

PLANE FACTS
(See page 36)



AN AIRFORCE
NEWSMAGAZINE

OCTOBER 24th, 1955

10c

IN THIS ISSUE:

"PROBLEMS OF BOMBER
DESIGN"

By David Keith-Lucas

SATISFACTION

A Spectral Romance

By D. G. and E. F. Lee

AVRO AIRCRAFT: BUILDER OF CONTINENTAL DEFENDERS



This highly skilled crew aboard Avro Aircraft's powerful CF-100 Mark 4 will soon be racing with sound up under the rim of the stratosphere.

... AS SURE AS NIGHT FOLLOWS DAY

Aggression recognizes no limitations of Time. Any hour can be Zero Hour. That's why the Royal Canadian Air Force drew up specifications for a *night* and day interceptor . . . long range and all weather, with the firing power of a destroyer . . . to defend the skyways of its vast, northern frontier. The specifications were met by Avro Aircraft Limited of Malton, Canada. The interceptor is the Avro CF-100. No other day *and* night, *all-weather* interceptor in the *world* has its power and range.

At RCAF stations across Canada, around the clock, in the heat of Summer and frigid cold of Winter, collision course interception exercises with the Avro CF-100 keep RCAF pilots, navigators and ground crews alert against aggression.



AVRO AIRCRAFT LIMITED

MALTON, CANADA

A. V. ROE CANADA LTD.—MEMBER, HAWKER SIDDELEY GROUP.

In RCAF operational multi-squadron service in Canada, squadrons of CF-100s will begin duty with NATO forces in Europe by 1956.



**STILL THE BEST —
FOR YOU**

DREWRY'S
DRY GINGER ALE

CRYSTAL SODA — LIME RICKEY — TOM COLLINS — LEMON - LIME

EDITORIAL

THE WAGES OF BOREDOM

LAST month in Mexico a truck loaded with four and a half tons of dynamite, and travelling at high speed, crashed into the side of a train. The ensuing blast would have been, by itself, a real tragedy, but Fate was not inclined to be so kind. Another vehicle with a similar cargo was close behind the first. Its load was affected by the initial explosion, and, in the best traditions of chain reaction, it too contributed to the power of the blast. And blast it was. Seventy people died. The balcony in a theatre a mile and a half distant collapsed and, Pedro, who had been enjoying a matinee in the back row with a new companion was moved to say, "But Senorita, how you can kees!" When the dust had settled it was revealed that the drivers of the trucks had been racing and that their minds apparently had been so intent on the race that neither had seen the train on the crossing.

The news of the catastrophe reached the ears of an incredulous world and sober citizens shook their heads and breathed, "Crazy fools, racing in trucks loaded with dynamite."

But was it sheer thrill-seeking that led these Mexican truck drivers into their final spectacular escapade? No, this is highly im-

probable. Foolhardy though their adventure was, the reason for it was not a form of temporary insanity, as has been suggested. They did it because they were bored. Yes, bored. Bored stiff.

Now people who would not willingly go within radar contact of a single stick of dynamite, let alone race a truck loaded with four and a half tons of it, might find this hard to credit. How could anyone so close to potential oblivion become bored? In actual fact it is unavoidable. No matter what the job, if done day in and day out it tends to become somewhat commonplace. The more it is done the more routine it becomes until eventually, unless something is done to ease the monotony, the job develops into distinct bore. Ask any pilot who has flown a hundred hours of navigation trips in the last month.

What should be done to thwart this seemingly inevitable boredom? Well, our Mexicans had it stopped in its tracks for a short time, but, as it turned out, their system had its limitations. Speaking again of Dakota pilots on navigation trips, a one-time Summerside captain approached the problem by doing fighter turns, with the result that the student who was on the astro-

stand at the time was suddenly ejected from the dome and broke his wrist. Because of this, the said captain's example never appeared in the form of an amendment to CAP 100. In other words, if the job possesses some inherent danger, taking risks is not the answer. This form of release is too often fatal to life and limb. Conversely, if the job is notable for its lack of hazards, such as sweeping floors, then unnecessary visits to the washroom and moving the broom only when the boss is looking will never prove to be a satisfactory relief from the monotony. This form of escape will result in the opportunity to sweep the same floor all the way up to retirement age.

The solution to the problem lies in nurturing an interest in one's job; in studying it from every angle in an effort to find a way to do it better. Regardless of the nature of the work, the quest for more efficient accomplishment will automatically bring benefits—benefits such as advancement and increased financial return. Of far greater importance, however, will be the relief from monotony. The job only gets tedious when there is time left over to let it become so. Look for that better way and avoid that payment on boredom.



Entrance to the renowned Caribou Room



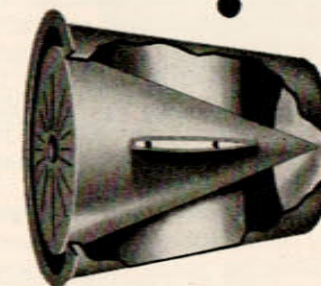
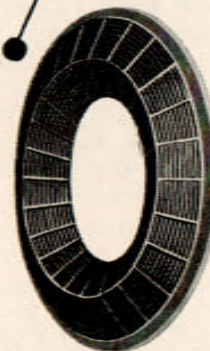
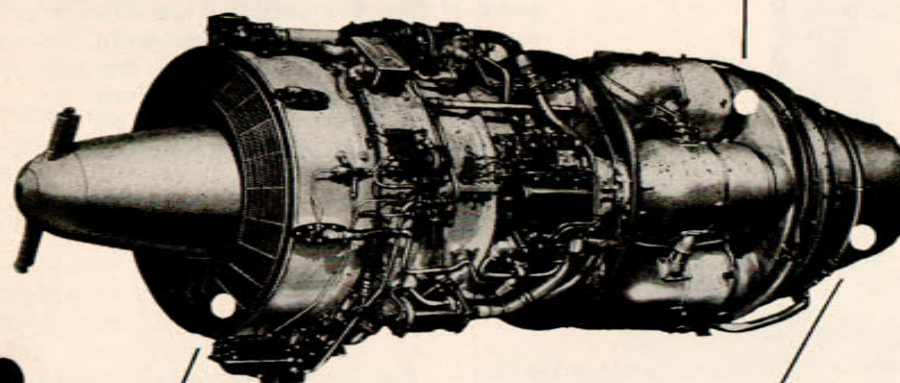
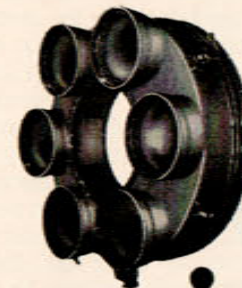
In Vancouver It's

Hotel Devonshire

For Comfort and Courtesy

"Hosts to the R.C.A.F. throughout the years"

MACDONALD BROS.
AIRCRAFT LIMITED
manufacturers of
TURBINE ENGINE
COMPONENTS



The world famous ORENDA gas turbine engine embodies components manufactured by MacDonal Bros. This fully equipped plant with its highly developed production facilities continues to serve the aircraft industry.

Bristol

MACDONALD BROS.
AIRCRAFT LIMITED,
WINNIPEG.



• AN AIRFORCE NEWSMAGAZINE •

Honorary Editor-in-Chief W/C F. GAFFNEY
Production Director S/L CORRIGAN

EDITOR
F/O ROBERT GENNO

CONTENTS

VOL. 4. NO. 13.

October 23, 1955

	Page
Sweet Music from Russia	4
I Have No Religion	6
"Satisfaction"	8
Problems of Bomber Design	10
"Bits and Pieces"	16
News	18
Voxair Vixen	25
Flight Safety	26
111 C & R Flight	27
Sports	28
Graduating Class 5412/13 (RO)	33
Plane Facts	36

ASSOCIATE EDITORS:

F/L C. Cheshire, N/S Dorothy White, F/O E. P. McLoughlin, F/L Jack Leach, F/O L. W. F. Beasleigh, LAW Marge Essex, F/O Sandy Ineson.

ART DIRECTOR: F/O W. W. FREDERICKSON

CIRCULATION MANAGER: F/O L. SHUMKA

ADVERTISING: F/O I. SCOTT, F/O A. L. AULD

CONTRIBUTING EDITORS:

F/O Harry O'Hara, Lt. K. R. Cryderman, Dr. L. A. Glinz, F/O H. N. McMillan, Sgt. H. O'Byrne, F/O I. K. Wilson.

VOXAIR is published every third Friday with the kind permission of:

The Commanding Officer,
Royal Canadian Air Force Station, Winnipeg,
Stevenson Field, Winnipeg, Manitoba.

VOXAIR is distributed to every R.C.A.F. Mess, Lounge, Reading Room and Library in the world. Subscription postpaid anywhere: 1 year, \$1.50; 2 years, \$2.75; 5 years, \$6.50.

The views expressed herein are not necessarily those of the RCAF or the staff of VOXAIR.

Authorized Second Class Matter P.O. Dept., Ottawa

EDITORIAL OFFICES: Phone 83-1311 — Local 216

Printed by The Wallingford Press, 303 Kennedy St., Winnipeg, Man.

'PREFERRED TO THE COLD WAR POLKA'



Alexander in The Philadelphia Bulletin

SWEET MUSIC FROM RUSSIA

Russia has produced some of the world's great music. Names like Tschaikowsky and Stravinsky are proof of this. But until the last few months political leaders have given the world nothing but harsh, discordant sounds and sour notes. Since Geneva in midsummer, however, all this has changed. Now the tune is a Russian serenade.

THE Russians have been consciously setting out to lessen world tension. By smiles, parties, invitations to visit the U.S.S.R., cultural exchanges and even political action, they have sought to convince the world that the Kremlin is not a den of ogres, that the Russian people are friendly and peace-loving, and that the leaders of the U.S.S.R. are more than willing to solve the world's problems by negotiation rather than war.

In September Nikita S. Krushchev pointed out to a delegation of twenty members of the French Parliament what the U.S.S.R. had done this year: concluded an Austrian peace treaty, made a settlement with Yugoslavia, presented a new disarmament plan, reduced the Soviet armed forces by 640,000 men, established diplomatic relations with West Germany, and returned the big Porkkala naval base to Finland. What have the Western powers done in the meantime? Mr. Krushchev asked. He answered his own question: They have ratified the Paris agreements and enlisted West Germany in the Atlantic military bloc.

Analysis of the acts listed by Mr. Krushchev shows most of them to be things that Russia should have done years ago. Also, beneath the smiles and international cordiality, there lies the same tough Russian resistance to settlement of the critical issues that divide the East and West: reunification of Germany, disarmament, communist subversion, a security system for Europe. A member of the West German delegation that recently visited Moscow made this observation about negotiating with today's Russians: "They squeeze you until blood comes from under your finger-nails. They make you feel your position is hopeless."

Manoeuvres on Germany

A story that used to go the rounds of West Berlin cafes had it that this dialogue took place between the Soviet High Commissioner in East Germany and Premier Otto Grotewohl of East Germany:

Pushkin: I'm telephoning Moscow tonight, so give me the election results.

Grotewohl: I don't know the results yet.

Pushkin: Why not? The election is tomorrow.

The New York Times, commenting on this story, says that it reflects the Western belief that the East German government is a puppet regime, supported by Russian bayonets. It is not representative of the people and should certainly not be recognized.

The West wants a re-united Germany, based on free elections. The Russians dodge the issue of free elections, which for good reasons they fear. They offer a unified Germany but only on condition that Germany withdraw from NATO. "NATO," Krushchev says, "is not a sports organization but a team for war against the Soviet Union." Finally, Russia insists on West Germany recognizing and dealing with the puppet government of East Germany. This Chancellor Adenauer refuses to do. His government, he insists, speaks for all German

What, then, has Russia contributed towards the solution of the German problem? With one minor exception, nothing. The exception is that they have agreed to release the many thousands of German prisoners they still hold (10 years

after the war!). West Germany, in turn, has agreed to the establishment of diplomatic relations with Russia. West Germany will in the future deal directly with Russia rather than through the Big Three.

Disarmament

President Eisenhower made this striking proposal at the Geneva conference: "that we (the United States and Russia) . . . give each other a complete blueprint of our military establishments . . . and provide within our countries facilities for aerial photography to the other country." The President's aim was to build up confidence through mutual inspection and reduce the chances for a surprise attack.

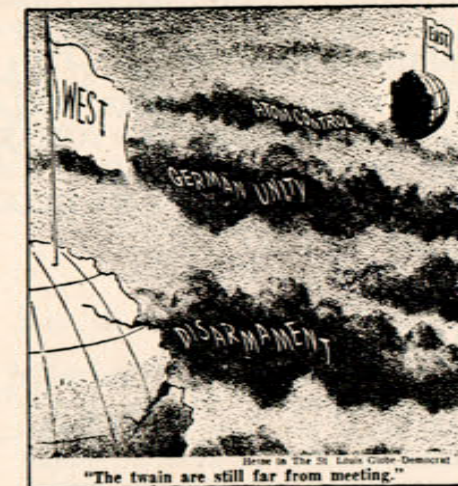
Premier Bulganin, in a recent letter, did not reject this proposal but he did say it "would become significant only if agreement is achieved on the reduction of armaments and on taking measures for the prohibition of atomic weapons." He pointed out that the President's plan "completely omits from consideration armed forces and military installations which are outside the area of the United States and the Soviet Union." He also reiterated Soviet preference for ground inspection at key points—highways, rail centres, ports and airfields—over aerial inspection as a guarantee against surprise attack.

Mr. Molotov, speaking before the General Assembly of the United Nations, re-stated the Russian plan of a drastic reduction in arms and men and the prohibition of atomic weapons. This is a beautiful scheme, but it makes what the West regards as inadequate provision for checks on arms reduction and for the use of atomic weapons against an aggressor.

Though all the world, including the U.S.S.R., is crying for relief from the burden of armaments, achievement in this field will be difficult, because of a difference of emphasis. The United States emphasizes a climate of trust, while Russia continues to call for reduction of forces. Trust and reduction of forces must march together.

Meeting of the "Big Four" Foreign Ministers

Late in October the foreign ministers of France, the United Kingdom, the United States and the U.S.S.R. will meet with the intention of translating the fine words and friendly spirit of the Geneva summit meeting into deeds. Whatever her long-range aims, there is evidence that the U.S.S.R. is genuinely desirous of an easing of international tension and a settlement of some of the problems that divide the world. Perhaps our leaders will be able to devise some means of getting along more peaceably with the U.S.S.R., even if they do not settle all the world's problems.



CANADA DECLINES TO QUIT NATO BASES

Officials in Ottawa said Canada has no present intention of withdrawing its forces from Europe. This country does not have its own bases as such in Europe but has a 12-squadron air division and infantry brigade group stationed in West Germany and France as part of NATO defence forces. Authorities added, however, that North American defence has become at least as important for NATO as European defence, and it might be possible some time in the future for Canada to bring home some of its troops, perhaps when Germany is fully re-armed. (Quoted from the Ottawa Journal.)

CURRENT AFFAIRS

Edited By



DR. L. A. GLINZ
Current Affairs Adviser—
Joint Services

FALL OF ARGENTINA'S DICTATOR, JUAN PERON

"Argentina," declared General Lonardi, who led the rebellion that overthrew Dictator Juan Peron, "has given the world the first example of an absolute totalitarian government falling—before the just and honorable reaction of the people."

The leaders of the rebellion were army and navy men, who believed that Argentina had had enough of Peron's dictatorial and harmful rule. General Lonardi charged that Peron subverted the laws, violated constitutional rights, mismanaged the economy, burned churches and permitted vast graft.

Peron had won and held power by giving labor the fair treatment it had never previously had. The new ruler has assured labor that it "can have as much confidence in this government as in the former. . . . The conquests of the workers will be maintained and improved." Argentina was in need of a new government. General Lonardi promises to restore freedom and prosperity to his country.

Chaplain's Page



By F/L P. GORIEU,
R.C. Chaplain, RCAF Station Winnipeg.

I HAVE NO
RELIGION
BUT
I'M AN
HONEST
MAN

ASK MILLIONS OF PEOPLE WHAT THEY THINK OF RELIGION AND THEIR ANSWER WILL RUN SOMETHING LIKE THIS:

"WHY! RELIGION IS ALL RIGHT, I SUPPOSE. IT DOES A LOT OF GOOD. FOR MYSELF, THOUGH, I AM NOT WHAT YOU WOULD CALL A RELIGIOUS PERSON. I BELIEVE IN GOD, OF COURSE, BUT THAT DOESN'T MEAN I NEED TO GO TO CHURCH ALL THE TIME. I'M BETTER THAN A LOT OF PEOPLE WHO ARE ALWAYS RUNNING TO CHURCH.

"I TREAT THE OTHER FELLOW THE WAY I WANT TO BE TREATED. I WORK HARD TO TAKE CARE OF MY FAMILY. I MIND MY OWN BUSINESS AND PAY MY DEBTS. I AM RESPECTABLE AND HONEST. THAT'S MY RELIGION."

BUT is that honest? Is that religion?

A mediocre and insufficient kind of honesty—yes. No one denies that there is a minimum honesty which consists in avoiding stupid excesses and in discharging certain duties which are popularly regarded as those of a respectable person, especially when no great sacrifice is involved and when it serves one's personal interests. However, a person is thoroughly honest only when he is careful to respect all his obligations. When he disregards his obligations to God—his Creator upon Whom he is utterly dependent and to Whom he owes all he is or has—is he truly honest?

However correct his conduct and his relations with others may be, the person who disregards his obligations to God denies God's Supremacy—His very existence. He withholds honor, loyalty, and service where they are due. That is not being honest with God.

When he insists that he fulfils his duties to himself, to those near and dear to him and to his neighbor, but not to God, is that religion?

It looks like religion—with religion left out. You may call it the Golden Rule, brotherly love, respectability, humanitarianism or anything else, but actually it is "religion" with God left out. There cannot be practical Brotherhood of Men when the more important Fatherhood of God is disregarded.

Religion is simply elementary justice which obliges us to give God the recognition, the honor, the loyalty and the respect which are rightfully His and which is our duty privately as individuals and publicly with our fellow men.

Leave God out of the picture and you are unjust—you are dishonest. How can you disregard God in your life without being irreligious?

There is no such thing as full-fledged Christian honesty when you are concerned only about the rule "Thou shalt love thy neighbor thyself." Because then you ignore the more important part of that same command: "Thou shalt love the Lord thy God with thy whole heart, and with thy whole soul, and with thy whole mind. . . ."

NHA HOMES — 2, 3, 4 BEDROOMS
SILVER HEIGHTS DEVELOPMENT
Low Cash Payments
1 ROWAND AVE. TELEPHONE
ST. JAMES MANITOBA 83-1811
Evenings: 123 Bruce Avenue, Telephone 83-2459

AMPLE CUSTOMER
PARKING

Silver
Heights

SILVER HEIGHTS
PHARMACY

YOUR REXALL STORE

Designed to Meet
The Shopping requirements of a fast growing
community

JOHN A. MAINELLA, Prop.

PHONE 83-1825

WE DELIVER

Shopping
Centre

SILVER HEIGHTS
ESSO SERVICE



Open Day & Night
Portage & Mount Royal Road
ST. JAMES, MAN.
PHONE 83-3903

930 NOTRE DAME
WINNIPEG

2285 PORTAGE AVE.
SILVER HEIGHTS

SERV-WELL
SUPER MARKETS

Winnipeg's Largest Independent Food Stores
We offer a large selection of goods at competitive
prices. Guaranteed Meats and Produce.
Free Delivery Service with Orders \$5.00 or Over.
Phone 83-1309

SILVER HEIGHTS DEVELOPMENT CORPORATION

F. R. Lount & Son Limited

WINNIPEG, MANITOBA



GENSER - - Amana FREEZER - FOOD PLAN

**Offers 4 Ways To Be Sure
You're Choosing The Food Plan
That's BEST For Your Family.**

1 CHECK THE QUALITY OF THE FOOD.

Food is a very important part of a food plan. That's why we provide you with all the nationally advertised brands . . . the finest foods obtainable . . . all unconditionally guaranteed.

2 CHECK THE SAVINGS

A good food plan should save you money while serving you finer foods. That's why we continually provide our customers with the best foods at the biggest possible savings.

3 CHECK THE FREEZER

A quality freezer is absolutely essential because the money you save with a food plan can be lost if these foods aren't properly stored. For this reason we have chosen the Amana "stor-mor" Freezer . . . the only freezer guaranteed to out-perform all others.

4 CHECK THE FIRM BEHIND THE FOOD PLAN

A food plan is as good as the people behind it. Be sure to check the reputation of the company you plan to do business with. Our reputation for integrity, quality and excellence of service is your assurance of satisfaction always.

**DON'T DELAY
CALL TODAY
PHONE 92-8191**

GENSER'S

291 PORTAGE AVE.

WINNIPEG MANITOBA

Learn how you can save money and time while serving the finest meals you've ever eaten . . . at less than your present food cost.

By D. G. AND E. F. LEE

SATISFACTION

A SPECTRAL ROMANCE

ALL through the month of October she was plagued with recurring fits of terror. Several times he found her talking to herself, "Soon, soon, soon."

At last he hit on the scheme of asking her in a quiet voice, while the last "soon" was still on her lips, "What, my dear?" The spell was unbroken, her answer came quite naturally, "Why, Hallowe'en, of course. I must get some candy and apples in for the children when they come around." It seemed simple enough. She flung herself whole-heartedly into each of the yearly festivals, and, with early frosts, everyone was beginning to think of Hallowe'en. Yet he was vaguely disturbed.

In his direct, practical manner he put the thing from his mind. But the very next day, when he entered the house and smelt a faint odor of freshly-turned earth, an inexplicable terror gripped his heart. It was seconds before he realized she was re-potting the african violets, as she did annually, at the big table in the hall. He managed one of his abrupt laughs. "Another sign of the season?" She flashed the smile that always hit him with the wallop of a 14-pound hammer, "Like frost on the pumpkins."

"I have the tickets," he said. "What about costumes?"

"We will have to go as spooks, there's been no time to arrange anything else," she replied.

"Fair enough. Did you get the pins?"

"Yes, they cost a dime."

Driving through the streets of the companionable little town, they were noticed by few, and these few apparently saw nothing strange in a fishtail Cadillac bearing two shrouded figures on their spectral mission. The reason was evident as they turned into the driveway of the old mansion, the town's architectural relic of the age of get-rich-quick millionaires, which now served as the "Town and Country

Club." From the old hitching-post at the sidewalk to the port-cochiere a line of cars was parked, the steam from their exhausts still rising in the glow of dimmed headlights, before which half-a-dozen spectres stood adjusting their shrouds. It seemed that others too had noted the simplicity and charm of a sheet and a few safety pins as a masquerade costume.

For some reason, he did not notice the odour until macabre, hollow laughter cackled from the gloom behind them. Then, as it rang in his ears, and even as he pinpointed its origin in the town's chubby, sheet-clad dentist, adding sound effects to the already eerie scene, he recognized for the second time that day the odor of fresh-turned earth.

Why, he wondered, when she had spent the day with that odd did the impressionable girl on his arm tremble so. Then he realized that it was not the earth, but that the little group of spectres thronging into the vaulted entrance of the club were a shade too realistic for fun. And it was indeed a fearsome sight. Pouring through the glass doors to the foyer at least a dozen shrouded gargoyles and luminescent skeletons cast before them a chill "like a grandmother's breath," a chill far in excess of what could be attributed to the frosty night air they brought in with them. And yet after the initial shock was over, and the ghosts were mingling with the colorful array of harlequins, pierrottes, 1908 bathing beauties and pathetic hoboes, it was noticeable that in some indefinable way they had added notes of both hilarity and reality to the fantasia. It seemed as if from that moment the pierrottes were pierrottes and the harlequins indeed the frenzied dancing celebrants.

The party had been awaiting this moment sedately; now it became a wild dianysiac revel.

Meeting her at the foot of the spiral stair he noticed with relief that she was no longer frightened and had caught the mood of the evening without its terrifying overtones. Not a tremor moved her sheeted hand when she reached for the tall, pink, frosted glass he presented to her with a flourish and an affectionate remark: "Your first today. Knock it back." She sipped it delicately for a moment, as she always did, and then unexpectedly said, "Let's do some ghosting on the dance floor."

A happy union had been established between crowd and orchestra, and they soon lost each other in the free-and-easy cutting-in which was the custom at the Town and Country Club. He tried dancing with several of the shorter white-shrouded figures, without finding her again, and finally decided to make a career of it, alternating dances with trips to the bar. Other he-ghosts he met at the bar complained of the confusion caused by so many spectres in identical white sheets, but the dentist thought it was "kinda fun." "Oh, well," they reflected, "it's only an hour to the unmasking."

When midnight came, most of the party were too intoxicated to remove their masks, but he pulled off his hood and stood at the edge of the crowd looking for her "carrot-top." Seconds later, her hand slid into his. She had left her hood on and continued to wear it because she was "having too much fun ghosting to spoil it now." He slid his hood back on too, and soon lost her in the crush. But each time he removed his hood she reappeared, so he stopped worrying and continued drifting between the bar and the dance floor, until he saw the orchestra packing up and realized with a shock it was 3 a.m. He hadn't had his hood off for two hours. He whipped it off and was relieved to see a small shrouded figure dissociate itself from a group

of spooks and slide to his side. She was trembling and frightened. "Let's go quickly, before it comes back," she whispered, "I thought it was you, at first. Don't ask me why. Let's just go."

However, as they went together to the foot of the stairs, she regained her composure, and explained with a laugh that her last dancing partner had been talking in an imaginative vein about the haunting business, and had invited her to join the union. At first it was amusing, with jocular remarks about the initiation fees, but as he continued, the conversation had taken on an eerie air of reality, so that when he had explained that tonight was the night for initiating new members, and that he had been chosen to sponsor her at the local chapter, she fled in terror.

He watched her go up the spiral staircase out of sight, and then joined the dentist at the bar for one last drink.

She glided down the long spiral staircase from the tower powder-room. There were no ghosts among the little group in the foyer. She glanced through the glass doors. There was the car, under the porte-cochiere, its exhaust steaming, the windows frosted over. As she hesitated, the near window rolled down and a ghostly arm beckoned, but for some inexplicable reason, she dreaded the chill air. Then, glancing back, and seeing a hooded, white figure approaching through the throng, she fled frantically through the double glass doors. The wind fluttered her shroud about her as she fitted silently down the steps and into the car.

He burst into the foyer, a disheveled and slightly tipsy ghost, bearing a tall glass of pink gin, glanced feverishly around, and seeing no ghosts, pulled off his hood. Then he noticed dully that the car pulling away from in front of the old building might have been his own, had it not gleamed with an eerie light.

Lindquist

BROS. LTD.

- TELEVISION
- RADIO
- FURNITURE
- APPLIANCES

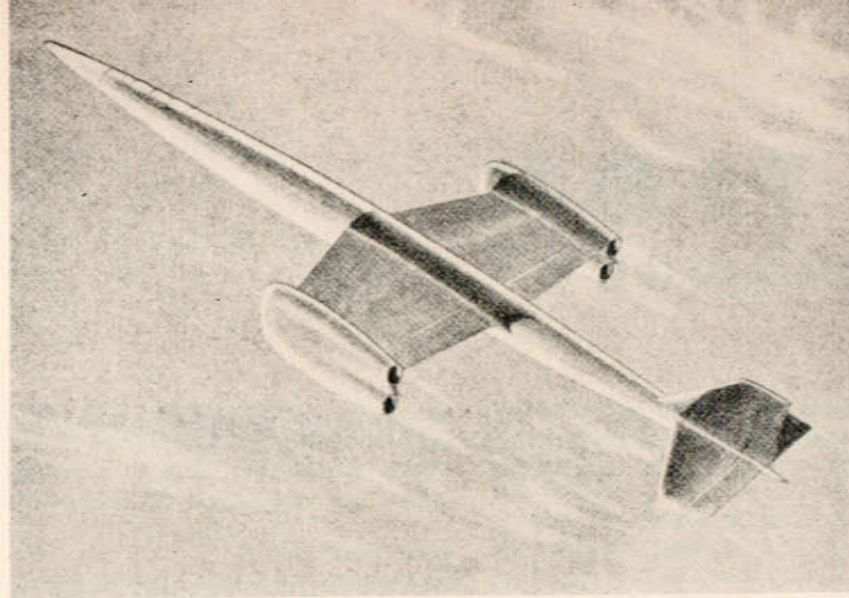
FAST, EFFICIENT
SERVICE ON ALL
MERCHANDISE
WE CARRY.

Located in St. James at
Cor. of Portage and
Winchester for the
convenience of RCAF
Personnel.

TECHNICAL NEWS

Edited by

S/L C. CHESHIRE



Problems of bomber design

by DAVID KEITH-LUCAS, B.A., M.I.Mech.E., F.R.Ae.S.

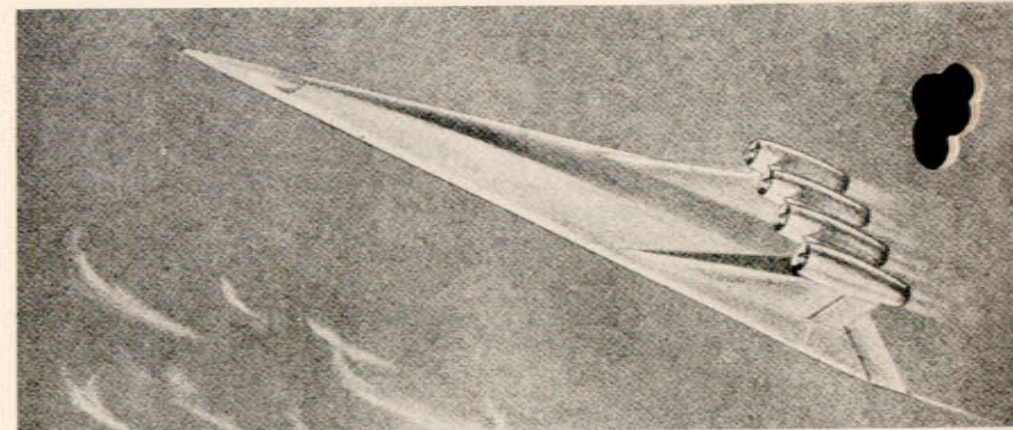
(Chief Designer, Short Bros. & Harland Ltd.)

I THINK THAT bomber designers always have to keep the purpose of their designs very clearly before them. A good aeroplane is not enough, it also has to be a good fighting machine and, indeed, many good bombers, far from being sleek and beautiful aircraft, have been nearly as ugly as their job.

That it is an ugly job is undeniable, but I am not going to discuss the ethics of it in this article. The moral problems are such that everyone of us should face them squarely. My only excuse for shrinking this responsibility is that I am hardly qualified to speak on the subject and that this is a technical paper and not a sermon. It is a sad thought that so much that is of absorbing technical interest should be concerned with destruction and not with creation.

A bomber is a form of long-range artillery, but there is a very significant difference arising from the manner in which it carries out its task. This difference is that once a gun is fired, the defenders can do very little to stop the shell, whereas even after a bomber has taken off they can do quite a lot to stop it reaching its target. Consequently the development of artillery has been towards greater range, greater accuracy, and greater fire power, whereas the development of bombers has been largely governed by the opposition with which they have had to contend in the air.

Bomber development has also been directed to greater range accuracy and



Supersonic bombers of the future, Mr. Keith-Lucas believes, may bear some resemblance to the "imagined planforms" illustrated on this page and drawn by Cyril Griggs of Short Bros. & Harland's technical publications department.

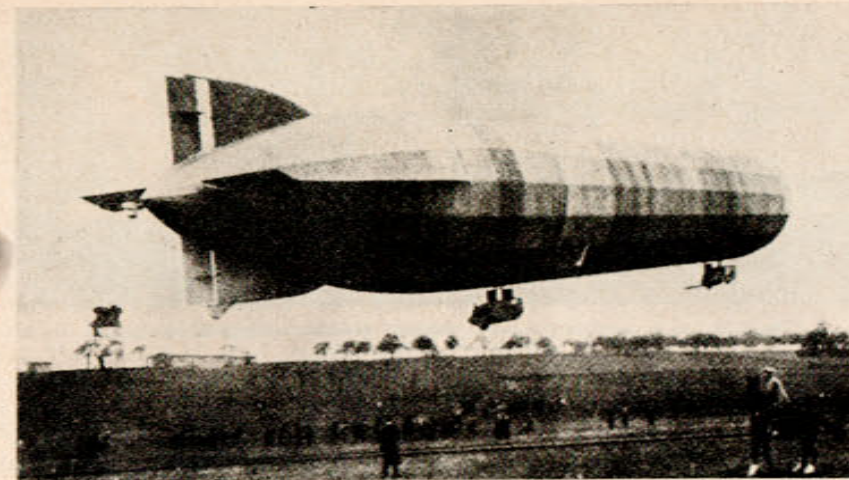
fire power, but these are not the only reasons for the change from Zeppelins to biplanes and from biplanes to the higher speed monoplanes and so to the jet bombers of today.

It is some 41 years since the first big bombing raid of the 1914-1918 war. It was made by 30 R.N.A.S. aeroplanes, starting from Dover and Dunkirk, and dropping bombs mainly on Ostend and Zeebrugge.

In the same year, British aeroplanes attacked the Zeppelin sheds at Friedrichshaven and on Christmas Day six

seaplanes raided Cuxhaven and Wilhelmshaven. Some of those seaplanes—one is shown on page 11—were built by Shorts. They had a gross weight of 3,700 lbs., were powered by one Canton Unne 200-h.p. engine, had a crew of two, and carried a bomb load of four 100-lb. bombs.

Looking back on those days—and I admit that my memory of them is getting rather blurred—it is curious to think what an exaggerated fear we had of the Zeppelin, with its load of a few 100-lb. bombs and a speed at that time



The Zeppelin—"surely the most vulnerable aircraft ever used in war. It was not only slow, but unmanoeuvrable, offered a very large target area, and only needed one incendiary bullet to bring it down in flames".

of only 50 m.p.h. We have got used to an awful lot since then.

The Zeppelin was surely the most vulnerable aircraft ever used in war. It was not only slow but also unmanoeuvrable, offered a very large target area, and only needed one incendiary bullet to bring it down in flames. Yet the Germans were relatively successful with it although the losses were, for those days, high and it is not surprising that by the end of the war they had changed over to the Gotha, a twin-engined aeroplane.

I suppose the success of the Zeppelin was due to the fact that we had few fighters and lacked the necessary instrumentation for flying at night. It was only the exceptional pilot who could bring off a kill under those conditions.

On the British side, Handley Page produced the famous O/400 and, later, the four-engined V/1500 which had a gross weight of 30,000 lb. and could carry nearly two tons of bombs. It was designed to bomb Berlin but the war ended just before it became operational.

I quote these figures to illustrate the enormous advances made in those early years, but fighter opposition was still not a major factor—the main developments being towards better flying machines capable of carrying larger bombs over longer ranges.

The next 20 years saw far more profound changes than appeared on the surface. The biplane had gone out in favour of the monoplane; undercarriages had become retractable. These were the obvious outward changes and the reason for them was to get the speed to enable the bombers to penetrate the fighter defences. To the same end engines were now cowled and cockpits were enclosed in streamlined canopies. The wing loading was in-

creased by five times and to make take-off and landing possible, variable pitch propellers and high lift flaps had been introduced. Most important of all, the hand-operated Lewis gun in the open 'scarff' ring had been replaced by a number of power-operated gun turrets each mounting two or four guns. The trend towards increasing complication was already clearly defined.

The drag of the last war bomber turret

This was the pattern of the Whitley and Wellington, Stirling, Halifax, and Lancaster, all of them great aircraft in their day and all of them slower than contemporary fighters, but able to battle their way through with the aid of their power-operated gun turrets. These turrets were one of the major technical advantages which we had over the Germans, but even they gave rise to quite a bit of drag and so reduced the speed of the bombers quite appreciably.



The Short S.41 which carried four 100-lb. bombs. S.41s took part in raids on Cuxhaven and Wilhelmshaven in 1941; they had a crew of two and were powered by a Canton Unne 200-h.p. engine.

Designers were asking themselves whether there was any fundamental reason why bombers should be slower than fighters. Could the extra weight of fuel and bombs be offset by higher wing loading and the absence of armament?

The Mosquito was the answer. With no armament at all it dashed in and out of Germany, dropping its bombs on the target and suffering much fewer losses than the heavily armed heavies. It is a very interesting object lesson, but the interpretation which I put on it is that it succeeded because we were up against one of the steps or barriers in our progress towards higher speeds. This particular barrier was the limit of what could be done with piston engines. Propeller performance and cooling drag made it impossible to get much more speed however much power we tried to cram into the airframe.

By the end of the war we were entering on a new phase of jet fighters. The Mosquito would have been useless against them and so a new breed of jet bombers had to come into existence. We were very soon up against a new barrier, this time the sound barrier. Once more the performance of the bomber could approximate to that of the fighter and armament became unnecessary on the former.

Now we are getting through the speed of sound—at least, the fighters are. So it may be that we will again have to arm the bombers unless we come up against another barrier.

I suppose that the next one will be the temperature barrier—but I am getting ahead rather too fast.

Penetrating power

I want first to deal with that quality in a bomber which enables it to penetrate the enemy defences and deliver its attack. There is no word in our lan-

guage to describe exactly what I mean. 'Unstoppability' would do if it were not so horrible. 'Get-there-ability' is more positive but even more nasty, so I am going to call it "penetrating power" and hope that I shall be understood.

This penetrating power involves the ability to take punishment without being shot down, the ability to protect itself against enemy fighter attacks and the ability to avoid interception.

Vulnerability and punishment

Let us take them in order. The ability to take punishment involves consideration of many vital parts—the pilot engines, fuel system, control system, and the structure of the aircraft itself. It is not easy to do much about these things without adding undesirable weight and complication. For example, the fuel tanks can be split up into a number of small tanks so that if any one is holed the loss of fuel is not critical. This complicates the fuel system considerably and introduces additional valves both to control the flow of fuel to the engines and to distribute the fuel to the various tanks when refuelling.

Self-sealing tanks provided an answer in the days of machine guns but are of little use against modern cannon. The emphasis now is on protection against explosion rather than leakage.

Integral tanks have certain advantages as, if they extend right to the outer skin, there is no internal space which can fill with fuel and subsequently catch fire. Any leakage is straight overboard and if the leaking fuel were to catch fire it would blow harmlessly away.

The flying controls are another problem. The wire or push rod controls of the last war bombers were not very

vulnerable, but modern speeds demand power operation—often hydraulic. Reversion to manual control in the event of damage is the best protection if we can do it. Otherwise I know no safeguard but duplication with all that it involves in weight and complication. In practice we have to duplicate in any case because of the risk of ordinary mechanical or electrical failure. The trouble will come if we have to triplicate or quadruplicate!

Careful location of all services such as hydraulic pipes, electric cables, and so on, where they get most protection from strong structural members is also worthwhile but the designer must be careful not to group them together where one hit can put too many services out of action.

The vulnerability of the structure itself is a very vexed question. There were examples in the last war of bombers struggling home with very extensive structural damage. There was, for example, a Stirling which got back with one of the main spar booms severed near the root. I do not know whether we should be proud or ashamed of the event. The particular crew would doubtless commend the

design but surely it argues that the structure had rather more redundancies than were quite necessary, that it weighed more than it need have done and that if it had weighed less it might, for all we know, have been able to fly higher and so avoid being hit at all. Alternatively, it could have carried a larger bomb load so that fewer aircraft would have been needed to do the same job and consequently fewer might have been shot down.

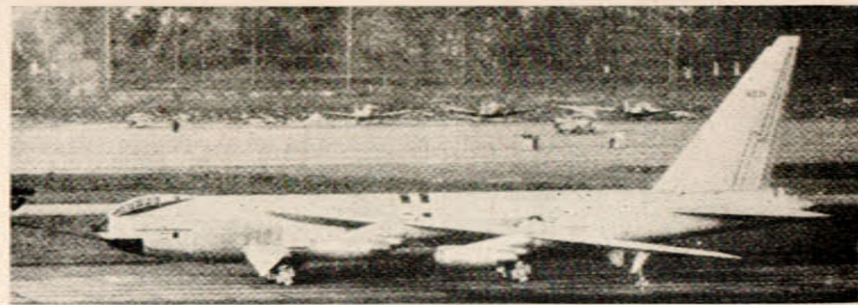
Rightly or wrongly we strive for more efficient structures and in doing so we try to eliminate as many joints as possible. The trend is undoubtedly towards fewer and therefore larger pieces. Ultimately it may lead to one- or two-piece moulded or cast wings. I have a nasty feeling that such wings will have so few redundancies that they will not stand much punishment.

Armament: we cannot afford turret drag

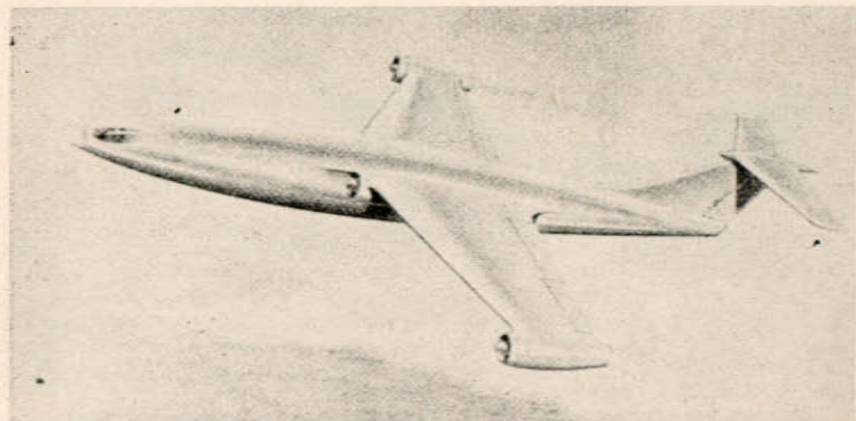
The next factor in penetrating power is the bomber's ability to protect itself against enemy fighters.

I have already spoken about the power-operated turrets of the last war. They were a great technical achievement, but on today's and tomorrow's bombers we cannot afford so much drag and if we have guns, they must have longer range. I suspect we will have to develop automatic radar sighting and we must have the sighting gear close to the guns. The reason for this is that the bomber may well be weaving or manoeuvring violently when the guns are needed and the structural distortions in the airframe could easily upset the aim if the guns and sighting gear were not close together.

This is a far cry from the hand-held Lewis gun of the 1914-1918 war. It makes one wonder whether emphasis on our third factor, the avoidance of interception, is not the best bet. It has often been said that owing to the additional drag and weight, fitting guns is the best way of ensuring that we will need them.



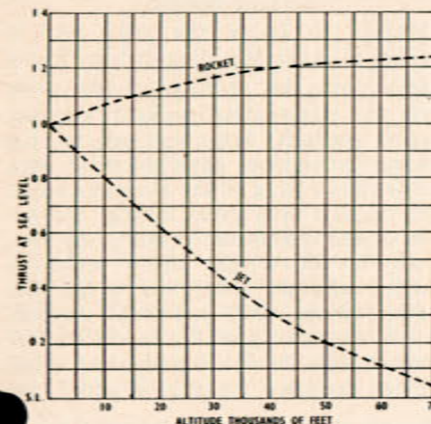
"The B-52 has to resort to the rather unhappy arrangement of a bicycle undercarriage and outriggers."



Possible form of high-speed, low-altitude bomber envisaged by Mr. Keith-Lucas. The design of such an aircraft would present formidable problems, he says. In this sketch (drawn by Cyril Griggs) the bomber is shown in the air: "I leave you to guess how it got there," says Mr. Keith-Lucas.

But the ability to avoid interception is not just a matter of speed, Range, altitude, manoeuvrability, and speed are all important factors. Sufficient range allows the bomber the freedom to approach by the back door instead of coming up the front drive where the reception party is gathered to meet it.

Altitude is rather a special problem and deserves more detailed treatment. The cruising height of a bomber may be governed by limitations of engine power or by limitations of the airframe itself. The thrust of a jet engine falls off roughly as the relative density of the atmosphere, as shown in the diagram below from which you will see



Comparison of jet and rocket thrust at altitude.

that at 60,000 feet it is only 1/20th the sea level value and at 70,000 feet a mere 1/20th. It makes it very difficult to design a jet bomber to fly much above 60,000 feet and almost as difficult to design a jet fighter to shoot a bomber down! But a rocket engine has no such inhibitions about altitude.

It appears, therefore, that rocket fighters or guided weapons might have it all their own way when attacking jet bombers at these altitudes. That may be true, but it depends on the fighters getting sufficient warning of the approach of the bombers because even a rocket fighter takes some while to climb to 60,000 feet and uses a great amount of fuel in doing it. It cannot carry enough fuel to sustain a long, stern chase. Indeed, to be successful it would have to make the interception very soon after arriving at the bomber's cruising height.

There is, therefore, a lot of sense in designing bombers to fly as high as possible, but it is not just a matter of engine power.

Let us consider a bomber flying at 500 knots at 60,000 feet. I chose 500 knots (which is equivalent to a mach

number of 0.87) as a rough guess at the true airspeed which it can attain without running into compressibility troubles. In other words, it is approaching its limiting mach number and cannot therefore go much faster. But 500 knots at 60,000 feet is only an indicated speed of 155 knots. With a high wing loading this may not be so very much above the stalling speed at this mach number (as indicated in the diagram in the third column). The bomber cannot therefore go much slower. It has practically lost the power of manoeuvre.

The higher we fly, therefore, the narrower is the usable range of speed, until finally we come to a height at which there is a unique usable speed and no power of manoeuvre. If we want to fly higher than this we may change the design in one of two ways. Either we must remove the high speed limit by sweepback or by making the wing thinner so that the limiting mach number is increased, e.g. to supersonic speeds—or we can reduce the low speed limit by increasing the wing area. In practice we would probably do a bit of both. Sweepback and relatively low wing loading are therefore the usual pattern for high-altitude bombers.

Most of our modern bombers follow this philosophy which explains the fact that the wings are large enough to allow us to bury the engines inside them, and so save drag. The Americans, on the other hand, have been more concerned with long range and have higher wing loadings with narrower wings incapable of housing the engines. They have therefore adopted the pod mounting which has certain advantages including that of vulnerability. If the engines catch fire or even explode there is a fair chance that they will not wreck the aircraft. I am not sure that we could say the same of buried engines. One of the disadvantages of the American approach is likely to be the aero-elastic effects arising from the high aspect ratio of the wings.

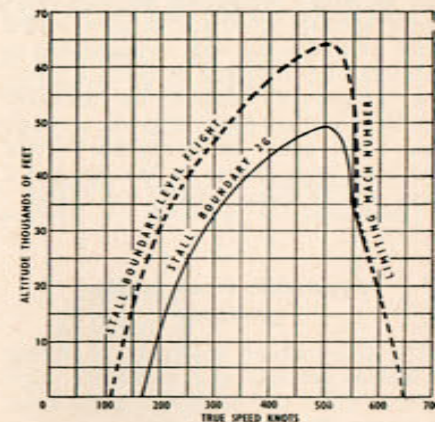
Manoeuvrability may not be much use against the guided missile

This brings us to the question of manoeuvrability. The high wing loading of the American bombers makes them essentially less manoeuvrable than our Victors, Valiants, and Canberras. But, quite apart from this, it must have been very difficult to make the wing of the B-47 stiff enough in torsion to give adequate aileron control. The loss of incidence which occurs at the tips of a swept wing when it bends upwards under load must also have caused some embarrassment in the design stages. These and other aero-elastic effects are obviously more easily overcome on the delta wing of

the Vulcan than on the V wing of the B-47. The Victor comes somewhere in between, but the crescent wing planform has definite advantages in overcoming the bad effects of aero-elastic distortion.

The Vulcan and the Victor both manage to stow the undercarriage in the wing whereas the B-52 has to resort to the rather unhappy arrangement of a bicycle undercarriage and outriggers. It is a particularly unhappy arrangement on the bomber because, due to the presence of the bomb cell, the wheels have to be widely spaced fore and aft of the centre of gravity; a fact which must impose severe restrictions on the technique of take-off and landing. This is not the sort of thing which pilots like. The important point, however, is not whether the aircraft is pleasant to fly, but whether it is a good bomber which can get through and drop its bombs on the target. Perhaps I should qualify this remark by saying that we should never countenance bad handling qualities except when these qualities have been deliberately sacrificed in the interests of the aircraft's ability to do its job. I would expect the British bombers to be nicer aircraft to fly than the American and far more manoeuvrable, but it does not follow that they are necessarily better bombers especially for the very long ranges over which the Americans may have to operate.

Manoeuvrability was of great importance in the dog fights of the last war, but it may not be of much use against guided missiles. Every boxer knows that it is no good dodging indiscriminately. The time to dodge is when you can see what is going to hit you. It may or may not be possible to devise radar apparatus which will give sufficient warning of the approach of a guided weapon and we will still need a very manoeuvrable aircraft to get out of the way in time.



Typical limitations of speed and manoeuvrability at altitude.

We must therefore consider other ways of escaping the attentions of guided weapons. These include the possibility of going so fast that the enemy have little chance of getting their missiles into the air or so low that the missiles cannot pick us up because of ground interference.

This latter suggestion is attractive in a way but would pose some horrible design problems. It would not be much fun to fly at a few hundred feet at high speed over enemy territory. To begin with it would be a very bumpy proceeding and special aids would be needed for navigation, which would be quite a problem, and to avoid the risk of flying into a hillside. Another very big problem would be how to get sufficient range.

Range of any aircraft is directly proportional to the lift/drag ratio (L/D). This may be re-written as CL/CD —lift coefficient divided by drag coefficient. We must therefore keep the lift coefficient as high as possible which, as the altitude is fixed and speed must be high, can only be achieved by making the wing loading high also. To get a really useful load we might have to go to wing loadings of 200 or even 300 lb/sq. ft.

This would have advantages from the point of view of comfort in rough air, but it makes fuel stowage difficult as a great deal of fuel would be needed and such a small wing would be of little use for housing tanks. The fuselage would therefore have to be large to accommodate fuel, bombs, crew, equipment, and, probably, the undercarriage as well.

The real problem of these wing loadings would be that of take-off. Even unlimited rocket assistance might not provide the answer as the take-off speed would be so high that ordinary pneumatic tyres would not stand up to it. We might therefore have to resort to flight refuelling, to the composite aircraft principle to give added wing area for take-off, or possibly to water basing. It would be quite a problem whichever solution we adopted. The drawing on page 12 gives a rough idea what such an aeroplane would look like. It is shown in the air, but I leave you to guess how it got there.

Supersonic bombers: the problems

The alternative approach of flying as fast as possible at a relatively high altitude gives rise to many of the same problems. The first question is how to get the range. The lift/drag ratio which

we can achieve at supersonic speeds is considerably less than that at subsonic speeds, but the range of a jet aircraft is proportional to lift/drag ratio times speed. It follows, therefore, that if we can fly fast enough we can get long range. Unfortunately another barrier is in front of us—the heat barrier. It comes somewhere around a mach number of 2 to 2.5, say 1,300 to 1,700 miles an hour.

It is not going to be very easy to dodge this one. Firstly there is the question of structural materials which can stand high temperatures, and structures which can stand the temperature gradients. But the problem reaches into almost every corner of the aircraft. The crew must be kept cool, the fuel and hydraulic fluid must be prevented from boiling. Electronic equipment and electric generators must be kept cool and we do not always manage to do that with cold air as a cooling agent. It will be quite a job with air at 200° C.

Wanted: An engine between a jet and a ram jet

Engine development is also needed for these speeds as the ram pressure is such that the compressor has less work to do and we need an engine which is half way between our present jet engines and a ram-jet. The aircraft design may follow one of two lines. The wings may either be straight or swept back at about 80 degrees—in the latter case they would take the form of a very narrow delta. Intermediate angles of sweep are less good because they are liable to delay the compressibility troubles to the speeds at which we want to fly.

If the wings are straight the thickness/chord ratio will have to be only 3 or 4 per cent and they will be almost solid. If we adopt the swept wing it can be a little thicker and the large root chord makes it quite useful for stowing fuel.

In neither case will the wing be much good for giving high lift at take-off or landing. And we must not compromise with these requirements or we will spoil it for the high speeds.

We therefore find ourselves with the same problem as for the low altitude bomber—how to take-off and how to land. The only difference is that having somehow got them into the air, we have even greater problems to solve on the supersonic bomber.

The problems of take-off and landing, of getting sufficient range, of cooling the cockpit, and a host of other difficulties make the idea of the pilot-

less, expendable bomber very attractive. If we analyze the reasons for carrying a pilot and crew I think we will agree that the important ones are to navigate to, and to identify, the target. The fact that having done so they turn round, navigate back to base, and land the aircraft is no longer a necessity if the crew is not carried.

When I say it is no longer a necessity I include the economic aspect because I believe that the simplifications due to halving the required range and omitting the crew and landing aids, are such that the over-all cost of mounting a given attack with expendable bombers would be no more than with conventional piloted bombers.

Merely to halve the fuel load is enough to make the aircraft very much smaller but the deletion of the crew with the pressurized cockpit, oxygen, cooling system, large cut-out in the fuselage structure, ejection seats, etc., and with the drag of the cockpit canopy adds up to a very great saving. We can then delete a number of safety devices. Every bit of weight saved means a smaller aircraft with less drag, less engine power, and less fuel needed. And so we end up with a much smaller aircraft with fewer engines and those engines designed for only a short life.

It is a very attractive thought but turns on two fundamentals—can it be navigated accurately enough and has the penetrating power? These are the two points on which the V.1 failed.

The navigation is obviously the most serious problem. If we could be certain that it were solved I doubt if we would see any more piloted bombers. London is a very large target, but the V.1 from quite short range spent a lot of its effectiveness on the surrounding countryside. The V.1 was a rather crude missile and by now we ought to be able to do much better than that. One possible but expensive way is to direct the pilotless bombers from a manned 'shepherd' aircraft which combines the role of shepherd with that of photographic reconnaissance.

One stage away from this idea is the parent aircraft which only releases the pilotless bomber from a relatively short distance away from the target. In the last war the Germans launched V.1s in this way from Heinkel aircraft. I believe that we failed to intercept a single V.1, so launched, because our defences were concentrated along the lanes from the launching bases to London whereas the air-launched missiles came from unexpected directions.

This raises the question of penetrating power. By the end of the attacks

we were bringing down something like 85 per cent of the V.1s before they reached London. Notwithstanding the fact that they were relatively slow subsonic missiles, there is a moral to be drawn from that experience, namely that it makes it much easier for the defence if they know that all missiles will come along one of a number of lines and at approximately a constant speed and altitude.

But the Germans themselves produced the answer in the V.2 which flew so high and fast that we never intercepted a single one before it reached its target.

The potentiality of the rocket bomber

The V.2 is one of the outstanding engineering achievements of our time. It had a range of about 200 miles, reached a height of 60 miles and had a maximum velocity of about 1 mile/second—3,600 miles an hour. It weighed 12½ tons.

In his lecture before the Royal Aeronautical Society, the late Mr. W. G. A. Perring estimated that a similar rocket with wings and boosted up to a starting height of 80,000 feet by a 100-ton booster rocket could achieve a range of 3,000 miles.

With better fuels and by development and refinement of design we might now be able to achieve that order of range on a single-stage rocket, using the fuel carried in the second stage to return to base.

If that is so we can envisage a bomber, if we can call it that, which could penetrate any defence which has yet been conceived.

One has only to mention such ideas to be accused of being a visionary with his eyes on the moon rather than his feet on the ground. But the V.2 first flew nearly 13 years ago, in October, 1942. It was operational in September, 1944, 11 years ago. Mr. Perring's lecture was nine years ago and already the Germans had been working on the two-stage rocket scheme. Herr von Braun, who developed the V.2, compared its development stage with that of aircraft in the 1914-1918 war. Thirteen years' development ought already to have produced the sort of figures which I have just quoted.

Sanger, another German scientist, envisaged still greater ranges by a technique of bouncing along the surface of the atmosphere like a flat stone will skip along the surface of water.

The possibilities of these long-range winged rockets are so enormous that one is tempted to believe that future bombers will take that form. But I do not want to give the impression that the problems are solved and all that is necessary is to do it. The V.2 was far from perfect—its range varied from about 160 to 220 miles and some 15 or 20 per cent of the rockets exploded in the air before reaching the target.

These are the very shortcomings which are likely to provide the biggest problems in the future.

The first one is that of accuracy. At 60 miles altitude the atmosphere is so rare that the indicated air speed of the V.2 was only 3.5 ft/sec. although the true air speed was 3,500 ft/sec. Control was therefore ineffective after the first few seconds of flight. In Perring's proposal the maximum height was 180 miles and, with the longer

range the problem of accuracy became increasingly difficult.

The second problem of exploding in mid-air is probably due to the high skin temperatures achieved on re-entering the denser atmosphere. The theoretical stagnation temperature on the V.2 was 1,100° C although, in practice, only about 600° C was realized. In Perring's proposal the theoretical stagnation temperature would be 6,500° C, so that if only half that were achieved, there would still be a problem—alcohol/air mixtures explode at about 450° C!

The Germans were working with a propellant which gave a specific impulse of about 230. Monatomic hydrogen could, theoretically, give 1,120 or nearly 24 times the range. Whether in fact atomic hydrogen can be harnessed in this way I do not know, but even with more conventional propellants we can hope for specific impulses of 430 giving three-and-a-half times the German ranges.

With prizes like this before us the difficulties ought to stimulate and not depress all true engineers. Or, to put it more crudely, what Germany could do 13 years ago we can surely surpass today.

This article is based on the text of a lecture given by the author to the Junior Institution of Engineers. Reprints (price 1s. 6d.) of the full paper can be obtained from the Secretary of the Institution, Pepys House, 41 Rochester Row, London, S.W.1, England.



SEE FOR YOURSELF

How you live better for less. No extras to buy. Your Mobile Home is completely furnished and equipped, ready to live in. These comfortable, easy-to-own Mobile Homes are the biggest living values of the year. In most cases what you have been paying for rent will cover the payments on your Mobile Home.

CAPITAL COAL CO. LTD.

PEMBINA HIGHWAY AT MULVEY
WINNIPEG, MANITOBA

Telephone 42-8645

Distributors for Canadian General — Pacemaker —
Safeway — Northland — American — Mid-States
Corporation



John Roddy LTD.

- UNIFORMS
 - BATES HATS
 - AQUASCUTUM & CROYDON RAIN COATS
 - ARROW SHIRTS
- THE OFFICERS' SHOP**

PORTAGE NEAR KENNEDY

WINNIPEG, MANITOBA

BITS and PIECES

By "BRIT"

If you see a serious young Officer, wearing horn-rimmed glasses, snooping about asking questions, do not, on any account, run, hide, or wave a red flag. He's not a bull; he's the Station Security Officer. The innocent-looking individual has full authority to drag out skeletons from under beds, from dark closets, and the MIR. Security come from two English words: secure and it. This is self-explanatory but it doesn't help much. Latin gives us a clue in the phrase "Hurlo in Secro." This comment was raised against Brutus and Co. on the occasion of Caesar's death. Freely translated it means, "Throw them to the lions!" The Eskimos frequently cry, "Seco, seco," which means "big fish." This has no bearing on the matter, but it's an interesting sidelight. Two years ago a prominent Government administrator stated: "Security is a big problem; it is a responsibility of all personnel, especially section heads." If we take all of this material and boil it down a bit we arrive at a definition. Problem lions are responsible for throwing big fish heads at personnel. Sounds like the RCAF recruiting program. If the big lions throw responsible fish head at personnel, only the strongest will make section heads, so if you see a serious young Officer, wearing horn-rimmed glasses, snooping about asking questions, do not, on any account, run, hide, or wave a red flag. Just duck.

Why is it that every so often we are plagued with a batch of "Why Is Its?" Since publication will ante-date this by some time, and memories are short (why are memories short, Oswald?), some refreshing is in order. We are faced with the World Series—the championship of the North-Eastern U.S.A. Why is it the World Series? Why is it the group of athletes from the American League are called a New York team? How many are from New York? Why is baseball called the National Pastime when only fifty players, six or eight coaches, and a couple of bat boys are directly involved? Why don't the umpires count, Oswald? Oswald claims they come from California. If anyone can answer all these questions satisfactorily they can get a job in public relations with the Baseball Commissioner.

PARTICLES: No doubt about it, the Empire builders are having tough sledding these days, all the Indians keep looking up at these light aircraft floating around. There is still some romance in flying . . . Desperate for a little reading, as only a desk-man can become, we turned to a Current Affairs pamphlet, entitled "The Gold Coast." Terrific surprise for us—the stuff is interesting. Wonder if it could help us out on Promotion exams. . . . Comment of the week to a new arrival: "Had a darn good summer last year—23rd of July." . . . Getting close to the New Year and resolution time. If you have any trouble thinking of resolutions, write to "Brit," c/o VOXAIR, for a useful list. A few for every member of the family.

CRUVER & MORGAN
SPORTING GOODS LTD.

NEW WESTMINSTER, B.C.

TELEPHONE 3268

519 COLUMBIA STREET

MAURICE HARDMAN and . . .

THE BIGGEST HYDROGEN BOMB

In spite of all our ingenuity and technique, and the lavish use of our resources, we are still a very long way from equalling the efforts of Nature. She has a way of decisively putting us in our place by showing us how puny our best really is when measured against her own displays.

Nowhere is this better illustrated than in the example of the Hydrogen bomb. The chain of discoveries leading to the manufacture of the bomb is one of the most notable feats of mankind. From the discovery of the electron by Sir J. J. Thompson in the late 19th century to the first artificial disintegration of the atom by Sir E. Rutherford at McGill and the discovery of the neutron by Chadwick at Cambridge, the story was one of brilliant research and an epic of imaginative interpretation. Capped by the work of Allied engineers in the Second World War, it resulted in the Atom Bomb and later in the Hydrogen Bomb.

If we can disregard for the moment the thoughts of the possible uses of this bomb and concentrate entirely on the discoveries leading to its preparation, we must agree that these discoveries constitute a very outstanding feat, possibly the most remarkable one since the dawn of history.

However, we feel somewhat deflated when we realize that Nature has so far surpassed this feat as to make it seem a trifle. Looking at the sun we see a vast Hydrogen bomb continuously exploding and of a size and violence that makes our own products seem like fireworks.

Looking at the stars we can see thousands of such bombs, many of them far exceeding the sun in size and power. Our scientists discovered the secret of transforming matter into energy during the last few decades, and we are just now beginning to apply it, but Nature used this secret from the beginning and has applied it for billions of years.



TODAY'S ANTIFREEZE IMPROVES WINTER DRIVING

When we talk about winter driving today we should remember that 40 years ago, grandpa used to put the old Model T up on blocks for the season, drain out the water and leave it in the barn until spring.

In those days, to keep a car running all winter was a serious problem. Many can recall some special "miracle antifreeze" which led to untold trouble and even damage to the engine, not to mention great expense.

Salt brine, sugar solutions, glucose concoctions, honey formulas, glycerine—all were tried as protectants from winter temperatures.

Today the most popular brands of antifreeze have ethylene glycol as their basic ingredient. This water-white, syrupy liquid is made basically from salt and oil, from salt brines that lie deep under the "chemical valley" in the Sarnia area, reacted with petroleum gas from adjacent oil refineries.

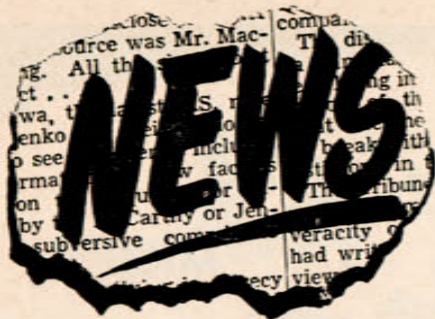
An interesting fact is that, while water freezes at 32 degrees Fahrenheit and pure ethylene glycol freezes at 9 degrees Fahrenheit, ethylene glycol mixed with water has

a far lower freezing point at minus 62 degrees Fahrenheit.

Another interesting characteristic is that ethylene-glycol based antifreeze does not evaporate on warm fall days or in late spring, due to its extremely high boiling point.

During the war the shortage of ethylene glycol encouraged the habit of leaving antifreeze in all summer, or of keeping it in containers for use again in the fall. Laboratory tests have shown that using fresh antifreeze each season helps keep the cooling system of your car clean. A clean, efficient cooling system is especially important with the tremendous heat generated by today's high-powered engines. Less gasoline is used and better lubrication means longer life for valves and spark plugs.

In order to obtain maximum engine performance from his automobile during the winter months ahead, the car owner is urged to have his service station dealer thoroughly clean out the radiator and put in fresh ethylene-glycol based antifreeze this fall.



Edited by F/O SANDY IONSON

No Time For Cupid

VICTORIA — A young naval rating, who wants to hold modern dances for single men and unescorted girls, said here the project is blocked by city dance halls. Ray McInnis, 19, who is attached to the RCN fleet air arm at Patricia Bay, says: "The minute we mention navy—that does it." Of the recently-opened United Services canteen, he says: "Magazines, chocolate bars and ping pong—what dances they do have are for couples only."



(Winnipeg Tribune)

FRENCH
BEAUTY

FRANCINE
RAGGI

Although she is not yet 16 we are presenting Francine as our current news page beauty feeling certain that loyal readers will not hold her tender years against her.

A GALLANT ATTEMPT



No, they are not a crowd of coal-miners or chimney sweeps, just a raiding party from the Applied Long Range School, No. 2 ANS Winnipeg, photographed after their return from a "visit" to the Joint Services Air Training Centre Officers' Mess, at Rivers. The object of the visit was to acquire a bell, the pride and joy of the officers of the Joint Service Centre. Unfortunately a pneumatic drill would have been required to dislodge the bell from its very secure position. As a consolation prize they took a shell case, which, brightly polished and suitably labelled, will soon be on display in Officers Mess "B", Winnipeg.

Winnipeg Could Be Key Nuclear Target

WINNIPEG — Winnipeg's Stevenson airport recently was the scene of a general invasion. Three generals, including Gen. Nathan Farragut Twining, USAF chief, were enroute to lodge on Lake Winnipegosis for a few days duck shooting. Gen Twining said that Winnipeg would be a key target in an enemy nuclear attack through the Arctic. Citing the importance of Stevenson Field as an operation base in such an attack, the USAF chief said, "this base would be vital and if I were the enemy a crippling blow at the enemy air force would be my first concern."

Canadian Truce Team May Stay in Viet-Nam

OTTAWA—Prime Minister Diem of South Viet Nam recently refused for the second time to hold a conference with Communist North Viet Nam on elections for a reunified country, temporarily divided at the 17th Parallel by the July, 1954, Geneva Armistice Agreement. This, in turn, raises the possibility that Canada, as a member of the three-nation International Truce Supervisory Commission, may have to stay in Vietnam past July, 1956, though on a smaller scale. There are more than 160 Canadians on the truce commissions in the three associated states of Indochina—Vietnam, Laos and Cambodia. About half this number are in Vietnam, where by far the most problems have arisen.



President Dwight D. Eisenhower created considerable anxiety among the free peoples of the world last month when he suffered a mild heart attack at his home in Denver, Colorado. Immediately following the seizure when the President's complete recovery was still a matter of doubt world stock markets wavered and selling was spasmodic. However, most recent reports state that he is progressing favourably and is expected to return to duty in the near future.

Reds May Accept Inspection

DENVER—After a 40-minute conference with President Eisenhower, Harold E. Stassen said the "odds are" that the Soviets will accept the President's proposal that the United States and Russia exchange blueprints of their military installations and make aerial inspections of each other's military establishments to prevent possible surprise attacks. In a press conference at the President's vacation headquarters, Mr. Stassen emphasized that Mr. Eisenhower's proposals, which affect only Russian and the United States, "mark a beginning" for the goal of effective disarmament.

U.S. Senators Get Soviet Trade Bid

MOSCOW — Nikita S. Khrushchev said recently the Soviet Union wanted to import United States machinery and agricultural products. The Communist party chief implied Moscow would offer manganese and other strategic materials in exchange for United States goods. Mr. Khrushchev and Premier Nikolai A. Bulganin told five United States Senators they wanted to expand Soviet-United States trade sharply to promote "better relations between our countries" and satisfy Soviet import requirements. "The trouble with you people so far is that you want to trade manganese for toys," Mr. Khrushchev smilingly told the Americans. "We used to have good trade relations with you," he continued, "and we would like to get back to that."

AVM Concerned Over Ineligibility for Air Crew

FREDERICTON — Air Vice-Marshal Kenneth Guthrie, national president of the RCAF Association, said Sept. 6 he is greatly concerned over the number of men ineligible for enlistment in RCAF air crew. He called for a national campaign to improve the physical fitness of the country's youth. "Let's find out when a boy is 14 if he has any physical defects, in order that a remedy can be made," he said in an interview. He urged greater enlistment in the Royal Canadian Air Cadets, now numbering 23,000, so that the present low qualifying rate of one man in every 6,000 for jet air crew can be improved.

Battle of Britain Day Marked by Air Force Parade

QUEBEC—Thousands of Canadians commemorated the 15th anniversary of the Battle of Britain Sept. 18 with church parades, zooming aircraft and blaring bands, and one Canadian couple contributed to a quiet unveiling ceremony in an English remembrance chapel. A formation of CF-100 jet planes flew over Ottawa's Parliament Hill as Air Marshal G. O. Johnson took the salute in a colorful marchpast of RCAF, air cadets and air force veterans. Air Marshal Johnson was commander of RCAF forces overseas in 1945-46.



F/O Ken Coleman, PR Photo, TCHQ.

N/S Marion Neilly, RCAF Station Winnipeg Para-Rescue nurse. N/S Neilly formerly served with the unit at Whitehorse, Yukon Territory.



Photo by LAC B. Hossack

VISIT OF AIR OFFICER COMMANDING

Air Commodore H. H. C. Rutledge, Air Officer Commanding 14 Training Group, inspects a Guard of Honour on the occasion of his first visit to RCAF Station Winnipeg in September. Also in the picture are Guard Commander Flight Lieutenant Robert Prior and Group Captain G. F. Jacobsen, Commanding Officer, RCAF Station Winnipeg.

No Shift on U.S. Bases

MADRID — U.S. Defence Secretary declared that the United States worldwide air bases program is being developed according to schedule because so long as there is no basic agreement that will insure peace "we will continue to build a strong air force." The secretary who was here on a fact-finding tour was received by Generalissimo Francisco Franco shortly before his departure for Washington on a special military plane.

POW Training Not Planned For Services

OTTAWA — Canada has no present intention of starting a course to toughen up its fighting men against treatment they may receive if captured by an unscrupulous enemy, a Defence Department official said recently. The whole problem of prisoner-of-war behavior has been under active study by defence officials for some time, he said. But no action can be taken until some definite conclusions are reached. Conduct of Canadian servicemen taken prisoner is governed at present by the Geneva Convention, which provides that they give the enemy only their name, rank, regimental number and date of birth.

Peron's Government Falls

BUENOS AIRES — The government of President Juan D. Peron fell last month. A four-man junta of army generals assumed command of the forces that had fought unsuccessfully to keep General Peron in power. General Peron offered his resignation in a statement read for him over the state radio. He suggested that the Army take charge.



Above: Group Captain G. F. Jacobsen congratulates Leading Aircraftman Doug Pirie, winner of the service division of the Provincial Civilian Truck "Roadeo," held at RCAF Station Winnipeg September 24. LAC Pirie who comes from Oakville, Ontario, won the Training Command Competition in 1953. His next competition will be the Training Command Finals to be held at Aylmer.

Right: Corporal Bob Bouchard of Quebec, Que., receiving congratulations from Group Captain G. F. Jacobsen on his success in the Truck "Roadeo." Corporal Bouchard placed third in the competition. Second from the left is LAC Pirie — winner in the service division.



DANISH AIR ATTACHE VISITS WINNIPEG

Pictured are Colonel Tage Neilsen, Danish Air Attache and Group Captain A. G. McKenna, Senior Personnel Staff Officer, 14 Training Group. Group Captain McKenna is shown welcoming Colonel Neilsen on the occasion of his visit to RCAF Station Winnipeg August 29.

TRUCK "ROADEO" WINNERS



Canada Declines to Quit NATO Bases

OTTAWA—Officials here said Canada has no present intention of withdrawing its forces from Europe. This country does not have its own bases as such in Europe but has a 12-squadron air division and infantry brigade group stationed in West Germany and France as part of NATO defence forces. Authorities added, however, that North American defence has become at least as important for NATO as European defence and it might be possible some time in the future for Canada to bring home home of its troops, perhaps when Germany is fully rearmed.

"U.K. Jet Sets New Speed Records—Flies Atlantic Twice in 14 Hours"

LONDON—Two British airmen breakfasted in London, nipped over to New York for lunch and flew back home to dine with their wives the same night. They did it by Canberra jet bomber, and the whole thing took just over 14 hours. Pilot John Hackett and Navigator Peter Moneypenny averaged 481.52 miles an hour on their trans-Atlantic shuttle, and that included 31 minutes for a lunch of scrambled eggs at New York's Floyd Bennet airfield. The official total time was 14 hours 21 minutes and 45.4 seconds, with 13 hours 50 minutes 56.2 seconds flying time.

Versatility
in aircraft overhaul



A. I. C. is fully equipped to handle all types of modification, repair or major overhaul. Serving both industry and the Royal Canadian Air Force we are able to provide specialist services in the field of custom modification.

AIRCRAFT INDUSTRIES OF CANADA LIMITED

St. Johns Airport

— St. Johns, Quebec

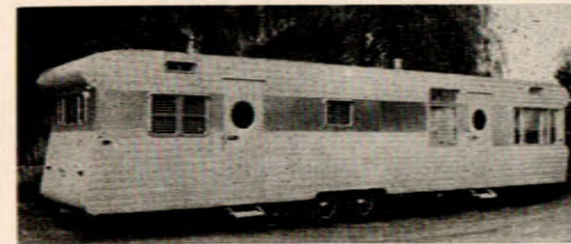
BELL-IRVING INSURANCE AGENCIES LIMITED
REAL ESTATE — INSURANCE BROKERS

930 WEST PENDER STREET

VANCOUVER, B.C.

WHY PAY RENT!

Buy a **GLENDALE MOBILE HOME**



H & C MOTORS

HEWLETT AND CHENNELLS
1288 PORTAGE AVENUE, WINNIPEG 10, MANITOBA

For what you are now paying for rent, you could own a luxurious modern home on wheels. The ideal accommodation for service men and families.

It is equipped with combination studio couch, large double pane picture windows, full floor traverse, drapes, over-head mirror, door chimes, large Duotherm heater with automatic blower and under floor heating. Drop leaf table and chairs, double kitchen sink, frigidaire and a beautiful four burner propane gas stove with automatic oven. You also get a good sized bathroom including shower, bath and sink and, for the best sleep and more rest, you will find these comfortable beds with spring-filled mattresses the best investment you have ever made.

Built by Canadians for Canadians, for as little as 20% down, and as long as five years to pay the balance.



ANITA
EKBERG

**"Most Canadians Prefer Service
in Air Force"**

TORONTO—Join the navy and see the world. Join the army because it's better to be on the ground. But join the air force because you like aeroplanes—and you get better training for civilian life. That, says the Gallup Poll, sums up the main reasons why Canadians give the popularity prize to the air force as the service they would most like to join.

**The World of Aviation Is Keeping Its
Eyes on Canada's Aircraft**

FARNBOROUGH — Crawford Gordon, Jr., president and general manager of A. V. Roe Canada Ltd., came here to England to do more than watch Canada's CF-100 perform at the Farnborough Air Show though the fact that the CF-100 is the first Commonwealth plane ever to fly in the world-famous British air display has some significance. A. V. Roe Canada is looking for buyers among friendly powers for the CF-100 all-weather fighter and its power plant, the Orenda gas turbine engine. Belgium is dickering and Germany is interested among the NATO powers. Neither has made any commitments. But with Belgium it is known that greater interest lies with a long-range interceptor of the CF-100 type with a 2-man crew than a single-seat daylight interceptor of the American Sabre or British Hunter category. Another feature that intrigues the Belgians is the fact that both the CF-100 and the Sabre, of which some are now in service in the country, are fitted with the same type of engine. They feel maintenance costs and problems could be cut down as a consequence.

**Russia Gives Tour of Atomic Energy
Plant to the Press**

MOSCOW—The Soviet Union opened the doors of its once top-secret atomic energy plant to the foreign press, and revealed that the electricity created by it is being fed into Moscow's central electrical system. This unprecedented press visit to the world's first atomic energy plant for peace-time purposes was a part of Moscow's post-Geneva "new look" on freer exchange of information.

**CDA and Army Devising Cheap Nerve-
Gas Face Mask**

ATLANTIC CITY—A cheap protective face mask against nerve gas is under development by the Federal Civil Defense Administration and the Army Chemical Corps, it was announced recently. Harold L. Goodwin, the defense agency's director of atomic test operations, said "progress has been made" toward this mask which will also protect against germ warfare. Pointing out that unprotected persons may die in five to fifteen minutes of this gas, Mr. Goodwin told the American Hospital Association convention that the United States may concentrate its planning on a single type of chemical weapon: nerve gas.

**"Who's To Handle Guided Missiles
Controversy Splits RCAF, Army"**

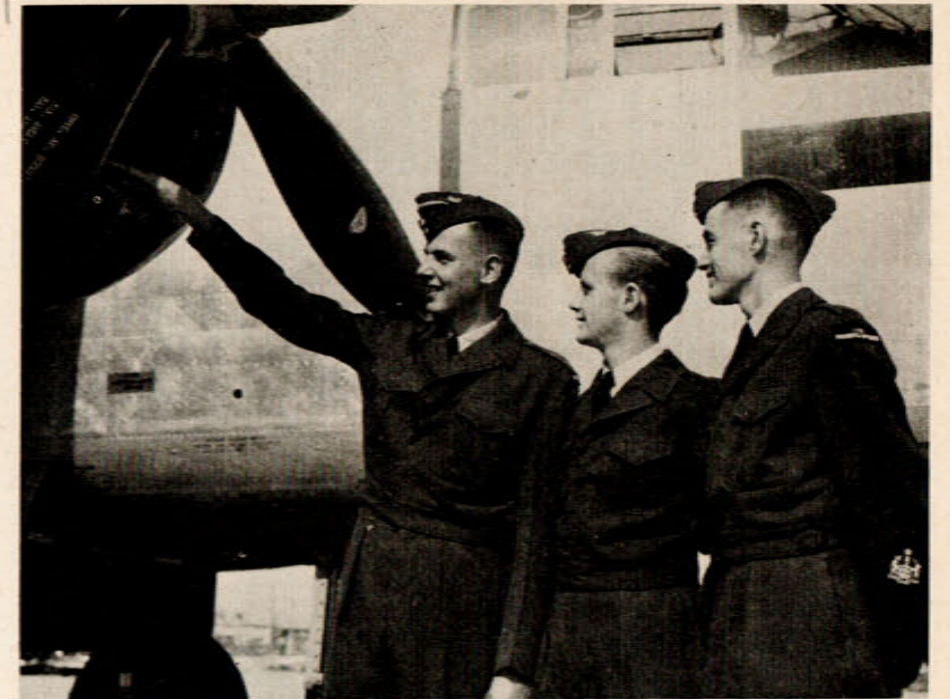
OTTAWA—The Army and Air Force are wrangling, at least in the lower echelons, about two aspects of their future operations. One concerns ground-to-air guided missiles and the other an airborne supply line for the 1st Canadian Infantry Division. Only guarded references have been made to this under-the-surface squabble at the Defence Department and none at all by senior officials. All Defence Minister Campney has said on the subject is that alternative methods for control of ground-to-air missiles are under consideration and will be studied for some time to come.

**One Jet Saved Meets Cost of New
Navigation Computer**

MONTREAL — The Federal Government spent a relatively nominal \$729,575 on the development of the R-Theta navigation computer, judged this year's outstanding aviation achievement. The Department of Defence production revealed that the sum covered a research and development contract with the Toronto manufacturers for an initial 41 computers. The expenditure is considered nominal primarily because if the navigation computer guides the pilot of only one lost CF-100 all-weather jet fighter to a landing strip it will have more than paid for the entire cost of developing the invention. The R-Theta, invented for the Royal Canadian Air Force by Wing Cmdr. J. G. Wright, DFC, is being studied by the U.S. Air Force and was unveiled Sept. 10 for the first time in public at the U.S. National Air Show in Philadelphia. Its manufacturers, PSC Applied Research Ltd., of Toronto, displayed the instrument, which indicates to the pilot how far he is from his base or target and what direction he must steer to arrive there.

"Supersonic Jet"

PARIS — France's latest supersonic jet fighter, the South West Trident, flew at 745 miles an hour in level flight during tests here Saturday. The French Air Force claims it is the fastest fighter in Europe.



(Photo—Beaudoin)

CADETS GO OVERSEAS

The R.C.A.C. sent a party of cadets on an overseas exchange visit recently, and here three Winnipeg boys are caught by our cameraman just before leaving. Left to right: WO2 Ken Bensen, 170 (St. James) Sqdn., Sgt. Jay Downey, 220 (Red River) Sqdn., and WO1 Jerry Chalmers, 176 (Winnipeg Optimists) Sqdn.

A Popular Winnipeg "Landmark"

MOORE'S TAXI . . . YOU SEE THEM EVERYWHERE ON THE
CITY STREET, ALL OF THEM DOING AN OUTSTANDING
JOB TRANSPORTING PATRONS, QUICKLY, SAFELY
AND COMFORTABLY.

Call . . .



PHONE **92-3366** CORNER DONALD
AT GRAHAM

WINNIPEG, MANITOBA

OKANAGAN HELICOPTERS LTD.

In providing a mountain training program for helicopter pilots we have been privileged to serve,

THE ROYAL CANADIAN ARMY SERVICE CORPS.

THE ROYAL CANADIAN AIR FORCE

THE UNITED STATES ARMY TRANSPORT COMMAND

THE INDONESIAN AIR FORCE

THE FRENCH AIR FORCE

World's largest commercial rotary wing operators.

VANCOUVER

TORONTO

OTTAWA

TORBAY

GANDER

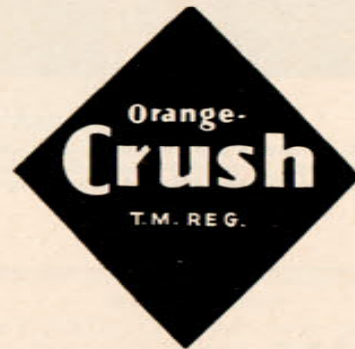
The Clarendon Hotel

IN DOWNTOWN WINNIPEG — OPPOSITE EATON'S
FULLY-MODERN ROOMS — \$3.00 and Up

"Get the Happy Habit"

say "CRUSH" and get

TRUE ORANGE
GOODNESS



ORANGE-CRUSH IS THE ONLY SOFT DRINK
RECOMMENDED BY SPORTS COLLEGE

CINEMA

October 21
BRIGHAM YOUNG (A)
Tyrone Power Linda Darnell

October 22
COW COUNTRY
and Serial — Matinee

October 23
NAVY AIR PATROL (G)
John Derek Diana Lynn

October 24
IT (A)
CREATURE WITH DOUBLE BRAIN
Double Feature

October 25
ADVENTURES OF SADIE (G)
Joan Collins Kenneth Moore

October 26
QUEEN OF SHEBA (G)
Leonora Ruffo Gino Cer

October 27
DRAGON FLY SQUADRON (G)
Barbara Britton John Hodia

October 29
HIAWATHA (G)
and Serial — Matinee

October 30
TONIGHT'S THE NIGHT (A)
David Niven Yvonne de Carlo

FOR THE FINEST SELECTION OF CAMERAS, PROJECTORS AND PHOTO ACCESSORIES VISIT

The Camera Shop

350 Donald Street, Winnipeg

Ph. 93-5518

THE PORTAGE HOTEL

Portage La Prairie

COMPLETE FACILITIES - Dining Room and Parlor

rooms
\$2.00
and
up



FLIGHT SAFETY

THIS IS THE BEGINNING

By LT. GEORGE PERSELAY

There is a saga in Greek mythology of Daedalus' escape from the Isle of Crete. He could not leave the Isle by sea, as all ships were carefully searched. Daedalus said, "Minos (who was the king) may control the land and sea, but not the regions of the air. I will try that way."

Daedalus was most skilful, and fashioned wings for himself and his son, Icarus. He used feathers, securing the larger ones with thread and the smaller ones with wax, so that the end product looked much like the wings of a bird. Daedalus tested his wings and, finding them successful, equipped his son with wings and taught him to fly.

When all was prepared for flight, Daedalus briefed his son as follows: "Icarus, my son, I charge you to keep a moderate height, for if you fly too low, the damp will clog your wings, and if too high, the heat will melt them. Keep near me and you will be safe."

They "took off," Daedalus in the lead and Icarus following in formation. As they flew, the boy, Icarus, exulting in his career, began to leave the guidance of his leader and soared up into the blue. The nearness of the sun softened the wax which held the feathers together, and the wings fell apart. He crashed into the sea which now bears his name.

Let us analyse this accident. We find the following cause factors:

1. Pilot error.

2. Supervisory error or lack of command supervision.
3. Poor design.
4. Material failure.
5. Violation of flying regulations.

The accident was primarily caused by the unsafe acts of Icarus, or, using a more familiar term, we have a pilot error accident. He wilfully violated flying regulations by exceeding a specified altitude and, in so doing, he exceeded the structural limitations of his aircraft. He showed utter disregard for his orders and departed formation without declaring an emergency contrary to the provisions of CAP 100, Vol. I, 3rd Edit., Art. 104-20.

Contributing to this accident was the lack of command supervision exercised by the father. He allowed Icarus to take off without adequate training and failed to compensate adequately for the youth and immaturity of his son. Closely related to this was the lack of air discipline that was evidenced.

We find material failure present in this accident in that the melting point of the wax was too low. Closely associated with this factor was the poor structural design which allowed the heat to melt the wax.

We can readily see that there are no new cause factors of aircraft accidents. The factors that played such a prominent role in this Greek myth are the very ones which cause us so much concern today.

FLIGHT SAFETY AND YOU

By F/L A. L. MORTON

The phrase "Flight Safety" and the recently-established position of "Flight Safety Officer" (FSO) are becoming more familiar parts of the RCAF scene. Unfortunately, a tendency has been noticed to treat all Flight Safety matters as "the FSO's responsibility." Nothing could be further from the truth. FSO's are established as advisors, monitors, investigators and liaison officers—without specific authority or responsibility.

Responsibilities for safe flying operations remain unchanged. Flying Safety Committees and FSO's serve to emphasize these responsibilities and co-ordinate the activities of the various sections concerned.

"Flight Safety" is a phrase recently applied to the most essential aspect of all flying operations. "This is the Beginning" is the story of one of the first flying accidents in the long history of man's struggle to master the air oceans. Although taken from the legends of ancient Greece, the sad fate of Icarus could well be that of the over-eager pilot of the jet age.

Transposing this mythical accident to the present day, one discovers that accident cause factors have not kept pace with the changing times, for they remain constant down through the centuries. The very cause factors of Icarus' legendary fatal accident are those still claiming lives almost daily throughout the air-minded modern world. Thus we find that flying accident causes are constant—a constant that must be compensated for in planning and executing flying operations.

Forethought, comprehensive planning and eternal vigilance are the price of safe flying operations. This price must be shared by all who share in planning, supporting and executing flying operations.

111 C & R FLIGHT

By F/O NORM McMILLAN

MOST of 111's flying for the past few weeks has been along the communications line rather than search.

F/L's Dickson and Wannamaker and F/O Fox are flying the T33s keeping in jet shape as well as flying the old fashioned types.

F/O Fox was called out one Saturday afternoon and sent to Churchill to search for six canoeists who were overdue at Baker Lake. Before he got to Churchill he was recalled. Five of the six had walked into Baker Lake. The sixth had drowned shooting some rapids in one of the northern rivers.

At present F/L Dickson is away with the AOC on his yearly inspection tour of western training stations.

F/O's Fox, Achron, and Maddex (Freddie Maddex incidentally has just joined 111 from 2 ANS) left this week for Yellowknife to search for a missing York belonging to Associated Airways. Fires have been spotted in the area of the search and it is hoped that the downed crew will be found safe.

Last week F/O Achron took Cpls. Hickling and Kischel to Netley Marsh where the two para-rescue men did a practice para-jump.

S/L Nickel and F/O's McNarry

and McMILLAN just returned from a tour of Northern seaplane bases in Otter 3673. They were gone a week. Will tell you a little more or this trip in the next edition.

111 C & R Flt. bids a fond adieu to F/L and Mrs. C. O. Thrasher, who have been transferred to Langar, England. Chuck is one of the better types in this Air Force and we will certainly miss him. We know wherever he goes he will be a welcome asset both in the air and on the ground—whether at a piano or telling jokes as only Chuck can tell them. Good luck, kids, from all of Station Winnipeg.

A NAME OF INTEGRITY THROUGHOUT CANADA

- CHEVROLET
- OLDSMOBILE
- CADILLAC

DUECK
ON BROADWAY

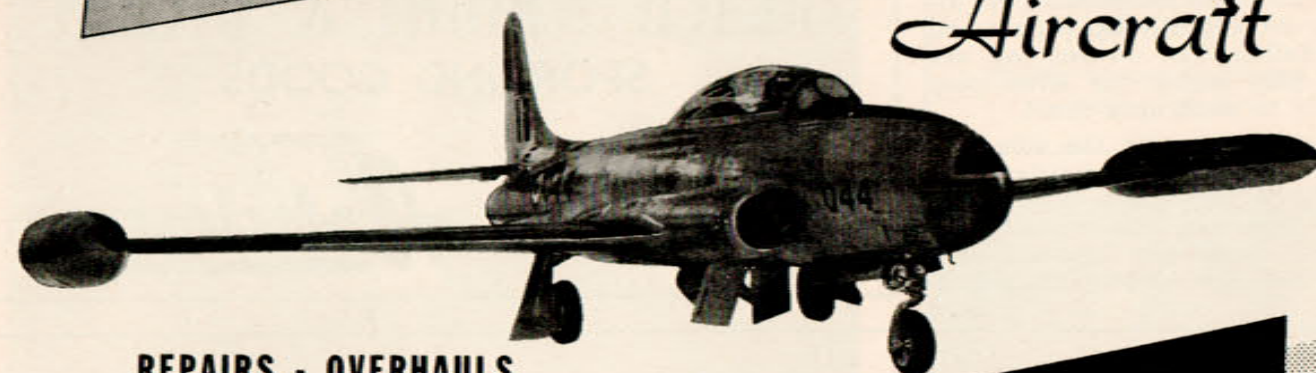
West Broadway
Vancouver, B.C.

Canada's Largest
Automobile Dealer

Servicing

R.C.A.F.

Aircraft



REPAIRS - OVERHAULS
AND MODIFICATIONS

to

Lockheed T-33 Dual Jet Trainers,
Fairchild C119 Freighters, Douglas
C47's (Dakotas) and Harvard Trainers
including instruments and radio equipment.

P. O. BOX 517, MUNICIPAL AIRPORT
Edmonton, Alberta

**NORTHWEST
Industries
LIMITED**

**Best
Service**
STORAGE • PACKING
MOVING

Star Storage Ltd.

PHONE 92-2951

● Make moving day a pleasant day . . . let us do the work. Phone for estimate on local or long-distance moves. Best service by trained, experienced packers and movers. Modern padded vans for safe delivery.





RUGGER

By P/O M. J. LEE

Passers-by on the intersite road during the past two weeks may have noticed the evening practices on the rugger pitch (the one with the Christian Dior H-line posts).

The new season started last month, and the size of the evening practice turn-outs is a good indication of the enthusiasm for this game.

The station club was formed to develop the English Rugby Union game, and it has reached its present level of success since 1953 due to the enthusiasm of F/O's Dale Kilshaw (recently transferred) and Ray Griffiths. We welcome a new manager this year—Ken Dea, who will also fill the full-back slot.

The club is a member of the six-team Manitoba Rugby League, and has claimed the championship each year since its inception. Two fifteens are fielded—the Astrals and the Exiles. The former, we are told, play rugby, the latter play merely to work up a thirst.

Last season, with the able captaincy of the now-moustacheless Terry Ledger, was a highly successful one, the club retaining the League Challenge Cup and winning the "seven-a-side" trophy.

The away games at Vancouver and Victoria were not so successful from the score viewpoint, but socially they were well worth while.

The RAF boys provide the bulk of the players, but we were happy to note that two of our most successful new players last season were Canadians. We hope there will be more "converts" this year.

CURLING

The station Curling Club has held its first meeting of the season last month when about forty curlers and potential curlers elected F/O Langen president of the club.

It looks as though the curlers are going to be well organized this year; already notices have been sent to all sections, and team lists are required as soon as possible, so that arrangements for the ice may be made.

The Granite Club ice is excellent this year, and we are hoping to have a 36-team competition.

If you wish to curl, but can't find a berth on one of the teams already formed, please contact one of the committee members and a

place will be found for you.

It was suggested at the meeting that each team should carry one inexperienced player to even up the team strength, and that the club should have a pool of spares, paying only half membership fees.

STATION SOFTBALL

The Station Softball team, ending the season at the top of the Inter-Service League over Army, Navy and RCMP, are at present embroiled in a final play-off of a two-out-of-three series with the runner-up Army team for the Inter-Service championship. Games are tied at one each.

The same team emerged victorious in the Western play-offs of No. 14 Trg Grp play-offs, defeating Station Macdonald of the Eastern division and Penhold of the Western division. In the Trg Command finals Winnipeg were hosts to Station Trenton, who edged Winnipeg 3-2 in the second game of a two-out-of-three series. G/C Ashman, Training Command SPSO, presented the Training Command trophy to Station Trenton.

You'll like everything about

REACH WRIGHT & DITSON
SPORTING GOODS



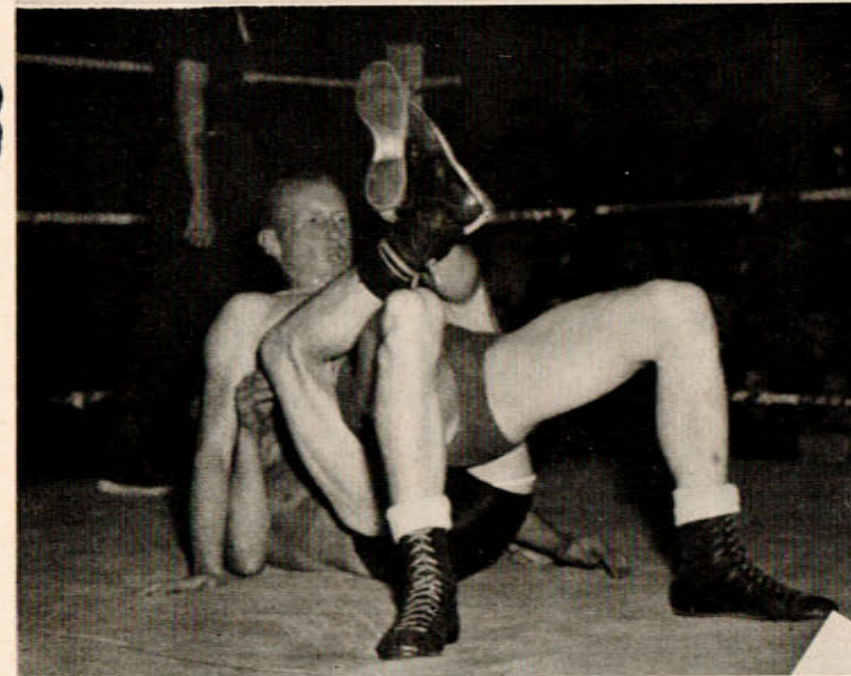
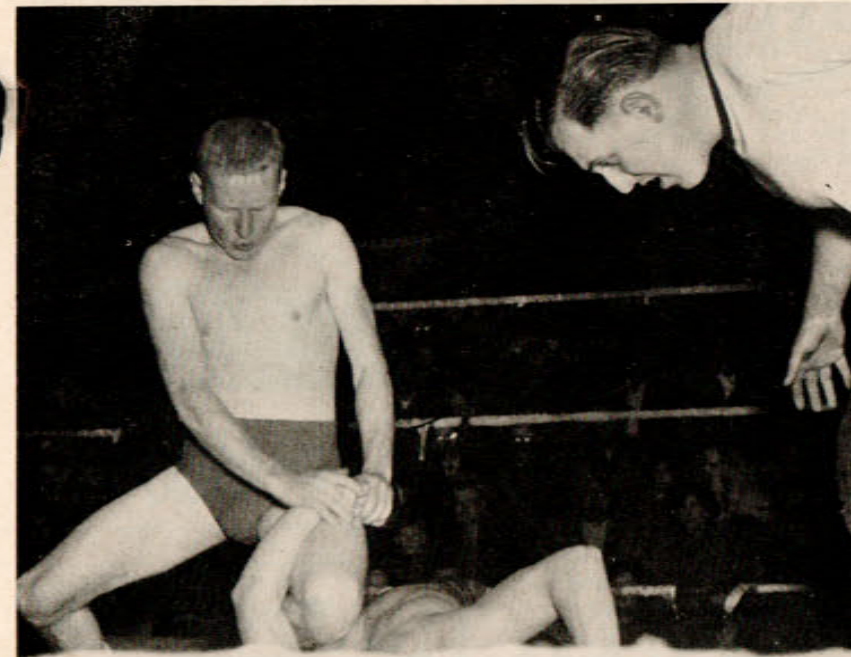
DISTRIBUTED BY

Ashdown's

Silverwood's DAIRY PRODUCTS

- Safe Milk
- DeLuxe Ice Cream
- First Grade Butter

WRESTLING



Manitoba Tag Team Wrestling Championships—Tuesday, 20th September, St. Boniface, Man.

EVENT—Middleweight Contest—The Hebert Brothers—LEO and LOU of St. Boniface vs. LAC Lee Warnock of RU Winnipeg and Al Corbett of Transcona, Man. 45 Minutes or One Fall.

Above: Lee Warnock with a wrist lock and leg lever with LOU Hebert under. Referee Bobby Jones on right. LEO Hebert under with leg scissors on Lee Warnock who is levering back to force Hebert's shoulders to the mat for the count.

Right: Split decision went to local boys, the Hebert Brothers.

INTER-SECTION SOFTBALL

Station Winnipeg Inter-Section Softball League experienced a very successful season. Fourteen teams competed during the summer months for the CO's cup. The final series saw GIS Staff playing Electrical Instruments in a two out-of-three series. GIS emerged victorious, taking the odd game. The highlight of the series was standout pitching by S/L L. C. Olein, of GIS.

W/C Gaffney presented the CO's cup, donated by G/C R. B. Ingalls, to the GIS staff at a get-together after the third game.

The CO's cup is to be presented to the winners of all events competed for on inter-section level.

SPORTS OFFICERS!
-Recreation Directors!

The largest stock of original trophies anywhere in Canada is at

KELBERT
TROPHIES

538 HOMER ST.
VANCOUVER

(Write for our illustrated folder today)



STATION ROD AND GUN CLUB

With the duck and deer season upon us and a bit of fishing weather still left, the ardent sportsmen of the Station and Gun Club are looking forward to an outing at Lake Dauphin sometime in October.

A meeting was held Sept. 1st at which F/O Donavon, the club president, gave an interesting description of the Lake Dauphin lodge to some 25 members attending. F/S Thomas reported that the materials to repair the lodge had been purchased and that he and four volunteers would do the job shortly.

Various members who had visited the site stated they returned with a most favourable impression, as well as some fish and game.

It must be remembered that everyone fishing or hunting on the property must comply with the Manitoba Fish and Game League regulations as, even though it is RCAF property, the game wardens have full authority there.

So—good hunting, fellows, and a word of caution: we would rather have a duck dinner than a funeral parade!

A QUARTER CENTURY SERVING R.C.A.F. PERSONNEL!

Alf. Thorndyraft's long experience in solving the financial security problems of RCAF personnel can be of real benefit to YOU.

Let him give specialized study to YOUR life insurance, savings, and retirement income needs!

Write or Telephone

ALF. THORNDYRAFT

185 Lombard Ave., Winnipeg
Phone 92-6144

THE GREAT-WEST LIFE
ASSURANCE COMPANY
HEAD OFFICE—WINNIPEG

COVER STORY

The last time we featured a meteorological-type cover (the snow blower in action) Winnipeg was hit by a blizzard within 24 hours! This time we're taking no chances. Our fingers are tightly crossed, our rabbit's foot is on our office desk as we present a cover by F/S Johnny Fletcher of 402 Squadron.

ASSINIBOINE HOTEL

Portage at Albany
WINNIPEG, MAN.

Phone 6-2371

Manitoba's finest Suburban Hotel
AIR-CONDITIONED
FREE PARKING

The DONUT HOUSE

Bakers of Delicious
Variety Donuts

496 Selkirk Ave.
52-6962

1758½ Portage Ave., St. James
6-2461
Winnipeg, Manitoba

DAILY HOME DELIVERY

GIBBS Furniture

YOUR PHILIPS

- RADIO
- TELEVISION
- HI-FIDELITY

DEALER

in ST. JAMES

D. L. (DON) DOWNIE
Service Mgr.

Hi Fi Demonstrations
By Appointment

1821 PORTAGE AVE.
ST. JAMES
PHONE 6-2174

SAME PRICE - SAME QUALITY

1 HOUR CLEANING AT Perth's

MAIN STORE - PORTAGE & GOOD
7:30 A.M. TO MIDNITE

Phone SU-3 7261

255 PORTAGE AVENUE
WINNIPEG MANITOBA

SERVICE CLOTHES SHOPS LTD.

"Men's Clothing of the
Better Kind"

HEADQUARTERS FOR

- ARROW SHIRTS
- ADAM HATS

PHONE 92-5663

Shea's

WINNIPEG BREWERY LIMITED

MARYLAND SERVICE

CORNER MARYLAND AND PORTAGE
WINNIPEG, MANITOBA

SPECIALIZING IN ENGLISH-
MADE CARS

TOM SMITH, Proprietor

K. A. Powell (Canada) Ltd.

GRAIN MERCHANTS

MEMBERS
WINNIPEG GRAIN EXCHANGE
CHICAGO BOARD OF TRADE
NEW YORK PRODUCE EXCHANGE
VANCOUVER GRAIN EXCHANGE

GRAIN EXCHANGE
WINNIPEG
MANITOBA

K. A. POWELL
President
W. T. POWELL
Vice-President
A. H. HAND
Secretary-Treasurer
Cable Address—HALCAR

THE McLAREN HOTEL
MAIN ST. AT RUPERT
WINNIPEG, MAN.
Phone 93-8518

THE KIRKFIELD HOTEL
KIRKFIELD PARK
WINNIPEG, MAN.
Phone 83-4313

Your Friendly Hosts

FRED DANGERFIELD
GEORGE DANGERFIELD

JACK DANGERFIELD
FORBES RANKIN

WEST END UPHOLSTERING AND FURNITURE

1110 Portage Avenue, Winnipeg, Man., Ph. SUNset 3-6930

- Full Line, Furniture, Laps, T.V., etc.
- Furniture Repairs.
- Theatre, Hotel, and Cafe Seats.
- Drapes Made to Order.

Our Specialty — Remodeling of Chesterfield Suites to the Latest Styles.

STANDARD AERO ENGINE LIMITED

No. 6 HANGAR
STEVENSON FIELD, WINNIPEG, MAN., PHONE 6-2391

Specializing in Overhaul and Supply of Aircraft Engines and Accessories

Contractors to the R.C.A.F.

BRANCH OFFICES AT: VANCOUVER A.M.F. B.C., EDMONTON, ALTA.



An RCA Victor Record



For Every Mood

- Top quality records at
 - The top of the street
- See Gerry Chipman
AT THE RECORD BAR

Deer Lodge Radio - TV

Portage at Sharpe
St. James, Man.
TELEPHONE 6-1016

GRADUATING CLASS 5412\13 (RO)



Left to right: F/C's Beaman, Boyd, Summons, McCarthy, and Warren.

F/C Boyd
Nickname: Dave.
Hometown: St. George, N.B.
Usually Seen: But not heard.
Ambition: 111 C & R Flight.
Favourite Expression: "Lois."
Probable Destination: Tap-man at Portage and Albany.
Pet Peeve: Western beer.

Beaman
Nickname: Duke.
Hometown: Fredericton, N.B.
Appearance: Flustered.
Usually Seen: Mondays to Fridays.
Ambition: To win an argument with Bob Prier.
Favourite Expression: "This !*?! set won" load, sir."
Probable Destination: Morse instructor to Barnard and Kennedy.
Pet Peeve: Broadcasts.

F/C Warren
Nickname: Tony.
Hometown: Toronto, Ont.
Appearance—With a beard.
Usually Seen: In a phone booth.

Ambition: Transport Command (HH!).
Favourite Expression: "Got no sidetone."
Probable Destination: Cricket instructor at Comox.
Pet Peeve: Summons.

F/C Summons
Nickname: Jamaica.
Hometown: Kingston, Jamaica.
Appearance: Hardly puzzled at all.
Usually Seen: Marking time in the barracks.
Ambition: O.R.D. Kingston-Winnipeg.
Favourite Expression: "Piece a cake."
Probable Destination: Rum runner on Caribbean.
Pet Peeve: Rip's bug.

F/C McCarthy
Nickname: Mac.
Hometown: Saint John, N.B.
Appearance: Glowing.
Usually Seen: Assiniboine.
Ambition: Maritime Command.
Favourite Expression: "Let's have another round."
Probable Destination: Picture hanger at AROS.
Pet Peeve: S.P.



By MARGIE ESSEX

Some of the girls in Barrack Block 9 were an audience the other night for a new singing trio, apparently organized on the spur of the moment. Their theme song? "You are so rare to me,"—sorry, no names, but the initials are: Ronnie Bullock, Izzie Erwin, and Irma Corwell.

The story of coming home to clean rooms on clean-up nights is really becoming interesting. Elves?—Well it was a wonderful surprise, wasn't it, girls?

The trade-examinations are over, and now all we have to do is to wait for the results; but the end of October seems to be so far away. Here's hoping that we all passed, so that there won't be any asking of questions in the laundry room, in the Mess hall, and first thing in the morning, for a little while at least.

Who is the airwoman who seems to be receiving letters, letters, and more letters from Army personnel? I still say I would like an invitation, Ruth!

The trip to Cold Lake was a success and our girls, although pretty well tired out by the time they arrived there, were able to win a game. Everyone had a wonderful time.

All the shift workers are hoping that Joan Steeves is feeling better now. But it doesn't pay to tease, does it, Joan? Never know what kind of troubles you are liable to have!

If you've ever heard the expression, "Lily pad jumper," and don't know what it is, just ask our little Helen Saucier—she can tell you.

SECURITY'S BIG YELLOW VANS mean safe economical moving



SECURITY STORAGE
Phone SU 3-7171

Agents for **ALLIED VAN LINES**



QUICKLY-SAFELY-ECONOMICALLY

- Over 75 agents located in all major Canadian Cities.
- Safe — careful moving anywhere on the continent — you get there on time!
- Our experience means your household possessions are protected every foot of the way.
- Complete — personal — service unequalled anywhere.
- Phone the agent in your city — the smartest move of your life!

Allied Van Lines

Allied Van Lines use the most modern moving equipment — their agents always have complete furniture storage facilities and every worker is experienced, trustworthy!

Take the worry out of moving — call the Allied agent in your town!

ALLIED VAN LINES LTD.
Agents in all principal cities... see your telephone directory.

READERS

Please
PATRONIZE OUR ADVERTISERS

MARK TRIPP LTD.

58 DUNDAS STREET WEST, TRENTON, ONT.

- TOBACCOS and CIGARS
- SPORTING GOODS
- GIFTS and TOYS
- MAGAZINES

TRIPP'S Since 1879

OPEN 24 HOURS
Salisbury House
DRIVE-IN

ELLICE AVE. NEAR THE AIRPORT

COMPLETE DELIVERY SERVICE TO
MARRIED QUARTERS ON REQUEST

PHONE SU 3-7222

DAY OR NIGHT

CLEANERS
New Method
LAUNDERERS

372 Burnell St.

Winnipeg, Man.

The Bay's Men's Store Presents . . .

Lightweight, Large Capacity

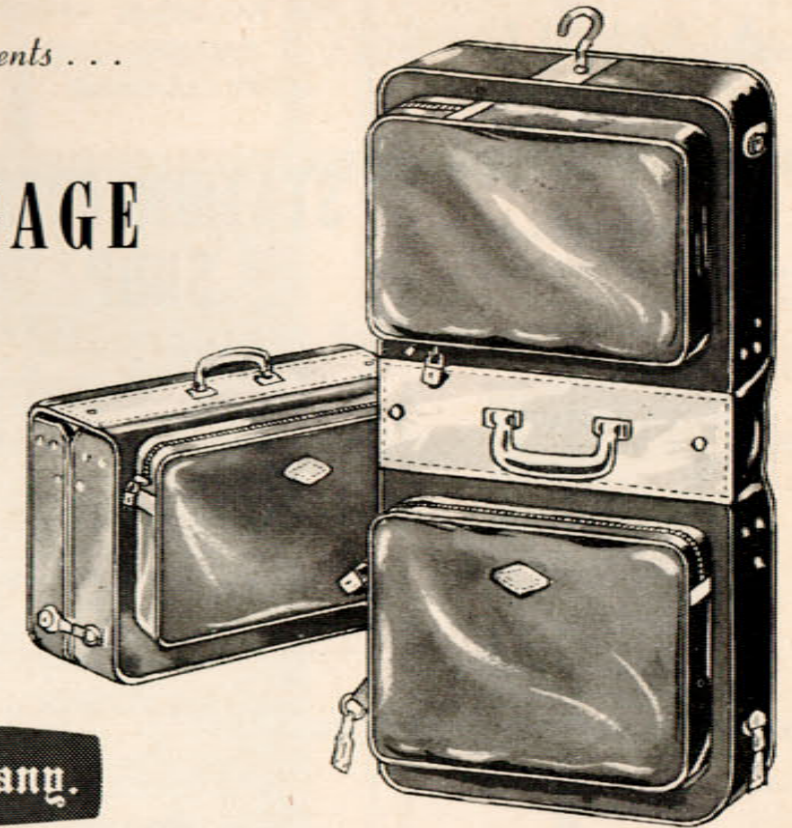
FLIGHT BAGGAGE

Only \$21.95

Uniforms and suits arrive looking smart and wrinkle-free when packed in this large capacity Flight Baggage! Made of heavy blue canvas, smartly trimmed with leather, this bag has two large zipper pouches for small items, with a lock for everything. Just hang Flight Baggage up on arrival and you have your wardrobe with you.

HBC Luggage, Second Floor

Hudson's Bay Company.
INCORPORATED 2ND MAY 1670.



Central Northern Airways Ltd.

WINGS OF THE NORTH

Regular scheduled flights to and from the following points:

Sioux Lookout — Pickle Lake

Sioux Lookout — Pickle Lake —
Big Trout Lake

Flin Flon — Island Falls — Pelican Narrows

Flin Flon — Lynn Lake — Pokatawagon

Winnipeg — Red Lake

Winnipeg — Lac du Bonnet — Bissett — Berens River
— Deer Lake

Island Lake — Little Grand Rapids — God's Lake —

Oxford House — Norway House

Float, wheel and ski operations are carried out for scheduled, non-scheduled and charter services for passengers, mail, express and freight, from the following bases: Sioux Lookout and Pickle Lake, Ontario, and Lac du Bonnet, Norway House, Wabowden, Flin Flon and Lynn Lake, in Manitoba.

For information write, wire, or telephone:

CENTRAL NORTHERN AIRWAYS LTD.

Winnipeg Traffic Office,
St. Regis Hotel,
283 Smith St., Winnipeg, Manitoba
Telephone: 92-2310

After business hours: Telephone: 50-4888

Head Office: No. 5 Hangar,
Winnipeg Airport, St. James, Manitoba
Telephone: 6-2307

A SMALL FORTUNE

will pass through your hands in the next few years.

How much will you keep?

Investors Syndicate savings plans are approved by the R.C.A.F. for payroll deduction.



ANDY GRIERSON

Former member of the R.C.A.F.

Your accredited Investors Syndicate representative

Residence Phone: 4-7310
Business Phone: 93-8617



H. BROCK SMITH

Manager, Winnipeg Division

Investors Syndicate is also distributor and investment manager for Investors Mutual of Canada Ltd.

FOR TAILORING, PRESSING,
LAUNDRY AND
DRY CLEANING . . .

STATION PRESS SHOP

A. PRESKY, Proprietor

A Complete Reliable Service

NORTH SIDE DRILL HALL
RCAF STATION, WINNIPEG

PLANE FACTS

(See Back Cover)

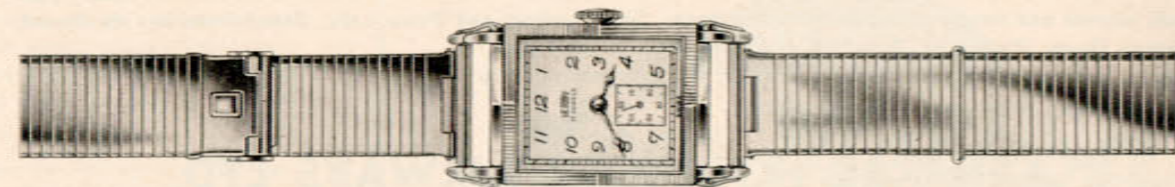
BOEING KC-135 JET TANKER

Back in the air well ahead schedule, the Boeing jet tanker-transport prototype has begun first-phase tests of its new high-speed Flying Boom for the U.S. Air Force. Considerably streamlined as compared with the boom used by Boeing KC-97 tankers to refuel B-47 Stratojets, the device will be thoroughly tested at high speeds and high altitudes. It will be installed on the KC-135 jet tanker, now in production at the Boeing plant in Renton, Wash., and will be used to refuel the Boeing B-52 heavy bomber and new USAF jet fighters. The KC-135 will be an advanced version of the 707 prototype.

—Boeing Airplane Company Photo.

DREWRY'S

MANITOBA DIVISION
Western Canada Breweries Ltd.



"LEROY" WATCHES and "LEROY" RINGS imported and Distributed by

AMERICAN JEWELRY CO. LTD.

WINNIPEG

MANITOBA

Enquire at Your Central Warehouse or Station Canteen

Eatonia

TECO



Birkdale

Commander

Babyfair

Good Labels
to know
and buy . . .

Haddon Plate



Glider

Look for these labels when you shop. Whatever you need, more than likely you'll find one of these names on the article you require. Buy with confidence—in its quality—in its value.



Berkley



Cottage Sweets

bellefair

Dorothy Vernon

... only at

EATON'S OF CANADA

Vanity Fair

optina

ROBINHOOD

Bonnie Brae

La Reine

GLENEATON

SOLAR

SHERWOOD

Braemore

Birkdale Junior

TRULINE

EATON'S