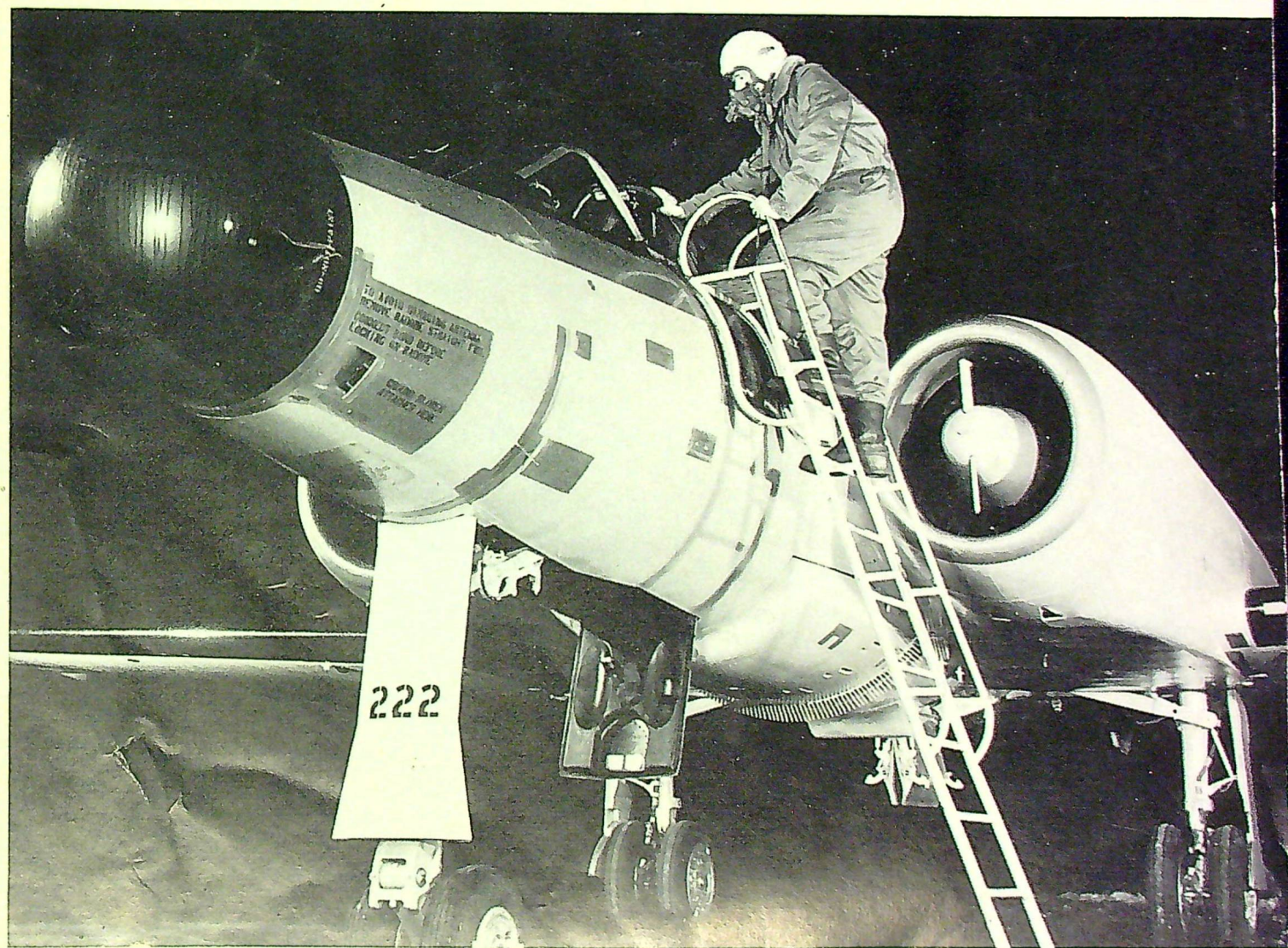


The **ROUNDDEL**

Vol. 7, No. 5
MAY 1955



ROYAL CANADIAN AIR FORCE

The ROUNDDEL

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 Royal Canadian Air Force

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This Month's Cover



When towing targets for practice firing, this CF-100 is rendered clearly visible by its coat of fluorescent red paint.

EDITORIAL OFFICES:
R.C.A.F., Victoria Island,
Ottawa, Ont.

Memoirs of a Canadian in the R.A.F. PART FOUR

By Wing Commander A. L. Bocking, D.F.C.

(Part Three of Wing Cdr. Bocking's narrative dealt very largely with his experiences as a reluctant dog-fancier in Egypt and Palestine. In this instalment, which takes us up to the opening chapters of the Arab Rebellion of 1938, he resumes the main thread of his story.—EDITOR.)

THE FIRST few months of 1938 found No. 33 (Light Bomber) Squadron still at Ismailia, and still flying the Hawker *Hart*. Life in the Suez Canal Zone was severe, placid, and just a little boring. In February, however, the grape-vine hinted that we were going to be re-equipped with Gloster *Gladiators* and thus become a fighter squadron. On March 1st the rumour was substantiated: our name was to be changed shortly to No. 33 (Fighter) Squadron—the first fighter squadron to be formed in the Middle East since the end of the First World War.

The *Gladiator* was the last and most famous of a long line of biplane fighters, and was to enjoy a period of operational fame equalled only by its successor the *Hurricane*. Indeed, the *Glad* had the unique distinction of being the only fighter that faced the Luftwaffe and the Italian Air Force after having already received its baptism of fire while attending to His Majesty's business on the outposts of Empire.

The change-over from *Harts* to *Gladiators* was made with little difficulty, and, now that we were "fighter pilots", our prestige among the members of less fortunate squadrons rocketed to a new high. Our new status as a fighter squadron of course necessitated the display of our prowess in the air on every possible occasion, and a brief period of rather reckless flying ensued. It was brought to an abrupt halt by two near-disastrous incidents which led to a firm clamping-down by the C.O.

The first incident concerned the Officer Commanding "A" flight, who had found an excellent audience aboard a packed troop-ship in the Suez Canal. After several low-level passes over the cheering soldiers, he ended up with the usual grand flourish—a half roll followed by an inverted climb. Unfortunately, near the end of this manoeuvre, the *Gladiator* (which had been subjected to stresses never bargained for by its designers) came apart at the seams. The centre section collapsed first, at which point the pilot and the *Glad* parted company. After further disintegration of the aircraft, sundry wings and control surfaces found their way to the ground not many yards away from the pilot, who was sitting on the desert sands, shaken but unhurt, under his collapsed parachute.

The second incident occurred on the evening of the same day. Though less spectacular, it was more nerve-wracking and lasted over a longer period of time. I was doing a low-level beat-up of Port Said at night when a landing-wire broke. (Landing-wires were the heavy gauge wires that ran from the top of the centre section down to the outer struts of the bottom wings.) It whipped back and smashed the cockpit hood, causing me some minor facial cuts and a bad nose-bleed. The slipstream, whipping through the broken canopy, soon made the cockpit look like an *abattoir*. Of more immediate concern was the fact that the wire had snapped back and had penetrated the

bottom wing, jamming the aileron controls so that the aircraft was in a slight turn to the left, which I couldn't correct except by excessive skidding and hard right rudder.

I briefly considered using my 'chute, but I felt that the loss of two aircraft in one day would take a bit of laughing-off by the squadron; so, by some unorthodox flying and judicious use of throttle and rudder, I managed to get back over the flare-path. The resultant landing was only briefly visible to the O.C. night flying and the small crowd assembled at no. 1 flare. This was lucky, for immediately after touch-down I disappeared promptly into the black Egyptian night to end my landing-run, without further hurt or damage, under the mooring-tower (for dirigibles) in the far north-west corner of the landing-area.

* * *

There were normally three flights to a squadron: "A" Flight, "B" Flight, and "C" Flight, each having its own colours of yellow, red, and blue, respectively. I was by this time the flight commander of "B" Flight, having reached the exalted rank of Flying Officer some time previously by virtue of time in rank and having passed the promotion "A" examination. To pass the promotion "A" exam. needed about as much concentrated effort as it takes to get to become a Flying Officer today. The examination consisted of two parts: drill and an oral trade exam. For the drill portion I reported to the R.A.F. Station at Heliopolis, a suburb of Cairo. Together with several other young hopefuls, I was taken out on the parade square at 0630 hours, where, under the rather bored supervision of Flt. Lt. "Chicken" Blain, we were to drill a dozen or so disgruntled airmen who had been swept out of the wet-canteen not long before.

The drill went along very well for a while. The hopeful Flying Officers-to-be executed some smart "left turns" and "right turns" with their disinterested flight, and one or two even attempted a bit of marching about. This latter manoeuvre caused some alarm in the ranks, and Chicken directed a few rather suspicious looks at the embryo Air Marshals. The whole thing was ex-

ceedingly tame. I decided that, when my turn came, I would liven things up a bit and get some really high marks.

Unfortunately, my first loud bellow of "Flight!" (intended to rouse my airmen from their lethargy) broke into a shrill falsetto, which so frightened two of the sickest-looking airmen that they dropped their rifles. (Quite unfairly, I lost marks for this.) In an endeavour to redeem myself, I attempted a "fix bayonets". By some miracle, this went off without a hitch. Flushed with success, I gave a sharp "right turn" followed by a "quick march". But now that I had them under way, their bayonets gleaming in the sun, panic set in. The only order I could remember was "at the halt, facing left, form flight mass". I had no idea what this meant, but, since my flight was plowing stolidly forward through the sand in the direction of the airfield, I thought it would sound better than a plain "halt" or even "good-bye". So, in desperation, I gave the order.

It appeared that I wasn't the only one who didn't know what it meant. For a time, complete chaos reigned. Why no one was stabbed to death with a bayonet, I'll never know. I must have received some marks for originality, though; because, having done fairly well in the oral trade examination, I was advised that I had "passed". Chicken told me later that evening over a pint of ale that never as long as he lived would he forget the look on the Corporal's face when I gave that incredible order.

* * *

Summer found Sqn. Ldr. "Hotlips" McReynolds still C.O. of No. 33, and my fellow flight commanders were Flying Officers "Ace" Hawkins (a Canadian) and Bolingbroke. Ace was later killed in a *Boston* over Europe, and Boly, after winning a D.F.C. in the Arab Rebellion, was killed in the Western Desert while flying a *Gladiator*.

Old days are apt to be loosely referred to as "good". Over the years, it is easy to forget the sticky nights, sand flies, fleas, and malaria. It is not, however, easy to forget the cool clean mornings when one was awakened by a gentle raising and lowering of one's leg by a cheerful but careful

bearer who had a firm hold of a big toe. (He held it at arm's length, because he had learned from experience not to come within reach until he had ascertained the effendi's morning mood.) It was good to be alive and to breathe the crisp cool desert air into one's lungs. It was good indeed to be young and a fighter pilot.

The days started at 0600 hours, inevitably launched by a cup of steaming hot tea, incredibly sweet, served in a thick battle-scarred mug. A typical early morning flight might be a three-aircraft formation practice along the Suez Canal, north to Port Said, or over the green oasis of Ismailia and south down the silver ribbon of the canal, above the twin columns of the Anzac Memorial (erected in honour of the Australian and New Zealand Army Corps who had fought the Turk and the German along this vital Empire life-line not so many years before), and on down past the Great Bitter Lake to Suez itself, with its towering hills of bleak and bare stone dropping precipitously down to the blue-green waters of the Gulf. Those were the halcyon days.

* * *

If this narrative so far appears to have treated serious romance in a rather cavalier fashion, it is not because the opportunities for romance were lacking. The fact was that I had been waiting for an opportunity to return to Winnipeg and marry a young lady whose books I had carried home from school. In August I applied for and was granted four months' leave, and with a high heart and post-dated cheques I bought a one-way ticket to New York via an Egyptian boat (third class) to Genoa, by rail (third class) to Paris, and by the Hamburg-Amerika liner *Hansa* (you guessed it — third class) to New York. There, my family were to meet me with their car.

The trials of this trip were many. In a Paris pub I met some American fighter pilots who had been fighting in the Spanish civil war. I forget which side they had flown for, but it must have been the losing one, because I changed some Spanish money for them into good Egyptian pounds and I had that Spanish money for years. I never could get rid of it, even in a crap game.

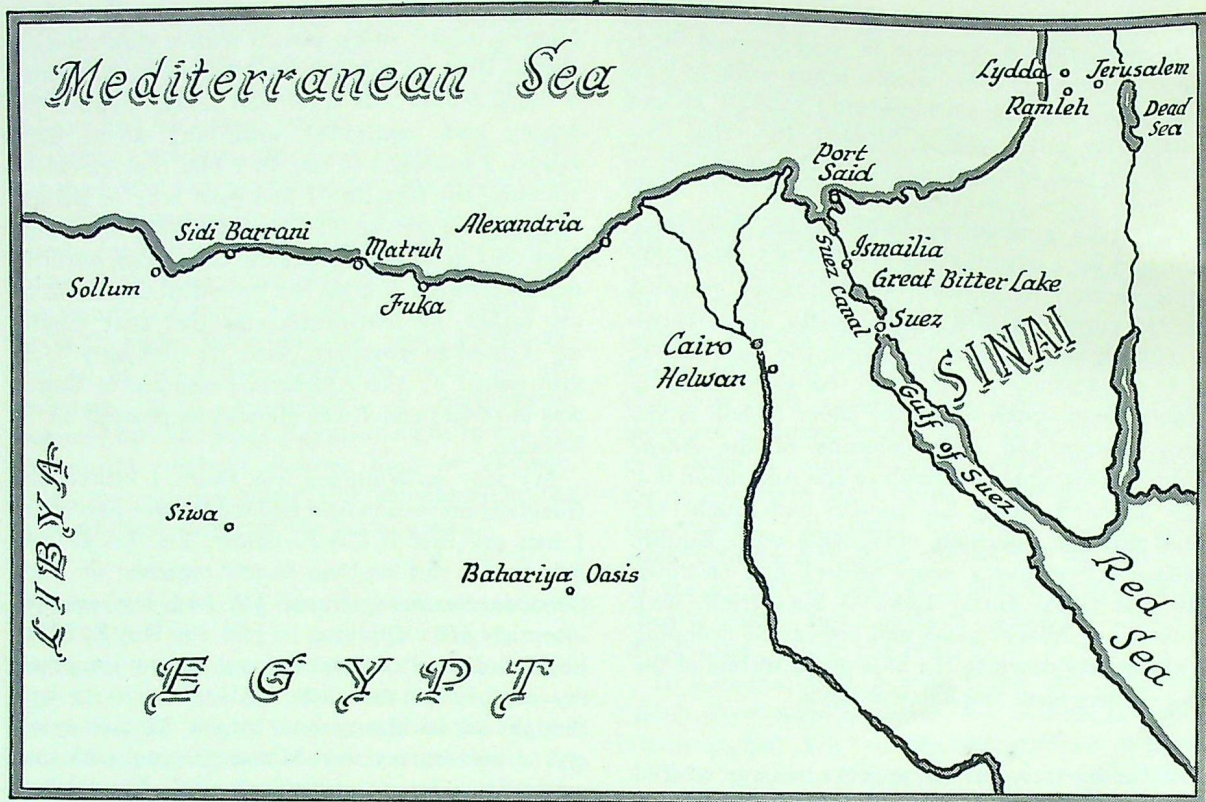
The result was that when I arrived in New York I had a short, sharp session with a gum-chewing official who, on discovering that my total wealth in legal tender was seventeen cents, snapped his braces and mentioned something about Ellis Island. I managed to convince him that, notwithstanding the fact that I had been born in Belfast and had just arrived from Egypt in a German boat, I was a Canadian. Eventually convinced, both by my statements and by the providential arrival of my father, he reluctantly conceded that maybe my Canadian passport, with its necessary U.S. visa issued by the American consulate in Cairo, was in order; and I was allowed to proceed on to Canada.

My stay in Winnipeg was short. I visited old friends at Stevenson field and made some new ones. I met my first R.C.A.F. officer, Flt. Lt. D. M. Edwards,* and we had lunch together at Fort Osborne Barracks, where I'd had my original interview after applying to join the R.A.F. Most important of all, I achieved my aim and married my school-days sweetheart. All this activity was brought to an abrupt end by the Munich crisis and a peremptory Air Ministry signal ordering me to report to my unit "forthwith". Since I had been banking on my accumulated pay over the four-month leave period to buy our tickets back to Egypt, the order came as a bit of a financial shock to a newly-married Flying Officer. My wife's suggestion that I send a telegram back to Air Ministry saying "forth with what?" was tempting, but I deemed it unwise. But, like most problems, this one was finally solved, and we left Winnipeg for Montreal, England, and Egypt, on Oct. 4th of 1938 — four years to the day after my original departure.

* * *

I arrived back in Egypt at the end of October and found that No. 33 Squadron was in the process of moving to Ramleh, in Palestine, to help deal with the rising tension between the Jewish settlers and the Arabs. There had been some changes in the squadron during my absence, the most important one being that a new C.O. had taken

*Group Capt. D. M. Edwards, A.F.C., Director of Air Intelligence, A.F.H.Q.



over — Sqn. Ldr. H. D. McGregor.* His charming wife Jean and his children were going to remain in married quarters at Ismailia during the squadron's absence in Palestine, and the C.O. very kindly suggested that my wife should stay with them.

I will make no attempt to assess the rights or wrongs of the conflict that was taking place in Palestine. The facts that concerned No. 33 Squadron were, in those winter months of 1938, that the Jews were attempting to carry out collective farming on the vast fertile plain that runs from Mount Carmel to the Sinai desert and lies between the Mediterranean and the Judean hills. The Arab, rightly or wrongly, felt that his rights were being violated, and he had resorted to terrorist tactics against the outlying Jewish villages. Whoever was at fault, Palestine was a British Protectorate, and it was the duty of His Majesty's

Government, as represented by the Royal Air Force, to bring peace to the Holy Land — even, as the Irishman said, "if I have to kill you to do it."

Ramleh was a rolling mud-field. As the tides of the First World War had swept across that ancient and embattled land, it had served as an airfield for the Turks, the Germans, and the British, in succession. I had, by virtue of being flight commander, become an acting Flight Lieutenant, and senior flight commander. Under some C.O.s, this position of second-in-command can be a precarious one, and it has not been unknown for its incumbent to find himself being allotted all the more dangerous and less glamorous operations, thus leaving the plums for the C.O. In my case, it was just the opposite. "Mac" was a flying demon. He provided operational leadership by flying on every possible occasion, and the fact that he chose, not the easy flights, but the more difficult and dan-

*Air Vice-Marshal H. D. McGregor, C.B., C.B.E., D.S.O., Chief of Guided Missiles, Air Ministry.

gerous ones, was eventually reflected in his being awarded one of the very few D.S.O.s ever awarded in time of "peace".

Our adversaries, the Arab Rebel Army, reputedly led by one Abdul Razek, were well armed, well trained, and highly skilled in guerilla warfare and terrorist tactics. They used the Mauser 9 mm. automatic rifle and the Italian parabellum. With these weapons they were exceedingly adept in the field of light anti-aircraft fire. This was a direct heritage from the days of Lawrence of Arabia, who had taught the Arabs the art of "leading" their targets. The Rebel Army would make night attacks on Jewish villages, blow up trains, and ambush vehicles on the road. No quarter was asked or given. As in all guerilla actions, its success was largely the result of its ability to fade back into the bleak rocky hills where roads were practically non-existent, and where local villagers, either out of fear or sympathy with the cause, provided food and shelter.

Britain, as always, was reluctant to expose these villages — even the known guilty ones — to the agony of air bombing. With the arrival of No. 33 Squadron, however, the thinking began to grow more stern. No. 6 (Light Bomber) Squadron (Hawker *Hardys*) stepped up its bombing activity and many notorious rebel villages were heavily bombed — but only, of course, after leaflets had been dropped to warn the population that the bombing was to take place. This procedure allowed them to take grand-stand seats on the surrounding hills and watch this display of His Majesty's wrath — the villagers with helpless anguish, the Rebels with smouldering anger.

It was during one of these bombing sorties that No. 33 Squadron drew first blood. An aircraft of No. 6 Squadron had been shot down and had crashed back in the hills near Kolundia. A pitched battle was taking place between an Army column and the Palestine Police, on one side, and a strong force of Arab rebels, on the other. The pilot and the bomb-aimer were the prize. Back at Ramleh, the rain was beating down out of low-hanging winter clouds, and we had just asked the Operations Officer in Jerusalem for permission to "stand-down", when word of the crash and a call

for assistance came in through Army wireless channels.

Ace Hawkins and I were airborne in a matter of minutes. I was leading and Ace was tucked in tight on my right wing. There were no radio aids or forward visibility, but we knew the road to Jerusalem; so, at 200 m.p.h., with our wheels scant feet from the road, we headed for the city. On arrival there, we swung around the tall tower of the Y.M.C.A. building and followed the road north to Kolundia, not forgetting the nearby presence of the tall transmitting-towers of the Palestine radio, unseen and deadly somewhere in the murk ahead. Fortune favoured us in every respect, or maybe we just lived right; for we saw the frantically-bobbing red and white umbrellas of the Army column on our first pass over our destination. We had no difficulty in locating the crashed aircraft but could see no signs of the crew. (They were, in fact, with the Army by this time). The ball-and-arrow code laid out on the ground spelled the message: "Enemy firing from the direction of arrow." Without further ado, Ace and I swung over for a look-see.

We immediately came under fire, and two holes appeared miraculously in my left wing a fraction of a second before the sound of two sharp slaps, as of clapped hands. This quick, accurate, and hostile action on the part of the unseen sharpshooters on the ground came as a bit of a shock. In visualizations of one's first action, it is always the villain who gets shot up (or maybe down) and never in any circumstances oneself — at least, not before large numbers of the enemy have been accounted for. If one *did* get shot (which could, by a stretch of the imagination, eventually happen), it would of course be a slightly romantic type of wound that didn't hurt too much. Now, however, as I looked at the ragged holes in my bottom mainplane, it became apparent that I could have become very dead indeed — and in a very messy and very unromantic manner — if those bullets had been aimed a few inches in another direction. Thus rudely awakened to reality, I called Ace on the radio: "Red leader to Red one. You take the area east of the road and I'll look after the west side." Ace swung out of

sight, and, as I broke left, I saw my enemy for the first time.

Two figures in khaki tunics and Arab head-dress were just climbing over a stone wall. As I dropped the nose of the aircraft in their direction, the whole picture seemed to freeze into immobility. The two figures were clearly outlined in my electric reflector gun-sight, etched in red lines on the windshield, arms over their heads, holding their guns high preparatory to making a leap to the ground below. My mind raced. Gun-sight was on, cockpit guns cocked, hydraulic reservoir handle in the "up" position, firing button turned from "safe" to "fire". All these things were done, and in the fraction of a second before I pushed the button I realized that these two men were going to die and things would never be quite the same again. The four Brownings chattered and the figures on the wall disappeared in a cloud of disintegrated stone and dust. Hauling back frantically on the control column, I pulled out of my dive with a force that jammed me down in my seat. I swung around in a tight circle and saw the bodies of my two rebels lying at the foot of the wall.

With this incident the *Gladiator* was launched on an operational career that was to cover an area from the Western Desert, through Greece and Crete to the Norwegian fjords, and which would culminate in the epic defence of Malta by those three most famous of all *Gladiators*, "Faith", "Hope", and "Charity".

* * *

In case the mention of white and red umbrellas, a few paragraphs back, has left my readers with the impression that the Army entered such operations as this in a gala mood, let me explain that the gaily coloured umbrellas played an important rôle in ground-to-air signals. Soldiers advancing on a village — say, through orange-groves — would be difficult to distinguish from the rebels lurking in the area. A pilot who obtained only a fleeting glimpse of furtive movement might very understandably "shoot-up" the wrong people, particularly as the Army very seldom approached from the agreed direction — a fact which was due, I understand, to the tortuous and rocky nature of

the terrain rather than to any ineptitude at map-reading. To prevent such a tragedy, the column commander carried a large brilliant red umbrella, and the company or platoon commanders smaller white ones. Pilots were known to make the odd dive at the white umbrellas just to see them bobbing frantically. It was not considered cricket to dive at the red umbrellas under which the top Brass clustered in distrust.

This distrust was not unjustified, as the standard of air-ground co-operation was low — thanks, mainly, to a lack of understanding or appreciation of each other's job on the part of the soldier and the airman. The education of both was greatly enhanced by detailing all pilots in turn to accompany a ground attack on at least one operation. This was an extremely uncomfortable and hazardous business, and one trip was usually sufficient to give the pilots a healthy respect for their comrades on the ground and to allow them to explain something about air operations. As the months went by, this army-air co-operation improved until we eventually became an efficient joint operational team.

* * *

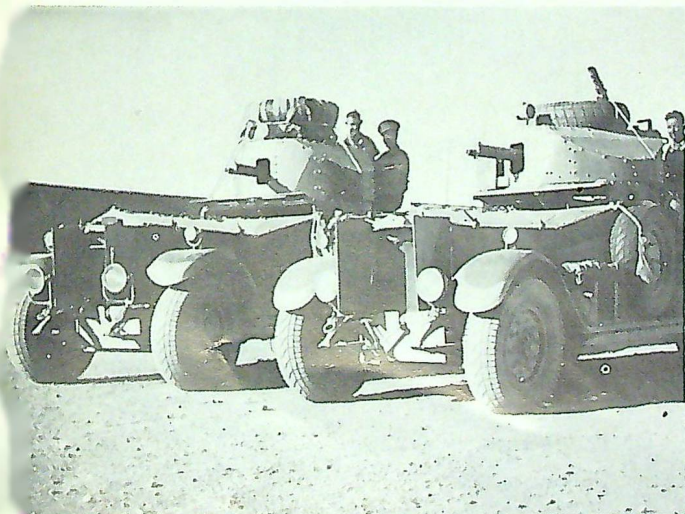
As the winter rains continued, the mud at Ramleh made it necessary for No. 33 Squadron to move to Lydda, 14 miles to the north. The move of the ground party was made without incident, under the protection of No. 2 Armoured Car Company, R.A.F. This company was equipped with Rolls Royce armoured cars of ancient vintage. The officers and men were as swashbuckling a crew as could be imagined, and not the least swashbuckling of them was Flt. Lt. "Cas" Casano. With a naturally swarthy complexion, hawk-like features, and a devil-may-care air, he could have been a throw-back to the crusaders that roamed these same hills so long ago. Cas was eventually to command this small R.A.F. Armoured Car Company against Rommel in the bigger war that was just around the corner.

The stories of the activities of the R.A.F. armoured cars are legionary, but the one that caused the most amusement, from Alexandria to Damascus, concerned Cas's liver-and-white hound-dog, "Butch". It seemed that Cas and his merry

men were as usual ranging far behind the German lines, deep in the desert south of Benghazi. They had formed a laager for the night with their armoured cars and dug the necessary slit-trenches. Early the next morning they were dive-bombed by Stukas of the Luftwaffe, dropping 1,000 lb. bombs; and everyone headed for cover in the slit-trenches. When the last German aircraft had departed, a ring of faces peered gloomily over the lips of the trenches at a monstrous and deadly-looking 1,000-pounder that lay unexploded in the very centre of the laager.

Did it have a short delay-action fuse? That was the question. As the sun grew hotter, the situation became uncomfortable. No one wanted to make the first move. Suddenly out of Cas's trench came "Butch", watched by a circle of eyes peering red-rimmed through small slits between the desert floor and steel helmets. He sauntered nonchalantly over to the half-buried bomb, and sniffed it disdainfully. Then, apparently deciding that, in a land where trees were so scarce, this was indeed manna from heaven, he proceeded to put it to the obvious doggy use. A roar of laughter arose, and the tension was broken. Treading very gently and driving off in a careful fashion, No. 2 Armoured Car Company proceeded on to the war, leaving the Nazis' bomb to

Cars of No. 2 Armoured Car Company.



Flt. Lt. Casano and Butch.

shatter the still of the desert in its own good time.

* * *

To return to Palestine, in the winter of 1938.

The airfield at Lydda and the terminal building in which we were to live were both still under construction; but to pilots who had never seen a runway, the joy of flying off those fine hard-surfaced strips was adequate compensation for the most primitive accommodation. And primitive it was — just the shell of a building, built, like most airport terminals, in the shape of a three-tiered wedding cake, with the glass-enclosed control tower perched on top like the model of the happy couple. Construction had reached the stage where door-knobs were to be put on the doors and glass in the windows, but there it had stopped. There was no furniture, no heat, and the plumbing worked only spasmodically. R.A.F. H.Q., located in some comfort in Jerusalem, gave us bed-boards and palliasses, a gallon jug of rum, and their deepest sympathy. For the uninitiated, a bed-board consisted of three six-foot planks resting on small blocks of wood about six inches high, on top of which went the palliasse, like an elongated pillow-case stuffed with straw. The rum was provided in accordance with Kings Regulations and Air Council Instructions, and the sympathy was thrown in free.

The airfield itself was surrounded by a strong wire fence, with stone blockhouses placed at strategic locations around the perimeter. These

blockhouses were veritable fortresses, with small slits for windows, complete with steel shutters that could be battened down at the slightest sign of danger. They gave adequate protection to the Jewish constabulary that was providing the ground defence. They did not, however, give much protection to the airfield, and life inside the wire could be precarious.

We had been in the habit, in Egypt, of using a strong portable flood-light, called a "Chance light", to provide illumination for night flying. At Lydda we tried this for a pre-dawn take-off — but we only tried it once. As soon as the light came on, several heavy slugs ripped out of the orange groves outside the wire, and, with a crash of shattering glass, everything was plunged into a darkness which covered a frantic scramble for cover by everyone but the pilot. He, poor wretch, was left sitting in his cockpit wondering what had happened and where everyone had gone so

suddenly. For a while after this, our night take-offs were made without benefit of any illumination save that provided by the stars or moon.

A rather clever trick of the rebels, which could have led to disaster for us, was rendered innocuous by their underestimation of the take-off run required by the *Gladiator*, particularly when the pilot was trying to pull it into the air off the dark runway as quickly as possible. After one pre-dawn take-off, the morning light revealed a string of large boulders stretched across the runway at the intersection. The *Gladiator's* wheels could not have missed them by more than a few feet.

He was a wily heathen, this Arab rebel, and we had to learn fast to keep ahead of him.

(To be continued)

The Suggestion Box ★ ★ ★

The Chief of the Air Staff has written a letter of thanks to the undermentioned N.C.O. for an original suggestion which has been officially adopted by the R.C.A.F.

W.O.2 J. C. Waroway, of R.C.A.F. Station North Bay, designed a chain-drive guard for use on Comstock energizers. Apart from safety considerations, its adoption will prevent damage to improperly hung external power supply cables, and generally reduce wear and maintenance.

W.O.2 J. C. Waroway.



A look through a window at WORLD WAR III

By Field Marshal Viscount Montgomery.

(We are reprinting here, in slightly abbreviated form, a lecture that was delivered by Field Marshal Viscount Montgomery a little more than six months ago to the Royal United Service Institution, in London, England. There can be no better preface to it than a few extracts from a letter written to "The Times" by Marshal of the Royal Air Force Lord Trenchard shortly after the lecture was given.—EDITOR.)

If the fundamentals which he (Field Marshal Viscount Montgomery) states, and which apply whether warfare is atomic or not, had been recognized in the years 1933-38, the ensuing war would not have lasted six years. Next time, should there be a next time, failure of Government to act now will have decided not the length but the result of the war. But the decisions which have to be taken are not easy, because it is not a question of one Service alone, but all the Services, some in a greater degree and some in a lesser degree, to avoid Service disagreements, which are bound to arise only if no decision is given. Of course the Services will co-operate, but their ability to do so efficiently must depend on knowing their broad responsibilities in the future. The Field-Marshal warns us: "We must not be hide-bound by past traditions." There must be "a call to discard out-of-date doctrines and methods and to organize our force so as to take full advantage of the progress of science . . . I can see control of the seas eventually passing to air forces . . . The armies need a simple line of supply based on air-lift. It is my opinion that this vast air organization for the land armies will be best handled by the air forces."
Trenchard.

THE COLD WAR AND THE HOT WAR

SOME may say that World War III is already in progress and that, as usual, it has taken a different form from any other war. It has come to be called the "cold war". It might well have been called the "cold peace".

As we advance further along the road of development of atomic and thermo-nuclear weapons, guided missiles, and ballistic rockets, it will become increasingly clear that a *hot* war will be mutual suicide for the contestants. Therefore the great problem regarding the cold war now in progress is how to win it without precipitating a hot war. Local wars, e.g. Korea, Indo-China, Malaya, Kenya, will no doubt continue to form part of the cold war, but there is a vast difference between them and a hot war. Both are global, the cold war *and* the hot war.

In trying to win the cold war, one side or the other may miscalculate and bring on a hot war, though neither side wanted it. Therefore the true objective of all military thinking today must be how to combine most economically the military measures needed for success in the cold war, with





the development of the military strength needed to convince our enemies that a world hot war would result in their own destruction — no matter how great the surprise they achieved at the outset, nor how ruthlessly they conducted the contest.

The cold war calls for the use of conventional weapons; success in the hot war calls for new weapons. It is obvious that the use of atomic and thermo-nuclear weapons will have a profound effect on the conduct of war, on weapon systems, on strategical and tactical conceptions, and therefore on the organization of forces.

In our reorganization, we may often find a clash occurring between conventional weapons which we know about, and new weapons which we do not know about. Whenever that clash occurs, the solution should be on the side of the long-term new weapons. New weapons must be "phased in" gradually to our existing weapons systems so as to reduce, or eliminate progressively, equipment and weapons which will become out of date as the years pass. I want to make it absolutely clear that we at S.H.A.P.E. are basing all our operational planning on using atomic and thermo-nuclear weapons in our defence. The reason for this action is that we cannot match the strength that could be brought against us unless we use nuclear weapons.

It all calls for a certain reorganization of our forces, and in our strategy. A special group at S.H.A.P.E. has had these matters under very close examination for the past year, and we have reached certain conclusions. We now need the co-operation of national authorities to get those conclusions translated into practical action. In fact, we have reached the point of no return as regards the use of atomic and thermo-nuclear weapons in a hot war.

CIVIL DEFENCE

If we visualize an atomic war, the importance of Civil Defence is apparent. That subject is grossly neglected today. Indeed, there is no sound Civil Defence organization in the national territory of any N.A.T.O. nation, so far as I know. The immense destruction caused by atomic and hydrogen bombs, and the disposal of large numbers of civilian casualties, could not be handled by a few volunteers. Trained and disciplined men under

good leaders would be required, over and above any civilian organization that existed in peace.

Since nuclear attack is now a possibility, a nation must be able to absorb a surprise attack, and survive to continue the struggle. Therefore the whole framework of the Civil Defence organization must exist in peace, with a Chief of Civil Defence and the essential means to implement the plan.

THE FUTURE

In our thinking ahead we need some realistic foundation. Let us therefore consider a war between two powerful groups of nations, and let us call them EAST and WEST. I would suggest we include the N.A.T.O. nations in the WEST.

We will assume that the WEST has at present a superiority in atomic and thermo-nuclear weapons, together with the means of delivery, but that, as the years pass, that superiority is likely to decline. It was Maeterlinck who said: "The past is chiefly of use to me as the eve of tomorrow. My soul wrestles with the future."

Let us, then, consider the future.

* * *

If ever war should come again to this distracted world — which God forbid — weapons of power unprecedented in the annals of war are available for employment. So far as we can see today, we are not justified in depending on air bombardment alone, even with nuclear weapons, to bring a world war to a successful conclusion — still less a local war or disturbance. Wars today can be won only by fighting, and, in a hot world war, fighting will continue in the air, at sea, and on land, until one side loses the will to fight on. Those who are inclined to believe that future wars will be confined to push-button activities would do well to stop deluding themselves.

On the other hand, the skilful employment and accurate application of superior nuclear fire-power *in combination* with the operations of streamlined land forces, can be a decisive factor in the land/air battle. The problem will be, how to force the enemy to concentrate his armed forces sufficiently to offer a worth-while nuclear target,

without exposing our own forces to destruction by the enemy's nuclear attack.

In our forward thinking we must put the emphasis on organization, on tactical conceptions, and on the weapons and equipment that are necessary to enable us to fight in the way we want.

THE HOT WAR BY MISCALCULATION

If a hot war is precipitated by miscalculation, which is always possible, there will not have been the build-up of Eastern land and air forces, nor the strategical deployment of submarines, which are generally taken for granted. In such a case, we, the Western nations, might be temporarily surprised. But if we can react quickly, we would win such a war. It would take a long time for the EAST to build up the forces necessary to do us serious harm, and by that time our air forces will have done a great deal of damage to the Eastern countries.

This type of hot war may come at any time. We must fight it with the weapons we have, and in the way to which our forces are trained when it begins. We must, in fact, do the best we can with what we have, and not be tied to plans designed to meet an entirely different situation.

THE DELIBERATELY PLANNED WORLD HOT WAR

I suggest that such a war will have three phases.

First Phase.— A world-wide struggle for mastery in the air and of the oceans. It will be vital during this phase to prevent enemy land forces overrunning and neutralizing Western bases and territories.

Second Phase.— The destruction of the remaining enemy land forces.

Third Phase.— The bargaining phase, when the enemy's homeland and all it contains is at the mercy of the Western air power. We will then carry the air attack to the point where the enemy accepts our terms.— The second and third phases may be concurrent.

Against the background of this overall strategy, let us consider the war under three headings:

- The War in the Air.
- The War at Sea.
- The War on Land.

THE WAR IN THE AIR

It is clear from the strategy I have outlined that the dominant factor in future war will be air power.

The greatest asset of air power is its flexibility. The main factors in determining the degree of flexibility are the methods of command and control, the range of aircraft, and the mobility of supporting equipment. Flexibility and centralized control of *all* the air forces in a theatre of war are vital to success.

But the WEST has sacrificed flexibility by basing the air command organization on the requirements of "direct support" of the land forces, whereas it should be based on the organization necessary to gain the greatest measure of control in the air. Air power is indivisible. If you split it up into compartments you merely pull it to pieces and destroy its greatest asset — its flexibility.

If we lose the war in the air, we lose the war and lose it quickly. The methods we adopted in the later stages of World War II are not *necessarily* those we should adopt in the next war. In World War II we had almost air superiority from 1943 onwards. It will not be the same in World War III, and we cannot afford to sacrifice flexibility in our air command organization. We must be careful that we do not draw false lessons for the future from the last two years of the late war, by which time we had won the war in the air.

The land-based air forces must always provide whatever offensive air support is needed in the war on land, using air forces that are highly trained in that particular work. But they must carry out this task without sacrificing their own flexibility. On occasions the whole of the available air power may have to be used to help to save the armies from destruction, and the air organization must provide for such a contingency arising at short notice.

Now let us examine the war in the air.

If we can maintain the ability to start a tremendous nuclear bombardment of the EAST *the moment we are attacked*, they cannot afford to do nothing about it. It *must* affect the employment of their air forces. It *must* force them to devote a considerable effort of their long-range air

forces and nuclear weapons to attempt to hit *our* strategical air forces and the installations on which they depend. It *must* force them to expend effort on air defence.

There are three successive stages to consider in the war in the air.

The First Stage

This stage would arise if war comes in the near future. In this period, as I see it, both sides will rely principally on *piloted* aircraft in both the strategical and tactical fields. In this period also, we stand to gain from the balance in favour of the *offensive* in the air, if we can react immediately we are attacked. I see no sign, within this period, of either side being able to create an air defence system which could greatly affect the present balance in favour of the offensive in the air.

The results of this great battle for mastery in the air will have a tremendous effect on the whole war, and we must win it. But we cannot afford to rely on air resources which depend on mobilization. The air forces we need, together with all the means necessary to keep them operational, must exist in peace-time. And we must restore to the air forces the flexibility they have largely lost, by centralizing air command on the highest possible level.

The Second Stage

In the not too-far distant future, the EAST may create a sufficient stock of atomic weapons, and may develop the long-range means of delivering them, effective enough for them to strike, at the outbreak of war, a devastating blow at *our* means of delivering offensive air power. We would not then be able to apply our greater stock of nuclear weapons, and we might therefore lose the initiative in the air war at the start.

At this stage, as far as I can see, both sides will still be relying principally on piloted aircraft, both for offence and defence. Before this period arrives, it will be of tremendous importance that we should have developed, and have in being, a highly effective global early warning system, together with the best air defence that the scientists can give us, in order to prevent our offensive air power being crippled from the start by a surprise attack.

The Third Stage

Later on still, further ahead — in my opinion — than five years from now, the EAST may have developed means of delivering their weapons with accuracy, both short-range and long-range, which do *not* rely on piloted aircraft. Our ability to counter that threat by both offensive and defensive measures will be much reduced, because the targets will be far less vulnerable — whether they are launching-sites, or the weapons themselves actually in the air. Will it then be true that offensive operations by *our* aircraft or missiles will directly affect the enemy's ability to deliver *his* weapons against us?

I do not see the aeroplane disappearing altogether. In the tactical field, I am sure that there will always be tasks for piloted aircraft in support of land and naval forces. The enemy's aircraft used for these purposes, and their bases, will remain an important target for our aircraft and missiles.

Conclusions

Once we have solved the problem of endurance in the air, and an aircraft can remain in the skies for prolonged periods and in all weathers, then air power will be the decisive factor in warfare. That time is not yet; but it will come. What we must do *now* is to organize the command and control of our air forces so as to retain the greatest degree of flexibility, centralizing command in the highest commander who can effectively exercise that command, so that he can wield the available air forces in a theatre of war as one mighty weapon.

If we are attacked, we must set in motion an immediate air offensive on the largest possible scale, directed at the enemy's air forces and at his homeland. The means of delivering an immediate air offensive *must* exist in peace. We must develop an effective, and global, early warning system in order to have some chance of being able to take the offensive in the air should we be attacked. And we must study air defence urgently.

It is vital that our air forces should be able to absorb nuclear attack and survive to strike back. We must get away from the enormous concrete runways of today, and develop aircraft which can



land and take off from small P.S.P. (pierced steel planking) airstrips dispersed over the countryside. This would have a revolutionary effect on infrastructure and result in very great savings of money. In this respect, "vertical lift" aircraft have very great possibilities.

THE WAR AT SEA

No modern development has lessened, or is likely to lessen in any foreseeable future, the dependence of the Western nations on the movement of their means of existence across the oceans of the world, in war, or indeed in peace. In an EAST-WEST war, it is my view that the WEST could not win if it lost control of the Atlantic. If we cannot deploy in Europe the power of the American continent, Europe could fall.

In the open seas the great threats are the submarine and air attack. In the narrow waters, the threat of the mine must be added, and attack by aircraft will be more effective. The first task of the Western naval forces is to make certain that they can deal with any challenge to our control of the seas, and that we do not lose that control.

Naval forces require air support in the same way as do land forces. It is vital, *in the conditions of today*, that navies called on to operate in the great oceans should have their own air forces. The navies of those nations whose work lies *entirely in narrow seas* such as the Mediterranean, or in European waters, are in a different situation. In my view, such navies do not need their own air forces.

What I have said about the war at sea is applicable today and for the next few years. But the more one considers the future, the more the problem of control of the seas becomes difficult to foresee. The question to be faced, and decided, is: "In the future, will the seas be controlled from the sea or from the air?"

When one considers the range and power of aircraft of the future, and the progress that is likely in radar and electronics, I am personally forced to the conclusion that the time will come when the major factor in the control of the seas will be air power. It seems to me that the day of the large warship is over. The emphasis in the

future is likely to be on the smaller type of vessel and on underwater craft.

If it is true that the seas will in the future be controlled mainly from the air, then it is for consideration whether this control would not be best exercised by national air forces and *not* by naval forces. If this is the case, then navies will not in the future require their *own* air forces. That time has not yet come, but in my view it will come eventually. If this is true, then we should not build any more expensive aircraft-carriers.

Until the future is clear in this respect, navies should not be allowed to build independent shore-based air forces designed to carry out, and duplicate, the present maritime responsibilities of Coastal, Bomber, and Fighter Commands of a national Air Force such as the Royal Air Force of the U.K. What it amounts to is that new weapons have not yet rendered the aircraft-carrier obsolete, but they are likely to do so in the future. And I see control of the seas eventually passing to air forces.

THE WAR ON LAND

To fight successfully on land we need the following four essentials, as a minimum:

1. We must have first-class "active" peace-time forces, up to strength and ready at all times to act as our shield *without any mobilization procedure*. These forces must be trained and equipped to the highest pitch — mobile, hard-hitting, offensive troops of magnificent morale, very highly disciplined, under young and active commanders. These are the troops and the commanders who have got to stand firm in the face of the horrors and terrors of the opening clashes of an atomic war. These are the M-Day forces.
2. We need reserve forces, well organized, capable of being mobilized in echelons, and each echelon receiving sufficient training in peace to ensure that it is fit to fight at the time it is needed. These are the post M-Day forces.
3. Our forces, active and reserve, must be backed by a sound logistic and movement organization, which should exist in peace to



the degree necessary to ensure success in the opening weeks of war.

4. We must have a sound Civil Defence organization in each national territory.

The whole philosophy underlying these needs in land forces is that the active forces "in being" in peace will make it impossible for the EAST to launch an attack successfully without a preparatory build-up of their forces, which we would know about. Our active forces will prevent the Eastern forces from reaching our vital areas while we are assembling and moving forward our reserve forces.

GENERAL SUMMARY

Adequate air strength, multiplied by the ability to use nuclear weapons in quantity, increased our chances of successfully defending the WEST if we are attacked. A further point is the great effect that the progress of science may have on the time factor in war. There is a stronger requirement now than ever before for M-Day forces to be ready, in place, and fully effective against a surprise attack. Reserve forces must be organized with relation to the time when they must be available for use. This will affect the state of readiness in which they are maintained, and, to some extent, their organization and equipment.

It seems to me that the early phases of a third world war will shape very rapidly the course of such a war. It would be wishful thinking to say at this time that decision would be reached in a matter of weeks or of a few months. But I suggest to you that a policy of the fullest exploitation of nuclear weapons *early in a war* raises serious questions as to the military worth in peace-time of contributions to the war effort which will have a delayed effect.

Let us have a last look at the war in the air, at sea, and on land.

The Air War

We have got to win the war in the air.

We will not win it unless the air forces are allowed to regain their flexibility and unity, and unless air command is organized accordingly.

We *must* maintain in peace the ability to launch an immediate offensive in the air against

anyone who attacks us. The WEST is vulnerable to nuclear attack. Great offensive power is wasted unless it is married to defensive power and can be launched from a secure base. As time passes and the offensive capability between EAST and WEST levels out, the advantage will go to that side which has the greater defensive strength, which can protect itself against attack, and can survive to strike back.

There is at the present time no sure defence against the aeroplane or ballistic rocket. Indeed, so far as we can see today, trying to get a secure defence against air attack is rather like trying to keep the tide back on the seashore with a picket fence. The best scientific brains we possess should be gathered in to help in the task, working in close co-operation with air forces. I say "air forces" because I hold the view that air defence should be organized and handled by air forces, and that A.A. (anti-aircraft) commands should be handed over to that Service.

The Sea War

Today, the navies must handle this war. They must be given the minimum means to ensure control of the seas and of the approaches to essential ports, and no more. It is essential that they should not dissipate those means on tasks which do not affect the war at sea. But we must not be hide-bound by past traditions. I give it as my opinion that the time will come when the seas will be controlled from the air. If this is true, the future must be planned and organized accordingly.

The Land War

Of all the fighting Services, the armies have the most difficult task as regards organization for the future. It is of little use to superimpose new weapons on World War II organizations and then to try to work out the tactical changes involved. We must examine our armies and their equipment to see what changes are needed in an atomic age. A complete reorganization is needed of the reserve armies of all the Western nations. The present systems for producing reserve armies are mostly out of date.



In the organization of land forces the emphasis must be on strategical and tactical mobility, and on simplicity of weapons systems. We need divisions that can be moved rapidly by air: this will necessitate suitable aircraft for the purpose. To gain full advantage of the immense fire-power that nuclear weapons have provided, and to avoid destruction by enemy nuclear attack, armies must develop a more lively and opportunist type of battle-leader than exists at present, in both junior and senior ranks. Such a leader must be trained to act independently and immediately within the framework of a general plan, rather than on precise and detailed orders or only after reference to a superior. These qualities in a leader apply equally to navies and air forces.

Land forces must become less dependent on roads and more capable of cross-country movement. Armies need a simple line of supply based on an airlift. Today, when supply lines are cut by enemy action, armies cease to operate efficiently. The system of the future should provide air supply to forward maintenance areas from base depots many miles to the rear and well dispersed. Divisions would draw their requirements from the forward maintenance areas with vehicles having a cross-country capacity.

The airlift from base depots to forward maintenance areas must be by some type of "vertical lift" aircraft. The air supply must be capable of being maintained in all weathers, and by day and night. Obviously the distance for this forward air supply should be kept as short as possible; therefore base depots should be moved forward from time to time. I see base depots being replenished by large freight-carrying aircraft which can land and take off from P.S.P. air-strips.

Whether this supply organization should be owned and operated by armies or by air forces is a matter for immediate examination on the highest inter-Service level. No nation could afford to give to one Service the amount of air-lift which that Service would need at any particular peak moment in war. If the airlift organization is to be an organic part of an army, it will cost more than if it was under the air forces, and the army will never have enough.

In war-time, great flexibility will be needed, and the ability to effect rapidly a large concentration of airlift within a theatre of war will be necessary. Great skill will be needed if the lift is to be maintained in all weathers. Air cover and protection will be necessary. An airlift organization must be dovetailed into air operations: you cannot separate an air transport system from air operations.

It is my opinion that this vast air organization for the land armies will be best handled by the air forces, for the reasons I have outlined. Such a supply organization would do away with the vast array of units and headquarters which today constitute the enormous "tail" of a modern army. It would be the first step in restoring to armies the "freedom of the countryside" and the tactical mobility that have so largely disappeared. By simplifying the tail we shall get more bite in the teeth.

The armies of today are becoming road-bound and are weighed down by a gigantic administrative set-up in and around them. Staffs are far too big; the amount of paper that is required to produce even quite small action is terrific. We seem to have lost the art of command, other than by paper. No ordinary man can read half the paper that is in circulation; I doubt if the other half is worth reading.

THE GIST OF THE WHOLE MATTER

Among the Western nations our policy must be strength through unity and peace through strength.

But we must understand that the danger of war is always with us because the fundamental aims of the two sides, EAST and WEST, are in direct conflict. If war is joined, and it becomes general, then nuclear bombardment would become general between the contestants.

A study of war reveals a thread of relentless change. In fact, *change* is inevitable from time to time, and it looms ahead of us today. But *progress* is not inevitable. Progress depends on sound decisions, and then on action. We stand today at the cross roads, not knowing which turning to take.

Absolute defence against air attack will be impossible in the future. A deterrent, the means with which to hit back instantly and to give more than



you receive, is the surest way to make an aggressor think twice before he attacks. The WEST must build up such a deterrent, capable of being delivered immediately through the air. It is then vitally necessary to guard against a surprise attack, and against treachery, and to be able to hold such an attack long enough to enable nations to spring to arms behind the shield and mobilize their collective strength. The Western nations must also retain the ability to absorb atomic and thermo-nuclear attack, and must ensure that their means of instant retaliation are not compromised by surprise or treachery.

In spite of everything I have said, I would issue a most definite warning against rushing into major changes until we are certain that they are sound. What is needed today in every nation is a roll of drums and a clarion call. That call must be one to discard out-of-date doctrines and methods, and to organize our affairs to take full advantage of the progress of science. In particular, I would draw the attention of all national Chiefs of Staff to a verse in the New Testament, which reads as follows:

"If the trumpet give an uncertain sound, who shall prepare himself to the battle."— 1 Corinthians, 14, 8.

We need a clear and certain sound, on an inter-Service key.

On the subject of inter-Service relations and co-operation in the international sphere, I would say this: there is room for much improvement. Before the late war the activities of the fighting Services were largely uncoordinated, in the U.K. at any rate. During the war inter-Service co-operation reached a high standard. Since the war it has deteriorated. We talk about the need for international unity and co-operation; we can hardly expect it if we ourselves do not give a lead with good inter-Service co-operation.

Political, financial, and economic considerations will make it impossible for armed forces to have all they want, or do all they would like. It will become more important than ever to concentrate on essentials and to have our priorities right. Governments have got to ensure that their armed forces and security measures are built up within a framework

of economic realities and against a background of sound inter-Service responsibilities.

If what I say has validity, then the future will call for:

- Bigger air forces.
- Smaller and more immediately-ready regular armies with great strategical and tactical mobility. Better organized and more efficient reserve armies.
- Smaller navies.
- The organization of the three fighting Services based on more atomic and thermo-nuclear power, and less manpower.
- A Civil Defence organization which exists in peace to the degree necessary to ensure that it can operate in top gear in an emergency.

The overall aim should be to get financial expenditure on defence geared to a level which will carry a reasonable defence budget over a prolonged period of years, thus giving continuity and stability of planning.

CONCLUSIONS

In the Navy, the Army, and the Air Force, we have a team. By themselves the individual members can achieve little. The team can achieve victory. The progress of science is likely to change the former responsibilities of the three members in certain directions. Parts of the load are shifting from the shoulders of one Service to the shoulders of another. In particular, the air is coming to the front as the dominant factor in war, and the decisive arm. This is going to introduce difficult problems, and in solving them do not let us bother unduly about the colour of our uniform — khaki, dark blue, or light blue. The important point is to reach the right answer without ill-feeling and inter-Service quarrels.

I have forecast greatly increased responsibilities for air forces. Today, it is doubtful if the air forces could cope with those added responsibilities. If what I have said is true, then the air forces must be got ready over the years to handle the tasks that will fall to them.

We spend today enormous sums in scientific research and development. But new weapons and technical equipment will avail us little unless we have first-class officers and specialists to operate and maintain them. All the fighting Services are below establishment in regular personnel and technicians, more because of the "conditions" of service than because of inadequate pay. Would it be a good thing to get a better balance between the two requirements of scientific development and skilled personnel, since both are essential?

The mobilization systems of today need drastic overhaul. The mobilization system of an atomic age must be such that, on national radio warning, it is effective in a matter of hours rather than days; it must be based on a decentralized method of call-up and dispersed equipment depots; it must be founded on a body of reservists all of whom know in peace-time exactly what to do on mobilization, and are able to do it quickly.

Civil Defence must be moved up to take its rightful place in the national war machine.

"Book of Flying"

Reviewed by Flying Officer W. J. W. Kucharski,
Directorate of Fighter Operations, A.F.H.Q.

Neville Duke's "Book of Flying"* deals with a variety of subjects in the aviation world, ranging from the history of flight to the future of rockets and atomic propulsion in aircraft. The author, whose previous book "Sound Barrier" was reviewed in the April issue of "The Roundel", is one of the world's best-known pilots, particularly for his work in test flying. However, in the chapter "Test Pilots' Tent," Duke does much to dispel the illusion of glamour that surrounds test pilots and shows them more as research workers than daredevil pilots. Even his account of the establishment of a world speed-record, in which the author played no small part, is written with a view to showing some of the preparations which were necessary and some of the problems which were encountered in the undertaking. But the book is in no sense a technical one. Indeed, the fascinating accounts of a fighter pilot on operations and a navigator "B" on the first 1000-plane raid read like fiction.

Written to inform as well as to entertain, the description of a flight in a *Vampire* jet, under the heading "Learn to Fly a Jet," is remarkably vivid. Even aerial navigation, which usually appears to be an unfathomable mystery to the layman, seems

easy as Duke describes it. Well illustrated with many drawings and photographs, the book, though naturally stressing the British point of view, should prove extremely interesting to anyone who has even the slightest interest in aviation.

Among the topics covered by the book is a very readable account of the rôle played by the helicopter in this air age. For the younger reader there is a review of the Air Training Corps, which is the British equivalent of the Royal Canadian Air Cadets. This brief but interesting outline shows what is expected of a cadet who joins the Corps and what advantages he can gain from becoming a member.

The story of naval aviation is neatly told in a chapter having the imaginative title of "The Roof of the Sea." Starting with the first landing of a Sopwith *Pup* on H.M.S. *Furious* in 1917, the evolution of naval aircraft is followed to the present-day carrier-based supersonic fighters and the perfection of the mirror-landing system.

Ending in a prophetic mood, the author speculates on the future of aviation. He makes special reference to rocket 'planes, the fantastic speeds at which they will travel, and the obstacles (such as the problems of heat and gravitation) which they will encounter.

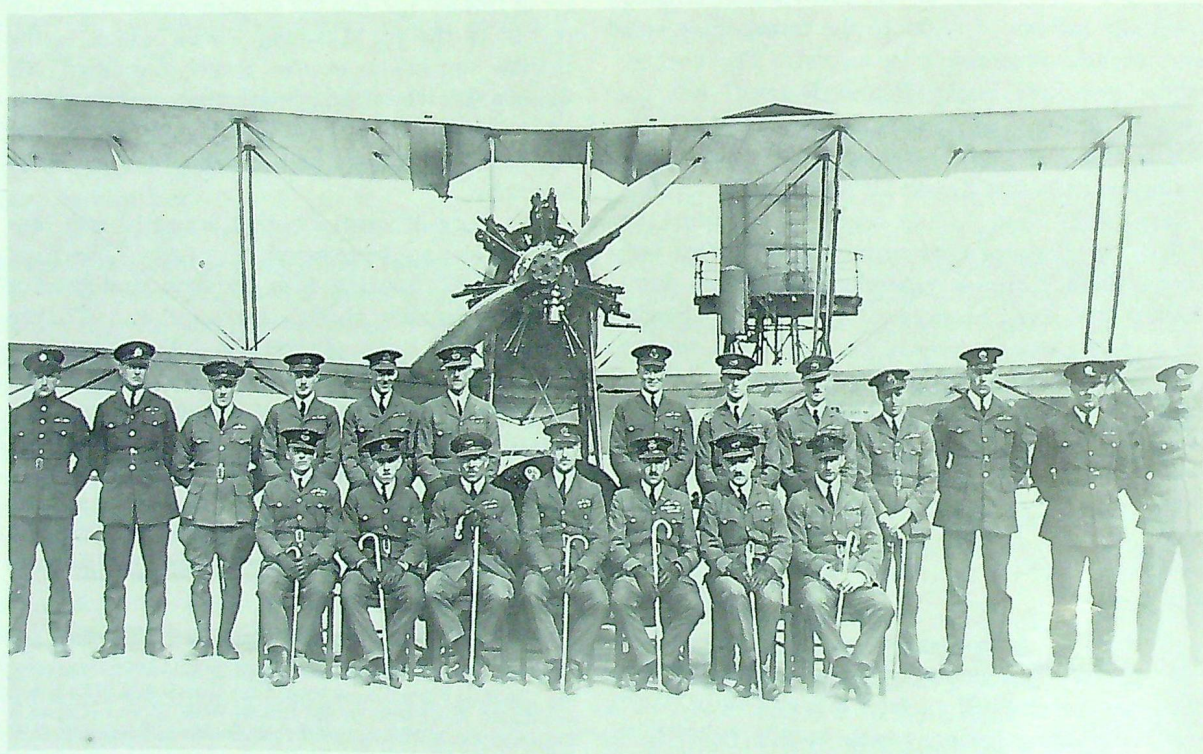
*Written by Neville Duke and edited by Edward Lanchberry, the "Book of Flying" is published by Cassell & Co. Ltd. and distributed in Canada by the British Book Service (Canada) Ltd., Kingswood House, 1068 Broadview Ave., Toronto 6, Ont. 120 pages. \$2.00.

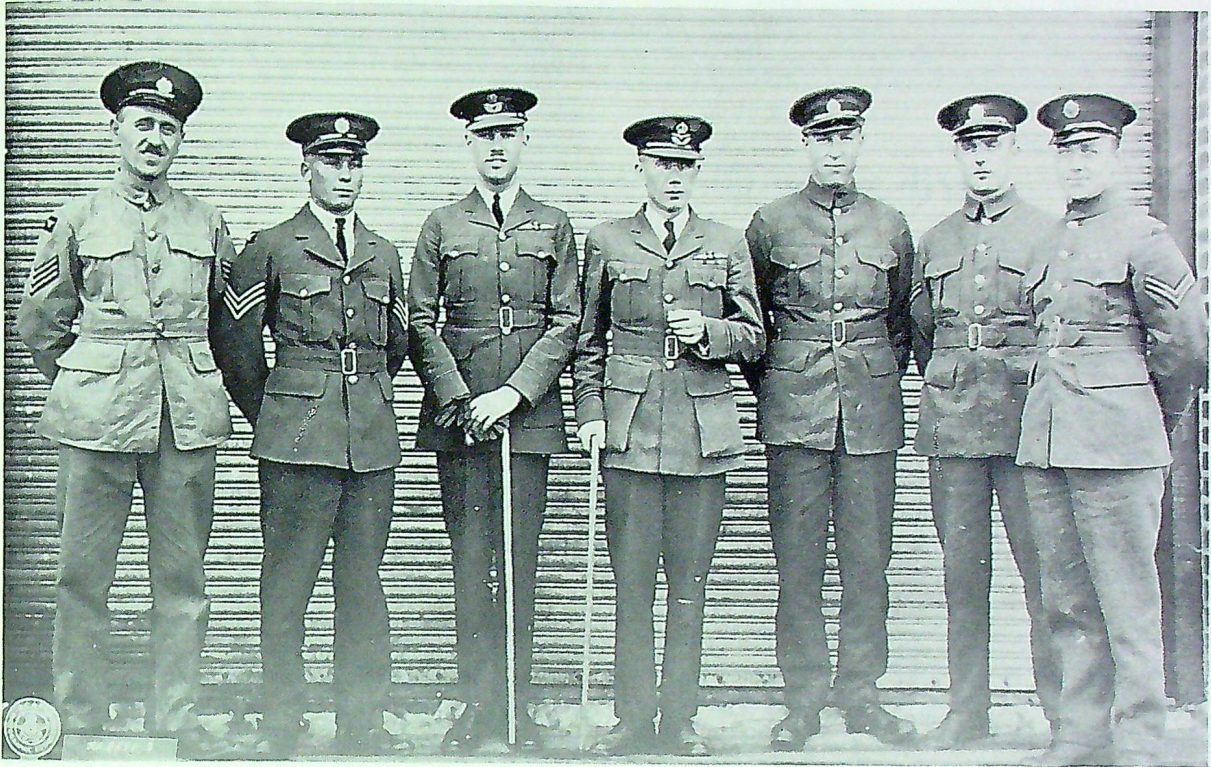
Pin-Points in the Past

Shown in front of the Avro *Lynx* are the members of the R.C.A.F.'s first seaplane course, conducted at Jericho Beach, Vancouver, in the spring of 1928. Seated (left to right): Unidentified, Pilot Officer Donnelly (Stores Officer; released), Flt. Lt. Saddler (R.A.F. exchange officer), Flt. Lt. A. H. Hull (C.O.: Air Cdre., retired), Flt. Lt. C. M. McEwen (Air Vice-Marshal, C.M., C.B., M.C., D.F.C., ret.), Flying Officer A. L. Morfee (Air Vice-Marshal, C.B., C.B.E., ret.), Flying Officer B. A. Davy (rel.). Standing (l. to r.): Flt. Sgt. R. F. Gibb (Group Capt., A.F.C., ret.), Sgt. E. C. Tennant (Group Capt., O.B.E., ret.), Flying Officer M. B. Barclay (rel.), Flying Officer B. F. Johnson (Air Cdre., O.B.E., rel.), Flying Officer MacMillan (rel.), Flying Officer McPhee (rel.),

Flying Officer A. D. MacLean (rel.), Flying Officer J. E. Jellison (Sqn. Ldr., rel.), Flying Officer A. F. MacDonald (rel.), Flying Officer H. M. Kennedy (Group Capt., A.F.C.), Sgt. H. J. Winny (Wing Cdr., rel.), Flt. Sgt. J. Horner (Sqn. Ldr., M.B.E., ret.), Sgt. G. T. Elliott (Wing Cdr., D.C.M., ret.) This photograph was sent to us by Air Cdre. A. H. Hull (ret.).

The other photograph shows the members of a course on the *Lynx* engine which was given at No. 1 Depot, Victoria Is., Ottawa, in 1926, in preparation for flying the first two wooden *Vedettes* from Ottawa to Vancouver. Left to right: Sgt. D. Black (Sqn. Ldr., deceased), Sgt. B. I. Barton (Sqn. Ldr., ret.), Pilot Officer C. R. Slemon (Air Marshal, C.B., C.B.E.), Flt. Lt. B. N. Harrop (rel.), L.A.C. F. J. Ewart (Group Capt., D.F.C., ret.), Cpl. F. Lund (Wing Cdr., M.B.E., ret.), Cpl. W. Keighley (Sqn. Ldr., M.B.E., ret.). We are indebted to Mrs. D. Black for this photograph.





AN AEROPLANE FOR \$800

Shown here is the prototype of a single-seater aeroplane which, according to "Mechanix Illustrated," can be built at home for \$800. The 'plane, known as the M. I. Baby Ace, is powered by a 65 h.p. engine and has a top speed of 110 m.p.h. and a landing-speed of only 30 m.p.h.



THE PARTY LINE

THE CANADIAN SERVICES COLLEGES

PART TWO ROYAL ROADS

By Wing Commander A. H. Middleton, A.F.C.

(The author of the second of our three articles on the Canadian Services Colleges graduated as a pilot in August 1942 and served almost continuously as a flying instructor, both at Service Flying Training Schools and at Central Flying School, until he was posted to A.F.H.Q. in the spring of 1949. After serving in the Directorate of Postings and Careers for four years, he was posted to R.C.A.F. Staff College. On completion of the course, in June 1954, he was transferred to Royal Roads, where he fills the dual rôle of Vice-Commandant and O.C. the Cadet Wing. — EDITOR.)

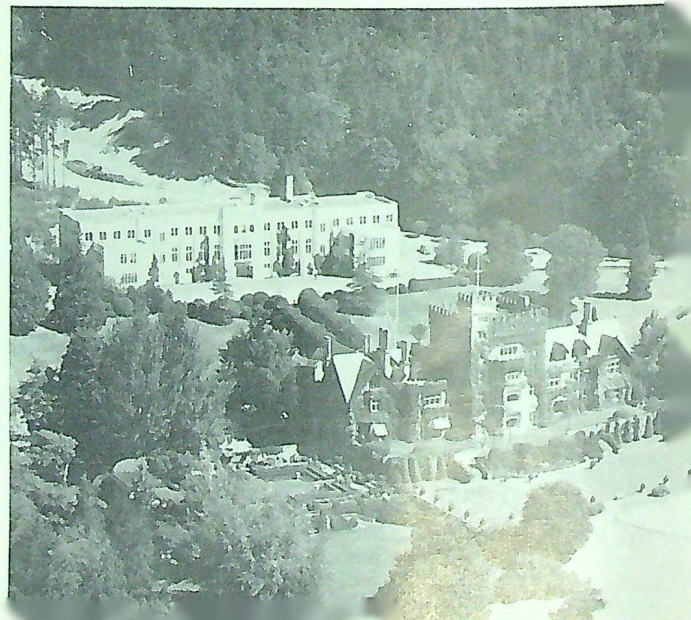
HISTORY

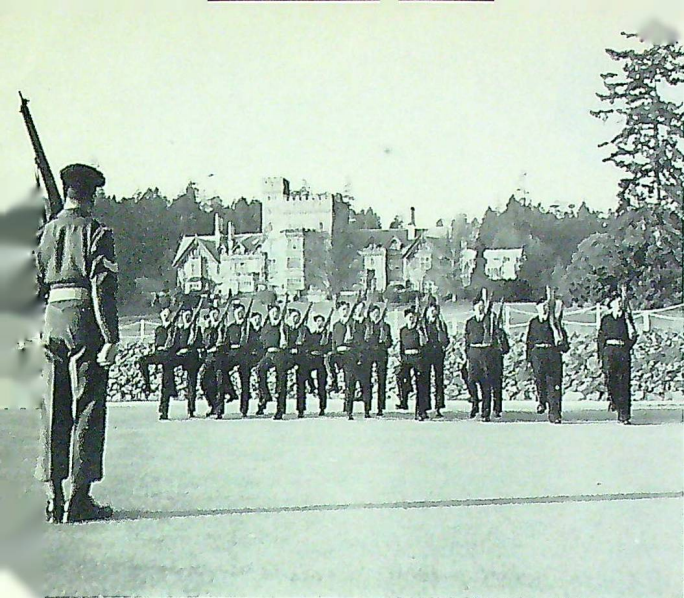
BECAUSE Victoria's association with the Navy dates back to the surveying of the harbour in 1846 by Captain Kellett (H.M.S. *Herald*), the city is thought of by most airmen as being wholly naval. Any training establishment in the area must, they therefore assume, be a naval institution. Since 1947, however, R.C.A.F. officers have been receiving training at Royal Roads, and officers trained at this College are now serving in all Commands of the Air Force. A graduate of the initial R.C.A.F. entry to Royal Roads, Flt. Lt. K. E. Lewis, has served as a flight commander in No. 414 (Fighter) Squadron, and many of his class-mates have also completed a tour overseas with No. 1 Air Division.

Hatley Park, the estate of the late Hon. James Dunsmuir, was purchased by the Government in 1940 and established as a Naval Officers' Training Centre, being commissioned as H.M.C.S. *Royal Roads*. The name was taken from the anchorage, just off the property, which was frequented by shipping during the last century on account of its convenience as a free rendezvous for vessels seeking freight or awaiting orders. The College trained R.C.N. officers throughout the Second

World War, and it was not until 1947, when the reduced requirement for naval officers became apparent, that R.C.A.F. cadets were admitted for training and the College became a joint training centre for the R.C.N. and the R.C.A.F. With the reopening of the Royal Military College in September 1948 for cadets of the three Services, Army

The Castle and the Cadet Block, showing the Italian Garden to the left of the Castle.





Drill

cadets were also admitted to Royal Roads. Thus, the organization changed to its present form as the Canadian Services College, Royal Roads.

ORGANIZATION

The College is organized under the Commandant into three Wings: Cadet, Academic, and Administrative. Since cadets of all three Services are being trained, the Commandant is selected from each of the Services in rotation. The present Commandant, Captain J. A. Charles, replaced Colonel (now Brigadier) C. B. Ware in September 1954, who in turn had taken over from Group Captain J. B. Millward in 1952. On completion of Capt. Charles' tour, an R.C.A.F. officer will again assume command.

The Cadet Wing, which is responsible for all the non-academic training of cadets, comprises an officer commanding, three squadron commanders, a physical and recreational training officer, and a small staff of N.C.O.s. Officers of the rank of Flight Lieutenant (or equivalent) are selected by each of the Services to fill the squadron commanders' positions, while the P. & R. T. officer and the officer commanding the cadet wing are selected from the three Services in rotation.

The Academic Wing, under the Director of Studies, is composed of 18 civilian professors, a registrar, and a librarian. Since the College is administered by the Navy, all officers and men in the Administrative Wing are members of the R.C.N.

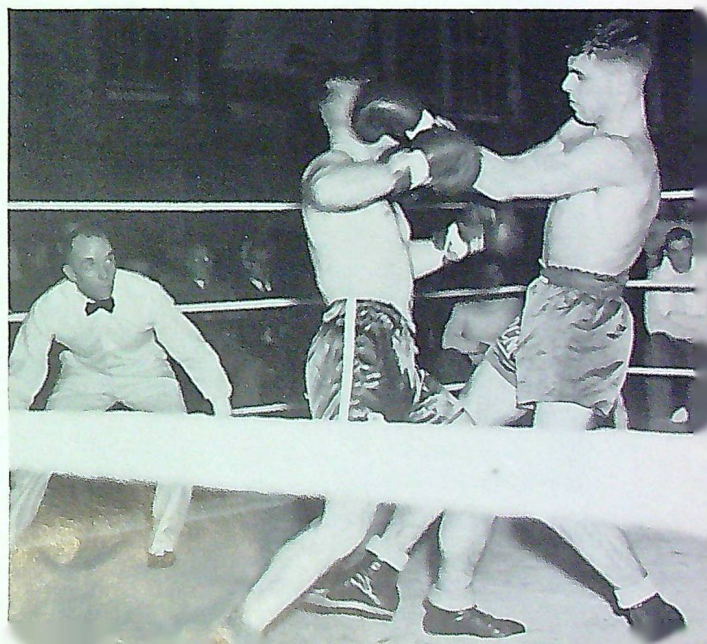
THE COURSE

Although the length of the course for cadets entering the Canadian Services Colleges is four years, only the first two years are taken at Royal Roads. R.C.A.F. cadets entering this College must proceed to the Royal Military College for their 3rd and 4th years.

The college year at all Services Colleges is divided into three terms: fall, winter, and summer. The cadets spend the fall and winter terms, from early September until the end of April, at the College, where 85% of the instruction is in academic subjects and 15% in military subjects, which include drill and physical training. During the summer term the cadets take practical military training with the armed force in which they are enrolled. Since all R.C.A.F. cadets must be medically fit for aircrew duties, training last summer was carried out at No. 4 F.T.S., Penhold, and at No. 2 A.N.S., Winnipeg.

Because the cadet receives a broad education in both the arts and the sciences during the first two years of his C.S.C. training, he is required to complete an exceedingly full programme. In addition to military training, the cadet receives instruction in physics, chemistry, mathematics, engineering drawing, descriptive geometry, shop-work, English, French, and history. All cadets take the

The annual boxing tournament.





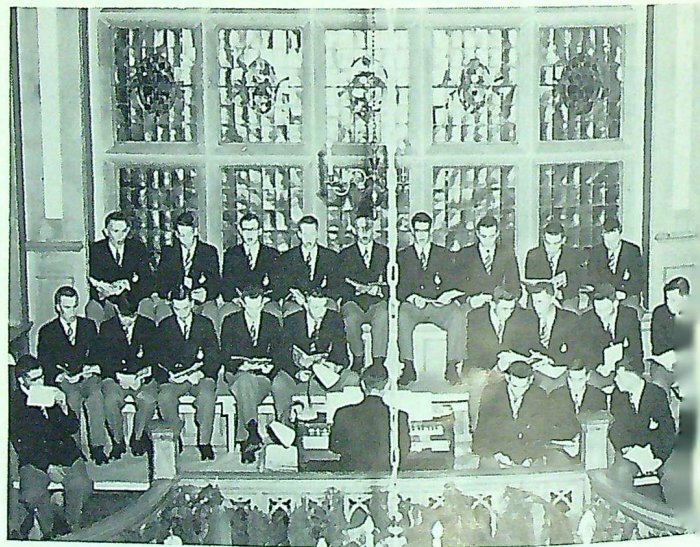
Inspection by the Hon. Brooke Claxton during graduation exercises a year ago.

The Cadet Choir at the Christmas Carol Service.

same course in the first year, with the exception of French, for which subject they are divided into classes according to their previous experience. Just as at the other Service Colleges, nightly study under supervision is required during the week.

STUDENTS

For the 1954-55 term, 157 cadets (representing every province) reported to Royal Roads. Of these cadets 44 were R.C.N., 57 Army, 53 R.C.A.F., and 3 N.A.T.O. naval cadets from Belgium. Of the new entries, only one was a Reserve Cadet, while the others were all enrolled in the Regular Force under the Regular Officer Training Plan, of which they receive the financial benefits.



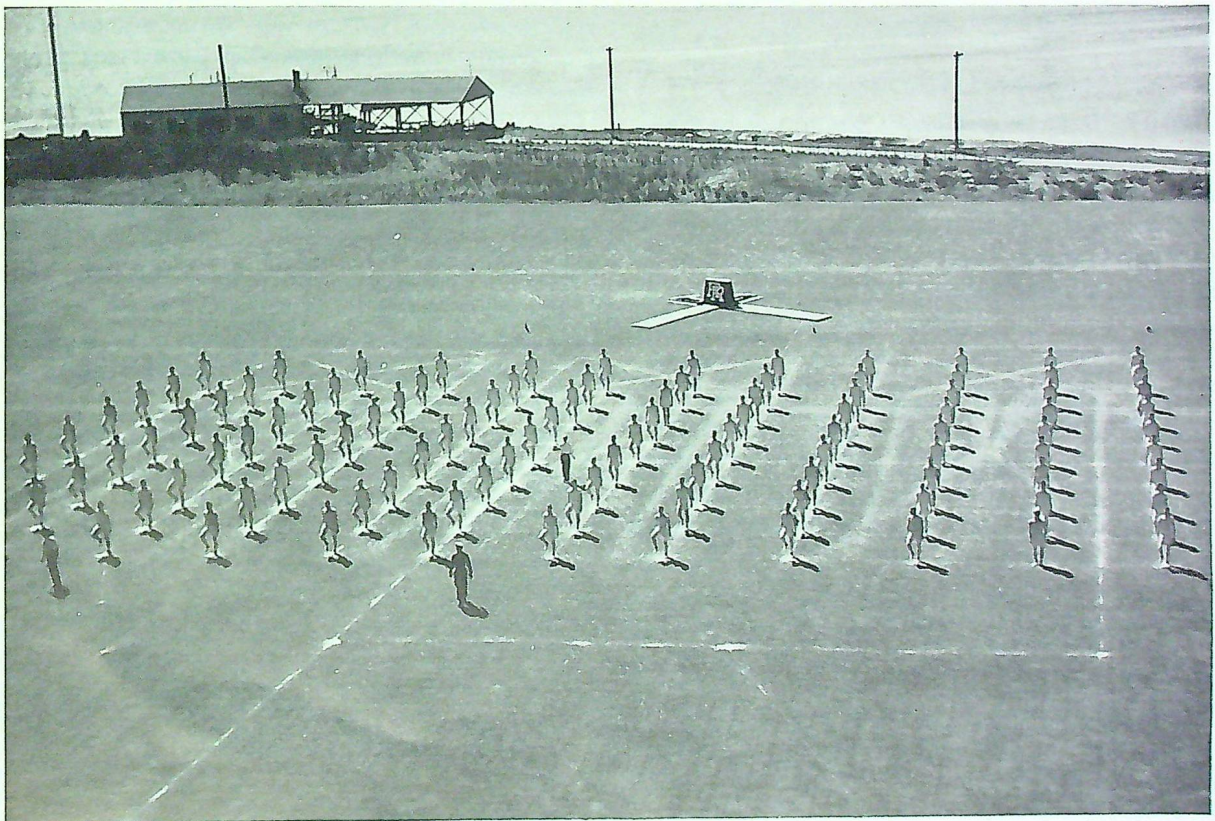
Although naval traditions have been retained at the College, Air Force terminology is used for the Cadet Wing formation. The cadets are divided into squadrons and flights with cadet officers appointed as Cadet Wing Commander, Cadet Squadron Leaders, and Cadet Flight Leaders. The Wing consists of three squadrons, each of two flights, and within each flight the cadets from the three Services are intermingled. During the academic year at the College, there is no means of distinguishing an R.C.N. or Army cadet from an R.C.A.F. cadet, since all wear the same uniform. Because of the strong emphasis on inter-flight sports, it has been found that the allotment of cadets to flights by weight has proved most successful in producing teams of equal ability.

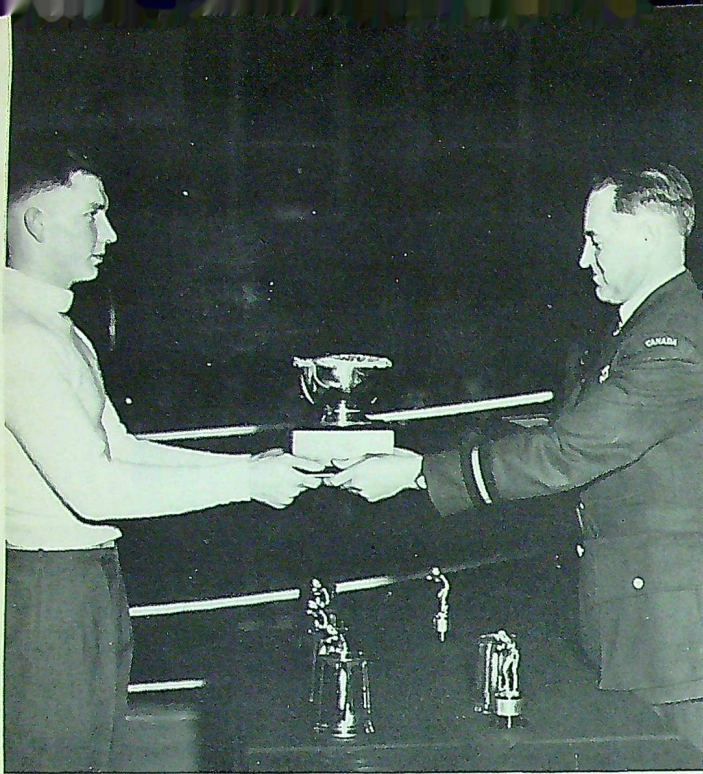
All cadets are required to participate in inter-

flight sports each week-day and, in addition, facilities are available for recreational sports during the week-ends. With two soccer pitches, a football field, five tennis courts, a 440-yard track, a gymnasium, and one of the best cross-country courses in Canada (all within the College grounds), a full programme of sports can be carried out at all times. Furthermore, because of the College's ideal location, all cadets take part in sailing and rowing in dinghies, whalers, and cutters.

Although the cadets have little time for recreational activities during the week, time is allotted on Saturday mornings when the cadet must participate in an activity of his choice; and it is not too difficult for the cadet to find an interest, since the College has a Radio Club, Camera Club, and facilities for model-building, wood-working, metal-working, in addition to sports. During the winter, skiing week-ends are arranged, and every oppor-

A physical training display.





Air Cdre. W. A. Orr, C.B.E., presenting trophies at the boxing tournament.

tunity is taken to visit ships and installations of military interest in the area.

BUILDINGS AND GROUNDS

An article on Royal Roads would not be complete without mentioning the buildings and grounds, which are one of the scenic attractions for visitors to Victoria. The College is situated eight miles west of the city, and its grounds cover 600 acres fronting on the Esquimalt Lagoon and looking across the Strait of Juan de Fuca to the Olympic range in the state of Washington. Although the grounds are for the most part timbered with fir, spruce, cedar, and maple, approximately 50 acres of the property were cultivated by the former owner. The formal Italian garden, the Japanese garden, and a small

orchard are still maintained by a small staff of gardeners.

The Castle, which was built in 1908 as the owner's residence, is now the administration building. The Commandant's office, the wardroom mess and galley, the College library, the sick bay, and other offices are located in this building. Of the other buildings which were on the original estate, the dairy barn now houses the engineering school, and the carriage-house was converted into living-quarters for the ship's company.

When the estate was purchased by the Government, a cadet block was built to provide dormitories and instructional facilities for 100 cadets. With the present cadet enrolment, however, this building is overcrowded and the construction of a new cadet block was started in September 1954. When completed, it will provide single cabins for the cadets and will permit the present cadet dormitories to be converted into additional classrooms and laboratories.

CONCLUSION

Before attending Royal Roads, the cadets have usually had little or no contact with any Service. All military personnel nowadays are well aware that future operations will be on a joint basis, and that the greatest emphasis must be placed on the principle of co-operation. To this end, every effort is made at Royal Roads to acquaint the cadets with the functions and organization of all three Services. Although the results of tri-Service training will not be seen for a generation, it is believed that the cadets trained at this College will be of inestimable value in the future of Canada.

MENTAL EUPEPSIA

The mind is like the stomach. It is not how much you put into it that counts, but how much it digests. (A. J. Nock.)

THE RUCKUS

On the top of a hill on the Island of Zort
Lived a bird called the Ruckus, whose favourite
sport

Was making loud noises. It gave him a thrill
To be known as the loudest-mouthed bird on the
hill.

Then, one day, he thought, "I can be louder still!
"My voice is terrific. It ought to be heard
"On many more islands than this," said the bird.
So he made his voice stronger, 'till, one day, he
found

That he'd learned how to make a tremendous
big sound

That shook every island for fifty miles 'round!
"I say!" laughed the Ruckus. "I am a great guy!
"But I can do better than that if I try.
"I'll build up my voice. Why, I'll practice a year!
"I'll cook up a noise that the whole world will
hear."

And, after he'd practiced for fifty-two weeks,
The Ruckus let loose with a mouthful of shrieks
That burst from his throat like the moans and the
groans

Of ten thousand elephants blowing trombones!

He yapped and he yodelled! He yelped and he
yilped!

He gargled! He snargled! He burped and he
bilped!

And the sound went to China and knocked down
three cats,

And, in England, it blew off eight bus drivers'
hats!

"Oh, boy!" bragged the Ruckus. "I'm really
some bird!

"I've opened my mouth and I've made myself
heard!"

Then a little old worm crawled up out of the
ground.

"That's true," said the worm. "That was quite a
big sound.

"But I have a question to ask, if I may . . .

"You made yourself heard . . . but just what did
you Say?"

And the worm turned his back and slid softly
away.

Theodor Seuss Geisel.



NEW SAAB RECORD

A new international speed record (pending approval by the Fédération Aéronautique Internationale) over a 1,000 km. (621 miles) closed-circuit distance was established on 23 March by a formation of two Saab-29C (S-29C) photographic reconnaissance aircraft piloted by Captain Hans Neij and short-service pilot Birger Eriksson of the Royal Swedish Air Force. The two aircraft flew the distance in 1 hour, 6 min., and 37 sec., giving an average speed of 900.6 km/h (560 miles per hour). The S-29C record is, incidentally, the first international speed record ever made by a formation of aircraft. The previous record of 822 km/h (510 mph) was set up in 1950

by a British Gloster *Meteor* jet fighter.

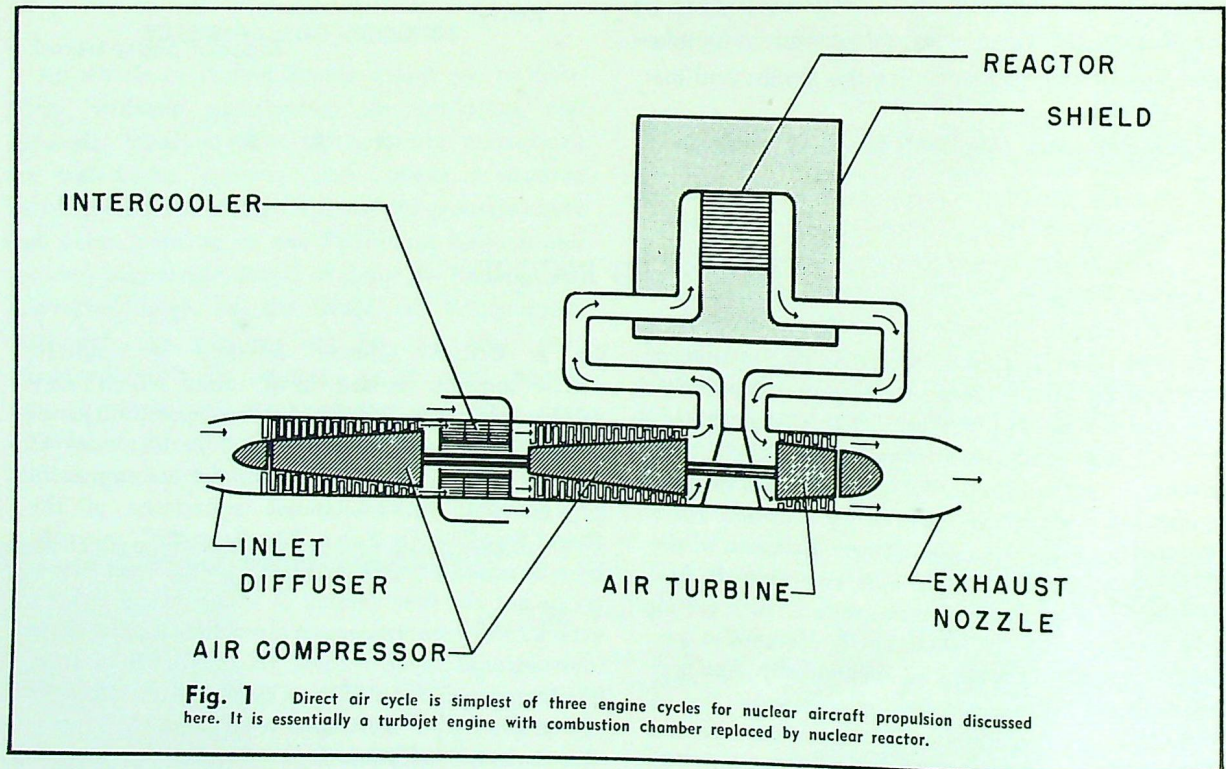
The aircraft carried drop tanks which were released en route. The flight formed part of a series of tests to establish the tactical performance of this version of the Saab-29, which now equips all photographic reconnaissance squadrons of the Royal Swedish Air Force. The Saab-29C, powered by a Svenska Flygmotor-built D.H. *Ghost* turbo-jet, is not the first version of this series of fighter, attack, and reconnaissance aircraft to establish an international speed record. In May 1954 a standard-equipped Saab-29B (J 29B) fighter averaged 977 km/h (607.5 mph) over a 500 km. (310 miles) closed-circuit distance.

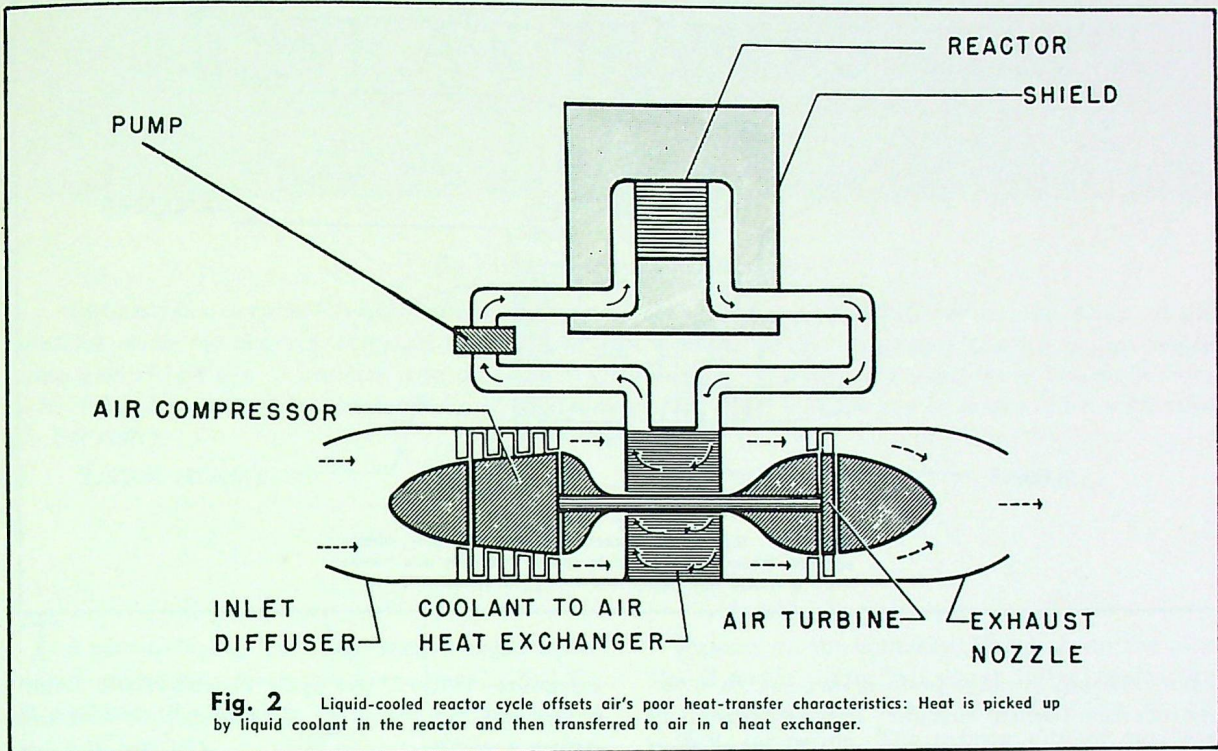
ATOMIC FLIGHT

(From the pages of "Aviation Age" we extract the following few paragraphs and drawings. They are taken from a paper by Mr. Abe Silverstein, Associate Director of N.A.C.A.'s Lewis Flight Propulsion Laboratory.—EDITOR.)

Despite important increases in aerodynamic efficiencies for aircraft at transonic and supersonic speeds since 1948, nuclear power still remains the shining hope for increasing the range of aircraft at high speeds — to values unobtainable with conventional or special chemical fuels. A long-range bomber today may carry as much as, or more than, 100,000 lbs. of fuel. A piece of U-235 with the same energy content would weigh only 0.05 lb. To my mind, our security requires that the application of nuclear power to aircraft be expedited with a feeling of real urgency.

Let us review some possible nuclear engine cycles. *Figure 1* shows a simple power-plant for nuclear aircraft propulsion. It is a turbo-jet engine with the combustion chamber replaced by a nuclear reactor. The air enters the compressor, passes through the reactor, where it is heated as it flows over elements containing uranium, continues through a turbine and is discharged to the rear through a nozzle. The power generated by the air's passage through the turbine drives the compressor through the shaft connecting it with the turbine. The airplane is, of course, propelled by the high-





velocity jet discharged through the exhaust nozzle.

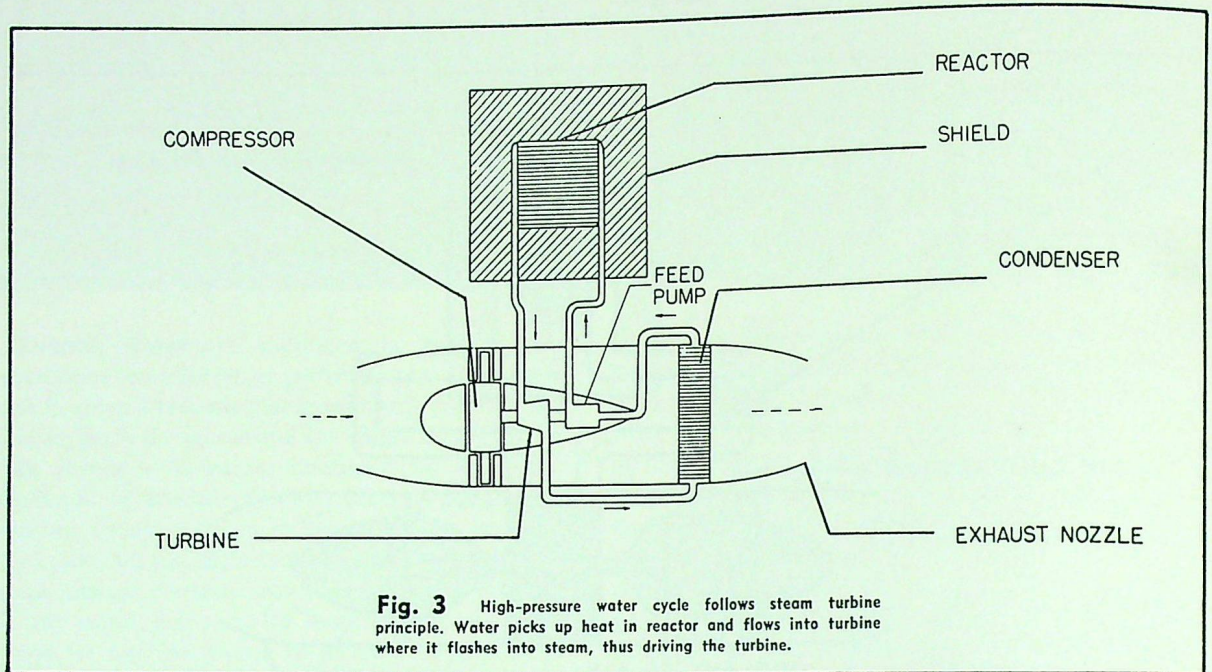
Air is a poor heat-transfer medium. Higher power generation can be obtained by using a liquid coolant in the reactor and transferring the heat from this liquid to the air in a heat-exchanger. The power-plant in *Figure 2* is similar to the one shown in *Figure 1* except for a secondary loop in which a liquid is pumped first through the reactor and then through the heat-exchanger through which flows the air from the compressor. This heat-exchanger can have considerably more heat transfer area than is permissible in the reactor and hence can transfer more heat to the air than can the reactor with direct air cooling.

Because the fluid must remain liquid at the high temperatures involved and have a low capture cross-section for neutrons, only a small number of coolants are suitable. These limitations have led to the consideration of such unconventional mate-

rials as molten sodium and lead-bismuth. The determination of the heat transfer data on these materials is one of the current research efforts in the development of the nuclear power-plant.

A third type of nuclear power-plant is represented by the steam turbine system (*Fig. 3*). Water is pumped through a reactor where it picks up heat while it is held at a very high pressure in order not to flash into steam within the reactor. It then flows into a turbine where the pressure is reduced so that it flashes into steam which drives the turbine. The turbine supplies power to the propeller shaft and the water pump. The air blast from the propeller provides the thrust for the airplane and also cools the condenser. The steam passes from the turbine to the condenser and back to the pump.

In the nuclear airplane, low cycle effectiveness



is not reflected in range performance as it is in the hydrocarbon-fuelled airplane. If the airplane will fly and land at all, its range will be more than

adequate. Rather, the cycle characteristic determines whether or not the airplane will fly and how heavy it will be.

DISCIPLINE MARKS THE PRO

Watch a runner round second base and streak for third. It's an example of perfect discipline. The runner doesn't watch the ball or the third baseman. He watches the third base coach. It's the coach's job to get him to third safely. The coach gives the signals: "Come in standing up" or "slide." The runner doesn't have time to figure the play. In baseball, discipline is the difference between a triple and an out.

Discipline is the mark of the real pro. It's an attitude of mind more than anything else.
 ("The Northeast Guardian"; U.S.A.F.)

Introducing CANADIAN JOINT AIR TRAINING CENTRE

By Flying Officer P. M. Simpson.

(With this article Flying Officer Simpson performs for C.J.A.T.C. a service that might well be done for every station in the R.C.A.F. How many of us have more than a rather vague idea about the life — both in and out of working-hours — on any stations other than those on which we have ourselves served? Contributions of this kind will always be more than welcome. — EDITOR.)

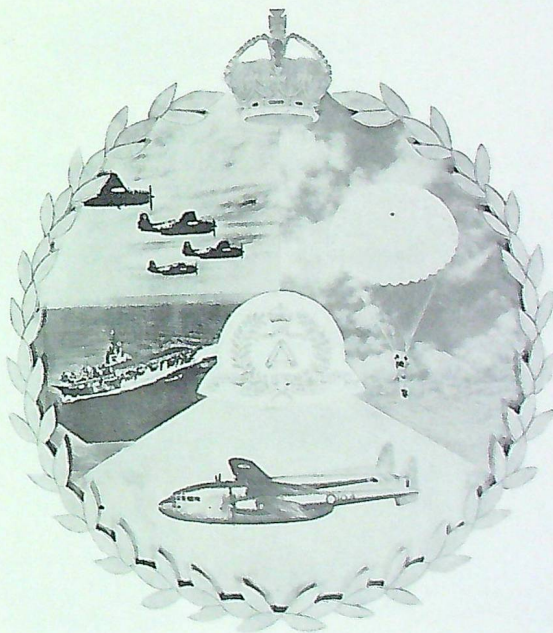


THE DAY arrives at last. Your section commander tells you you have been transferred to C.J.A.T.C., Rivers, and he may or may not add that he is sorry to lose you.

Slightly bewildered, you go home and tell the news to everyone. Your wife says: "Rivers? Where's that? I've never even heard of the place. Do we get a P.M.Q.? What about a school for the children?" Vaguely you reply: "They tell me it is somewhere in Manitoba. That's all I know."

Now, in case any of you are transferred to C.J.A.T.C., we shall endeavour to give you some facts about this unusual station. As its name implies, it's tri-Service — which means that you must get along not only with members of the Air Force, but also with members of the other Services too. When you need ground transportation, the Army will provide it; for air transportation, your pilot may be from the Air Force, Army, or Navy (depending on the type of aircraft); your doctor will be an Army M.O.; and your official photographer will probably be supplied by the Navy. Engineering works services are an Air Force responsibility. Some of the courses given at C.J.A.T.C. draw their instructors from all three Services.

Rumour to the contrary, Rivers is on the map. You'll find it there. It is about 160 miles due west of Winnipeg, and it's a stopping-point on the C.N.R. main line. The nearest city of any size,





Brandon, lies 34 miles east of C.J.A.T.C. Its population is 22,000. The town of Rivers, which is only 4 miles from the station, has a population of 1,500.

Winters at Rivers are cold and dry, summers dry and hot. You may have to contend with temperatures down to about 40° below zero in the winter and up to about 90° in the summer, but these are the minimum and maximum and the range between is not unpleasant. The annual rainfall is around 20 inches, and snow precipitation is heaviest between January and April. Our winds can be trying: the highest velocity recorded is 80 m.p.h.

* * *

C.J.A.T.C. was originally (in 1947) called "Joint Air School," its purpose at that time being to meet training requirements in matters relating to the joint employment of air and ground forces. On 1 April 1949, the Joint Air School was renamed "Canadian Joint Air Training Centre" and reorganized to provide for more efficient training and administration.

It would be a lengthy task to explain in full its organization and functions. Briefly, however, it is divided into four wings:

- Administrative.
- Ground Training.
- Air Training.
- Technical.

The Administrative Wing, which is composed of a staff of Army and Air Force personnel, performs the local administration of C.J.A.T.C. It provides all facilities necessary for the conduct of operations by the functional wings and administers certain amenities for the use of all personnel.

The Ground Training Wing conducts both theoretical and practical courses on all matters relating to land/air warfare. The Naval personnel take care of the amphibious aspects of the subject. The wing is divided into six schools.

The Joint Air Photo-Interpretation School is the only tri-Service school of its kind on the North American continent, and its primary function is to train photo-readers from all three Services for photo intelligence purposes.

The Airborne School conducts the basic course in paratraining. It instructs in the theory of parachuting, in basic drills, techniques, and actual jumps.

The Transport Support School teaches the principles and organization of transport air support in airborne and air transportation operations.

The Tactical Air Support School instructs in the principles and techniques used in providing close air support to the Army. In this connection the school conducts courses for the three Services and in addition gives specialist instruction to the Naval squadrons when they visit C.J.A.T.C.

Air Training Wing has several functions. The Tactical and Transport Support School (Air) provides assistance to ground training courses, and improves and develops methods and techniques of tactical support; while the Light Aircraft School trains Army pilots for Army flying duties and gives helicopter conversion training for pilots of all three Services.

Technical Wing provides full logistical support for C.J.A.T.C. and advises on all technical and engineering matters.

A small but important part of C.J.A.T.C. is the Tactical and Technical Investigation Section. Its functions are to conduct Service trials on new and existing airborne equipment, to submit recommendations, and to suggest improvements to be incorporated into the military characteristics of the equipment.

* * *

Station amenities for Service personnel and their dependents are numerous. There are 400 P.M.Q. units; and Brooke School, one of the most modern of schools, was built in 1951. This year about 450 children are enrolled, and a staff of 20 teachers take care of their education from kindergarten to Grade XII, inclusive.

The Station Store is large, having its own grocery, butcher, and clothing departments, and a great variety of general items. The Station Theatre, with a seating capacity of 480, is open every day. The shows change four times a week.

Recreational facilities are various and many. The new outdoor swimming-pool, partly financed by weekly Bingos, should be completed shortly. The curling-rink has four sheets of ice, and the winter of 1954/55 showed a membership of around 300. The drill-hall provides room for numerous sports and games. The "electric eye" has been installed in the four bowling-alleys, and last season saw 500 regular bowlers. Nearby is the 25-yard

indoor shooting-range. The billiard-room contains four tables, and darts and ping-pong can be played in the games-room. The drill-hall floor is marked for three games of volleyball, ten of badminton, and two of basketball. Another room in the drill-hall has been fitted up for weight-lifting and wrestling-training. Every two weeks the drill-hall is the scene of a station dance, with music provided by a component of the C.J.A.T.C. Band.

In addition to one regular and one "little league" baseball diamond, there are three softball diamonds in the station area. The outdoor hockey rink near the drill-hall is the practising-ground for the station hockey team and three inter-section teams. C.J.A.T.C. also sponsors one Midget and one Tom Thumb hockey team. Other amenities include a hobby shop and a recently formed art club; and square-dancing classes are now in the process of organization.

Close to the station — and owned by it — is the New Sarum Golf Club. It has a nine-hole course

and a club-house. Membership in 1954 was about 120. The station also boasts a Rod and Gun Club which has its own lodge at Arrow River, some 42 miles away. The whole area is ideal for duck- and deer-hunting in season.

During the winter, equipment is available for skiing, either on the slopes 5 miles to the south, or on the ski-run at Virden, about 40 miles from camp.

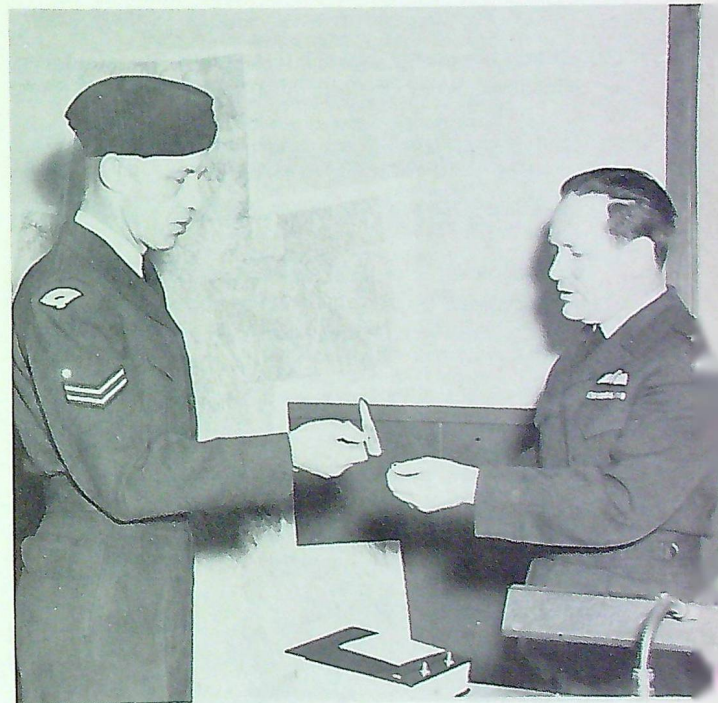
Riding-horses can be hired from the stables opposite the Golf Club. One of the biggest attractions for tourists is Clear Lake, 70 miles north of Rivers and situated in the beautiful Riding Mountain National Park. Here you can swim, play tennis, go boating or roller-skating, dance, ride, or fish.

* * *

Such, briefly, is the environment into which we shall welcome you should you ever find yourself transferred to the Canadian Joint Air Training Centre.

DISTINGUISHED MARKSMAN

Wing Commander F. H. Pearce, A.F.C., Commanding Officer of R.C.A.F. Station Whitehorse, presents Cpl. A. R. Baker with the Distinguished Marksman's Badge. Cpl. Baker's average score was 98% for 10 targets.



WHAT'S THE SCORE?

“Ha!” exclaimed Sgt. Shatterproof, as he riffled through the list of our proposed contents for the May issue. “So we are to have a medical questionnaire. A sound idea, Sir, and one in which I may be able to help you. You have, of course, heard of my great-great-uncle, Sir Clyster Shatterproof, who was Royal Physician to Queen Anne and who was instrumental in bringing her 19 children into this world. Apart from his achievements in the field of obstetrics, he did some remarkable work in applied psychology, developing an entirely new technique for gaining the patient’s confidence before anaesthetizing him with an iron mace. Unfortunately, at the height of his fame he became a prey to hallucinations, and he ended his days in Bedlam, firmly convinced that Her Majesty was an Angora rabbit. None the less —” At this point we coughed loudly. “Sir Clyster,” we interrupted, “must have been an amazing man. But our questionnaire is not a medical one. It concerns plastics.” He eyed us with pity. “Can it be, Sir, that you have never heard of mustard plastics? Why —” We tried again: “No, Sergeant, you’re thinking of mustard plasters. Plastics are —” His expression chilled. “I would suggest, Sir, that before we attempt to instruct the boys in the field, we get our terms straight. I leave you with that thought.” Undeterred, we sought the aid of Mr. J. M. Macoun, the Assistant Chief of the Customs Excise Laboratory, who has helped us on several occasions before this. The following twenty questions are the fruits of our visit. Answers appear on page 48.— EDITOR.)

1. A plastic, as the term is generally understood by everyone except Sgt. Shatterproof, may best be defined as:
 - (a) An inorganic material reduced to powder and bonded with synthetic resin.
 - (b) A synthetic organic material that can be moulded to produce a tough non-crystalline substance which is solid at ordinary temperatures.
 - (c) A synthetic substance which can be moulded into any desired shape at temperatures above 212° F. but which becomes solid at ordinary room temperatures.
 - (d) Any compound of carbon, sulphur, argon, hydrogen, and oxygen.
2. Celluloid, the first commercial plastic, was produced by:
 - (a) John Hyatt (U.S.A., 1868).
 - (b) Braconnot (France, 1833).
 - (c) Leuchs (Germany, 1912).
 - (d) Spill and Parkes (England, 1845).
3. Plexiglas, the plastic of which aircraft canopies are made, has a tensile strength of:
 - (a) 500 lbs. per sq. in.
 - (b) 1 ton per sq. in.
 - (c) 2½ tons per sq. in.
 - (d) 12,000 lbs. per sq. in.
4. *Not* a plastic is:
 - (a) Ebonite.
 - (b) Bakelite.
 - (c) Vinylite.
 - (d) Uformite.
5. Vuelite, a transparent plastic reinforced with 16-gauge wire screen, can withstand:
 - (a) The action of nitric acid.
 - (b) The temperatures encountered in blast-furnaces.
 - (c) The blast of a 150-lb. bomb exploded 150 ft. away.
 - (d) A direct hit from a 20mm. cannon.
6. The plastic buttons on the jackets formerly issued on the R.C.A.F. Survival Course could be eaten (in emergency) by the famished student because they were made of:
 - (a) Hydrogenated synthetic corn-meal.
 - (b) Soya beans.
 - (c) Bakelite.
 - (d) Urea.





7. The chief source of modern plastics is (at the time of writing):
- Fats.
 - Alcohol.
 - Natural resin.
 - Hydrocarbons from coal or petroleum.
8. Receiving the same priority as rubber during the Second World War (because it was required for the manufacture of plastics) was:
- Coal-dust.
 - Tung oil.
 - The liquid obtained from the shells of cashew nuts.
 - The essential oil of Brazil nuts.
9. The plastic most generally used as a synthetic fibre is (at present):
- Rayon.
 - Nylon.
 - Terylene.
 - Orlon.
10. Before the advent of resin bonding, plywood was not widely used for aircraft, because of:
- Its tendency to delaminate.
 - The weight of the glue required to join it safely.
 - The attraction held by ordinary glues for ants or termites.
 - Its inability to stand the heat induced by skin-friction.
11. Not used in the manufacture of any kind of plastic is:
- Cotton.
 - Hydrogen.
 - Helium.
 - Oats.
12. The pliable translucent containers often used to contain liquids are made of polyethylene. Polyethylene consists of:
- Phosphorus and nylon.
 - Synthetic resin and hydrogen.
 - Bleached Vinylite.
 - Carbon and hydrogen.
13. A material often used to reinforce plastics is:
- Aluminum strips.
 - Rags.
 - Linoleum.
 - Steel wool.
14. Among the plastic aids which the ladies employ to enhance their charms are:
- Kiss-proof lipsticks.
 - Non-alcoholic perfumes.
 - Contact lenses.
 - All-weather rouges.
15. By far the largest group of basic materials used in the making of plastics is:
- Cellulose.
 - Rubber.
 - Petroleum.
 - Synthetic resins.
16. Angora sweaters are no longer made from nitro-cellulose, because this material:
- Is too transparent.
 - Scratches all but the most rugged skin.
 - Is too inflammable.
 - Disintegrates in the rain.
17. Most of the plastic material used for the new "plastic" automobile bodies is of the polyester type. It is reinforced with:
- Wood shavings.
 - Fibre glass.
 - Aluminum strips.
 - Steel wool.
18. Bootleg duck is:
- A potable plastic employed in the distillation of "bathtub gin."
 - An edible plastic made of oatmeal, soya beans, and hydrogen.
 - A synthetic leather used for making the uppers of rubber bush-boots.
 - A plastic fabric characterized by its "two-way stretch."
19. Most articles (e.g. drinking-glasses, boxes, plates, etc.) made of polystyrene resemble metal in that:
- They give forth a metallic ring when dropped.
 - The human skin clings to them at low sub-zero temperatures.
 - Their melting-point is the same as that of mild steel.
 - They are sufficiently resistant to abrasion for use as thrust-bearings in light aero-engines.
20. Made from the same basic material as paper, is:
- Vinylite (polyvinyl).
 - Plexiglas (acrylic).
 - Styron (polystyrene).
 - Plastacele (cellulose acetate).



The ROYAL CANADIAN AIR CADETS



By Arthur Macdonald, Air Cadet League of Canada.

It has been our custom from time to time to report at some length in this section on the activities of individual squadrons. Two squadrons have been selected for "feature treatment" this month: one, a well-established outfit with an outstanding record for all-round proficiency, and the other a relatively new unit which has brought a

The Commanding Officer, civilian committee members, and award-winning cadets of No. 218 Squadron, display the trophies won by this unit during the past year.

fresh and interesting approach to the business of Air Cadet training. Both have developed ideas which should prove helpful to other units across the country.

No. 218 (DANFORTH) SQUADRON

Winners of the de Havilland Trophy last year as the most proficient squadron in the metropolitan Toronto area and two-time winner of the championship shield at summer camp, No. 218 Squadron





The "ham" radio station operated by No. 218 Squadron.

gives a major share of the credit for its success to the effective sponsorship provided by the Danforth Lions Club.

The Lions marked their twelfth anniversary as sponsors of the squadron by recording a bumper year. No less than eight Danforth cadets received their Private Pilot's Licenses and wings last year—two of them through R.C.A.F. flying scholarships, and six under a unique flying scholarship scheme set up by the squadron. Two of the eight pilots trained last year have already graduated from the squadron and entered the R.C.A.F.

The squadron flying training plan is one that might well be adopted by other units across the country. It is made possible by a three-way partnership between the cadet concerned, the sponsoring committee, and the flying school (in this case Central Airways, operating at the Toronto Island airport). Cadets wishing to qualify under the scheme are first of all required to put up fifty dollars, this amount being matched by the sponsoring committee. The remaining funds required are obtained through the government subsidies of \$100 paid both to the cadet and to the flying school when the lad qualifies for a Private Pilot's License. Through this unique plan, No. 218

Squadron is probably graduating more pilots each year than any other squadron in Canada.

One of the lads trained in this method last year was W.O.1 W. Tarling, who was selected as the outstanding cadet in the Toronto area and named as "Test Pilot for a Day" by the de Havilland Aircraft Company. This distinction earned him an attractive trophy, flights in six different types of aircraft, and a day's pay as a de Havilland test pilot.

No. 218 Squadron has had no serious recruiting problems since it started to award a half-hour's flying time to each cadet who brings in a new recruit. A special grant from the Toronto Central Committee is used for this purpose. The squadron

also flies every member of the squadron at least three times a year from the Island Airport, takes all cadets to at least two professional baseball games per season, and arranges frequent visits to the stock-car races held on Saturday evening at the C.N.E. grand stand. In addition, such attractive items as hockey sweaters and sweat shirts are awarded to deserving cadets by the Lions Club.

Not satisfied with this impressive record, the sponsoring committee played host to the whole squadron at a wings parade held late in the year and served a buffet supper to more than two hundred and fifty cadets, parents, and friends. The officers, instructors, and cadets were invited to another banquet early in the new year, and every cadet who took a "first" in the track and field meet at summer camp was presented with an

The Christmas party for the members of Nos. 588 and 592 Squadrons, both sponsored by Canadair Limited.





A newly-enrolled cadet of No. 218 Squadron being issued with his uniform.

individual trophy by Dr. Tony Vince, a former Canadian Olympic star and a member of the Lions Club.

The latest gift by the Lions to the squadron is a radio transmitter receiver which has been set up as a "ham" radio station and has contacted points as far away as South America.

Another interesting accomplishment by No. 218 Squadron is the production of a summer-camp film made by squadron personnel using film and cameras provided by the Lions Club. This film,

covering two years of summer camp, has been turned over to the Ontario Provincial Committee for wider use throughout the province.

No. 588 (CANADAIR) SQUADRON

One of two squadrons sponsored by Canadair Limited, No. 588 came into being on 1 June 1954. The squadron was set up with the understanding that all cadets must be related to Canadair employees. This ruling also applies to adult personnel, inasmuch as all officers and instructors are company employees and former Servicemen.

Following its formation, the squadron enjoyed instant success. Within a month, squadron strength



reached ninety cadets and has continued to increase steadily.

As a training headquarters, the squadron is fortunate in having the use of a 120' x 90' hangar at Canadair, in which are located the C.O.'s office, orderly room, lecture rooms, supply section, canteen, and cloakroom. The hangar also provides space for indoor drill, although open-air drill space is also available during spring and fall.

The administrative set-up of No. 588 Squadron is one of the most efficient yet devised by any Air Cadet unit. Personal files are kept on every cadet in accordance with R.C.A.F. standards. A squadron strength board, listing the names of cadets by flights, is kept up-to-date each parade night. A Kardex system, provided by Canadair, maintains the complete record of every cadet with reference to attendance, discipline, and academic assessment. Squadron standing orders have been compiled, and routine orders are issued every two weeks.

The training programme covers the full range of syllabus subjects, including drill, navigation, meteorology, engines, principles of flight, aircraft

structure, Service familiarization, armament, flying hygiene, and physical training. Extra-curricular training is provided in the subjects of radio, marksmanship, photography, model-aircraft building, blueprint reading, and precision drill.

In addition to the sponsoring committee, other groups at Canadair are showing a keen interest in the progress of No. 588. The Canadair ex-Servicemen's Association has donated a trophy to be awarded annually to the squadron's most proficient cadet. Another trophy has been put up by the Canadair Foremen's Association for inter-flight competition.

While squadron activities have so far been restricted mainly to organization and training, the social side of cadet life has not been completely neglected. A very successful Christmas dinner for both Canadair squadrons was held at the company's cafeteria in December, and selected groups of cadets have also made special flying visits to Ottawa.

If No. 588 Squadron continues at its present pace, there is no doubt that it will soon rank with the finest Air Cadet units in Canada.

COSMIC JIVE

Suppose that a terrestrial spaceship were to land on Mars, how would the crew communicate with intelligent Martians? Dr. Claude E. Shannon, of the Bell Telephone Laboratories, got up to explain how it could be done.

Pointing at objects — in short, sign language — would be one way of beginning. But suppose the Martians use a means of communication utterly unknown to us. We would have to rely on a secondary channel of some kind. Von Frisch, the Austrian naturalist, discovered that bees tell one another

by a peculiar wiggle dance where nectar-bearing flowers are to be found. The frequency of the wiggles indicated by a code the distance to the flowers. The direction in which the bees moved along the hive was related in a different way to the direction from the hive to the flowers. If it is possible to find out how bees communicate in this manner with one another, the linguistic problem presented by Martians is not insoluble to Shannon. (*Waldemar Kaempffert in "The New York Times."*)



ROYAL CANADIAN AIR FORCE

Association



AIR FORCE BONSPIEL AT LETHBRIDGE

The Second International Air Force Bonspiel was held at Lethbridge on 17, 18, and 19 March. The only international Air Force bonspiel ever attempted in Canada, it was organized in 1954 by No. 702 (Lethbridge) Wing. This year No. 702 Wing conducted a two-day bonspiel, with such men as Messrs. T. Martin, M. Moffatt, E. Moffatt, C. H. Linn, R. Mueller, T. Segsworth, W. Lee, D. Brogart, G. Marshall, J. Gard, L. Cowlie, N. Nakamura, and S. Wallis, contributing their time and efforts towards the success of the event.

A total of forty-four rinks was entered, from as far away as Greenwood, N.S., and Sea Island,

Mayor A. W. Shackelford, Lethbridge, throws the first rock to open the Second International Air Force Bonspiel.

B.C. Other participating rinks came from Beausejour, Winnipeg, Centralia, Rockcliffe, North Bay, Ottawa, Downsview, Lachine, Red Deer, Claresholm, Penhold, Lincoln Park, Medicine Hat, Calgary, Suffield, and Stavely. Many of these places entered more than one team. The Wing enlisted the aid of twenty-eight commercial firms.

The highlight of the bonspiel was the appropriate capture of the Flying Officer Del Martin Memorial Trophy by the entry from Greenwood, N.S. The late Flying Officer Del Martin was a pilot in No. 405 (M.R.) Squadron, stationed at Greenwood, when he lost his life in a flying accident in Northern Canada. The donors of the Trophy, Mr. and Mrs. T. Martin, had the Greenwood team as their guests throughout their visit to Lethbridge.





Winners of the Flying Officer Del Martin Trophy (grand aggregate) were

1. Flying Officer F. Beatty, R.C.A.F., Greenwood.
2. Sergeant J. Woods, R.C.A.F., Suffield.
3. Corporal L. Thompson, R.C.A.F., Centralia.

Winners of the Tip-Top Tailors Trophy (highest point-winners) were:

1. Sqn. Ldr. A. Trotter, R.C.A.F., Lachine.
2. Mr. N. Cook, No. 702 Wing, R.C.A.F.A.
3. Cpl. T. Eadie, R.C.A.F., North Bay.
4. Mr. A. Batty, No. 702 Wing, R.C.A.F.A.

The spiel wound up with a banquet and presentation of prizes at the Marquis Hotel. All the members of No. 702 are to be commended for the very fine and efficient manner in which the spiel was conducted.

WING NEWS

No. 500 (Winnipeg) Wing

On 26 February, No. 500 Wing held a Past-President's Banquet and Dance at R.C.A.F. Station Winnipeg. There were 174 members and

The West Coast rink. Left to right: Cpl. J. Pozzi, Sqn. Ldr. G. Moir, L.A.C. N. Black, Flt. Sgt. N. McLeish.

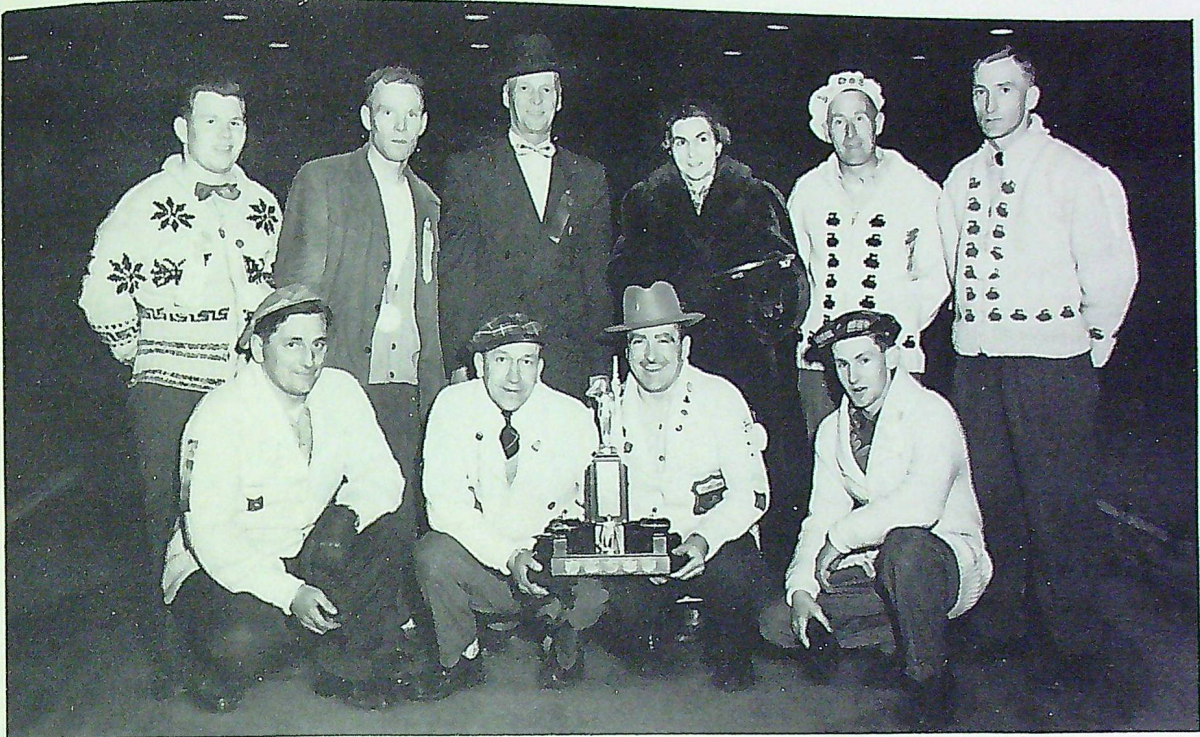
guests present, including delegates from Nos. 501 and 502 Wings who were attending the Annual Convention of the Manitoba-Northwestern-Ontario Group, and additional guests from No. 502 Wing.

At the close of the banquet, Group Captain R. B. Ingalls, D.S.O., D.F.C., Commanding Officer of the station, presented Past-President's pins to the following:

- Dufferin Roblin, Wing president, 1950-51
- H. Oscar Olson, Wing president, 1951-52
- A. H. Turner, Wing president, 1952-53
- G. A. McNeil, Wing president, 1953-54
- W. A. Mildren, Group president, 1954-55

A one-minute silence was observed in honour of the Wing's first president, E. O. W. Hall (now deceased), who did so much for the Wing when it was first organized.

Following the presentation of the pins, Group Captain Ingalls gave an interesting short talk. Much credit is due Wing Commander Gaffney,



Front row: winners of the Flying Officer Del Martin trophy. L. to r.: Cpl. B. Stevenson, Flying Officer F. Beatty, Cpl. N. Shewchuk, Flying Officer G. Moore. Back row: runners-up. L. to r.: Cpl. J. Ross, L.A.C. R. Krepps, Mr. T. Martin (donor of Trophy), Mrs. Martin, Sgt. J. W. Woods, L.A.C. J. G. Newport.

Liaison Officer, and to Station Winnipeg, for their co-operation in making the evening a success. It is planned to make this an annual event.

On March 10th, President Rex Johnson and Vice-President Earl Carlyle attended the Father-and-Son Banquet put on by No. 220 Air Cadet Squadron, which is sponsored by the Winnipeg Wing. About 75 boys were present with their fathers.

No. 402 (Sudbury) Wing

No. 402 Wing recently planned a fund-raising campaign from which the proceeds were to be used to assist in the work of sponsoring No. 200 Air Cadet Squadron. The Wing utilized radio, television, and press interviews to further the response; and, with an objective of \$2,500, it collected a

total of \$1,300. The canvass of the city was conducted by uniformed Air Cadets and members of the Wing, assisted by the local postmen who took the cadets on the postal routes of the city.

No. 411 (Chatham) Wing

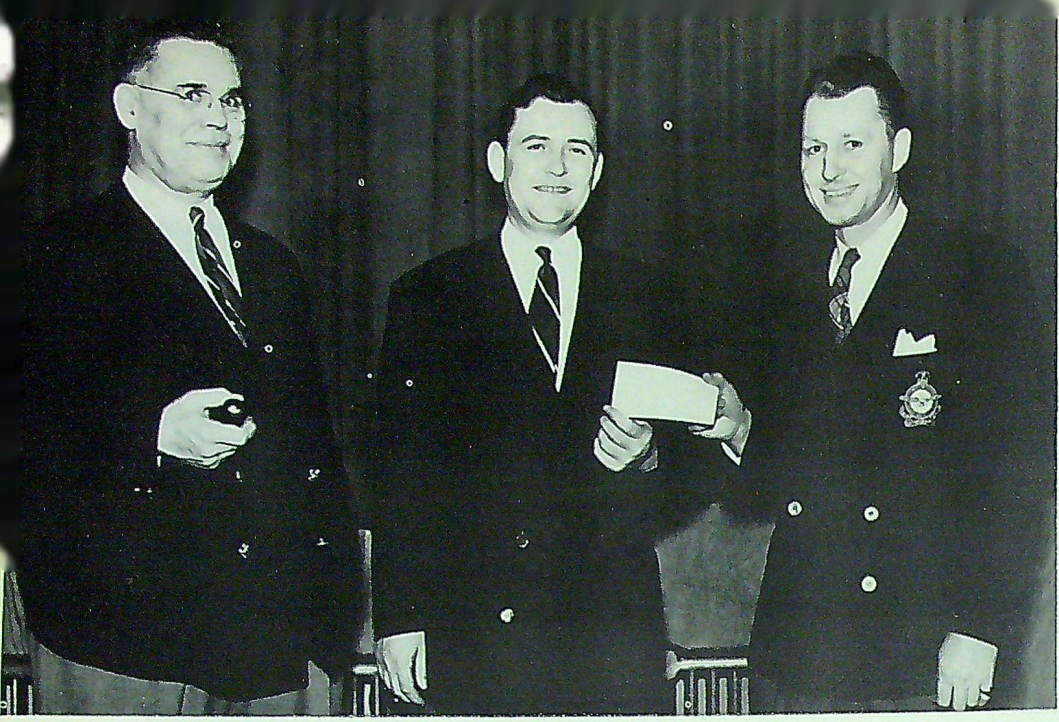
The members of No. 411 Wing conducted a Planter's Peanut Sale, and, from the funds received, they donated a \$300 cheque to the Kent County Cerebral Palsy Association for crippled children.

No. 420 (Oshawa) Wing

On March 16th, No. 420 Wing held a Mess Dinner. The guest speaker on this occasion was Lt. Colonel S. Wotton, Commanding Officer of the Ontario Regiment, who gave a very interesting account of Militia Training and its needs.

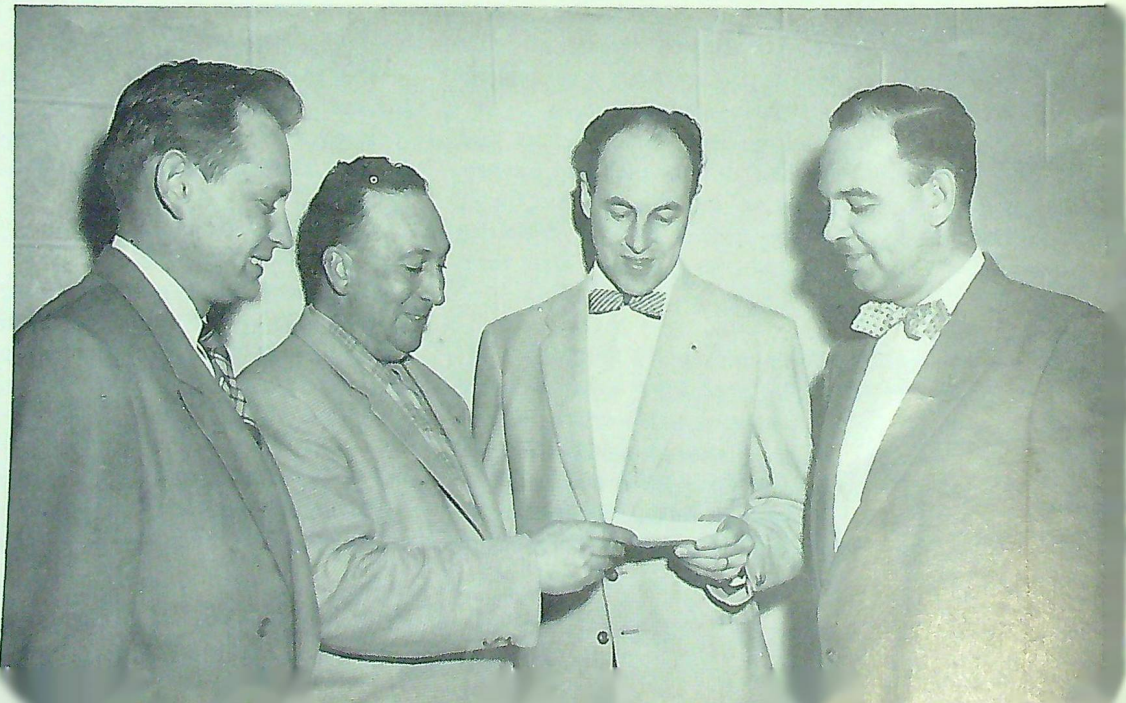
No. 429 (Elgin) Wing

No. 429 Wing, of St. Thomas, opened its new club-rooms and conducted the first meeting held



No. 303 (Sherbrooke) Wing presents a \$100.00 cheque to the No. 67 (Rotary) Air Cadet Squadron. Left to right: C. Bryant, chairman of the Air Cadet Committee of the Sherbrooke Rotary Club; L. Gingras, president of No. 303; and Sqn. Ldr. F. Lord, C.O. of No. 67 Squadron (Gerry Lemay photograph.)

No. 411 (Chatham) Wing contributes \$300 to the Cerebral Palsy Association. L. to r.: G. Hudson, chairman of Peanut Committee; R. Norris, Wing president; I. Beecroft, president of Cerebral Palsy Association; G. Marvell.





No. 404 (Kitchener-Waterloo) Wing executive. Front row (l. to r.): D. Budd, vice-president; B. Roberts, president; S. Steip, secretary. Back row (l. to r.): J. Playford, H. Beaupré, J. Lorentz, J. Helm, S. Elnaugh, H. Shillinglaw, B. Mills (all directors). Absent: L. Cressman, treasurer.



No. 420 (Oshawa) Wing. Front row (l. to r.): Alderman R. Halliday; Lt. Col. S. Wotton; N. Hircocok, president of the Oshawa Branch, Canadian Legion; G. Stonebridge, president of the Naval Veterans Association. Back row (l. to r.): R. Kent, Committee Manager; J. W. Woodman, president of the Canadian Corps; C. Halliday, president of No. 420 Wing; J. Gorman, 1st vice-president.

in the new premises, on March 21st. Its new quarters, which required extensive renovating, now rank with some of the finest in the Association.

New Wings in the West

Two new Wings have been formed in Western Canada. These are No. 605 (Lloydminster) Wing, Saskatchewan, and No. 705 (Rocky Mountain House) Wing, Alberta. Lloydminster was presented with its charter on April 12th, with Air Vice-Marshal K. M. Guthrie, C.B., C.B.E., making the presentation. Mr. B. E. Crane, vice-president of the Alberta Group, accompanied him on this occasion. Rocky Mountain House Wing has fifteen members at present, and is just in the early stages of organization under the leadership of Mr. G. Greenaway.

LIFE MEMBERSHIP

This month we are pleased to announce the following additions to our Life Membership list:

- D. N. Budd, Waterloo, Ont.
- S. J. Elnaugh, Waterloo, Ont.
- W. G. Roberts, Waterloo, Ont.
- J. R. Roe, Kitchener, Ont.
- G. N. Saunders, Kitchener, Ont.
- A. J. Snetsinger, Kitchener, Ont.
- R. Tucker, Waterloo, Ont.
- J. C. Uffelman, Waterloo, Ont.
- H. O. Olson, Winnipeg, Man.
- F. J. Clair, Three Rivers, Que.
- J. H. Horncastle, Fredericton, N.B.
- J. M. Wilson, Fredericton, N.B.
- W. G. Sansom, Fredericton, N.B.

DISCRIMINATION

Every kind of discrimination is a protection of the incompetent against the competent, with the result that the motive to become competent is taken away. (G. L. Dickinson.)

Feminine Gen

Sgt. Shatterproof, on being shown this month's "Feminine Gen", started like a mustang that feels the spur. Then, drawing himself up to his full girth, he fixed his eyes on the ceiling and saluted.

"Vive la Sexe!" he said fervently.

"*Le Sexe*," we corrected him. "In French, 'Sexe' is always masculine, even when it merely means 'the ladies'— which, I trust, is the sense in which you use it."

His gaze dropped, to focus on my face in mingled horror and incredulity. He recoiled a step from the editorial desk.

"Sir," he thundered, "we have worked together for nearly seven years, but if —"

At that moment Claudette, our messenger girl, tripped into the office and dropped some papers into my basket. Precariously draped about her

was the first spring ensemble of the year. As she darted out again, she paused for the briefest of instants to bat her curling eyelashes at Shatterproof and to whisper something which my ears failed to catch. Then, with a flirt of her gay little skirt, she was gone.

The expression on the old wardog's face changed. The cumulonimbus dissolved into what passes with him for a sunny smile. That is to say, one corner of his mouth twitched almost imperceptibly.

"— but if," he resumed, "you will excuse me, Sir, I must be off to the canteen. It is the hour for gallantry amid the coffee-cups. The young fellow which has just left did not, I am happy to say, learn her French from a grammar-book . . ."

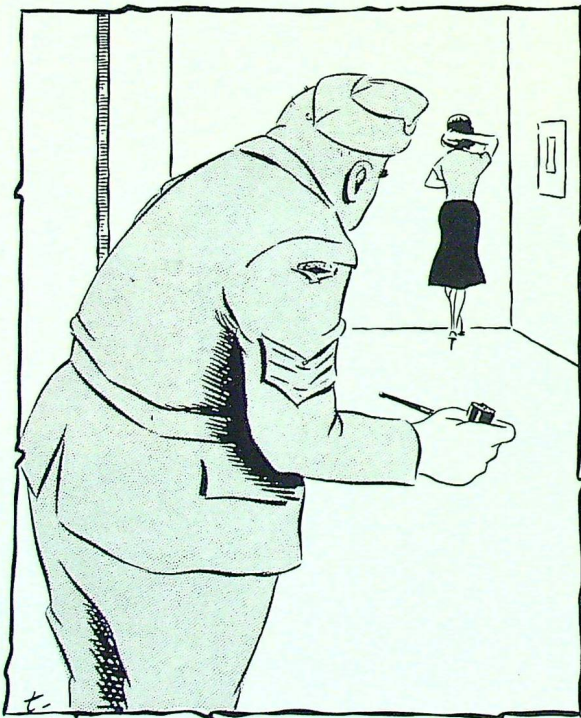
* * *

In the letter that accompanied the photographs published in these pages, Flying Officer P.M. Corbould writes as follows:

"The name of R.C.A.F. Station Aylmer will revive many nostalgic memories in the hearts of the men and women who have worked there. Perhaps for some the trials and tribulations were many, but we are sure that even those few will recall with pleasure the congeniality and comradeship of the groups which comprised the different courses, and in particular their own class or barrack-room friends.

"They will remember especially 'Judgment Day' (or Graduation)— the jubilation as the word 'Passed' echoed through the room. They will remember the excitement as the postings and transfers were called out; they will remember, too, the graduation party that climaxed the weeks of worry, study, bed-checks, and duty-watch. And possibly they will recall the following evening, with its sad farewells to instructors and friends, and its promises to write and 'keep in touch'.

"In order to help ex-Aylmerites — and the women personnel at all R.C.A.F. stations across



Canada and overseas — to keep in touch, we offer this bit of information about our station as it is today. We now boast two swimming-pools, a posh new snack-bar and dry canteen, and greatly improved facilities in the recreation centre. Roller-skating has become a great favourite here with both the staff and trainees. Square-dancing, too, is catching on, and this spring we hope to have our

new bicycles ready for the highways and roads to the beaches.

"Though the face of the station has changed somewhat in the past couple of years, our small group of female staff personnel has remained more or less stationary. We are sending you a few pictures of these girls."

So here they are —

THE GIRLS OF STATION AYLMER

L. to r.: Flying Officer P. M. Corbould (Pers. Adm.: Stn. Aylmer) and Flying Officer L. S. Benevides (Pers. Admin.: No. 1 T.T.S.)



Criticizing these photographs in Station H.Q. are, from left to right: L.A.W. M. U. Bach (Security Police), A.W. R. S. Knox (Clk. Acc.), Cpl. S. H. Williams (Photo.)



On Station H.Q. strength are (l. to r.): A.W. J. M. Lohnes (Clk. Typ.), Cpl. M. Markin (Clk. Steno.), Cpl. L. K. Schille (Clk. Admin.), Cpl. V. Bergman (Discip.).

Three telotype operators of Station H.Q. L. to r.: L.A.W.s L. A. Villiers, S. N. Bond, and A.W. H. Storoschuk.



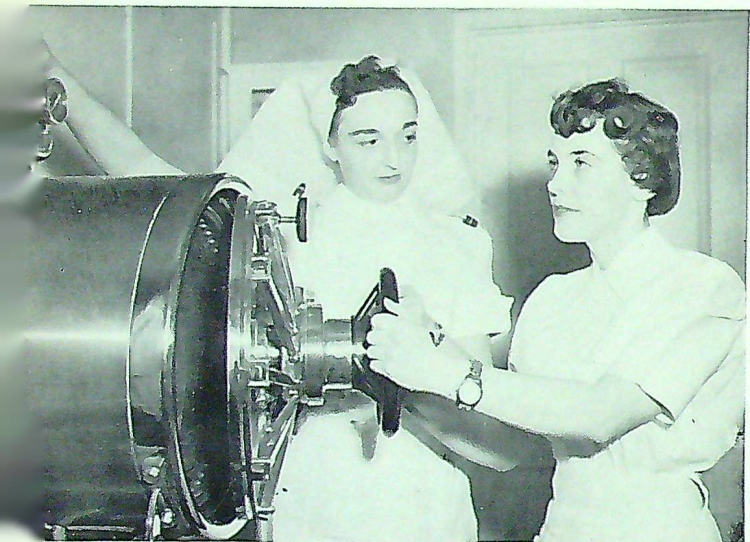


In the Station Infirmary. L.A.W. D. M. Barnes (Med. Asst.) and Flt. Lt. J. E. Marsh (M.O.)



L. to r.: Flying Officers T. M. Vogt, V. E. Geer, M. F. Crawford, Flt. Lt. G. I. Bradshaw — all of No. 1 T.T.S.

Dicing with an autoclave are Flying Officer F. H. J. Caldwell (left) and L.A.W. M. R. Hooker (Med. Asst.).



L. to r.: A.W.s S. R. Sanderson and M. J. Hoy (Clk. Typ.), Cpl. A. Derbowka (Clk. Steno.), L.A.W. A. M. Adams (Clk. Typ.) All four are attached to No. 1 T.T.S.

L. to r.: L.A.W. M. M. E. Roy (Tailor), A.W. M. Martin and Clp. B. L. Harden (Sup. Techs.) — all of Station H.Q.



L.A.W. M. M. M. L. Brunet deals with a "customer" while A.W. M. R. M. Constantineau types on. Both Clk. Typs., the girls belong to No. 1 T.T.S.





A trio from No. 11 Exam. Unit. L. to r.: A.W. F. M. Roach, L.A.W.s M. E. Stanyer, E. L. Cornwell (all Clk. Typs.).



Three T.T.S. girls. L. to r.: A.W.s M. R. Mairs (Clk. Typ.), J. M. Preboy (R. Spec.), E. J. Bloomfield (Clk. Typ.)

SKI-BORNE PILOTS

More than 40 fighter pilots of No. 1 Air Division have been guests during the past winter at the French Air Force ski school at Les Allues, about 50 miles east of Grenoble. Part of the R.C.A.F.'s physical fitness programme for jet pilots, the two-week curriculum was designed to put them in top physical condition.

The French ski school caters to all degrees of proficiency. All instruction is carried out by a team of top-flight skiers, called "monitors", drawn from the French Air Force. The course is conducted in an atmosphere of complete informality, and ski clothing, issued by the French, takes the place of uniforms. During their stay, French and Canadian students bunk and eat together in a mountain chalet located at an altitude of 5600 feet. Tows take the students up to nearly 10,000 feet and give them a clear mile of downhill skiing.

Our photograph shows (left to right): Flying Officer B. A. McLeod (R.C.A.F.), Commander Lionetti (French Air Force), Flying Officer W. N. Morrison (R.C.A.F.), Sgt. Chassaing (French Air Force), and Flying Officer D. C. Alexander (R.C.A.F.).



Letters to the Editor ★ ★ ★

No. 525 (R.A.F.) SQUADRON REUNION

Dear Sir:

The members of No. 525 (R.A.F.) Squadron are planning a ten-year reunion to be held at Vancouver, B.C., from July 27th to August 1st, 1955. Mr. Stanley J. Green, of 1012 Failing Building, Portland, Oregon, the secretary of No. 525 (R.A.F.) Squadron Officers Association, has made arrangements with the Colonial Motor Hotel, Kingsway, Vancouver, to provide hotel service at \$8.50 per day for doubles or \$10.50 for triples. The reservations for accommodation should be sent to Mr. Green or directly to the Colonial Motor Hotel. Former members of the squadron from Canada, the United States, England, and Australia, have already indicated their desire to attend. Wives are welcome, and arrangements are being made for their entertainment. I would be much obliged if you would publish a notice of this re-union in "The Roundel."

H. F. Jones,
101 Saskatchewan Cres. West,
Saskatoon, Sask.

"TEASER FOR TREASURERS"

Dear Sir:

The following solution to "Teaser For Treasurers," which appeared in the January issue, may be somewhat simpler than that given by Wing Cdr. W. M. Mills:

The counterfeit coin we are using is heavier than the rest . . .

Paul L. Leonard (R.C.A.F.A.)

(The solution which follows in Mr. Leonard's letter is quite correct — but it is not a solution to the original problem. Wing Cdr. Mills' problem depends for its difficulty on the fact that we do not know whether the counterfeit coin is heavier or lighter. — EDITOR.)

Views expressed in "The Roundel" upon controversial subjects are the views of the writers expressing them. They do not necessarily reflect the official opinions of the Royal Canadian Air Force.

Answer to "What's the Score?"

1: (b)	2: (a)	3: (c)	4: (a)
5: (c)	6: (b)	7: (d)	8: (c)
9: (b)	10: (a)	11: (c)	12: (d)
13: (b)	14: (c)	15: (d)	16: (c)
17: (b)	18: (d)	19: (a)	20: (d)

DICY DROP

Dear Sir:

On page 17 of the February issue you show a photograph of three airmen "waiting for the signal to hurl a pannier into the arctic night."

It is to be hoped that the arctic night was soft and resilient, because someone had forgotten to attach the 'chutes to the static line in the Dak's roof.

Look, ma! — No parachute!

Flt. Lt. C. L. Rippon, D.F.C.,
A.F.H.Q.

(We share Flt. Lt. Rippon's concern — but it may be, of course, that the pannier contained hard stuff. — EDITOR.)

POISED BULLET

Dear Sir:

If the muzzle velocity of a rifle-bullet, fired from the rear of an aircraft flying straight and level at 500 m.p.h., is also 500 m.p.h., what is its velocity relative to the ground?

L.A.C. D. G. Allen,
R.C.A.F. Station Claresholm.

(At the instant the bullet leaves the rifle barrel, its velocity relative to the ground is zero. After that instant, of course, other factors come into play — e.g. gravity, the earth's rotation, etc. — EDITOR.)

COMPLEX COMFORT

From the "De Havilland Gazette" we reprint the following Patent specification:

"A device for evacuating an occupant seated in a cockpit of an aircraft comprising, in combination, a backed seat downwardly tiltable around a transverse axis located in front of said seat, releasable means to hold said seat in normal sitting position, a normally covered opening in the bottom of said cockpit beneath said seat, means to uncover said opening, means to release said seat to allow the same to tilt into said opening and abutment means to stop said seat in said opening when its back has reached a predetermined position inclined downwards and rearwards with respect to said bottom, whereby said occupant is caused to leave said seat by a movement of translation in a direction depending upon said back predetermined position."

Remarks the "Gazette's" editor: "It's such a comfy seat, too."



