surface, thus distorting the relative size of the countries) was very misleading.

Old Maps Useless

With the rise of aviation and consequent discussions on the use of air power, it was apparent that the old maps were not only inaccurate, but gave a completely wrong military impression. In fact, the study of aerial warfare has made it necessary to alter our conventional ideas of the map of the world.

When I was Chief of the Air Staff, 30 years ago, I obtained a map with the American continent in the centre instead of Britain. This gave me quite a different idea of the world from a military point of view.

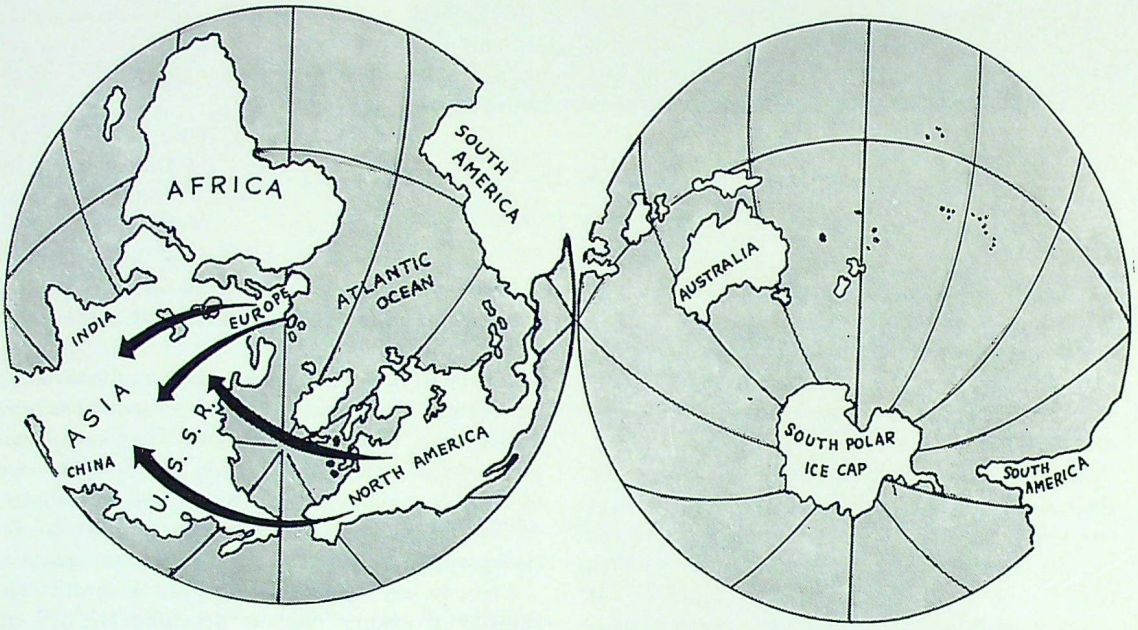
Many years later I found that the Brookings Institute at Washington, U.S.A., had published a map of the world divided into two hemispheres. This showed that the "land hemisphere," embracing all Europe, Asia, Africa, North America and the greater part of South America, contained 94 per cent. of the world's population and 98 per cent. of its industrial activity, whereas only 6 per cent. of the population and 2 per cent. industrial activity are to be found in the "water hemisphere."

This, in my opinion, is a more accurate conception of reality than is provided by the old Mercator maps, to which we have all been so long accustomed, and it proves that to all intents and purposes of strategy we have only to deal with one hemisphere.

I feel that the Services and political authorities have not yet fully realised how air power has altered the world; how distances have shortened. Space on this planet has been conquered; there is no such thing today. It does not make sense to talk about the Atlantic Pact, the Brussels Pact, or the *Middle* East or *Far* East. It is now *one* world.

During the 1914-18 war, defensive weapons became so formidable that trench warfare was forced on the opposing armies, and because of this many people thought that this form of combat had come to stay. So much was it believed that the French built their Maginot Line and we fortified Singapore, Hong Kong and other places without making aerodromes; yet the next war proved all these defensive measures to be quite useless. This was due in a large part to the development of air power.

During the 1939-45 war, we learned that it was essential to have aerodromes surrounding all the enemies' territory at strategic points, from which bombing raids could be carried out. This was



necessary because of the comparatively limited range of fighter aircraft providing cover, but we are under no such limitations today. I have said that space has been conquered on this planet. We can now build, and have built, fighter and bomber aircraft with a range of 5,000 miles and more. These machines can carry a load of bombs or an atom bomb to any part of the "land hemisphere."

A Rude Awakening?

In the 1939-45 war it took hundreds of aircraft to do the work which one can do today carrying the atom bomb. It is no exaggeration to say that one or two bombers can do the damage a thousand did on Cologne or Hamburg — and can travel ten times the distance to do it.

It has been said, perhaps with truth, that the military staffs of all nations always make their plans and prepare for the *last war*. As far as I can see, that is what is being done now; we are preparing to fight the next war on the basis of 1939-45 — like the Maginot Line after the 1914-18 war. If this is so, and a third world war comes, I fear we shall have a rude awakening.

In the last great war air bases were fought for all over the world. In the islands of the Pacific, in North Africa, in Southern Europe and many other places (with all that it meant in transporting millions of men to hold air bases or islands, the millions of tons of war material, the thousands of ships to carry them and the ships to protect the transports from submarines) it was necessary to have the air bases to provide cover for the ships and armies. But with the tremendous increase in range and striking power of modern aircraft, these scattered bases are unnecessary, and to plan on the lines of the 1939-45 war over again is to be caught in a vicious circle.

Yet we are still talking of "balanced forces" between the Navy, Army and Air Force — which presumably means that we intend to use ships and their escort vessels, that we mean to maintain garrisons in far-distant places, and keep those garrisons supplied with millions of tons of war material, and that the ships and garrisons will have to be protected from the hazards of submarines and air attacks on their lines of communication throughout the world.

The Western democracies are at a disadvantage with regard to manpower for armies. They are at

a disadvantage economically in that they have high standards of life to maintain. Can the Western peoples keep up their standard of life and provide sufficient of their "balanced forces" in all parts of the world to repulse aggression at any point chosen by the Communists? The answer is NO.

Vital Front

Can the Western democracies build up an invincible fleet of long-range aircraft whose striking power would deter any aggressor? Could this fleet actually repulse aggression with few or no ground troops to help it? The answer to the first question is YES, and to the second question YES — after the three or four years it would take to build the necessary aircraft.

I do not suggest that we should withdraw our troops from Germany and Austria; indeed, it is essential to maintain and even build up our position in Europe; on that vital front we cannot afford to yield an inch. Moreover, at the present moment we have not the long-range aircraft and therefore it is necessary to have a strong army and tactical air forces on the Continent while we are building a powerful airfleet.

The next few years should be a period of transition during which time we should place the weight of our defensive preparation on the side of long-range aircraft, and thus, as our air-power increases, the strain of maintaining large ground forces overseas would be progressively reduced.

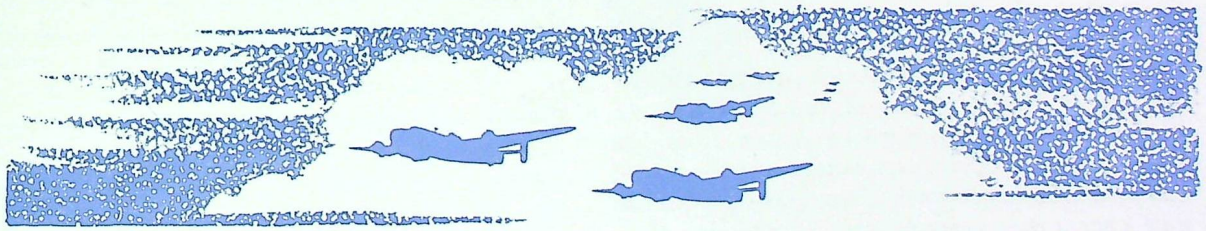
My object in writing this article is to ensure that we begin to build these essential types of machines *now*, and not wait, as we did in 1939, until after war has started. Then we were fortunate in being granted time, but in the next war time may not be on our side.

I would recommend that those who are prepared to consider these matters should read the new book, "Air Power: Key to Survival," by Major Serversky (Simon Schuster, New York, 1950). This book is nearer to my own views on defence questions than anything I have heard or read, in this country or any other, about the future of world defence.

The peoples of the West are at an advantage in that they have a high standard of general education and technical development. They can maintain their standard of life and at the same time develop one type of force which can strike anywhere on the earth. By the might of her Navy, nineteenth-century Britain ruled the majority of the world, and by the might of an air fleet of ten times the range and five hundred times the striking power of the last war, Western civilisation can face and overcome the menace from the East.

If we wholeheartedly and unreservedly put our weight into producing the machines, to be operated from home bases in Britain and the U.S.A., this would give us far greater security than establishing or maintaining these far-distant bases, which are only moderately safe in the world today.

By this means we should save untold manpower and material and the saving thus achieved could be put into the provision of more and more long-range aircraft. It is the greater range of aircraft and not the atom bomb that has changed warfare.



The Part of Strategic Bombing in Modern War

By Wing Commander W. P. Whitworth, A.F.C.

(*Reprinted by courtesy of the "R.A.F. Quarterly"*)

INTRODUCTION

Definition of Terms

IT IS THE PURPOSE of this article to discuss, in the light of events since the First World War, what part strategic bombing should play in modern war, but before going into detail on this subject it is advisable to explain the exact meanings attached to the terms and words employed. Therefore the following definitions will apply:

Strategic Bombing Operations.— Those air operations whose main purpose is to deliver bombs on to an enemy target; but excluding air operations in direct support of land or sea forces.

The Object of such Operations.— To attack effectively those enemy targets whose destruction is best calculated, at the time, to undermine the enemy's power or will to continue the war.

Air Superiority.— The general war situation in which the enemy air forces are unable to interfere effectively with our own operations by land, sea or air.

Modern War.— War which may occur at the present time or within the next ten years.

Strategic Bombing Operations

Strategic bombing operations were carried out throughout the six years of the Second World War, though the conclusions drawn from the results of these operations were extremely varied and often contradictory. Since the war ended, however, it has been possible to examine these results in much greater detail and in much better perspective than was possible during the war. This examination has established several basic conclusions regarding strategic bombing and has given valuable indications as to the correct use of strategic bomber forces in modern war.

Having studied the conclusions that can be drawn from the results of strategic bombing in the last war, it will be necessary to relate them to present-day conditions, and to see in what way the basic requirements for successful bombing could be met by the types of aircraft and equipment likely to be available. This study will thus provide the final answer concerning the part that strategic bombing should play in modern war.

LESSONS LEARNT FROM THE SECOND WORLD WAR

Air Superiority

In modern war a country needs air superiority before it can even begin to wage war successfully; and without air superiority it is useless to consider the various forms of warfare that might be employed against an enemy. This lesson was demonstrated time and again throughout the Second World War, firstly by the Germans and then by our allies and ourselves. The German method of obtaining air superiority was to attack the enemy air bases with as much surprise as possible and with as strong a force of bombers and fighters as could be assembled. In this way the enemy air forces were put out of action almost at once, and were kept out of action by attacks on the aircraft factories, or repeat attacks on the air bases. This method stood Germany in good stead

in all her earlier campaigns; notably, in Poland, Norway and Holland; but it did not prove successful in the Battle of Britain. From that time onwards we were able to fight for the one thing that could give us final victory — time — and with time we were able, very gradually, to build up and then establish air superiority over the German air forces.

The absolutely essential requirements for air superiority, before undertaking any major campaign against a modern enemy, is the most important lesson that can be drawn from the Second World War. Whether the intended campaign is to be by land, sea or air forces is of comparatively small importance.

National War Effort

In the last war we did not attempt to win the war with air forces alone, or even with air power as the most important means of defeating the enemy. From 1940 onwards the Cabinet certainly did give aircraft production the highest production priority, so that Bomber Command should be expanded to its greatest possible strength. But this did not give a true picture of the proportionate distribution of the national war effort. In 1940 the man power of the Army was about six times that of the R.A.F., while by 1944 the Army still had three times the numbers of the Air Force. Of the direct war effort the Army accounted for about half, while the R.A.F.'s share was nearer one-third. Again, taking into consideration all normal factors, the bomber force itself took only about 12 per cent. at its peak, and over the whole war only 7 per cent., of the direct war effort. This shows clearly that we did not attempt to use the air as the real war winner, but rather that we relied on the combined efforts of all the three Services to achieve victory.

Bombing Policy

Our early bombing operations against ships of the German Fleet immediately disclosed one very important fact; that is, we found that our bombers, unescorted by fighters, could not stand up to the attacks of the German fighters. We had concentrated our whole fighter production on fighter aircraft for home defence, and at that time we had no fighters that were fit for escort duties. This situation forced us to resort to night bombing and this change in policy seriously affected our bombing throughout the war. By day the pilots and bomb aimers could see the target (if they got to it), but by night the inaccuracies were tremendous; this fact was to prove a definite disadvantage to us in by far the greater proportion of our bomber operations. Further, owing to frequent changes in the war situation in the early stages, too many targets were being attacked with too small a force of bombers. Thus, in July, 1940, thirty-one oil targets were attacked, twenty of them with less than twenty tons of bombs; this was a complete waste of effort, and little or no permanent damage was done to the selected targets, though the bombs could ill be spared. Again, during the summer of 1940, 3,000 tons of bombs were distributed between eight distinct and varied target systems. Not only was our bombing effort being dispersed over too many targets, but it was also apparent that the effect of a given tonnage of our bombs had been overrated by the experts concerned. A further point was that our standard of navigation and target recognition at night was so poor that it was useless to expect our bombing (except by moonlight) to have any success against small targets. This led directly to the selection of larger targets ("area" targets as they were called) so that we would have targets capable of attack by our bombers throughout the hours of darkness — particularly as the German night defences had caused heavy casualties among our night-bomber aircraft.

The operational necessity for "area" bombing was not in itself the only reason for the adoption of this policy, since it was considered by our economic experts that the German economy was stretched to its limit, and that any general chaos caused to German industry would also adversely affect the direct war industries. It was also considered that attacks on the urban areas of industrial towns would not only render thousands of workers homeless and lower their morale, but would incidentally cause great damage to industrial plants, power services, public transport services, etc. In this

Krefeld. An example of wasteful bombing. This type of "area" attack was devastating to the towns and cities concerned, but did little to reduce Germany's overall industrial output.

war it was hoped to reduce the total German output of armaments by as much as one-third. It is now known that this assessment was wholly inaccurate, in that the morale of the homeless workers remained extremely high under the worst possible conditions, and the output of armaments in Germany rose steadily throughout the war until the latter part of 1944.

The devastation, over a period of more than three years, of all the major German cities and industrial areas, on the false assessments of economic experts backed by military leaders, must be classed as one of the most serious blunders of the Second World War. Admittedly, huge defences were organized and continuously employed by the enemy, at a great cost in man power and materials, but the fundamental error in the selection of "area" bombing as the rôle for our strategic bombers is undeniable.

Bombing Accuracy

Bombing is dependent on accuracy for its effectiveness; without a certain degree of accuracy it is useless, no matter how efficient the particular type of bomb. It is therefore instructive to discover what degree of accuracy is considered acceptable, and what is not, for strategic bombing. From a study of the detailed results of bombing during the Second World War it is possible to draw the following general conclusions:

Night Bombing by a Main Bomber Force.—

This was the type of bombing in general use by the R.A.F., and was normally carried out from 15,000 to 20,000 feet. It was capable of devastating vast areas within cities, but it was unsuitable and extremely wasteful against small, isolated targets. Accuracy of bombing was at first very poor, but by 1944 the average error of such attacks could be taken as 500 to 700 yards from the centre of the target. This type of bombing could be carried out in all but the worst weather, using target-marker bombs to indicate the target.

Day Bombing by a Main Bomber Force with Fighter Escort.—

This type of bombing was used extensively by the American air forces and occasionally by the R.A.F. Visual identification of the target was essential, and accuracy was very similar to that of night "area" bombing, *i.e.*, 500 to 700 yards from the centre of the target. The success of such attacks was entirely dependent on the weather.

Day or Night Precision Bombing.—

This bombing required specially trained squadrons, who normally attacked from 15,000 to 20,000 feet with an extremely accurate bombsight. An average error of 150 yards from the centre of the target was obtained, and highly successful attacks were made on small, isolated targets, though good weather was essential for these attacks.

Day Bombing at Low Level.—

This bombing required specially trained squadrons and was used only against selected targets of importance. Bombing was from very low altitude (100 to 200 feet) and the average error was less than 100 yards from the target.

The basic conclusions that can be drawn from the above information are as follows:

(*a*) Bombing with an average accuracy of 500 to 700 yards is capable of devastating vast areas within cities, but it is extremely wasteful and inefficient when bombing individual targets such as factories or industrial plants. Moreover, since the general devastation of cities and

Marbeck/Rheinpreussen oil refinery — another profitable target. Though attacked many times, it was, in actual fact, put out of action in one bombing raid.

industrial areas has proved to be of little value as a means of waging war, a bombing accuracy of 500 to 700 yards is not acceptable for strategic bombing.

(*b*) Bombing with an average accuracy of 150 yards is effective against all normal targets, and is acceptable as the average accuracy necessary for the successful operation of a strategic bombing force.

(*c*) An average accuracy somewhere between 150 and 500 yards may be acceptable for strategic bombers when attacking certain very large targets.

Concentration on Selected Targets

In the early stages of the Second World War we have seen that the mistake was made of attacking too many different targets with too few aircraft (see under "Bombing Policy" above). But by the later stages of the war (1943) this mistake was appreciated and much more detailed analysis of target systems was undertaken, and attacks on the selected targets were much more concentrated. If this lesson had been learnt earlier it is doubtful if it would have made a great deal of difference to the course of the war, as in the early stages our bomber force was so small that it really was not fit to undertake the destruction of even a few selected target systems.

Nevertheless, it was an important factor in bombing, and towards the end of the war we were able to implement this policy with marked success. By the end of 1943 a very complete analysis had been made of the effects of our bombing on the main railway centres in Italy and Sicily, and this showed that a comparatively small number of attacks on the vital centres had all but paralysed the whole rail system. We therefore made a similar but much larger plan for the attack of communications in Northern France, as a prelude to our invasion of the Continent. Attacks were to be made on all important railway centres (seventy-nine of them in Northern France and Belgium) with the object of disrupting and destroying the rail communications which would be so necessary to the Germans in the event of our invasion. These attacks went on for nearly three months (from March, 1944, until just prior to the invasion) and in that time they had achieved their object; the railways between Germany and the invasion coast were in a state of complete disruption and paralysis.

At this stage of the war another German target system, which had been methodically analysed from the start of the war, gave indications that it was vital to Germany's war effort, and was also vulnerable to our bombing attacks. This was oil; or, more correctly, the synthetic-oil plants. Germany had exhausted her captured stocks and was relying almost completely on the output of her synthetic plants; we therefore undertook the systematic destruction of these plants wherever they could be found. It was a ruthless and continuous attack, with a single object in view — to deny the enemy the use of an essential product for continuing the war. The strategic bombers were concentrated on this task, to the exclusion of all but a few important diversionary attacks, and the results were as striking as they had been with the attacks on railways in Northern France and Belgium. Germany was starved of her vital supplies of oil, and there is no doubt that in due course she would have been forced to cease taking part in the war, without regard to the state of her armed forces or of her internal economy — without oil they were useless assets.

STRATEGIC BOMBING IN MODERN WAR

Air superiority is an essential factor in modern times if a successful war is to be waged by land, sea or air. Therefore, whatever part strategic bombing should play in war, air superiority must be established as soon as possible after the outbreak of hostilities. Assuming that this can be done, the requirements and potentialities of a modern strategic bombing force will be examined in the succeeding paragraphs.

Bombing Policy

In modern war the aggressor is unlikely to give any warning of his intended attack on an enemy, and therefore the strategic bombing policy of any nation must be determined in peace time. Further, a bomber force should be held in readiness to implement the policy as and when required. Before the bombing policy can be decided, however, a vast amount of information is necessary concerning

the internal economy of all likely aggressors. This information must be studied and analysed by the most able scientific and economic experts available, so as to discover a weak spot or flaw in the general economy of each aggressor country. This weak spot should preferably be some raw material or commodity which requires specialized production in only a few centres, but which is essential for continuing the war. Obviously whatever vital targets are chosen, they must be suitable targets for air attack. If the analysis of every type of industry and activity within a country is based on reliable and up-to-date information, it is almost certain that one weak but vital point will be found. Where this is the case, strategic bombing should be used as the main method of defeating that country in war. Where no such vital point can be found in a country's economic and industrial life, strategic bombing certainly should not play a major part in the war against that country.

Limitations of a Modern Bomber Force

Having found and selected targets which are vital to the enemy's war effort, it is necessary for strategic bombers to be able to reach those targets, identify them, and destroy them. The capabilities in this respect of bombers of the last war are known; they had a radius of action of less than 1,000 miles with a good bomb load; today the strategic bombers may require a radius of action of 2,000 miles to play their part in modern war. They will also require expert navigation over long distances, an average bombing accuracy which will give them a reasonable chance of hitting the target, and they must be capable of carrying a bomb load which can destroy or seriously damage the target attacked. Results of "area" bombing in the last war showed that the accuracy obtained in these attacks (500 to 700 yards average error from the centre of the target) was extremely wasteful against normal targets such as industrial works or factories; and the targets that are selected in this case may of necessity be small and isolated. Therefore, bombing errors should be as small as possible, and in any case not greater than 500 yards from the centre of the target. With the modern jet

Hamm marshalling yard: a profitable target. This is the bomb plot of a raid against a vital transport target, where a multi-track railway passes over a river and a canal.

bombers operating at heights of 40,000 feet or higher, at speeds of 400 knots or faster, everything is against accurate bombing from these bombers in a strategic bomber rôle.

Visual bombing, in which the bomb aimer actually sees the target, offers the greatest accuracy at present, but this type of bomb-sighting has the inherent disadvantage that it is dependent on the weather, which, on the average, is fit in only four or five days each month. This would be a most serious handicap to the use of any bomber force, and particularly so when the greatest urgency for bombing operations may well be in the first month or two of a war.

The inability to bomb accurately is therefore likely to be one of the most serious factors which must be considered when determining the correct rôle of the strategic bomber. If accuracy is better than 500 yards, then it is certainly worth attacking industrial targets of a reasonable size; but if accuracy is worse than 1,000 yards, it is doubtful if any use can be found for a strategic bomber force in modern war.

Atomic Bombs

The effects of conventional bombs are well known, but it is possible that strategic bombers will carry atom bombs instead. Atom bombs are,

however, extremely costly and unless the stocks of atom bombs available in reserve, or manufactured during a war, are sufficient to ensure the complete defeat of the enemy, conventional bombs will be required to supplement the atomic attacks. The great difference in using atom bombs is likely to be that colossal damage can be caused in a short time; and it may therefore be possible to paralyze and defeat an enemy in a matter of days. Otherwise, atom bombs do not alter the rôle that should be allotted to strategic bombers; their object is always to find and destroy the vital targets of the enemy; and the same accuracy is required for atom bombs as for the normal types.

Chemical and Bacterial Warfare

A strategic bomber force may be used as the means of carrying chemical or bacterial warfare into the heart of the enemy country. Where an aggressor possesses one or more of these types of weapons of mass destruction, and is prepared to use them ruthlessly against an enemy, the strategic bomber force will play the major rôle in waging this type of warfare.

CONCLUSIONS

The basic lessons that can be drawn from the results of the last war indicate that strategic bombing, in itself, could be a decisive winning factor in modern war. But to achieve this object by means of strategic bombing, any country would have to ensure that the following requirements were fulfilled:

(*a*) The establishment and maintenance of air superiority over the enemy.

(*b*) The possession of sufficient intelligence information about likely aggressor countries to enable a vital weak spot to be found in the internal economy of such countries. (This weak spot to consist of targets which are suitable for air attack.)

(*c*) The possession of a strategic bomber force capable of reaching the enemy's vital targets, finding them and destroying them.

(*d*) The ability to continue attacks against the enemy's vital targets until the enemy ceases to wage war.

At the present time, general indications are that no countries could meet the above requirements fully; therefore, unless a country took steps to remedy its shortcomings in this respect it could not rely on strategic bombing as a war-winning factor. The preparation and planning necessary to establish an efficient bombing force are a heavy commitment on any country; yet without an efficient bomber force a country is unlikely to be able to wage war successfully against an aggressor who has such a force. With modern weapons a well-planned strategic bomber attack offers the chance of a quick victory to the aggressor, as it may well be too late for the country that is attacked to prepare its own offensive. Therefore, for a country which intends to be aggressive, strategic bombing should play the major part in all offensive operations.

The countries which do not intend aggression (including most democracies) are not in the same position as those that do intend it. The former normally cannot afford vast expenditures on preparations for war, and their general policy is more one of defence than offence; thus they are unlikely to possess an efficient strategic bomber force. This is a most dangerous position for the non-aggressor countries, and it can be remedied in only two ways. Either they must face up to the threat of a strategic bomber offensive from an aggressor country, by building up an efficient bomber force of their own; or they must prepare some other plan of defence against the enemy bombers, and relegate their bomber force to a minor rôle in this plan. They will be wise to choose the former alternative, since there is no countermeasure which will prevent an efficient bomber force from achieving its object.

Strategic bombing is therefore destined to play the most important part in modern war; it is the most devastating form of aggression; and the only real defence to it is retaliation on the aggressor by his own methods.

No. 401 Squadron's Pipe Band

By Flt. Lt. S. B. Fleming

DURING THE HALF-TIME INTERVAL at a recent football game in Montreal, a kilt-clad pipe band marched smartly over the gridiron to the strains of the "Queen Elizabeth March." While the spectators were asking one another to what highland regiment the pipers belonged, the public address system announced that they were airmen of No. 401 (City of Westmount) Fighter Squadron of the Royal Canadian Air Force Reserve.

For all its success, No. 401's pipe band is, oddly enough, the child of circumstance rather than choice. The unit had originally intended to have a brass band, but it found itself faced both by a shortage of musicians and with difficulties with the musician's union. Research revealed, however, that bagpipes have apparently failed to impress the discerning ear of Mr. Petrillo, with the result that pipers have yet to become incorporated into the union.

Thus, when a stalwart Montreal Scot, Mr. Jock Laurie, met Wing Cdr. J. W. Reid, D.F.C. (No. 401's C.O.), while on a social visit to the squadron's headquarters, they were free to discuss the possibility of forming a pipe band. On the subject of bagpipes Mr. Laurie knew whereof he spoke. The son of an Imperial Army pipe major who taught him to skirl the pipes at an early age, he arrived in Canada and took up duties as a sergeant in the Black Watch pipe band, where he served for more than twenty-five years. Pipe Major Laurie, as he is now known in the R.C.A.F. Reserve, is a master painter in civilian life.

Most of the members of the band were recruited by Mr. Laurie from pupils he instructed in Montreal. Other bandsmen remustered from various airmen's trades. Including the pipe major, the band is now thirty-three strong. Twenty-three of the airmen are pipers and ten are drummers.

The majority of the bagpipes used by the band

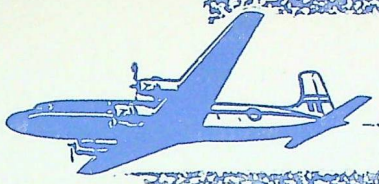
Armistice Day. The Pipe Band leads the R.C.A.F. section past saluting base on Sherbrooke Street.

were specially constructed for the squadron in Scotland, and incorporate the R.C.A.F. tartan. With their tartan kilts, white sporrans and Air Force blue tunics, No. 401's pipe band presents a striking appearance that has never failed to impress those who have seen it in action. Even connoisseurs seem heartily to approve of the new unit, if one can judge by the competitions it has won throughout Canada and the United States since its formation two years ago. The band has carried off many prizes at cities and towns in Eastern Canada, at Syracuse, N.Y., and in New York City. It was the Band of Honour at the Gaelic Mod (or Highland Gathering) at St. Ann's, N.S., where it won first prize as a band and two cups for individual piping.

Should transport be available in 1951, No. 401 hopes to be able to send its pipe band to its spiritual home in Scotland, where the World's Bagpipe Championships will be held at Dunoon, Argyleshire, next summer.

* * *

Although it has no direct bearing on No. 401's pipe band, a note on the origin of the R.C.A.F. tartan may be of interest to readers of "The Roundel." It was designed during the Second World War by Group Capt. E. G. Fullerton, A.F.C., as a derivation of the Anderson tartan, with a generous background of Air Force blue. Officially recognized by the King, it has its place in Edinburgh Castle, the home of all authentic Scottish tartans.



A Tribute to S.A.R.

Chief of the Air Staff,
Department of National Defence,
Ottawa, Ont.

14 Feb. 1951

Dear Sir:

I would like to express my gratitude to the crew of the R.C.A.F. "North Star" aircraft and to the personnel of your Search and Rescue Unit for the mission accomplished on December 28th, 1950.

A young Eskimo child named Matto, from Lake Harbour, was reported dangerously ill in the nursing station and oxygen was badly needed if the child was to live. Our Doctor Corbett at Chesterfield Inlet relayed this information to us and we in turn got in touch with your Search and Rescue Unit in Ottawa, where Wing Cdr. Pearce and Sqn. Ldr. Miller gave us their usual very effective co-operation.

The next morning an aircraft flew over the settlement and dropped the oxygen and some drugs. By this time the child was close to death, having periods of no breathing up to three minutes. As soon as the oxygen was administered, his breathing improved; and in two days the child had recovered enough to be considered out of danger.

The local R.C.M.P. Constable in his report points out that, had the oxygen not arrived, the Eskimo boy would have died. He goes on to say that the Eskimo and other members of the settlement were grateful to the R.C.A.F. as being the chief factor in saving the boy's life.

Mr. S. T. Wood, the Commissioner of the Royal Canadian Mounted Police, who has read this report, has also expressed his sincere appreciation of the prompt response of your personnel to accomplish this mercy flight.

Will you please convey to all the personnel responsible for this flight our deepest gratitude and sincere thanks.

Yours very truly,

P. E. Moore

P. E. Moore, M.D., D.P.H.,
Director, Indian Health Services,
Department of National Health and Welfare.

Letters to the Editor ★ ★ ★

SOMETHING FOR SHATTERPROOF

Dear Sir:

Engineering Order 00-25-1 urges personnel engaged in fuelling aircraft to bring their bodies to the electrical potential of the aircraft by grounding themselves with UNGLOVED HAND against some bare metal part. Also stressed is the precaution of ascertaining proper engine temperature before fuelling by grasping the exhaust stack with the bare hand. Both procedures have their drawbacks in zero weather, and I cannot but feel that the matter should be brought to the attention of Sgt. Shatterproof before most of our northern groundcrew are wandering around with one hand burnt to a crisp and the other frost-bitten.

Flt. Sgt. J. T. Gates,
No. 1 T.A.B., Trenton.

(*Flt. Sgt. Gates' letter has been passed to the old wardog, together with a copy of E.O. 00-25-1.*—Editor)

"HIGH FLIGHT"

Dear Sir:

Some time ago "The Roundel" published the poem "High Flight," by Pilot Officer Magee. To my mind this poem expresses the spirit of flight more fully than anything I have ever read. I would consider it a great favour if you would send me two or three copies of the verses and the illustration that accompanied them.

Flying Officer J. G. Sloan,

R.C.A.F. Station Trenton.

(*There are no copies of the poem any longer available. Since, however, Flying Officer Sloan is not the only reader who has made such a request, we are printing the poem again inside the back cover of this issue.*—Editor)

Answers to "What's the Score?"

Your score is 20. This is April.

1. (*a*) Air Marshal W. A. Curtis.
   (*b*) Western Air Command.
   (*c*) War Assets Corporation.

2. (*a*) Post Office.
   (*b*) Petty Officer.
   (*c*) Pilot Officer.

3. (*a*) Maintenance Command.
   (*b*) Master of Ceremonies.
   (*c*) Military Cross.

4. (*a*) Royal Navy
   (*b*) Radio Navigator.
   (*c*) Registered Nurse.

5. (*a*) British Columbia.
   (*b*) Before Christ.
   (*c*) Hon. Brooke Claxton.

6. (*a*) Air Mechanic.
   (*b*) Ante Meridiem.
   (*c*) Air Marshal.

7. (*a*) Aircraftman.
   (*b*) Aircraft.
   (*c*) Alternating Current.

8. (*a*) Depth Charge.
   (*b*) Direct Current.
   (*c*) District of Columbia.

9. (*a*) Air Transport Command.
   (*b*) Air Training Corps.
   (*c*) Canadian Joint Air Training Centre.

10. (*a*) Permanent Commission.
    (*b*) Progressive Conservative.
    (*c*) Police Constable.

11. (*a*) President of the Mess Committee.
    (*b*) Personnel Members Committee.
    (*c*) Private Motor Car.

12. (*a*) Manning Depot.
    (*b*) Military District.
    (*c*) Medicinae Doctor.

13. (*a*) Aiming-Point.
    (*b*) Air Publication.
    (*c*) Associated Press.

14. (*a*) Confined to barracks.
    (*b*) Companion of the Bath.
    (*c*) Construction Battalion.

15. (*a*) Royal Canadian Artillery.
    (*b*) Radio Corporation of America.
    (*c*) Royal Canadian Academician.

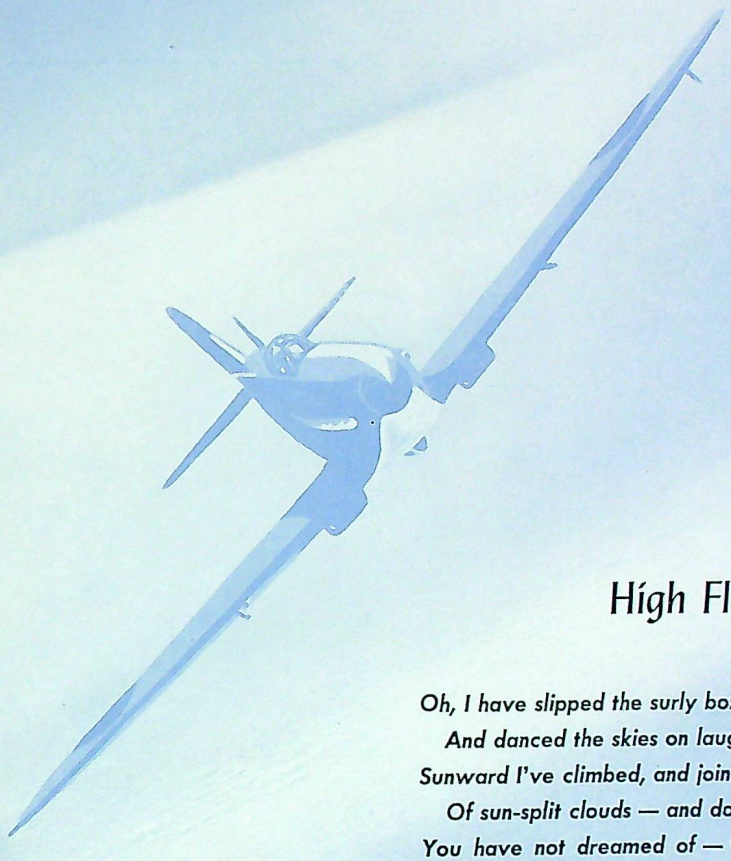
16. (*a*) Post Mortem.
    (*b*) Post Meridiem.
    (*c*) Provost Marshal.

17. (*a*) Typhoid-paratyphoid A. & B. Vaccine.
    (*b*) Trade Advancement Board.
    (*c*) Table.

18. (*a*) Two points in tennis.
    (*b*) Journalese for "the end."
    (*c*) As Caesar wrote it.

19. (*a*) Nova Scotia.
    (*b*) Nursing Sister.
    (*c*) Not Sufficient Funds.

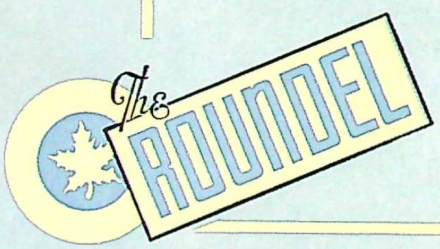
20. (*a*) See (b).
    (*b*) See (c).
    (*c*) See (a).



High Flight

Oh, I have slipped the surly bonds of Earth
And danced the skies on laughter-silvered wings;
Sunward I've climbed, and joined the tumbling mirth
Of sun-split clouds — and done a hundred things
You have not dreamed of — wheeled and soared and swung
High in the sunlit silence; hov'ring there,
I've chased the shouting wind along, and flung
My eager craft through footless halls of air.
Up, up the long, delirious, burning blue
I've topped the wind-swept heights with easy grace
Where never lark or even eagle flew —
And, while with silent lifting mind I've trod
The high untrespassed sanctity of space,
Put out my hand and touched the face of God.

John Gillespie Magee, Jr.
September 3, 1941.


The
ROUNDEL