

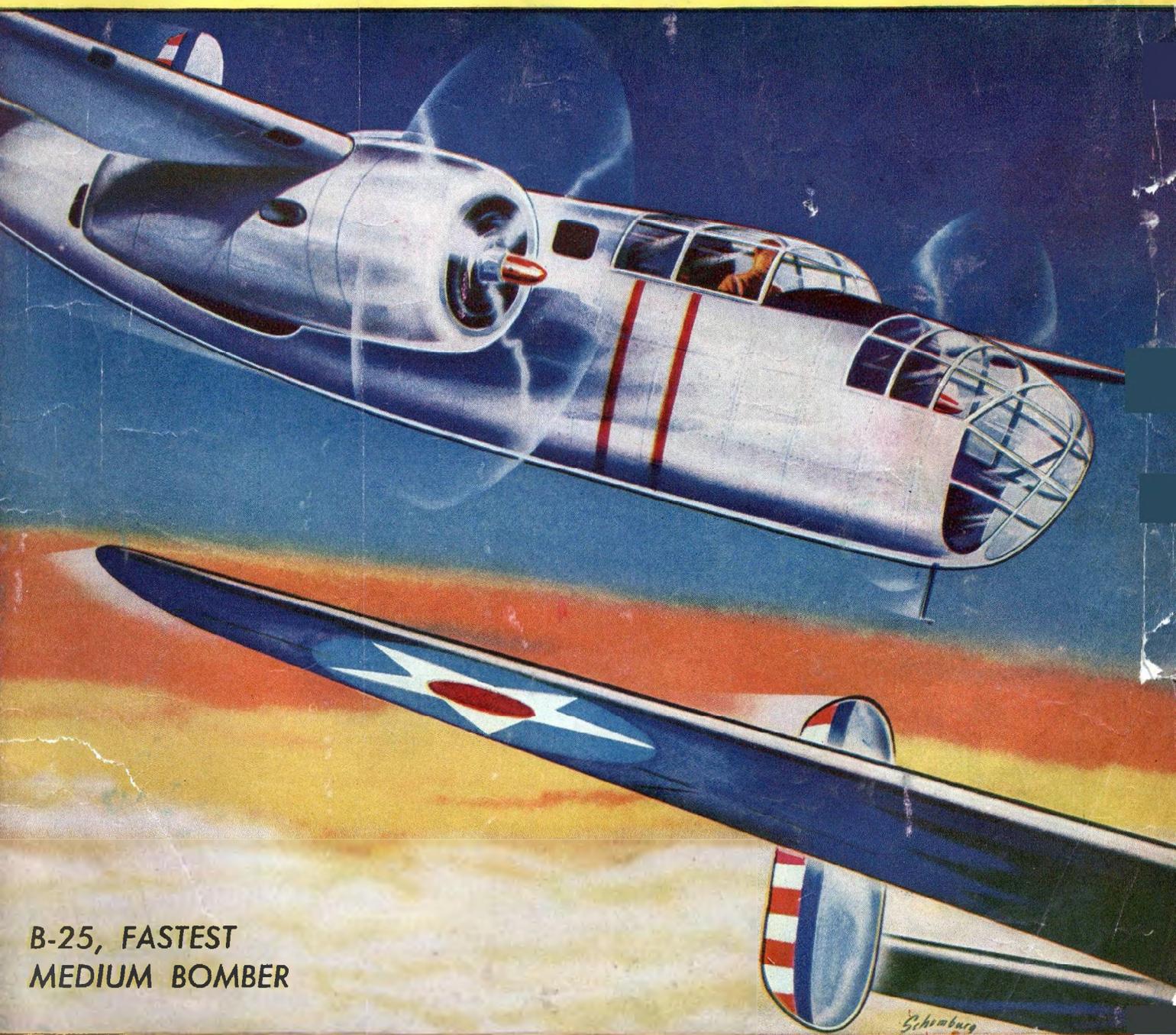
# FLYING ACES

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FEBRUARY

WHAT MAKES A FIGHTING PILOT?  
by ARCH WHITEHOUSE



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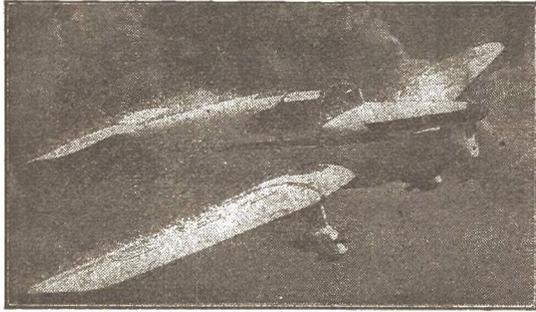
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articles we have ever read about the much-praised and much-condemned German Junkers Ju. 87 dive-bomber is "The Stuka in Action" which starts on page 26. Lieutenant Thomas McBride, the author of this revealing feature, was in France during the Nazi invasion, and talks from experience. Take our warning and don't miss this great "inside" story.

# FLYING ACES

A. A. WYN, *Editor*

DAVID COOKE, *Managing Editor*

VOLUME XXXVIII

FEBRUARY, 1941

NUMBER 2

### ON OUR FACT AND FICTION RUNWAY

WHAT MAKES A FIGHTING PILOT? . . . . .	Arch Whitehouse	4
One who knows tells what he has learned.		
RENDEZVOUS AT 25,000! . . . . .	John R. Hoyt	10
Let's go to sea with the Navy boys.		
CANADA GUARDS HER BACK DOOR . . . . .	Morton L. Bennet	12
Bush flyers are the air "Mounties."		
TELEVISION TRACERS . . . . .	Donald E. Keyhoe	14
Captain Brennard became—a grinning green skull!		
BREED OF THE HELLFIRE . . . . .	Arch Whitehouse	22
Three Canadians had been killed while looping!		
THE STUKA IN ACTION . . . . .	Lt. Thomas McBride	26
Are the Nazi dive-bombers good, or—		
"I KNEW DE GAULLE" . . . . .	Joe Archibald	30
Another Phineas fun fest.		
THE PLANE ON OUR COVER . . . . .		63
Full dope on the North American B-25		
IN MEMORY OF MYRIAM STEFFORD . . . . .	Allis M. Hutchings	66
In South America, she was a great woman.		

### MODEL MAKERS' HANGAR

WITH THE MODEL BUILDERS . . . . .		37
DOUGLAS EXPORT-ATTACK . . . . .	Abe Shaw	38
"WHISPER" GLIDER . . . . .	Ernest Copeland	44
NEWS OF THE MODELERS . . . . .		46
SECRETS OF ENDURANCE . . . . .	Thracý Petrides	48
VOUGHT-SIKORSKY OS2U-1 . . . . .	Leonard Wiczorek	51
YOU SAID IT! . . . . .		52
LOGGING THE MOTOR MARKET . . . . .		52
WORKBENCH TIPS . . . . .		53

### DEPARTMENTS AND FEATURES

FLYING INTO FOCUS . . . . .	8	HAPPY LANDINGS . . . . .	29
DOWN MEMORY'S RUNWAY . . . . .	17	JOIN THE FLYING ACES CLUB . . . . .	33
MODERN PLANES ALBUM . . . . .	18	FLYING ACES CLUB NEWS . . . . .	34
LIGHT PLANE TARMAC . . . . .	20	ALL QUESTIONS ANSWERED . . . . .	36
IN THE SLIPSTREAM . . . . .	25	IN OUR NEXT ISSUE . . . . .	53

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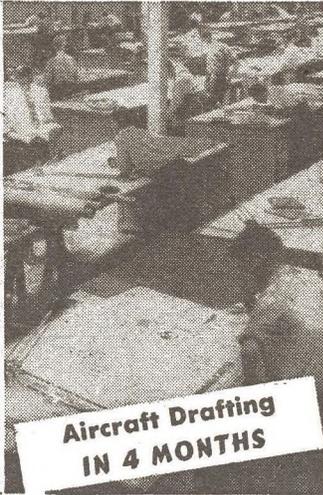
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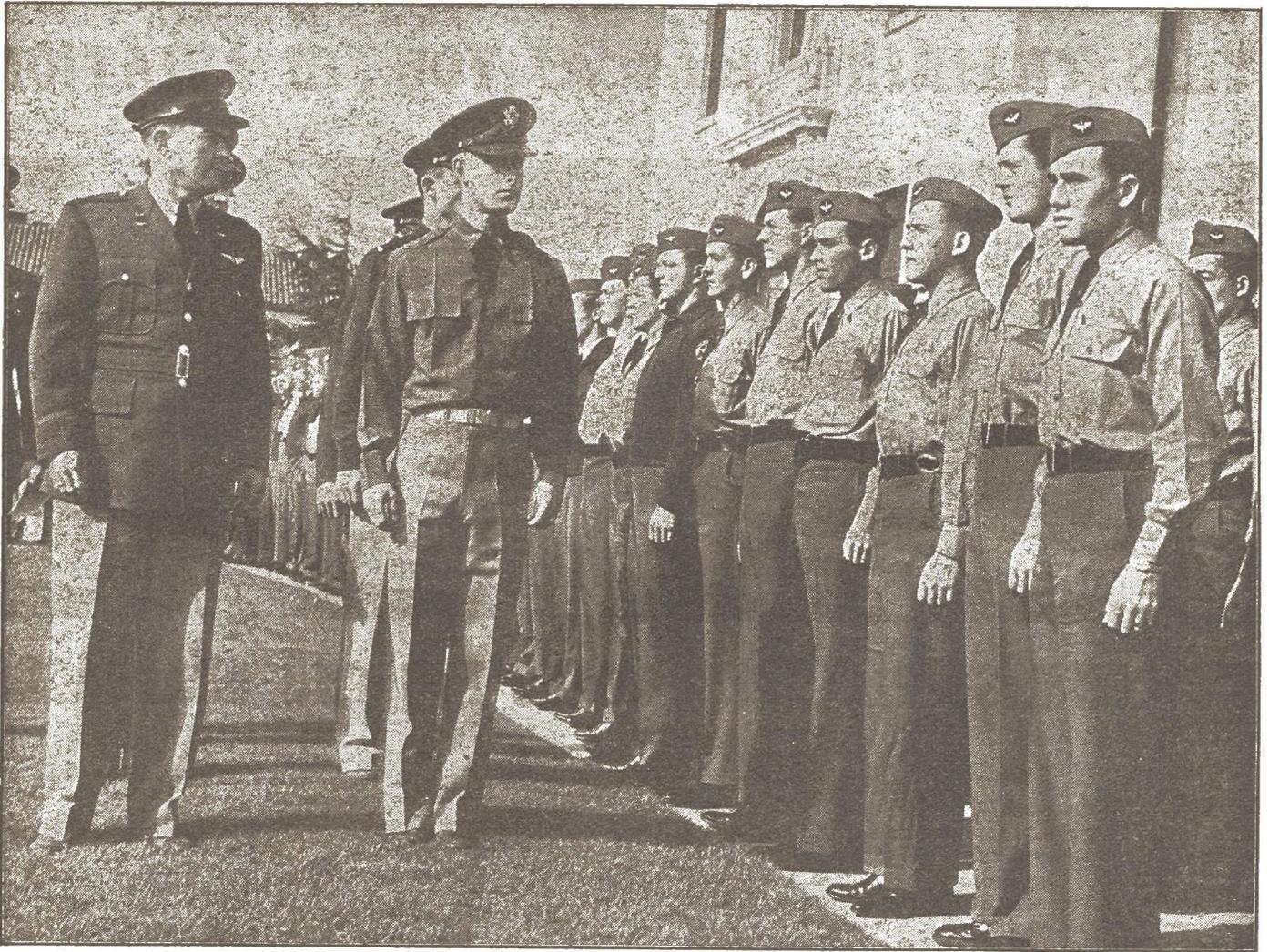
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Major McGregor, left, inspects a group of U.S. Army Flying Cadets. These fledgling flyers train for two years before they are listed as "regulars."

# What *Makes* a Fighting Pilot?

**P**ROBABLY the most interesting reading concerning the present war will be found in the official *Gazette* notices printed in the better British newspapers and aeronautical magazines. Few readers notice these items, set in small type, but in them will be found all the color, drama, heroics, and tragedy of modern warfare. Those concerning the activities of the Royal Air Force and its companion Fleet Air Arm are, of course, the most interesting to those of us who follow the history of modern military aviation.

So far in this war, only five Victoria Crosses have been awarded to British sky fighters in more than fourteen months of bitter fighting. In the last war, nineteen were issued to airmen during the four and one-half years of battle. Of these, twelve were awarded to pilots of single-seater planes and for feats of individual courage. The other seven went to

**If the answer to this puzzling question were known by any one man, he could command a towering salary in any country. Since it is not known, however, we can give you only a few requirements and case histories of men who had that unexplainable "something."**

by Arch Whitehouse

Author of "We Must Build an Independent Air Force!" "Warplanes Pack Punch!" etc.

pilots of two-seaters who performed outstanding acts of gallantry in which the saving of their machines and observers was the high-lighted point of the citation. Among the single-seater pilots to get the coveted award were such noted characters as Ball, Bishop, McCudden, Mannock, Hawker, McLeod, and famous Zeppelin busters Warnford and Robinson.

The two-seater heroes you probably have never heard of. They were: Captain J. A. Liddel, Squadron-Com-

mander R. Bell Davies, Sergeant Thomas Mottershead, and Lieutenant F. M. F. West. No, you can't identify them. They were "merely" pilots of two-seater planes and were not listed in the "ace" classification.

**B**UT WHAT about the V.C. air heroes of today? Who are they and how many planes have they shot down in defending Britain?

Of the five awarded so far, only one has been issued to a single-seater

fighter pilot—a Pilot-Officer named Nicholson who lays no claim to a great victory list. He was awarded his V. C. for shooting down two German raiders after his Hurricane had been set on fire. He was badly burned, but he lived to tell the tale—and what a story it was!

Then there was young Sergeant John Hannah, the Air-Gunner who fought a fire aboard a Handley Page Hampden well inside Germany. Two other gunners jumped, but Hannah stayed and somehow put the fire out with his gloves, a fire-extinguisher, and the plane's log book. He even burned up his parachute in an effort to stop the forced-draft blaze. He could have bailed out, but he decided to stop that fire if it was humanly possible. His pilot got the bomber back safely—although no one knows why it flew at all, or why it didn't break up in the middle where the fire had burned away many of the important structural members.

Another modern V. C. is Flight-Lieutenant R. A. B. Learoyd who piloted a bomber that carried out a successful attack on the Dortmund-Ems Canal. The other two are a Pilot-Officer and a Sergeant Air-Gunner who flew a Fairey Battle against an important bridge and destroyed it. They both died in the action.

Out of five new-war awards of the Victoria Cross, then, we find no fighting pilot in the "ace" sense of the word. We do know, however, that there are several British Spitfire pilots who have more than forty enemy planes to their credit. So far, though, the best any of them can do is to get a Distinguished Flying Cross and, in exceptional cases, a bar to their D. F. C.—which means that they have been awarded the same decoration twice. But the Distinguished Flying Cross is at least two steps removed from the V. C.

A glance through the *Gazette* list discloses that fighter pilots with twelve or fourteen enemy planes to their credit are a dime-a-dozen. I notice, for instance, that Pilot-Officer Albert Gerald Lewis, who has eighteen Germans to his credit, has received the D. F. C. and bar. Moreover, Sergeant-Pilots with the Distinguished Flying Medal and at least a dozen enemy planes to their credit appear to clutter up most Hurricane and Spitfire squadrons.

This all adds up to something new in aerial warfare. We must consider the fighting pilot not only by his score against the enemy or the number of planes he has shot down but also for his ability to carry out dangerous missions. Airmen who have been able to consistently get good sets of pictures of enemy territory are being rewarded daily with

high decorations, whereas their "machines-downed" bag is comparatively low. Pilots who can dare the anti-aircraft fire and go down low and get direct hits on enemy bases are apparently worth more than the spectacular fighter—at least, they are in Great Britain if the distribution of decorations is anything to go by.

## A Fighting Pilot Must—

- be an excellent marksman. This can be developed only through handling firearms and is not something that might be called a "gift."
- have a clear mind at all times and be able to reason thoroughly during combat with an enemy.
- be a natural flyer and have a real love for aviation.
- have fear. Courage is for the usual run-of-the-mill flyers.
- be quick in making decisions. He should know what is the right maneuver instead of hoping it is right.
- have respect for the enemy. This is probably the most important item.

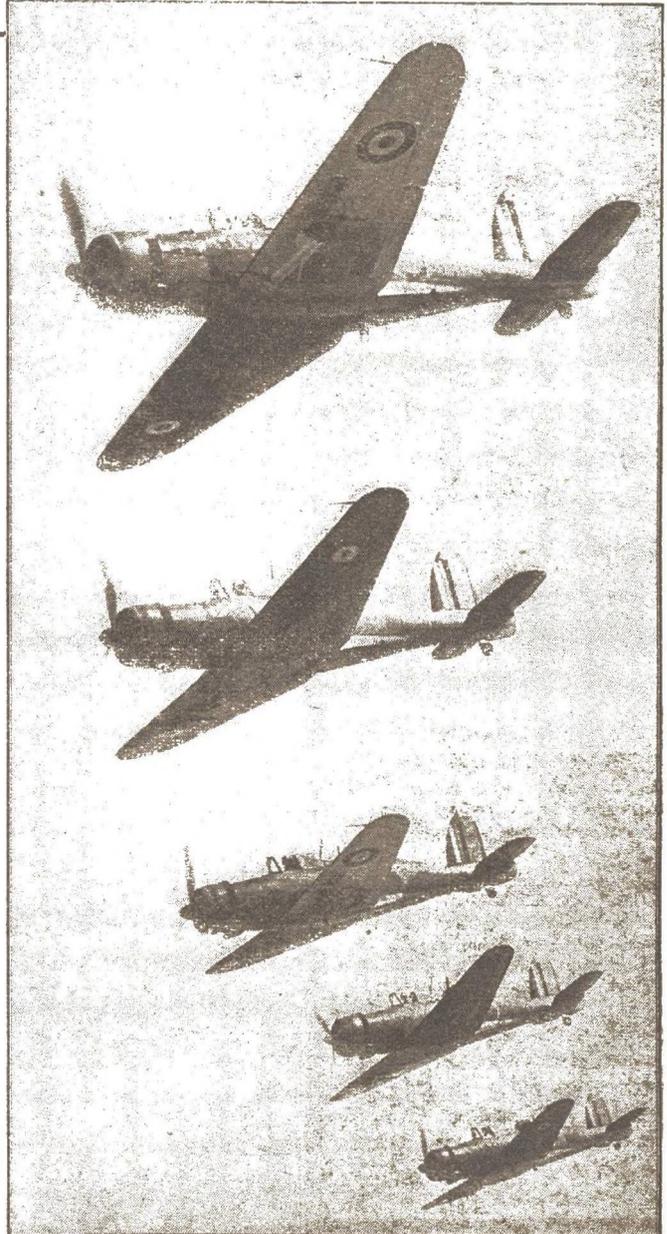
But we must have fighting pilots, whether they win decorations or not. Without the fighting pilot, the bombers and reconnaissance ships would find it extremely difficult to carry out their all-important missions. The fighter pilot must first gain command or control of the air before the bombers and reconnaissance machines can dare to take-off and attempt to raid or photograph the enemy.

The failure of the German Air Force to "break the ground" for the invasion of Great Britain has been due mainly to the fighting superiority of the British pilots. The planes themselves have noth-

A flight of RAF Blackburn Roc's soar in perfect step echelon. Mr. Whitehouse says that gunners aboard these ships are potentially single-seat fighting pilots.

ing to do with the situation. Germany has had more ships than the British ever since the war began. However, the British youngsters have out-fought the Nazis from every angle. When the Germans rain bombs on London, they usually make the most of the darkness of night or clouds during the day. When they have dared daylight raids without benefit of cover, they have always been severely beaten back by the pilots of the fighter command. That is why almost all of the Nazis' heavy bombing is undertaken under the cover of darkness.

British bombers also wisely make the most of night and clouds when they raid important German points. They are different from the Nazis, though, in that they have splendid aerial gunnery defense. The young Air-Gunners aboard bombers are, of course, all potential fighter pilots, just as many aerial gunners of the last war became skilled single-seater fighter pilots.



IT IS OBVIOUS, then, that if we are to have an Air Service capable of taking care of itself and carrying out the duties for which it was intended, we must first of all develop fighter pilots. Whether these men fly Lockheed, Bell, Curtiss, Republic fighters, Douglas observation planes, or Martin bombers, they must be first and foremost "fighting" pilots. No matter what their duty, they must be fighting men. Learoyd, Hannah, and Nicholson were all fighting airmen, in that they did not give up the battle until the end. Yes there's a great deal of difference between a fighting pilot and the studious engineer type who flies our airliners across the continent, guided by radio beams and a ground staff of hundreds.

But where are we to get the American equivalent of Hannah, Learoyd, and Nicholson? These men are not "types." They are, according to their pictures, as unlike as three men could be. As an example, we only have to go through past history and look over the faces of the men who made American aviation history in 1917-18.

There were no particular types even then. They were typical Americans, yes, but far from being special "types." They didn't even look alike. Rickenbacker was a cold, calculating

go through the rest yourself and see what I am getting at. They might be grouped together and offered as the tenth Class Reunion of the Eighth Grade of Public School No. 15 in any town in the United States.

But above all, most of these men were *volunteers*. Many of them had crossed the Atlantic to take up the fight against what was called Prussianism long before the United States entered the war. There can be no out-and-out volunteers today, except that small handful of men who are now training to fight with the British. Conscription and the Selective Service System have done away with the old type of volunteer, although there are still many who joined up long before the draft system was put into operation.

The volunteer, as we knew him in the last war, hardly fits the series of present conditions because of the vastness and mechanics of modern warfare. The old soldier of fortune, whose chief stock in trade was the knowledge of a Springfield rifle and a Maxim machine gun, would today be lost in the intricate maze of mechanical and chemical warfare.

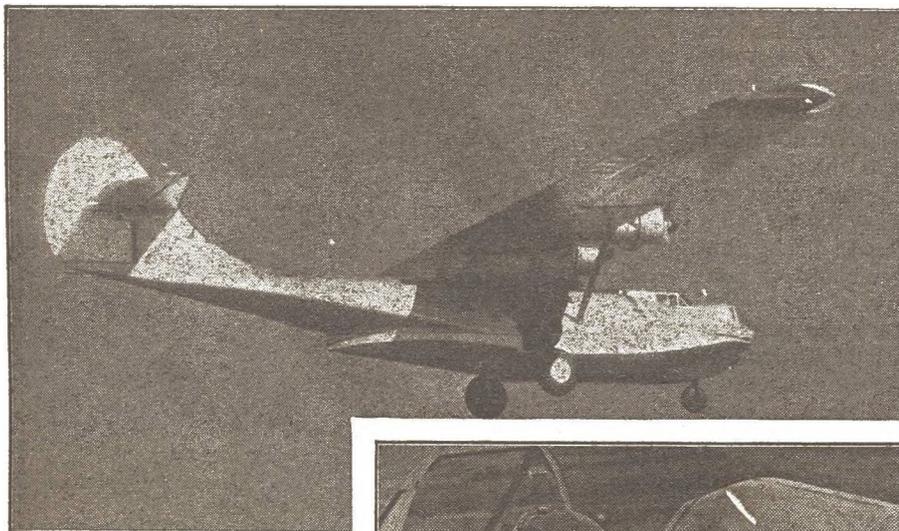
The fighting pilot of today and tomorrow will be a combination Frank Merriwell and Thomas Edison. He

will not necessarily be a renowned college athlete, a two-fisted fighter of the fiction world, or a Charles A. Lindbergh. I venture to hazard a guess that the greater number of American fighting pilots will come from the suburban or rural section of the country. There we find youngsters who are more than familiar with bicycles, motorcycles, automobiles, and tractors.

The youngsters from the rural districts are as much at home with a tractor or a big bull-dozer as the city boy is with a pair of roller skates. Intricate farm machinery such as binders, milking machines, harvesters, power saws, hay loaders, and road scrapers are as familiar to him as the knife and fork he uses at breakfast. And with all that, he still goes to high school and college. He repairs automobiles, radio sets, pumps, tractors, and sets up his own power plant, either in a local stream or on top of the barn where he harnesses the wind to a dynamo propeller.

The writer has had ample opportunity to study these youngsters in the past six months, having moved to a very rural district in New England where he has discovered that the country boy is no longer the dull hick of song and story. The country boy of today is the most suitable material for the modern mechanized Army. He is acquainted with firearms of all kinds and handles them well. You never hear of hunting and shooting accidents among country boys. The city sportsmen bring their accidents to the country.

But while the country boy is apparently most suited for modern warfare, it is also a fact that he does not generally care for aviation. This is another point the writer has learned in his few months of living in an old New England village and getting acquainted with the youth. It is star-



"Any military pilot—whether he is aboard a pursuit or a patrol amphibian like this Consolidated PB5-A—is a fighting pilot," says our author.

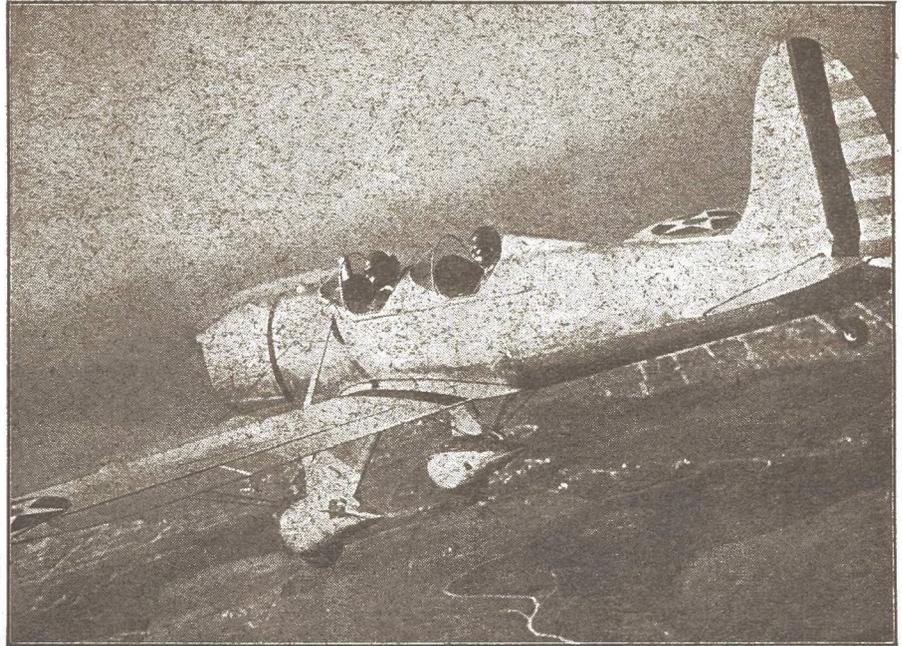
Right: The instructor in a training plane knows how his student is progressing, but he doesn't know how he will be when under heavy enemy fire.

figure. Luke, wild and demonstrative. Joe Wehner, a slight, cheerful chap. Bill Thaw, heavy and colorless. Dave Putnam looked like a high school boy. James Norman Hall, dour and thin-lipped. Raoul Lufbery, rough and gruff. You



ting to note how little interest there is in either commercial or military aviation. But few of the old World War aces did, either, until the war broke out.

The strange thing about this business of seeking material for our air fighting forces is that there is no set rule about it. Education and environment apparently have nothing to do with it. Knowledge of planes and engines has nothing to do with it. The ability to fly well, moreover, has nothing to do with a man becoming a great air fighter. All he really has to know is how to get his plane off the ground and get it back again. The writer was personally acquainted with several of the better-known aces



If the fledgling in this Ryan PT-20 has the necessary qualities, he will be a great war pilot. If not, he'll be an out-and-out dud.



Left: Flying Cadets A. L. Nelson and V. K. White inspect a North American BT-9. Will they become ace flyers? No one can tell until . . .

of the last World War. In most cases these individual fighting stars were not great airmen in the accepted sense of the word. If the truth be known, they became aces because they were allowed to carry out individual offensive patrols as free lance pilots, *because they were not suitable to fly in tight formations!* I believe I have gone into this angle before, and there is no use in taking up valuable space to outline the individual cases again.

**M**Y READERS will perhaps argue that those with superior education will make the best fighting airmen. I can only point out that Great Britain's RAF is composed by a great percentage of non-commissioned officers; men who have risen from the ranks to become Sergeant-Pilots, Air-Gunners, and Observers. These men are not the university group. They are representative of the class that gets through grammar school and possibly gains about two years of high school education. Many,

moreover, have considerably less.

The modern fighting pilot can be taught to handle, without a college education, practically any type of military plane. This has been proven time and time again. But, as I have pointed out before, the university man makes a better officer and is more likely to be able to assume the responsibility of command. Air fighting ability is one thing and the courage to take high rank responsibility is quite another. It is an actual fact that, except in rare instances, the greatly publicized aces of the last World War were pathetic as squadron leaders where they had to do paper work and make quick decisions *on the ground*. In the air against an enemy opponent, they were supreme—but the responsibility of squadron leadership demanded bravery and courage of another classification.

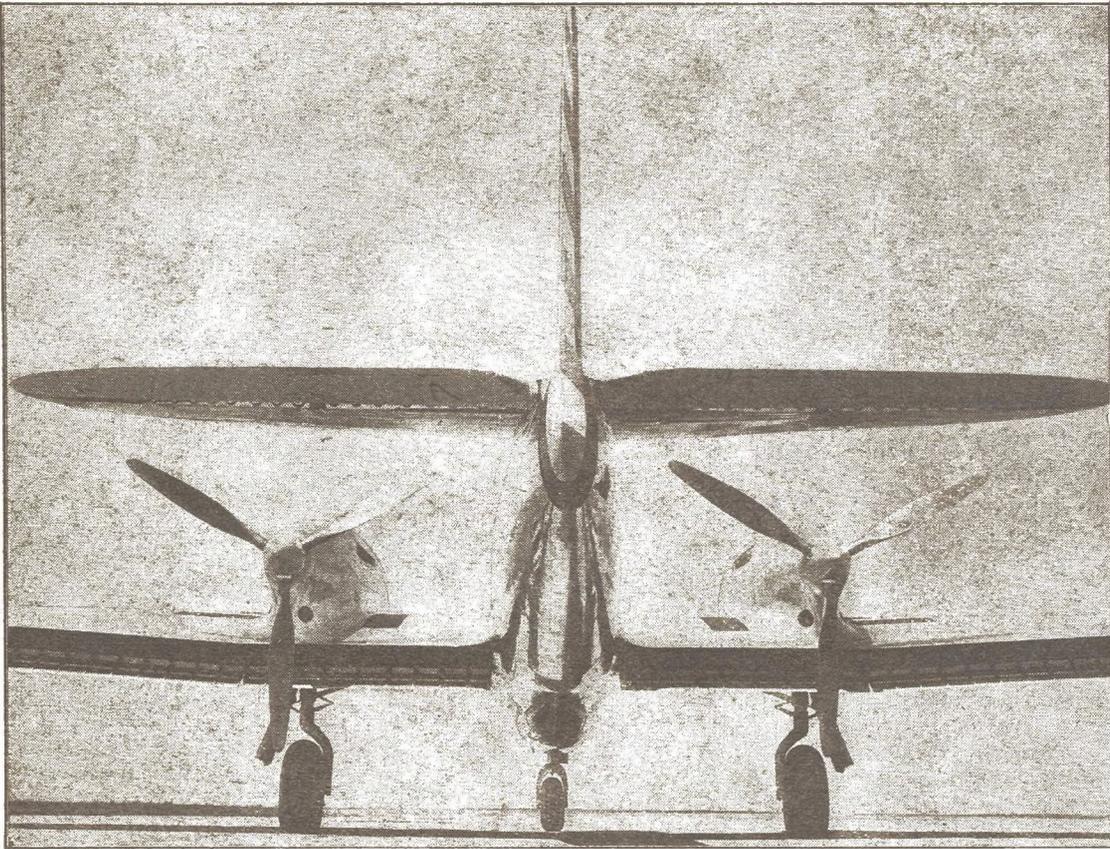
We are likely to mistake mechanical and aeronautical knowledge for fighting ability, whereas these qualifications have nothing to do with

fighting courage and fighting skill. Major Jimmy McCudden used to say: "No matter how much you know, you can't get out at 8,000 feet and clean a distributor."

Mechanical knowledge quickly helps in training our fighting airmen, but it will not assure us that he will stay in a fight and score victories or go through with a mission against great odds—or heavy gunfire. You may know every nut and bolt in a Twin-Wasp or an Allison, but what do you know about a bulged cartridge jam in a Browning machine gun?

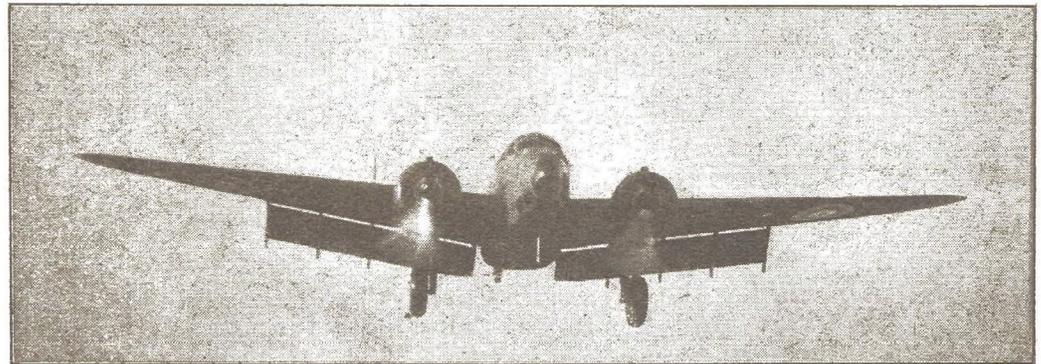
**I**T IS STRANGE, but the quiet, unassuming choir boy makes just as good a fighting pilot as does last year's All-American quarterback. They both have a certain quality of courage which somehow asserts itself in the air. The same two might become quaking cowards in the gun-ponson of an Army Tank. Look at Albert Ball, Rhys-Davids, Alan McLeod, Reggie Warneford, George Vaughn, David Putnam, and Georges Guynemer. They were all kids in every sense of the word—and I like to call them the choir-boy crowd. But look at what they did and what they accomplished in the air.

It is obvious, then, that there are no marks on anyone to indicate whether he will become a great fighting pilot. No matter how good they are at flying school or in the classroom, you can never tell how they will turn out when the guns begin to  
(Continued on page 73)



According to Bell Aircraft, their XFM-1A is identical to the old XFM-1, with the exception of the tricycle landing gear arrangement. We learn via the grapevine, though, that cannon will not be included in the armament. Instead, machine guns will be mounted in the engine nacelle turrets.

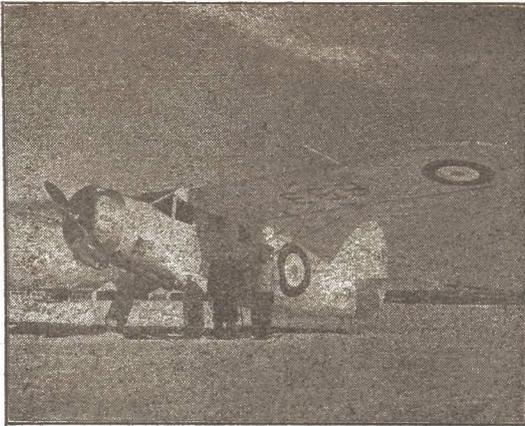
As we go to press, 589 Lockheed Hudson bombers have been delivered to Great Britain and 100 others to Australia. The plant is still turning out these long-range medium bombers for RAF use. Note trailing Fowler flaps on inboard section of Hudson's wing.



# FLYING



Above: Air Corps Cadets "land" a Flying Fortress. The pilot, with broom-handle joystick, points down to the field—and his crew gets scared. (See opposite page.) Left: Major Bertrandias (in cockpit) points out details of the Douglas 8A-5 to Comdr. K. A. Ostby of Norway. A total of 36 of these machines have been ordered.



R.B.C. Noorduyn, left, poses with one of his Norseman jobs. These ships are being built for the Canadian RCAF for training purposes.



Right: The Coast Guard now has seven of these Hall PH-3 patrol boats. Cruising range is 2,000 miles with a crew of six and top speed is 137.

Right: Reloading a Spitfire after a fight with Nazi raiders. Eight machine guns are carried, three in each wing panel and two on the body.

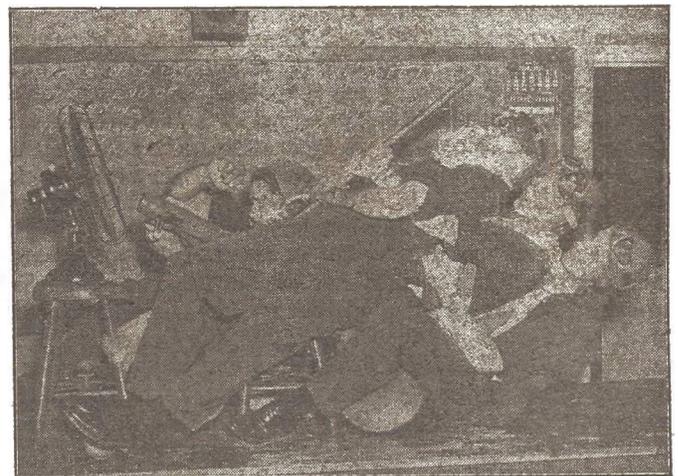
Below: Attack bombers are steadily rolling off the line at Douglas Aircraft. This factory scene shows U.S. Air Corps jobs in the making.



# INTO FOCUS



And now, our cuckoo Cadets come in for a landing. The crew chief has throttled the motor and both command pilot and co-pilot—plus the navigator—are pulling hard on the stick, trying to bring up the nose. The command pilot has his foot down on the rudder can—er, pedal—to counteract drift. But will they land safely? That is the ques-



tion. Ah, they've done it! That last ounce of oomph the boys gave finally brought the tail wheel down! But the crew chief still seems a little worried. "Wonder if we unretracted the landing gear?" he wonders aloud. "But who cares?" he goes on. "I always did like belly floppers!" Yes, it was a tough fight—but they made it at long last!



"From high altitudes, the whole world takes on a fleecy appearance. The soft, ever-changing white clouds give a feeling of security in their billowing mass."

# Rendezvous at 25,000!

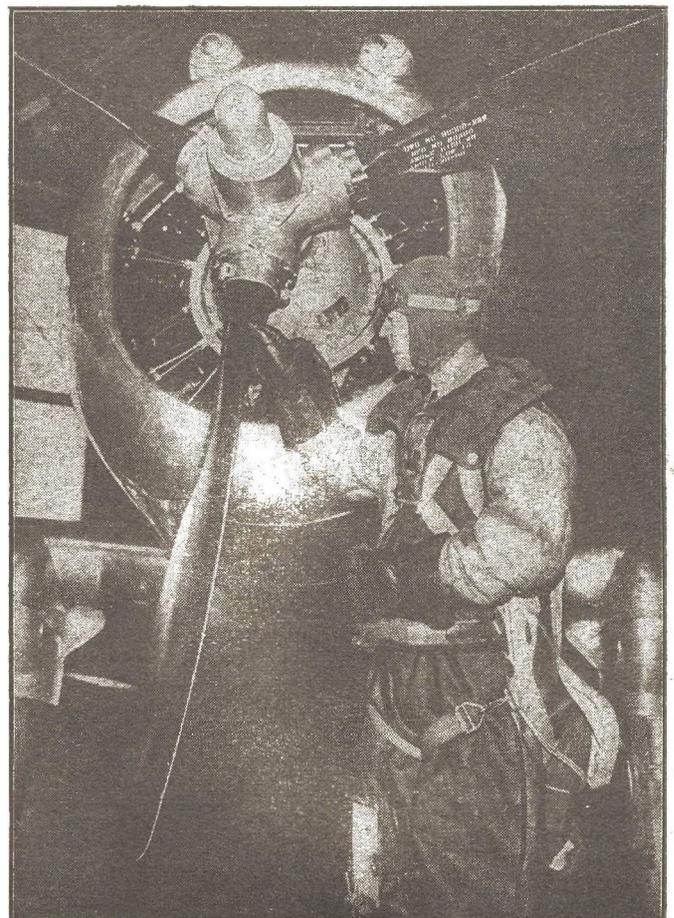
**W**HEN THE PILOT threw his legs over the cockpit of his powerful interceptor fighter and clambered down to the rolling, teakwood deck of the aircraft carrier, he looked far more worn than when he took-off several hours before. He paid little attention to the handling crew as they bustled about his hot, almost smoking plane. As they rolled it up forward past the ominous eight-inch guns, the stabilizer brushed his leg. He frowned irritably.

"It's the altitude," someone said. "Lack of oxygen and an excess of carbon dioxide, from the exhaust fumes. He may be tired—but wait until he hears about the next hop. Rendezvous at 25,000!"

Rendezvous at 25,000 feet! Five miles up, where you can gasp in great lungfulls of nothing and pass out painlessly from lack of oxygen—that is, if you don't have an oxygen mask or "pipe" to suck the sweet stuff through. . . . Where the temperatures are below zero, even at the equator. . . . Where the wind blows with unabated fury. . . . Where the world starts to look like a rounded disk spreading out beneath you!

The aircraft carrier rolled as the 180,000-h.p. steam and electric units pushed her 33,000 tons through the water. The seventy-two planes on her maroon-colored deck were now being rolled aft, in preparation for another take-off. As the deck rolled and pitched, yellow-jerseyed men guided the torpedo-bombers to the rear, almost to the sloping ramp on the deck's end. It took time to roll them from the bow of the 888-foot platform to the stern, to spot planes in order: torpedo-bombers, scout-bombers, then the scouts and fighters. With all the machines in place,

Wearing a heavy tunic, Lloyd Childs, Curtiss test pilot, presents a good illustration of gear worn by airmen flying at upper levels.

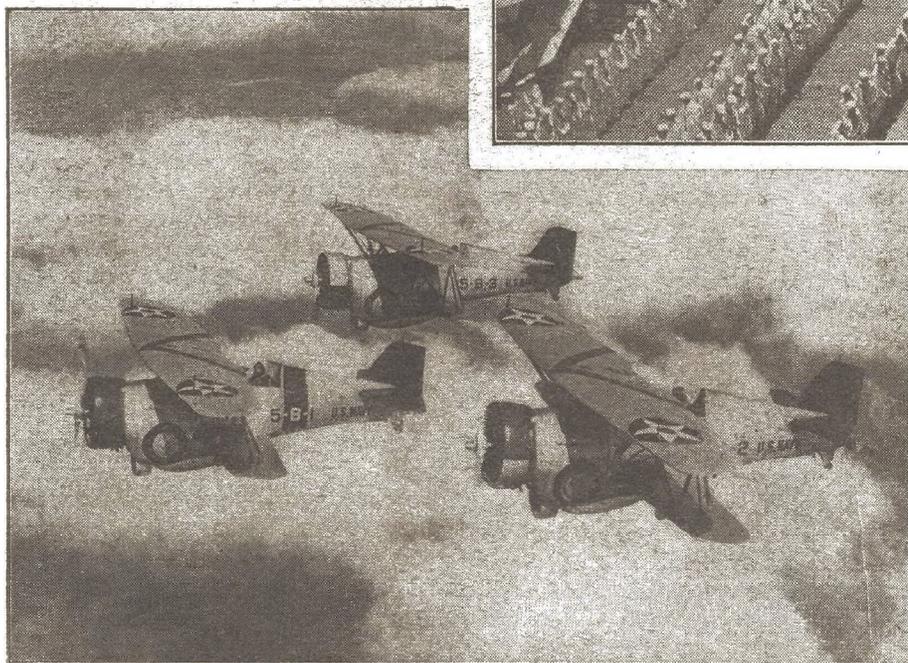


"Water, water everywhere—" is the problem Navy flyers face. And that problem would be still worse if their floating airdromes were destroyed. In this feature, you become a sea arm airman and help defend your home carrier-base.

by John R. Hoyt



Inspection at sea. If you were a Naval airman aboard the "Lexington," you would be with the group of officers in the center.



Left: These Curtiss BF2C-1's of a few years ago were hard on their pilots at high altitudes. Open cockpits made it very cold.

the carrier turned and sped downwind with the thin, gray smoke from her narrow, elliptical funnel hanging lazily over the ship.

**B**ELOW the flight deck in the Officers' Ward Room, nearly a hundred pilots grouped themselves about a large blackboard. The commander indicated the ship's longitude and latitude and the distance from the enemy. In this problem one force was taking the part of invaders, the other attempting to repulse the attack. It would soon become evident which was the better—the enemy or the carrier!

When the signal came from the Air Department to "Man Planes," seventy-two pilots clambered up the steep, iron ladders from the Ward Room to the flight deck, where the silver, wing-starred planes were waiting. As the carrier swung into the wind the word was passed among the fighter pilots: "Rendezvous at 25,000. We will form a high-altitude guard for the carrier."

At first, the significance of this was not quite plain. They merely thought of the cold, the thin air, the high winds . . . and not of the "enemy" bombers that would try to get through. If one of the "enemy" penetrated the defenses, however, and scored an actual "hit"—not one defensive plane would have a place on which to land that night!

Imagine how you would feel climbing into the narrow, complicated cockpit of one of those interceptor fighters. As the carrier swings into the wind, blowing the gray, sulphurous smoke aft into the waiting planes and pilot's nostrils, you would study the instrument panel with its multitude of gauges and dials. First the gas, then the temperatures, wheels, flaps, propeller, carburetor heat. Don't forget to have that parachute unbuckled, because in a forced landing off the bow it might prove embarrassing to have a heavy chute attached to your arms and legs—embarrassing and dangerous!

The aircraft carrier is now mov-

ing into the actual wind. She is making enough speed to increase the resulting or relative wind to about 33 knots, and every so often a gust or bump will strike the wing of your job; combined with the rolling and pitching of the ship the plane feels about ready to take-off. The handling crew stands by, leaning against the gale as it whips their yellow jerseys.

Behind the carrier steam two tiny but speedy destroyers acting as plane guards and defensive weapons for the mother ship. At a blast from the hoarse whistle they take position abreast the ship, ready to rescue the crew of any unlucky plane that may be forced down.

As the leader takes-off, successive planes taxi slowly up the deck. Teamwork at its greatest development is in evidence; from keelson to foretop, it is organization that makes the ship go. The men in the yellow jerseys are waving each pilot on, and when it comes your turn you ease the throttle forward and release the brakes. In a moment you will take-off from the rolling, tilting deck of a ship at sea—a ship moving upwards of thirty miles an hour, a floating airport that in actual engagement might not even be afloat by the time your rendezvous is over!

When the plane ahead of you leaps forward down the deck, you taxi into position. The interval between take-offs is as short as safety permits; too

(Continued on page 78)

# Canada Guards Her Back Door

Until Hitler invaded Poland and the Nazi War began, the Maple Leaf country had no air force worth considering. Now, even though her sky power has increased ten-fold, Canada still looks to the commercial companies and bush flyers to sound the alert!

by Morton L. Bennet

**O**MIK, the Eskimo, gazed into the grey sky at this strange flight of man-made birds roaring overhead. They were not like those of his friends. They were black and grim and bore strange markings on their spreading wings. Oomik made off at once to the nearest trading post.

Meantime, the helmeted figures in the huge bombers peered down on a bleak expanse of ice and snow. No danger here. They could come within easy striking distance of Canada's highly vulnerable cities before their presence was discovered. A few bombs would disrupt the essential services and the troop-carrying planes would arrive to take over. Demolition squads could sever the rail connections between Canada and the United States and it would then be an easy matter to blast the heart out of that great democratic nation from anywhere along the three thousand miles of unprotected border. The leader of the bombing squadron licked his thin lips in anticipation of this easy victory.

Ice and snow gave way to lakes and forests. In the distance were the cities of free people and in a few hours death and destruction would rain down upon them. Fifth Columnists would be ready to go into instant action—and another nation would fall easy victim to this new technique of blitzkrieg warfare.

**S**UDDENLY the air was filled with a thousand furies. A slashing swarm of nickel-jacketed bullets whipped through the leading bomber and blasted the crew into bloody oblivion. Another ferocious burst and the bomber's motors burst into flames. She turned over on her back, and as she dived out of control the last view her commander had of this world was a sky filled with whirling Hurricanes and Curtis Hawks. How, were his last thoughts, had these stupid people been prepared to deal with this squadron? But he was never to know. The raging Canadian fighters were still upon him, blasting his loaded bomber to atoms!

He could have looked back to a time a few short months before the outbreak of war. He might have seen Squadron-Leader G. Brookes, of the Royal Canadian Air Force, taking off in a fully armed military machine to go North to investigate rumors of foreign gasoline caches on the Labrador coast. No official report was ever made of these investigations, but it is a fact that fuel supplies were discovered and confiscated. The Canadian commercial concerns operating in the North country did not own them. Their real owners have not yet claimed their property.

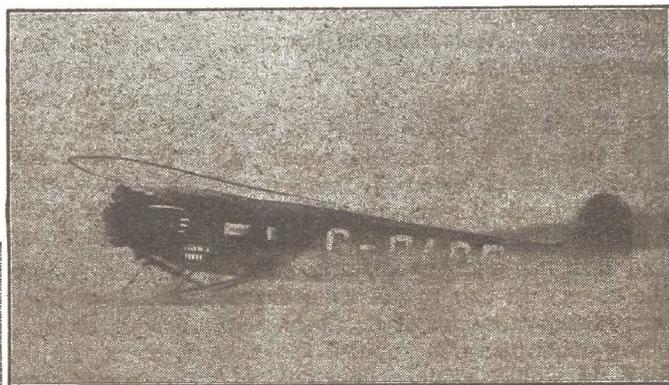
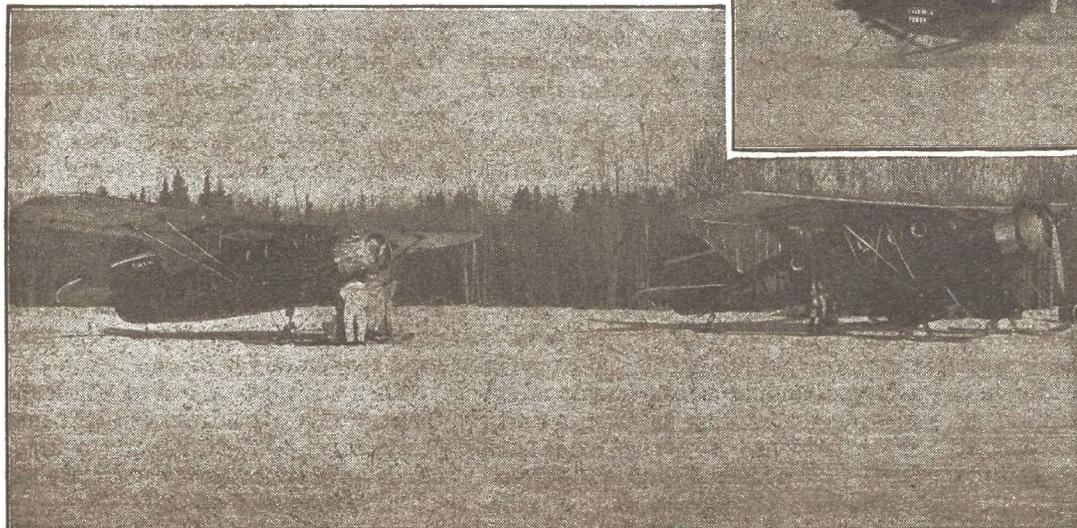
But this is not

the first time that suspicions have been directed Northward. Canadian bush flyers take the reports of the Russian Trans-Polar flights with the proverbial grain of salt. Several of them openly ridicule the story that Sigmund Levanevsky was ever lost with eleven men on a Trans-Polar flight. What, they ask, would eleven men be doing in a machine that was trying for a long distance record? Why was some trace of this machine never found despite an intensive search?

Walter E. Gilbert, of Canadian Airways, Ltd., is still trying to figure out how the Russians managed to waste so much time on their Trans-Polar hops.

"Their flying time," he points out, "averages less than one hundred miles per hour. It is true that they might have bucked headwinds for part of the way, but prevailing Northern winds at that season would have helped them greatly once they were over the roof of the world. Their weather reports and those from our own stations in the North do not jibe. If their logs are true, we are forced to believe that Russian transport planes are incapable of speeds greater than one hundred miles per hour. This alleged speed, in my opinion, is certainly nothing to brag about. Are we expected to believe that this is all the Russian planes can do?"

Other pilots also are of the opinion that the Reds made landings along



With throttle advanced and engine wide out, this Fokker Super Universal strives to get off the snow-packed ground. This is a typical scene in the far Northern regions.

Left: Fitted with skis, this Noorduyn Norseman (left) and Bellanca Aircruiser (right) sit in their blue-topped "open hangar." These ships are used by Arctic bush flyers.

The old meets the new. Landing at one of the scarce ice-free Northland ports where oxen are still in use, a pilot discharges his cargo and takes on gas and provisions. He is a member of Canada's unseen air force.



the route. They knew that a U.S.S.R. scientific party spent several months in the vicinity of the North Pole. Their object, it was learned, was to map out suitable bases for flying fields—and now Russia is building a huge air base near Alaska.

Returning to Oomik: He ran to the nearest Hudson's Bay Company post and poured out his message, which was promptly relayed to headquarters at Winnipeg. Military radios went into action. More reports came in. American authorities in Alaska and Washington were notified. Maps were hastily consulted and expert Arctic pilots gave their opinions.

Fighting planes of Canada and the United States were dispatched to a central point along the invader's line of flight. They hung high in the clouds, unseen. Their pilots, trained to that last degree of perfection which is beyond the economic reach of totalitarian states, waited with every move planned, each victim spotted and marked for destruction. Then at a given signal from their leader they went down like streaks of light, their machine guns spitting hell-streaks of white-hot tracers. Taken by surprise, outmatched despite superior numbers, the invaders were swept from the skies to crash in flames instead of strewing death on cities farther South.



Being loaded at Port Burwell, Labrador, this machine is about to set off on a flying survey for national defense. It will tour all out-of-the-way places in search of fuel caches stored by enemies.

break of war, the Canadian government was seriously contemplating, with the help of the American Government, the establishment of an Arctic patrol by military planes. This is how it was to work out:

The military pilots of both nations were to be taken on the strength of the commercial companies flying the Arctic. They would serve a certain term with the companies until they were thoroughly familiar with every phase of Arctic flying. They would be the best flyers in the world, capable of operating under any weather conditions, and their resourcefulness would be developed to the fullest extent. The plan would have been beneficial to the commercial companies and later the patrol would be taken over entirely by military planes. Though this proposal never materialized, owing to the outbreak of war, the commercial concerns were still maintaining an unofficial patrol of the North.

The Hudson's Bay Company, too, is doing its part. Their posts are now radio equipped and weather reports are dispatched each day. The Company owns and operates a 250 m.p.h. twin engined Beechcraft. It is in constant touch with headquarters while patrolling the North.

Nor are the famed Royal Canadian Mounted Police left out of the aerial defense. They have a big Noorduyn Norseman on constant patrol. Every Eskimo is warned to make an instant report on all strange aircraft seen in his vicinity. Radio stations are spotted along the vast expanse of the Arctic, and keen eyes are constantly

surveying the drab heavens of our outer guard. No man may move in that country now without it being reported at once to the proper authorities.

Since those controversial Trans-Polar flights, Canada has not been lulled into a sense of false security by Russia's so-called neutrality. More than seven Royal Canadian Air Force bases are stretched along the Pacific Coast from the San Juan Islands to the Alaskan border. From these bases, daily patrols are carried out as a training routine; they also serve as a security patrol to guard against any possible surprise attack from Russia or Japan.

Some idea of the efficiency of this guard may be gathered from the report of a Canadian Airways, Ltd., pilot when flying a party of cannery officials on an inspection tour. In his log, the flyer stated that he was challenged by an RCAF station when on his way North. Patrol planes roared up and inspected the commercial job. Luckily, the flyer was recognized by the pilot of the patrol plane; otherwise, there is no telling what might have happened.

This is the way Canada guards her back door against attack. America, too, is now alert to the danger from this quarter. She is preparing to do her part in making the North safe against invasion. And until she is ready and her huge Alaskan air base is in operation, the duties of guarding against invasion from the North will be cheerfully undertaken by those veterans of the Arctic—the Canadian and Alaskan bush flyers.

Until a very few months ago, many Canadian commercial operators fought hard and bitterly against permitting Pan-American Airways transports to fly over Canadian territory. However, the situation is now entirely different and the Yukon Southern, one of Canada's largest and most powerful commercial companies, is cooperating to the fullest extent with Pan-American.

**T**HAT IS ALL merely a possibility, of course, but a reasonably accurate description of what could happen to invaders trying their luck at crashing the back door of North America.

For some time now, American commercial pilots in Alaska and Canada's bush flyers have been cooperating on an unofficial patrol of the Arctic Circle. Before the out-

stant touch with headquarters while patrolling the North.

Crabb hurriedly spun  
his rear turret as  
Trent hammered the  
Seversky up front!



ED  
SHALLE  
'40

# TELEVISION TRACERS

## CHAPTER I

### THE GREEN SKELETON

**E**RIC TRENT was half-way into the taxi when his hat gave a peculiar little jump and flipped over one ear. He climbed in beside Mortimer Crabb, gave his partner a whimsical grin.

"Very neat, Mort, but a trifle playful for one of your solemn demeanor."

Crabb's mournful countenance registered a gloomy suspicion. "What's this? What are you talking about?"

"That hat trick. My lessons in magic must be taking effect. I didn't see you make a move."

"I never touched your hat—" Crabb's long, sad face suddenly froze. "Hey, what's that up at the top?"

Trent took off his hat, a brand-new Homburg purchased late that afternoon on their arrival in Seattle. On the left side, an inch below the crown, was a small, neat hole.

"H-m-m," said Trent. "Hardly termites, that soon. Something tells me we have unsuspected friends in Seattle. Driver, it's worth five dollars if you put us somewhere else."

The driver had been staring back at the bullet-hole. The sound of the slug had been drowned by the passing cars.

"You said it!" he erupted. The cab shot forward, took the next corner on

One moment, Eric Trent and Mortimer Crabb, his sad-faced companion, were talking with Captain Brennard—and the next moment the Captain was a horrible, grinning green skeleton! That happened in Seattle—but they flew North in quest of the grim answer!

by Donald E. Keyhoe

Author of "Bombs Over the Bahamas," "The Ace From Hell," etc.

Illustrated by Ed Smalle

two wheels, roared ahead, and made another wild turn.

"That should be sufficient," Trent said drily, "unless it's Superman. Now suppose you zigzag to a spot known as 'Wing High,' if that happens to be on your general itinerary."

"Yeah, I know where it is," the driver said.

Trent sat back, his dark eyes faintly amused. He was a tall man, with something coolly audacious in his face. His almost black hair and close-clipped mustache gave him a slightly Latin appearance, a look that went well with his cosmopolitan air. But Eric Trent's blood was pure Yankee, and under that smoothly careless manner was a capacity for lightning action—a part of which went back to his days as a magician's assistant, before he took up aerial globe-trotting as more suited to his devil-may-care existence.

"You may think it's funny, but I'm getting sick of it," grated Mortimer Crabb. He had a deep, rusty voice that sounded as though it came from the bottom of a well. "Isn't there any place in the world we can go without running into somebody who doesn't like you—or is that asking too much?"

Trent chuckled. "Mort, old bean,

believe it or not but Seattle is one of the few places I've never been. I think that little token back there was meant for you."

**C**RABB'S over-sized Adam's-apple jumped up and down as the inventor gulped. "Me?" he said hoarsely. "Why should anybody want to take a pot-shot at me? I never did anything to—"

The taxi lurched to a stop, and the driver pointed to an areaway entrance to a basement-level taproom which had a flamboyant neon sign, "Wing High," flashing on and off.

"There she is. And if you ask me, it ain't the healthiest joint in town. But it's your funeral."

"Let's hope that's not too literally correct," Trent said amiably. He paid the man, waited until the cab had disappeared. "Just a second, Mort. Let's reconnoiter before we descend."

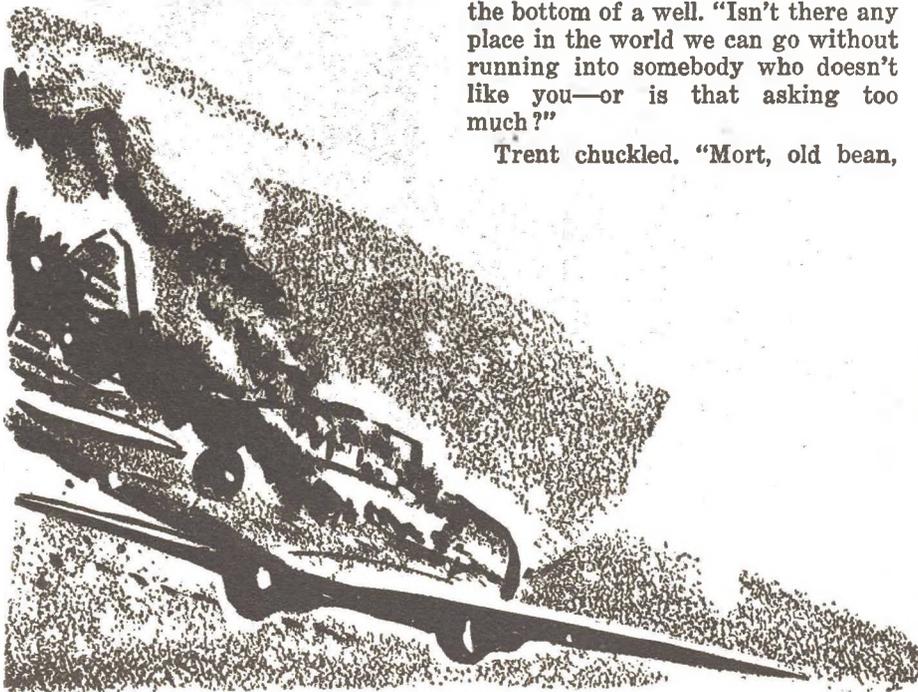
"What are we going in here for, anyway?" demanded Crabb.

"Because Captain Brennard left word at the hotel that he'd meet us here. Or at least the message was supposed to come from him. But I'm beginning to detect a piscatorial odor."

"I wish I'd never met you," Crabb said bitterly. "I haven't had a peaceful minute since then. Dragging me over to Europe just in time to get mixed up in a war. Getting chased out of every country we hit—"

"Better than getting hit before we were chased out. But this happens to be your affair. The Army Air Corps asked you to come out here and meet this Brennard chap from the Alaska experimental base. It seems somebody would prefer you didn't meet him."

"But why? It's purely a technical matter. Something went wrong with the television set I built for the Air Corps. They want me to check it over. Television's no secret, so why should anybody want to stop me from work-



ing on a set I built myself?"

"That," said Trent pleasantly, "is what I think we'll find out—very soon. Come on and if things start to get warm, let me handle the opening fireworks."

Crabb groaned, but followed him down the steps. The "Wing High" proved to be a second-rate cocktail lounge that more nearly deserved the name of bar-room. It was decorated, cheaply, with aeronautical effects—two or three old wooden propellers, an antiquated machine gun of World War days, and some panels ostensibly torn from captured German planes, but with suspiciously artificial bullet-holes. The waiters wore bell-hop type uniforms, with wings on the collars.

The lights were low and the air was filled with stale tobacco smoke. A squint-eyed head-waiter led Trent and Crabb past a row of booths, all filled, to a table at the end of the room, not far from a piano where a pimply-faced youth was rendering "Blueberry Hill" with the aid of a peroxide-blond violinist. A hulking waiter, with a seamy face and huge hands, came to take their order.

"One Manhattan," said Trent. "My friend doesn't drink, but you might bring him a couple of packs of gum. He's about worn out his present cargo."

As the waiter went to the bar, Trent saw him glance toward the semi-enclosed space near the kitchen door. Trent idly took a coin from his pocket. One side looked like an ordinary half-dollar; the other was a tiny mirror. He carelessly toyed with the coin a moment, then held it up as though inspecting it.

"Mort, are you acquainted with a small bald-headed gentleman about forty, with ears flat against his head and eyebrows that meet across the top of his nose?"

"Doesn't sound like anybody I know," Crabb said dismally. "Why, where is he?"

"Don't look around. He's back there near the side-entrance, to the right of the kitchen door, with a couple of gentry who look as though they'd cut each other's throats for the price of a beer. They seem quite interested in you—oh, oh! I think they're getting suspicious."

Trent flipped the coin into the air, caught it, put its mirror side down on the table. "Heads! You pay, old chap."

The squint-eyed man walked by, looked down at the table. Trent waited, pocketed the coin, and glanced toward the bar. The blond violinist stepped to one side of the piano, ob-

structing his view. She smiled at him, and Trent promptly got to his feet. The hulking waiter came by as he reached the piano, and Trent stopped him, took the Manhattan.

"Here, my friend," he said to the pimply youth, "you toss this one off while your fair virtuoso and I do a little close harmony. Waiter, another Manhattan."

He was on the piano stool before anyone could stop him. The waiter scowled, and the blond looked disconcerted. Trent ran his fingers over the keys, began to play "God Bless America." The blond violinist said curtly, "I don't know it well enough."

"How about this?" said Trent, gaily. He plunged suddenly into the Nazi "Horst Wessel" song. The blond stiffened, and he saw the bald-headed man near the kitchen jerk around, his mouth agape. He took his hands from the keys, but before he could get up there was an abrupt diversion. An Army Air Corps captain was striding toward Mortimer Crabb. The officer was a lean, middle-sized man with sandy hair and a determined jaw.

Trent could tell by Crabb's quick look of recognition that this was Captain Brennard. The Air Corps officer stopped at the table. After a hasty greeting he motioned for Crabb to come with him. The inventor looked at Trent, and Trent nodded carelessly, pointing to the second cocktail the waiter was bringing him.



FROM the corner of his eye, Trent saw the bald-headed man and the two shadowy figures near the door turn hurriedly to go out. He waited until Crabb and Brennard had reached the entrance, then briskly stood up, tossed a dollar bill onto the waiter's tray.

"Here, Fritz, that ought to cover the two Mickey Finns."

The waiter's jaw dropped. Trent turned swiftly to the rear. But before he could reach the side door the huge waiter came dashing after him, the squint-eyed man at his heels. Trent sidestepped the waiter's bear-like lunge. The kitchen door opened, and another waiter came out with a laden tray. With a lightning glance, Trent snatched a ketchup bottle and whacked it over the first waiter's head. The bottle broke, and ketchup flooded down over the man's face. The squint-eyed man leaped back, hand inside his coat.

Trent caught him neatly with a left hook to the chin, whirled, and was outside before the head-waiter had time to hit the floor. A black sedan was drawn up near an alley which ran back of the taproom. Trent raced up the steps to the street, in time to see the bald-headed man and the two thugs trying to force Crabb and Brennard into the machine. He thrust his hand toward the .38 in his armpit holster, sprang toward the car. The Air Corps captain slumped inside the sedan, struck by a gun-butt, as Trent reached the machine. Mortimer Crabb had knocked the bald man off balance, was battling one of the gunmen. Trent triggered a swift shot as the other gunman spun around, pistol lifted.

The man sagged to his knees, and the other thugs scrambled into the car, where a third figure was crouched over the wheel. The sedan roared ahead, swung into the alley. Trent seized Crabb's arm.

"Come on—we've got to stop those devils!"

A taxi had pulled up across the street during the fight, with a coupe blocked behind it. But as Trent ran toward the coupe, the taxi driver threw his car into gear and sped away. The driver of the coupe was a timid-looking man with enormous tortois shell glasses. As Trent wheeled, gun still in hand, he frantically dived from the car and ran down the street.

"The idiot!" said Trent. "I wasn't going to hurt him."

"How would he know?" panted Crabb, as he tumbled into the seat beside Trent. "You didn't look any too pleasant."

Trent hurled the coupe into the alley, accelerator jammed to the floor. The sedan was skidding into a cross-alley almost a block ahead. Trent took the same turn, with a wild screech of tires, raced two more blocks, scattering traffic as they charged through a downtown street. The fleeing car made another swift turn, into an alley Trent had not seen in time. He overshot, braked, and followed as quickly as he could.

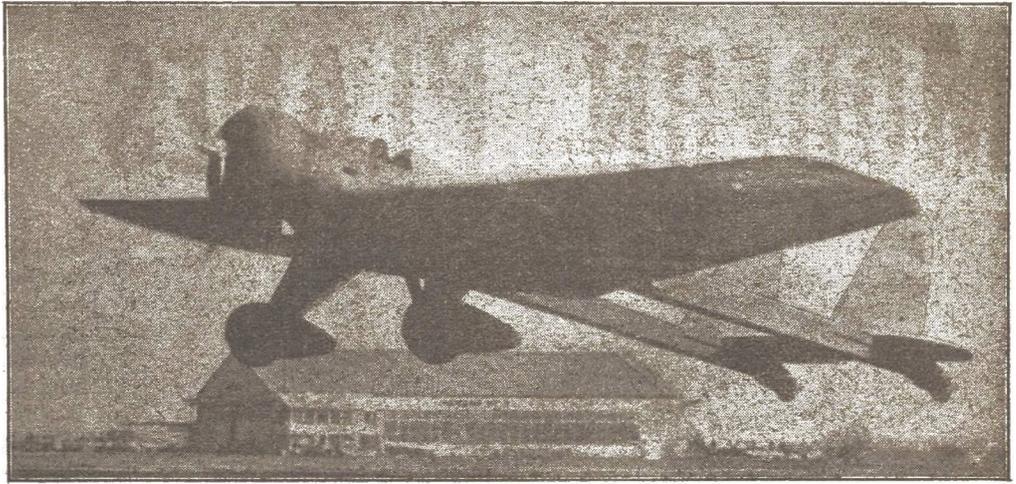
Suddenly, out of the darkness ahead, something white loomed in the headlights. It was like a cloud of steam, but thicker, and it rolled and seethed furiously in the lights. Trent stood on the brake pedal, whipped the car aside. A fender grated against a brick wall, and they stopped.

"Go on through!" Crabb said tensely. "It's only a smoke-screen of some kind."

"It looks like gas," Trent muttered. "Close the windows and we'll make a dash through it."

(Continued on page 54)

This old-time Vance job of about 1930 was too far advanced for its time. The wing was of full cantilever design and carried gas tanks in its center panel.

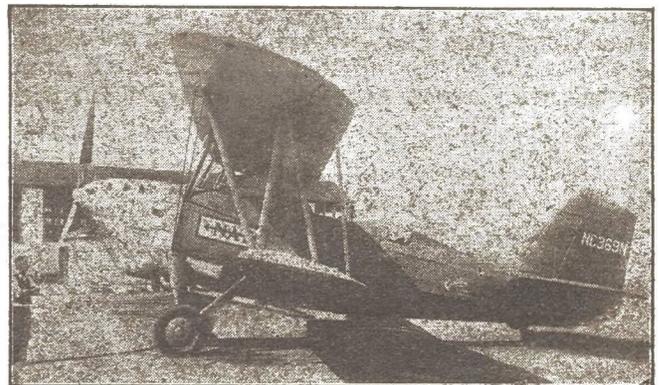


Below: Here we view the Curtiss P-18 Hawk of 1921. This fast-climbing peashooter was pulled through the air by a Curtiss D-12 engine. Top speed was 185.



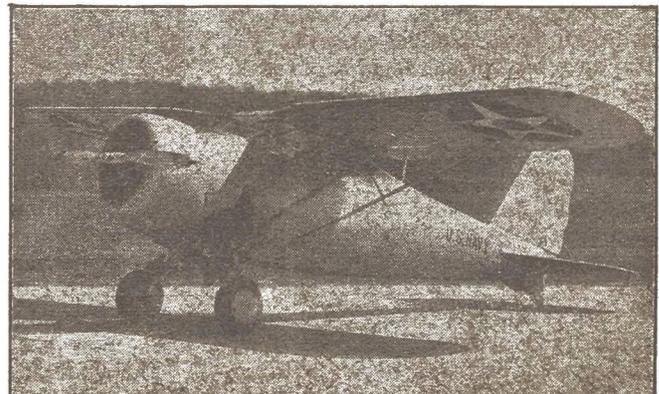
# DOWN MEMORY'S RUNWAY

Below: Lieutenant Al Williams—now Major—poses with his Curtiss R2C-1 Schneider Cup racer. He took first honors in that race, which was held on October 6, 1923, with 243.67 m.p.h.—a new world's record. Later, Williams flew the same machine at 266.6.

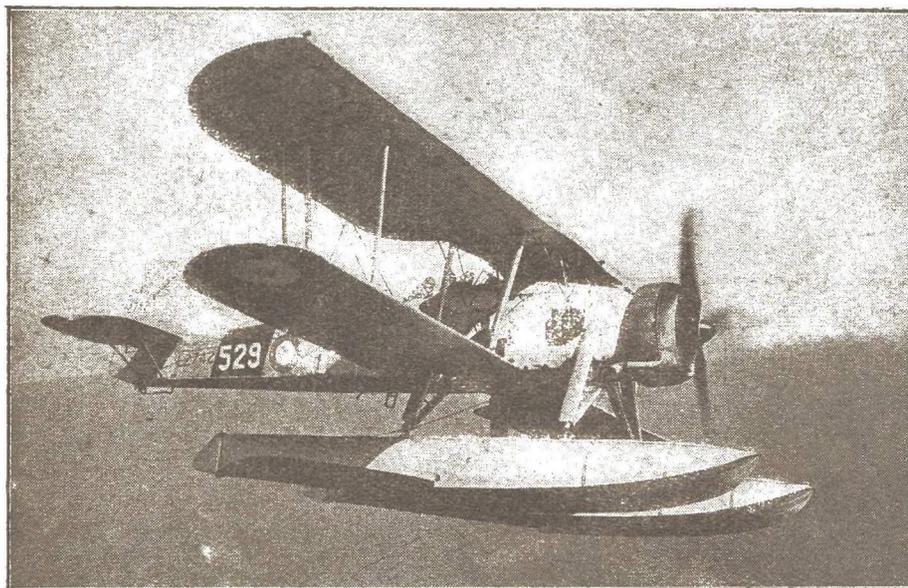


A real mail ship! The adventurous days of air mail are gone and letters are now carried by the airlines. Back when this Curtiss Carrier Pigeon III was used, though, the over land postal job was a one-man task. This craft was powered with a 600-h.p. Conqueror.

Below: In 1934, the latest Naval experimental fighter was this Curtiss XF13C-1. It seems that the "13" was bad luck—for this machine ended up in the boneyard along with the Northrop XFT-1 of that year. Pilot had plenty of visibility but wings were weak.



# MODERN PLANES ALBUM



BRITISH FAIREY SWORDFISH

of the Admiralty. It consists of special Naval fighter groups, catapult seaplane units, and some torpedo-bomber sections. It does not command the flying boats, long-range bombers, or other machines of the land-based Coastal Command. This is a most important point when this unified air-service argument comes up.

The Fairey Swordfish is a typical torpedo-spotter-reconnaissance seaplane. It is not a beautiful machine by any stretch of the imagination, but considering the varied program of duties it has to perform it is remarkable that the designers could even keep it looking like an airplane. As a matter of fact, the Swordfish is being replaced by the Blackburn Roc and Skua, but there are still plenty of them with the British Fleet.

The Swordfish is a two or three-seater biplane powered with the Bristol Perseus engine rated at 690 h.p. It is also produced as a landplane with deck arrester gear and wheels. As a spotter, it carries a pilot, gunner, and Navy observer who is a specially-trained man and has wide authority over the pilot. The wings of the Swordfish are made to fold for storage aboard battleships.

## BRITISH FAIREY SWORDFISH

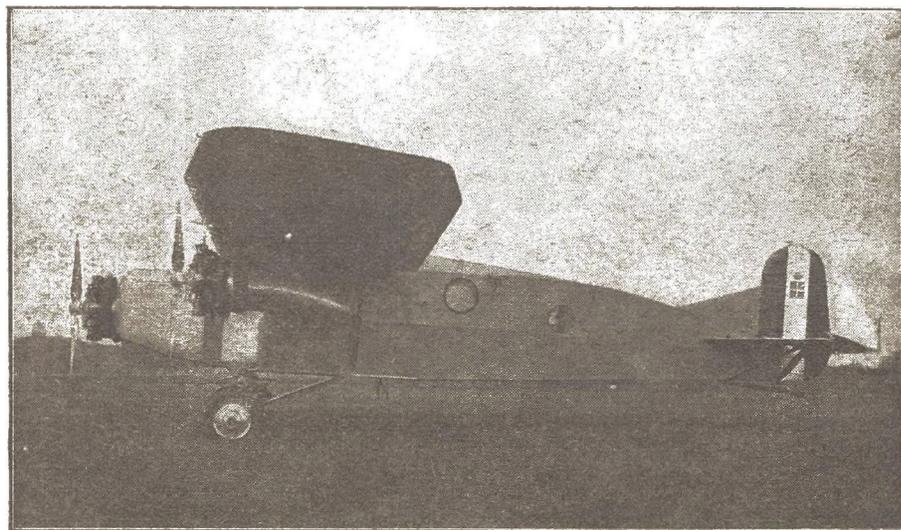
**A** MATTER that should be cleared up, particularly for American readers who have been bombarded with arguments for and against a unified Air Service, is the explanation of the British Fleet Air Arm. As is well known now, the British have the only truly unified Air Service in

the world and they seem to be doing very well with it. They do have, however a Fleet Air Arm, which is a small separate unit manned and controlled by the Royal Navy. The history of this group is long and varied, but the actual situation is that the Fleet Air Arm is a small but efficient Naval Air Service under full control

## ITALIAN CAPRONI CA. 101

**T**HE ITALIAN Air Force, on the strength of its showing so far in this war, seems to be justifying the statements of many air experts who declare that air strength is more reliant on the man-spirit of the personnel than the quality of the aircraft available. On paper, the machines of the Italian Air Force appear to be equal to any in the world, and it is still a puzzle to air experts why they haven't put up a better showing against the British and the Greeks. Italy has splendid fighters, well-designed bombers, and seaplanes of worthy categories, but somehow, at least from neutral reports, the Italian pilots do not seem to be making the most of their opportunities.

The Ca.101 was used with great effect against the Ethiopians and in those days it was produced as a colonial type, especially fitted for overseas desert work. It is not a high-speed aircraft, being rated only at 155 top, but it uses light, easy-to-service Piaggio "Stella VII" engines rated at 370 h.p. apiece. Thus we see they had well over 1,000 h.p. available for a loaded weight of 11,-



ITALIAN CAPRONI CA. 101

317 pounds. The empty weight of the Ca.101 is 7,577 pounds. The load, then, including fuel, oil, and a crew of at least four is about 3,740 pounds. The colonial model could be used as a light bomber or a special transport-ambulance plane. The straight bomber is now used for night-bombing.

The general accommodation is as follows: The pilots' compartment,

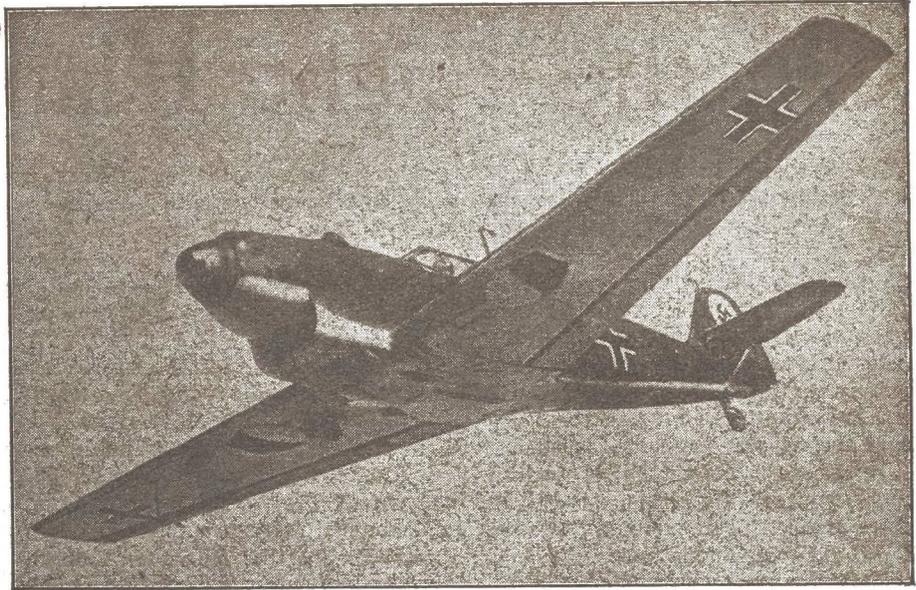
seating two side-by-side, is set in line with the wing leading edge. Behind this is a large cabin which may be outfitted for several duties. The main bomb racks are carried beneath the fuselage. The gunners have three machine guns, one in a special retractable turret firing over the tail and two more in a mounting set in the floor.

#### GERMAN MESSERSCHMITT ME. 109

**W**E CAN now present some satisfactory and reliable data on the much publicized German Messerschmitt Me. 109. A number of these machines have been shot down and captured by the British and we are fortunate in having access to their fair-minded findings.

According to RAF research engineers who have studied these machines, the Me. 109 is a fine fighter, which only just missed becoming a great weapon. It appears now that the original machine was designed to fly on the power of the 750-h.p. Daimler-Benz engine, but with the great demand for speed figures the heavier D-B 601-A engine of 1,150 h.p. was installed. Higher speed was obtained but at a great sacrifice in fighting maneuverability. A feature noted in practically all Messerschmitts captured so far is a heavy wire cable which is attached to the fuselage, passes around the engine, and which appears to have been fitted to prevent the engine from falling away from the light alloy supporting members. This same safety device has also been found on several other single-engined machines. It is hardly a token of confidence in the design or structural invincibility.

On the other hand, the Messerschmitt is not a slipshod job. It is well built and carries as many instruments as the fighting craft of the British. It has two-way radio covering a single wave band of 2.5 to 3.7



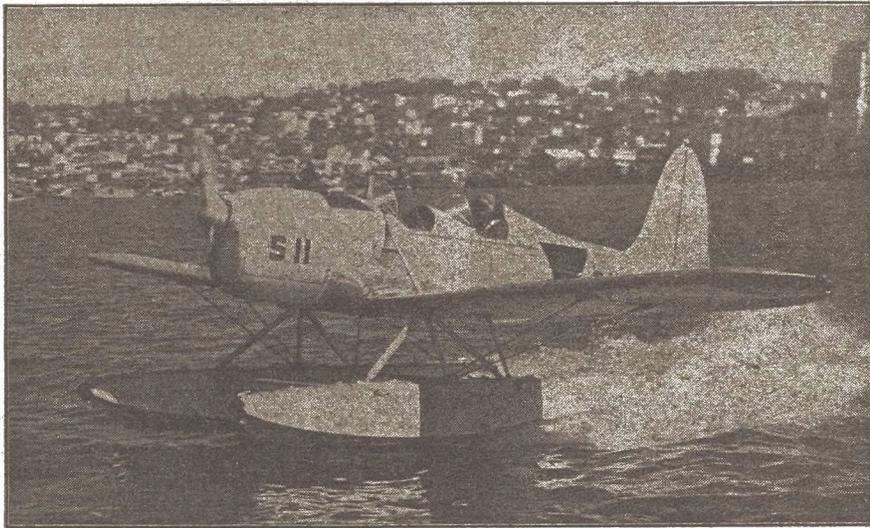
GERMAN MESSERSCHMITT ME. 109

megacycles, but the frequency cannot be altered by the pilot while in the air. The radio set is not considered to be very efficient or up-to-date.

The Messerschmitt generally carries two rifle-caliber machine guns set under the motor hood and synchronized to fire through the propeller. There are two more machine guns in the wings well outside the propeller arc. In some cases, but very rarely, these rifle-caliber guns in the wings are replaced by Oerlikon 20 mm. shell guns. They are loaded with explosive bullets. The much-publicized 20 mm. gun set to fire through

the propeller boss has not as yet materialized. The Me. 109 is said to do 354 m.p.h. Some carry 8 mm. armor plate behind the pilot's head.

The fuselage is all-metal, of monocoque design, and is flush-riveted. Wing panels are cantilever, all-metal stressed skin, and flush-riveted. Handley Page slots are built into the leading edges. The outer portions of the trailing edge flaps act as ailerons and the inner segments as flaps. The landing gear is hydraulically operated and folds into special wells in the wing.



U. S. RYAN SEAPLANE TRAINER

**U. S. RYAN SEAPLANE TRAINER**  
**W**ITH THE advance of the great effort to build up national defense, it is easy to forget the many angles that come up in aviation training. The man on the street sees only a program of bombers and fighters being built in production line numbers, along with the pilots and me-

chanics to man and service them. The great problem of training with all its many angles and requirements seldom gets into the picture.

Take the training of Naval airmen, for instance. Few think that their training is any different from that experienced by Army pilots. But it is vastly different because of the

surface medium they have to contend with.

Navy men must consider the problems presented by water, and for this reason their training must include some seaplane work—and seaplane training requires a certain amount of primary training with light, easy-to-handle equipment before they can advance to heavier and faster types.

To meet this classification, Ryan has redesigned their famous ST trainer, fitted it with floats, and tagged it with the name STM-2. The floats are all-metal and produced by Edo. Whether these machines will be supplied to the U.S. Navy has not been made public, but an “undisclosed” foreign government has already ordered some.

According to publicity, the STM-2 has been test flown by the factory staff. They declare it to be “the finest acrobatic training seaplane” they have ever flown and that “its performance is comparable to that of the conventional landplane S-T used by the U. S. Army Air Corps.” Such statements, of course, mean absolutely nothing, since they offer nothing that could be called official.

# On the Light Plane Tarmac

## FREE AERO TRAINING

**T**HIS AVIATION business is tougher than trying to sell a life history of Winston Churchill in Berlin. You are never quite sure just what angle to take when you sit down to present an article. If you take the attitude that certain conditions should be changed, you are either a Red or a disgruntled outsider. If you argue that the Air Services need bolstering in certain spots, you are a warmonger. If you cheer them on, you overnight become a self-satisfied appeaser.

Take the case of our attempting to get free or reasonably free aviation training for the masses. We always thought we were doing the right thing by advocating Government or state provided air training. Now we find that, after all, we were tearing aviation down as far as it could go.

What has happened, of course, is that wherever someone has attempted to do something about providing free aviation training, there has been a disgruntled air school operator who has had to stand by and watch state-supported schools providing the very thing he has been trying to sell the

public for many years. This situation may soon burst out with large slices of bitterness in the State of New York, and we presume the same thing will happen elsewhere—so you might as well get used to it and learn what it is all about.

According to generalized information being passed around, free training by the State of New York for thousands of youngsters has been contemplated in plans now under development. On the surface of things, this sounds like just what the medico ordered. On the sidelines though, consternation reigns because in none of these plans has any provision been made for air school operators who already have invested considerable time and not a little money in their organizations. Some of them have made a lot of money, and some have had tough times in the past five years. They have had to pay either rental on their fields or taxes, or both. It is quite understandable, then, that they are becoming disturbed about the manner in which State authorities are preparing to create schools.

Of course, actually, there are very few operators today who are not mak-

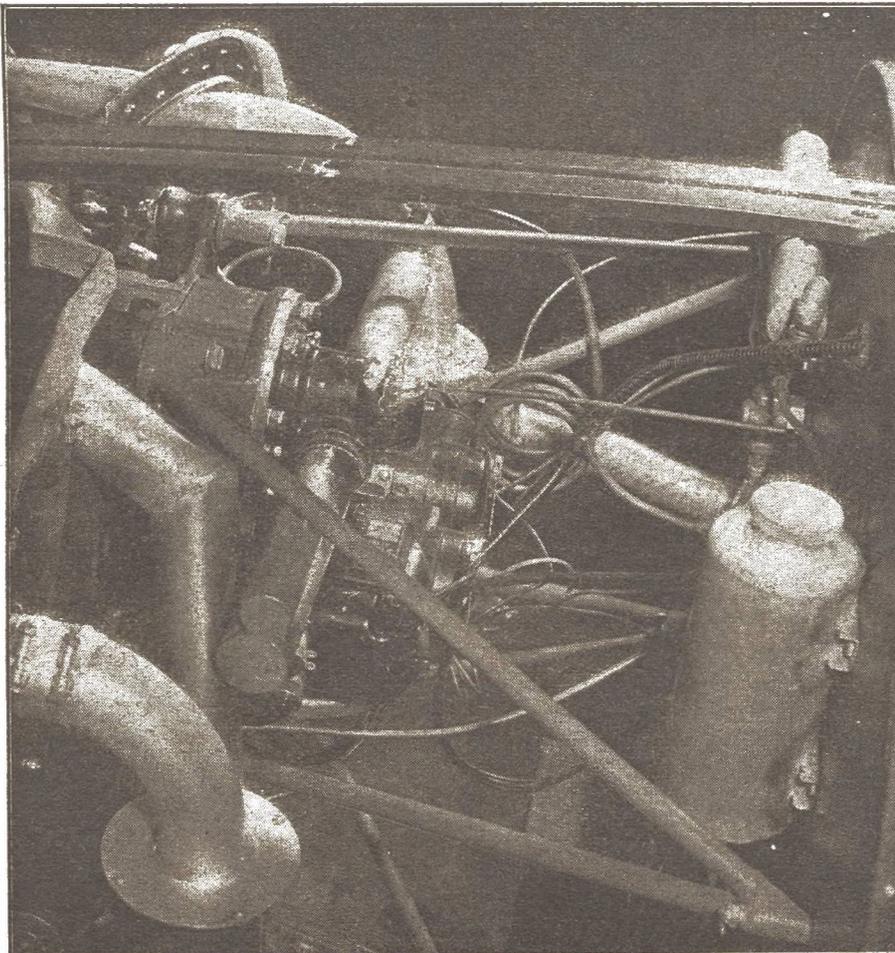
ing money out of the CAB plan. Most of them are up to their necks in business, whether it be in New York or some cow-pasture outfit in New England. Many of the higher class concerns are working with the Army Air Corps program and, by the way, are doing a very fine job from all angles.

Still, this is a situation that will have to be considered, particularly for the future when the furor of national defense begins to slow down. There will come a time, not so far off as we might believe, when we shall slide back into the numb state of inaction, such as followed the last World War, when you couldn't sell a \$5,000 training plane, just out of the crate, for three hundred bucks. It is then that all these operators will have to be nursed along again.

If our public school systems are going to provide the masses with free aviation training, some consideration should be made for the *bona fide* operator who has for years been working hard, building up his time, his system, and gathering more Government license credentials to his credit. He should be taken into any aero plan offered the public and paid for out of public funds. If he is not considered, he will have to shut up shop, close his field, sell his planes at a sacrifice, and let go what employees he has on his payroll. He will pay no more taxes on his hangar and field. He will no longer buy tank-car loads of gasoline, and, all in all, the State will be the big loser in the end.

So you lads who want your flight training dropped into your laps free of charge had better consider all the angles to this business. Aviation, as we have pointed out for years, is not a cheap profession and you have to pay for what you get, whether you pay it direct into the cash register of a flying school or whether you pay it indirectly through your taxes. You can't get anything for nothing, not even free aviation training.

One interesting angle on all this is the announcement made recently by the Republic Aviation Corporation (Seversky, as was) that 8,000 apprentices to be trained under their new \$1,000,000 expansion plan will get much of their tuition at the Faust Aircraft School located at Jericho, N. Y. Three hundred students already registered at the Faust school were



Weighing a bare 15 pounds, the Criley Hydraulic Starter is shown here installed in a Stinson 105. This is one of the very few really practical starters we have ever seen for light jobs.

immediately taken into the plan.

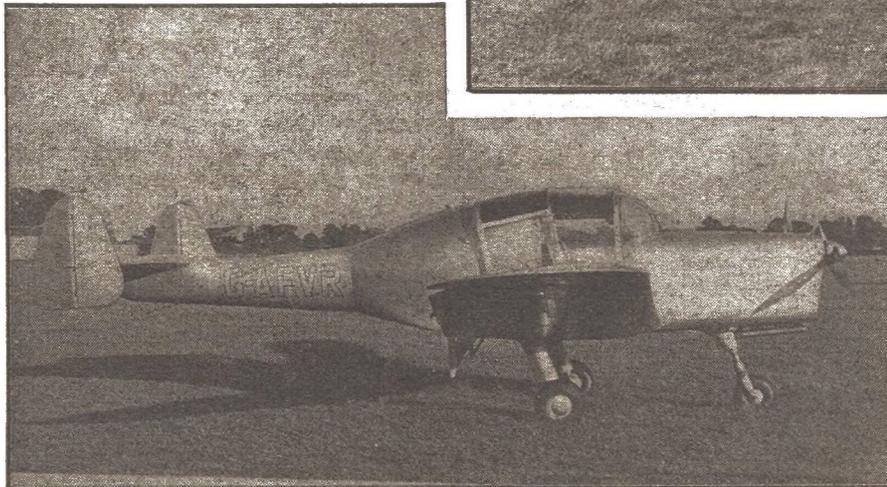
And just in case you didn't spot this in your newspapers recently, we reprint an official statement from the office of the National Aeronautic Association:

"Development of aviation recreational areas as a recognized feature of city planning is urged by Robert H. Hinckley, Assistant Secretary of Commerce, in a letter to Captain Gill Robb Wilson, President of the National Aeronautic Association.

"Aviation activities will play an important part in the life of the cities



Lt. Peirce, of the Brown & Williamson Tobacco Corp., prepares to deliver a Cub to a contest winner. One Piper craft is awarded every week.



Left: Prototype built in 1937, this British General Aircraft Cygnet is quite different from most U.S. light planes. Construction is all-metal.

of the future, Mr. Hinckley pointed out, and advance steps are necessary to set aside the large tracts of land which will be needed. Endorsing the national program of the NAA, Mr. Hinckley said:

"It seems to me that under education and promotion, one of the greatest things your organization could do would be to interest communities, large and small, in the desirability of creating their own landing areas as air parks, recreational in character.

"As I fly over the country I am impressed with the number of baseball and football fields, golf parks, etc., and my fear is that few communities yet realize that one of the great recreational activities of the near future will be flying.

"This type of recreation soon will require extensive areas of public land, conveniently located, and progressive cities which take advantage of the inevitable trend will profit from it. I think it is up to those of us who realize this to keep telling them."

#### NEWSY NOTES

**C**LARENCE DAVIS, an engineering grad from the Massachusetts Institute of Technology, is the 1,000th employee hired by Piper Aircraft. Davis didn't know before hand, but now he's a pretty famous guy. In celebration of passing the first

ten-century mark, W. T. Piper, president of the concern, was photographed shaking hands with the number man in front of a Cub. Now, almost every publication will be using the pix. Nice way to do it!

If you really want to own a 65-h.p. Taylor Cub these days, all you have to do is to listen in to the Brown & Williamson Tobacco Company's new program scheduled for 9:00 to 9:30 (Eastern Standard Time) every Friday night from New York on the NBC coast-to-coast network. They give one away free every week in one of those "complete the sentence" contests.

The Aeronca firm has put up a new factory to produce training planes used in the civilian training program. The plant has 60,000 square feet of floor space, exclusive of the general and engineering offices. The Aeronca sales for the first seven months of 1940 were up 147% over the corresponding period of 1939 and they still had half a million dollars worth of unfilled orders. And for the sentimental touch to all this, we might add that the No. 1 Aeronca, built in June 1929—the original Aeronca C-2—returned to the factory to become something of a museum piece. In eleven years it had flown a distance equal to several trips around the world. It still had the 30-h.p. Aeronca 107 engine and had never suffered a single serious mis-

hap. It was originally bought by Miss Gertrude A. Fravel of Lakewood, Ohio.

Bill Wagner, demon publicity man of the Ryan Aeronautical Corporation, reports that his firm has a backlog of orders totalling more than \$10,000,000. The U.S. Government has ordered \$5,000,000 worth of planes—and all you and I want is just one little 65 h.p. job to keep us happy!

#### THOSE BLASTED DOORS!

**W**ELL, now for the horror feature of this month's program. This is part of the business that always gives us the chills, for we have to sort through a stack of Light Plane Tarmac letters and find one that fits the bill. Some are good, some are terrible, and many are evidently beautiful bits of fiction. We do not want fiction; we want actual happenings that make good topics for a department of this kind. Please write plainly, on one side of the paper only, and try to keep your letters down to about 300 words unless it is *very* good and *very* interesting.

This month's letter comes from Don Burkert, Jr., and Walt Pawfouski of Nanticoke, Pa. It was a long, weary search trying to find a missive that carried a lesson, but we believe we at last won out with this one.

#### Light Plane Editor:

Well, we're back again, but only two of us this time. The third blade, Margelewicz, busted out of our club for reasons which are censored.

Anyway, the other week-end we two Blades—went to Cornell to get  
(Continued on page 79)

# Breed of the Hellfire

by Arch Whitehouse

Author of "The Silent Raider," "Wings of Sawdust," etc.

Illustrated by Alden McWilliams

## CHAPTER I

### TWO MORE CRASHES

**C**RASH CARRINGER, chief test pilot, ace salesman, and Size-4 headache of the Hale Aviation Company of Long Island, knew his firm could sell a lot of airplanes to the U. S. Government, but he also knew they could sell more to the Dominion of Canada. Canada was at war and was really air-minded. Canada was a big prop in the British Empire's thrust against Nazism, and, besides, Canada needed fighting planes of the Hale Hellfire class. But unless something was done about this business, Hale would not be able to sell an airplane to a ninth rate South

American republic for coffee beans.

Two young Canadian Squadron-Leaders had gone west in two days, testing Hale Hellfires for their government. Two youngsters who had been overseas for seven months, youngsters who had two ribbons for gallantry up under their RCAF wings.

Crash Carringer was boiling mad about it, but what could he do? The young Canadians were first-class airmen. The machines were in first-class-plus shape, but two had gone West in two days, leaving no trace of what had happened.

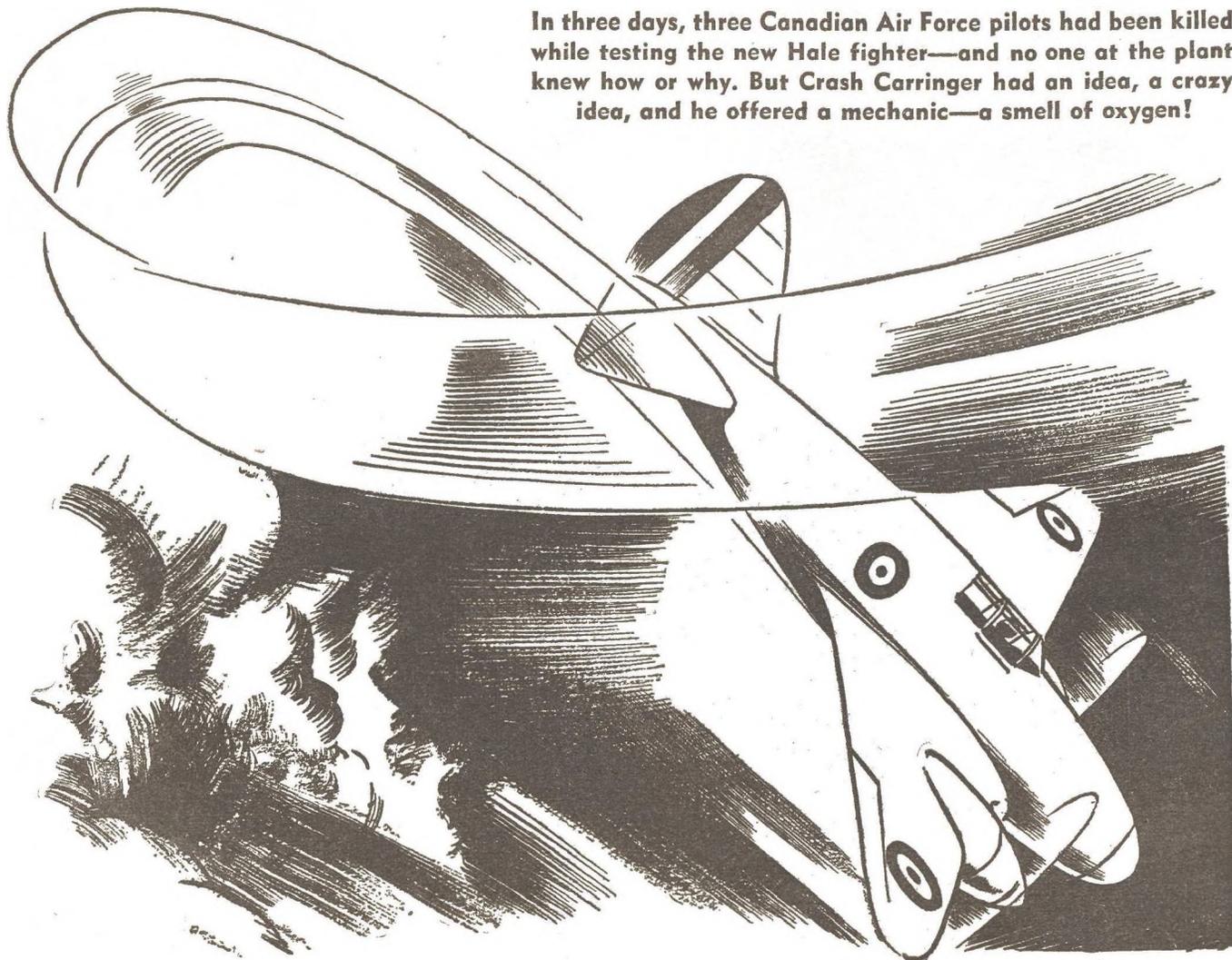
**G**ROUP-CAPTAIN Eric Swain, DSO, DFC, was a slim god of a man. He had a profile, a stride, and the laugh of some fawn that has been touched by a magic wand and changed into man. The trim Royal Canadian Air Force kit didn't detract from the illusion, either. He had seen all there was to be seen over the

old Maginot Line and above Krupps and he got his DSO at Dunkerque when he calmly shot seven lumbering Junkers dive-bombers out of the air in exactly seven minutes. As the result of his effort, a side-wheeler Yarmouth ferry loaded to the stack-base with two regiments of Seaforths got safely across the Channel during that hellish adventure.

For his marksmanship, Swain was given a leave, a few extra rings of braid on his sleeve, and was sent home to hold down a Purchasing Board post until a new Canadian air group could be trained and outfitted.

That's how Group-Captain Swain happened to be at the Hale plant, testing Hale Hellfires that had been ordered for his unit. Swain still had the profile and the stride, but somehow the laugh had become hollow with a tonal quality of mockery. He had helped pull Squadron-Leader Craddock out of a wreck and had gamely put it down to the twist of

**In three days, three Canadian Air Force pilots had been killed while testing the new Hale fighter—and no one at the plant knew how or why. But Crash Carringer had an idea, a crazy idea, and he offered a mechanic—a smell of oxygen!**



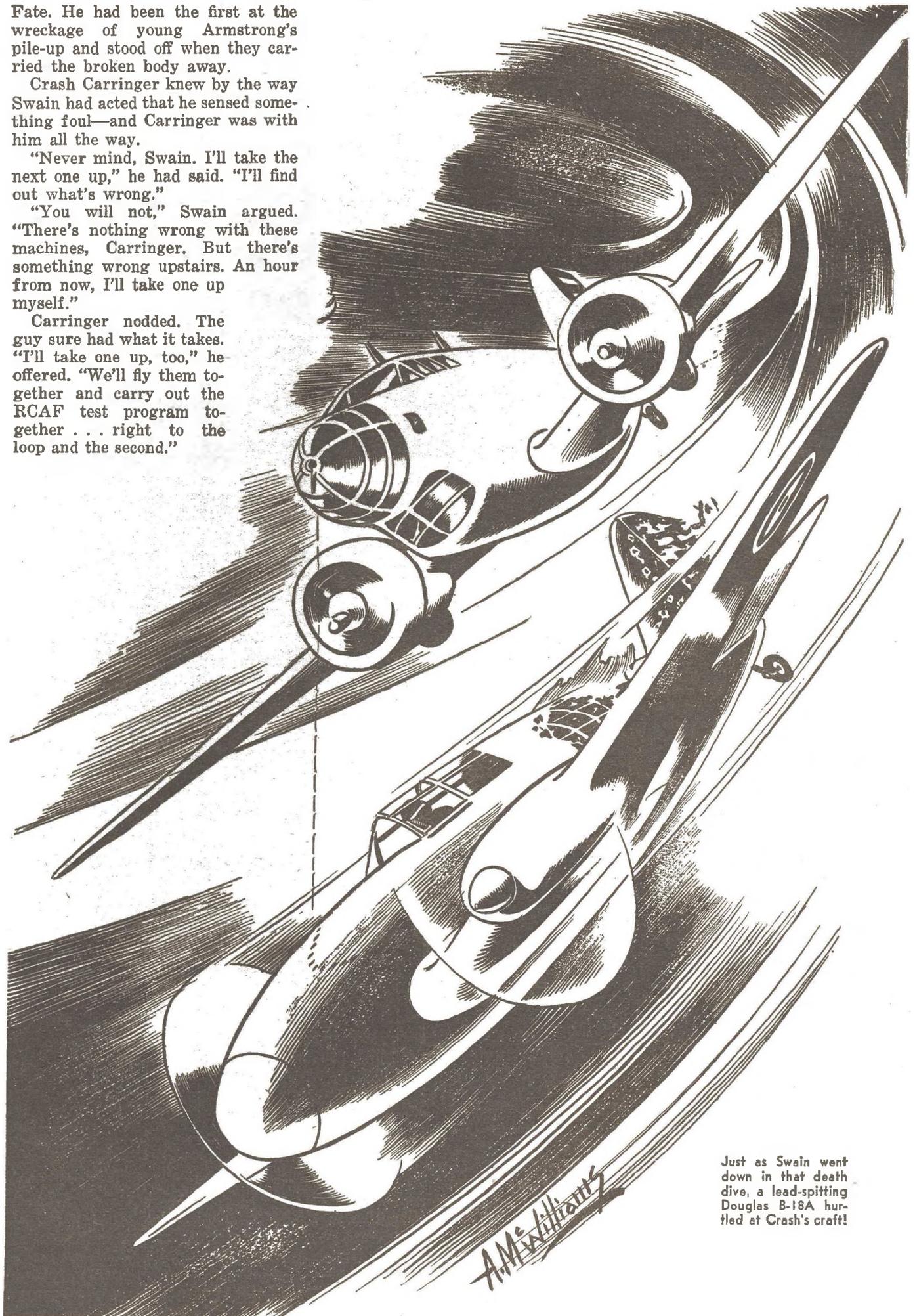
Fate. He had been the first at the wreckage of young Armstrong's pile-up and stood off when they carried the broken body away.

Crash Carringer knew by the way Swain had acted that he sensed something foul—and Carringer was with him all the way.

"Never mind, Swain. I'll take the next one up," he had said. "I'll find out what's wrong."

"You will not," Swain argued. "There's nothing wrong with these machines, Carringer. But there's something wrong upstairs. An hour from now, I'll take one up myself."

Carringer nodded. The guy sure had what it takes. "I'll take one up, too," he offered. "We'll fly them together and carry out the RCAF test program together . . . right to the loop and the second."



Just as Swain went down in that death dive, a lead-spitting Douglas B-18A hurtled at Crash's craft!

"It's not your job," Swain protested, "but it might work and give us some idea of what's taking place. Let's go and check them over from prop to fin."

There were about nine Hellfires, complete with Cutlass engines and instruments, in the storage shed. They selected the first two and with the Chief Engineer and the Maintenance Foreman they went to work. Satisfied that both planes were in perfect shape and had in no way been tampered with, they turned their attention to a study of the two that had crashed.

In both instances the wrecked Hellfires had simply nosed down straight from about 8,000 feet and had plunged full tilt into the ground within five hundred yards of each other. In both instances the fatal dive had started about eleven minutes after they had left the ground, and in both instances neither flyer had made any attempt to get clear of the planes and take to their parachutes.

They studied the flight-test cards the pilots had been filling out during the tests and in both cases they were startlingly alike.

Time of take-off. . . . Climbed to 20,000 feet in 9 minutes. . . . Checked supercharger output at that height. . . . Made notes on manifold temperatures. . . . Performed two loops, a barrel roll, and then checked all controls in neutral to test control rigging. . . . Fired all guns and checked temperatures of gun-warring units. . . . Series of sharp dives with steady pull-outs.

That was as far as either Craddock or Armstrong had got. In eleven minutes after taking off, they were on their way down to their deaths. The machines had not flamed because of the automatic crash switches and the fracture-proof tanks. There was no evidence in either wreck of sabotage or meddling with any of the controls. They had checked and tested the fuel and oil. The belts had not been unlatched.

"These guys were Okay, from a physical standpoint, weren't they?" asked Crash, utterly unable to figure it out. "I mean, they were not run down as the result of their time abroad?"

"We all went through special medical examinations in Ottawa, when we got back," explained Swain. "Then we took another to satisfy your CAB men down here. We all passed with ease."

"Well, even so, they had oxygen and the bottles were filled and the valves worked, so that at 20,000 they

could have taken a snifter if they felt like it," pondered Crash. "And you can't get monoxide in a twin-motored job; the engines are too far away from the cockpit."

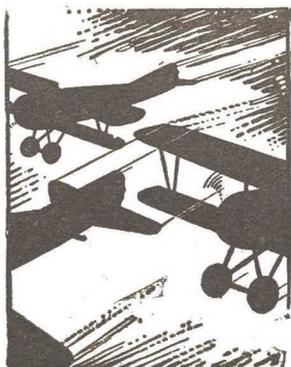
"There's only one way to find out, and that is to carry out the show just as they had done it," Swain said with deliberation. "We'll try it after lunch, eh?"

"Right. But we'll put a guard on these planes right away. We don't want any monkey business, while we are getting some grub into us. I know an old lady who runs a tourist house down the road a couple of miles. She cooks like something you read about. No one will get gay with her kitchen."

**T**HE TWO Hellfires were checked again, even though they had been carefully guarded by a group of picked mechanics. They assayed on the check list as perfect. Crash, in greasy breeches, golf stockings, and brogues was a grim contrast to Swain who was spotless.

They warmed the engines together, climbed in at the same time, and closed the hatches in unison. Then, almost wing-tip to wing-tip, they took-off across the field.

They had set their radios for communication and had ordered the field traffic man to have a complete typescript of their conversation from take-off to landing. Nothing had been left undone that might in any way give a clue to the mysterious crashes—in case another took place today.



The display they made in getting off with those amazing machines would have taken a top-billing position on any air-show program. It was a splendid exhibition of precision flying by two men who flew and handled planes as though they were part of them. The exhibition would have

drawn unstinted applause except for the tension and fear that gripped the small group that watched it. They saw nothing of the clean get-away, the synchronized hoik off the ground, or the curling bank as they came about and drew up their retractable undercarriages together.

Glenworthy Hale, president of the company, was at the head of the ground group checking everything that went on. He hunched up on the corner of the table that had been set up outside. There was a loud-speaker that gave off their conversation and checks, and the group had one ear cocked to the speaker and

one eye to the sky as the machines climbed in even circuits.

They caught the clipped accent of Swain as he spoke into his flap mike at 8,000 feet: "All well, so far, Carringer. . . . Nothing in the sky either, eh?"

"Not even a whisper of cloud," Carringer answered back as they turned again and sent down the glints of sunshine from their dural wings.

They called the time again at 15,000 and reported a thin layer of clouds but explained that it was not heavy enough to cause any trouble. They reached their 20,000 foot mark in the accepted nine minutes and stood off and checked temperatures and manifold pressures.

"All right, Carringer," Swain reported. "Oxygen working well?"

"I'll take a snifter to make certain," Carringer said, drawing up the face mask and strapping it to the lugs at the side of his helmet. He leaned over and turned on the valve and the dull, almost sweet tang of the air seemed to caress his nostrils for a minute. He checked the needle on the flow-meter and slipped off the mask.

"Okey doke, Swain," he said into the mike. "What'll we go into now. . . the two loops and barrel-roll, according to the card?"

There was a moment's delay. Swain was probably getting his mask clear. Finally, he came through with: "Righto! Power loops from about 45-degree dives."

"Take it away. I'll stay just behind your elevator."

The two Hellfires poised for the test and Carringer watched Swain raise his hand and then snap the fingers down. Immediately, both ships dived at  $\frac{3}{4}$  throttle. When the needle was well around the air-speed indicator and nuzzling the 450 mark, Swain's hand came up again, four fingers pointing upward.

Both ships went over in a trim curling loop and the two pilots were jammed down into their seats with the centrifugal force of the maneuver. Crash watched the other machine carefully, trying to discover if anything had broke up as they came around.

The two planes made the loop perfectly in infantry-drill unison and Crash waited for Swain to pull out. The horizon came down from somewhere above as it will following a loop, and Crash started to speak to his flying mate.

"You should start to pull out just a fraction earlier, Swain," he began to say. "You have a lot of weight here, you know." Then he argued quietly with himself, for he sensed that Swain was smart enough to  
(Continued on page 62)

# In the Slipstream

## Teeth In It Now

Changes in this, that, or the other phase of the CPTP have, of course, been made from time to time in order to improve this nation-wide flight training plan. But the most important change of all was a new requirement quietly tagged on the other day. All future candidates, it declared, must pledge themselves to enter military air services if qualified, thus signifying their intention of accepting this training for national defense! So there'll be no more of that "I'll learn but I won't defend" business. Meanwhile, the minimum age limit has been raised from 18 to 19 years.

## Eight Times Safer

As for safety, the CPTP ranks tops with a record of more than 100,000 hours flown per fatality in some 28,000 flight courses. That's eight times better than any previous national flight-instruction performance.

## Bombers East!

Britain will be getting plenty more of our big bombers now that the first Boeing B-17's and Consolidated B-24's have been sent on their way. For the new accented action against the axis demands 'em. There are, by the way, many more of those B-17 models than you may have thought. The B-17C, third in the series, has a rear gun position and has been streamlined by removal of the old gun "blisters." A B-17D is coming along with a supercharged cabin. And a little bird just told us that still another model, the B-17E, is now "in the works."

## Defense Notes

That new parachute troop squadron at Fort Benning, Ga., has been swamped with volunteers. . . . Another Georgia project will be a huge new anti-aircraft training center near Hinesville. . . . War jobs which fly faster, higher, and farther than any in the world have now been developed by American manufacturers. It's in the armament department that we've now got to concentrate. . . . Two U.S. air service observers are now in Egypt to study desert sky warfare. . . . Workers employed in American airplane manufacture numbered 27,000 something over a year ago. Today they total around 160,000, and the figure is expected to be 250,000 by Spring.

## 1940 Crash No. 2

"In roared a snowstorm, the beam went on the blink, the airliner wandered off its course—and crashed." That, in brief, is the story they tell of the recent Utah smash-up. Now then, if some kind of passenger para-

chute devices had been installed, could the pilot have saved some lives between the time the beam went awry and the crash? We'd say yes, if that was how it all actually happened. And the airline companies can tell us we "don't know from nothing" if they want to.

## War Angles

It must be tough to keep air victories straight in this sky war. Phil Leckrone, of Illinois, now with the American Eagle Squadron, writes of having credit for "half a bomber" and "a third of a bomber." . . . Though official statements don't offer much info, news writers tell us that more than 40 Yank flyers are joining up in Canada every week. . . . Our old Sperry bomb-sight has gone to the British. And we've finally pinned down the name of the hush-hush one we're still keeping under cover—it's the Norden bomb-sight. . . . Douglas 8A-5 attack-bombers are going to that Norwegian Anti-Nazi fighting force in Canada. . . . So regularly have German airmen attacked groups of ferried planes coming from Canada that some mighty clever fifth columning is suspected.

## Lighter Side

After the British bombed Naples, Joe Archibald remarked that they might have dropped a big "egg" into the mouth of nearby Mount Vesuvius and "let the volcano do the rest." But having seen Mount V., it's our guess that it wouldn't have any more respect for a bomb than it would a firecracker. . . . The New York Times editors still keep talking about *Paul Boulton* Defiants. Maybe we better write 'em a letter. . . . Peace, it's wonderful! Believe it or not, *Florida* lads are going to *California* to learn to fly! Our authority is Bill Wagner of Ryan. . . .

## New Gimmicks, Etc.

Rumor has it that the secret weapon used by the British in the Taranto Harbor victory was the Queen Bee flying torpedo—a pilotless, radio-controlled aerial explosive. . . . The Dow Chemical outfit has patents on a new magnesium aircraft alloy which, it's said, can be bent, rolled, and drawn without cracking. . . . Cockpit movie machines have been devised to record vital data in aircraft test flights. So the pilot no longer needs a pad and pencil. . . . Some 3,000 war schemes are submitted weekly to a special British science bureau, and virtually none of 'em are any good. One idea that did work out, however, was developed into that famed incendiary "leaf" which got the Nazis so mad. . . . An airplane windshield wiper

which can buzz up 1/2hp. has been devised for American Airlines. "It will be of special use," says the news release, "in rainy weather." Well, we'd hope so—after they went to the trouble of making the thing!

## Patter About People

Rear Admiral Arthur B. Cook now commands all U.S. Navy aircraft in the Atlantic area. He formerly was chief of the Naval Bureau of Aeronautics. . . . The coveted Victoria Cross has just gone to 23-year-old James Nicolson, RAF flight lieutenant. Though his Hurricane was ablaze and he was badly burned, Nicolson kept after the 'Schmitt that had fired him—until he peppered it into the sea. Only then did he bail out. . . . Marty Allen, last of "The Flying Allens," died the other day at 90. He was parachuting from balloons as early as 1877. And here's *something*: He made his last jump in 1924—at the age of 75! . . . Boeing Engineer Bob Minshall is the latest winner of the Musick Trophy, awarded for "the most valuable contribution to the safety of life in the air."

## Congrats To—

The Volunteer Pilots' Training Fund of 400 Madison Avenue, N. Y. C. This outfit has begun teaching 100 young men how to fly—fellows who don't have the dough. . . . Also to the Aircraft Owners and Pilots Association's new Air Guard. It's composed of several hundred airmen who at their own expense have taken standard, Army-text military flying courses. . . . Yes, and to the California Flyers School of Aeronautics, which is helping a lot by putting more than 200 Army regulars through aero training this Winter.

## Tailwind Tid-Bits

As we understand it, they're moving half a dozen houses in front of the Douglas plant runway—to get enough room for the mammoth XB-19s first take off. . . . Pitcairn's "quick hop" autogiro, now dubbed the "Whirl Wing," has caught the interest of the U.S. Border Patrol, which could use a job able to operate from two-by-four spots out in the rough country. . . . Due to the fact that they really know their aeronautics, British schoolboys rate high as air raid experts. . . . Having just hurtled a Lockheed Lodestar from coast to coast in 9 1/2 hours, G. T. Baker claims the transcontinent commercial-plane record. . . . Our moral for the month: To be on the safe side, *don't* fly with a student pilot. . . . Despite all the great advances in aircraft design, the good old DC-3 is still in there on top. TWA just ordered 15 more of 'em.



Going down! German Junkers Ju. 87 "plummet planes" start their screaming dive toward an Allied target. Ships of this type destroyed 26,000 buildings in Rotterdam in two and one-half hours.

**Dive-bombers, according to Nazi propaganda, are the most destructive war machines in the Luftwaffe. But what is the real story of these infamous craft? Lieut. McBride tells you here.**

ejector-type bomb rack that throws the bomb outside the propeller arc when the release is pulled. The Ju. 87 carries either one large bomb or one medium bomb and eight or ten small bombs in external racks fastened to the underside of the wing.

In the little town of Beauvais, which is north of Paris, the Nazi Stukas had a field day. They bombed this one small town continuously for about two weeks. This was the method used: Just after sunrise a lone bomber would come howling out of nowhere and drop his load of concentrated death. He would then pull up to about 10,000 feet and swing in a circle over the center of the town. Immediately following him would come several flights of six or seven ships, spaced about fifteen minutes apart and a thousand feet or so above the first machine.

When the Nazis spotted the original plane circling, they would break formation and approach in single file. As they reached a point directly above the center of the circle they would peel off one by one and dive through the center of the ring formed by the circling ship. In this way they could send out green pilots in all but the first machine. He would do the spotting and mark the target for them by circling.

Of course, after the first flight had dropped its bombs, there was no longer need for the target-spotting ship, as the smoke and flames rising thousands of feet become a perfect marker visible for miles.

With all this pounding, however, Beauvais was not damaged materially

# The Stuka in Action

by Lieutenant Thomas McBride

Author of "We Were Bombed in Paris!"

**I** AM NOT a military expert by any stretch of the imagination. I am, however, a pilot, and all I intend to write about are the things I saw in France. I have no intention of trying to interpret them in the cold glare of military strategy. I'll leave that to the "experts."

I was sent to France by a representative of the French Government to organize the Second Lafayette Escadrille, made up of American pilots flying American planes for France. Out of the thirty-six boys sent over, only eight of us saw action. Of the others, six were torpedoed on the way over, two were captured and are prisoners in Germany today, and five escaped from Bordeaux before the Armistice and got to England and are now flying Spitfires on the Channel patrol, and I am, so far, the only one that succeeded in returning to this country.

Since my return, I've heard so many wild and extravagant stories of the methods used to force France's capitulation, particularly in reference to aviation, that I find it almost a duty to step in and tell the truth about some of the happenings. Here I will deal with the famous—or infamous—Stuka. I'll explain all I saw of this weapon in action and will give a

few experiences my friends and I have had with dive-bombers.

**I**N THE first place, there is no definite make of plane known as the Stuka. The word "Stuka" is the condensation of *Sturzkampfflugzeug*, which means "diver, bomber, fighter" and can be applied to any ship answering those specifications. The machine to which this name is most often applied, however, is the Junkers Ju. 87. It is a low-wing, all-metal, two-place ship, powered with an inverted Junkers Jumo engine. It is capable of about 170 m.p.h. in level flight.

The pilot has two machine guns firing forward and the gunner has one weapon on a swivel mount in the rear. Between the landing gear legs is an

Snapped over Poland, this dramatic air shot shows a railroad junction being bombed by the Nazis. Note bomb craters near train tracks. (Photo from March of Time)



as much as should have been expected. You will notice that I said "actual" damage, for the accuracy of these Junkers was not of the best. It was an entirely different story, though, as far as the moral effect was concerned.

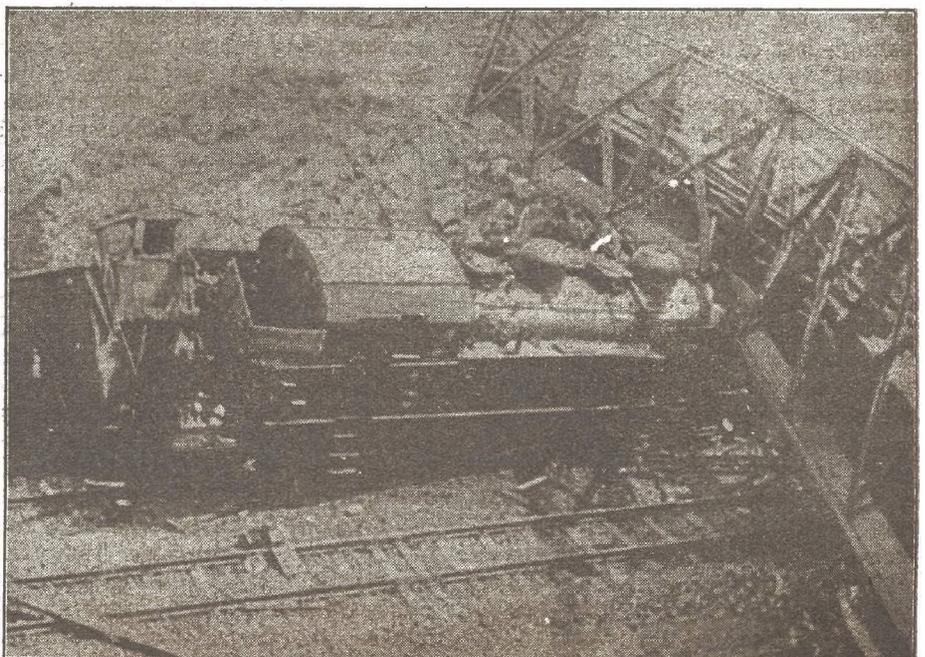
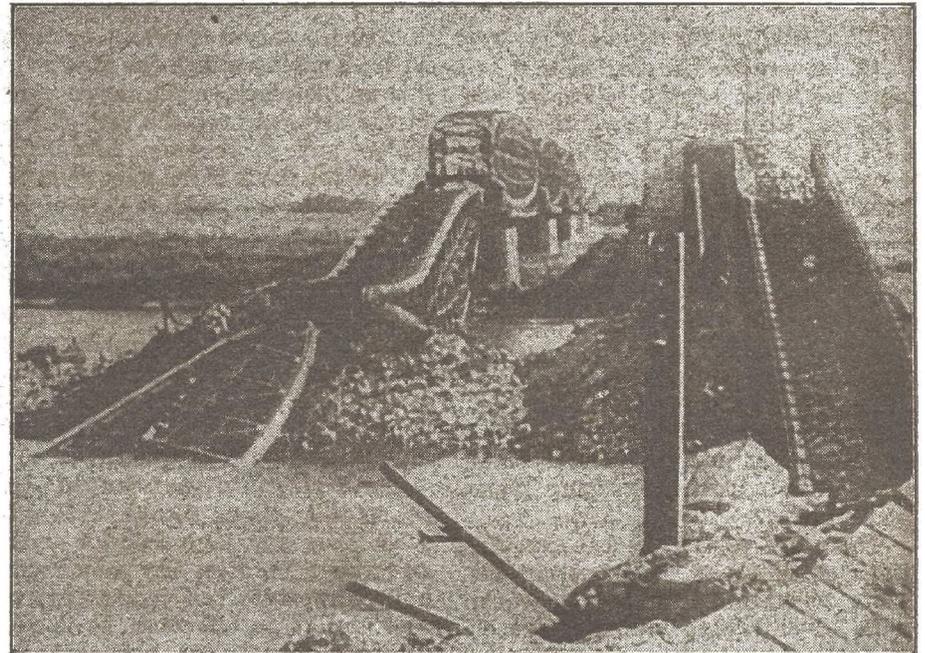
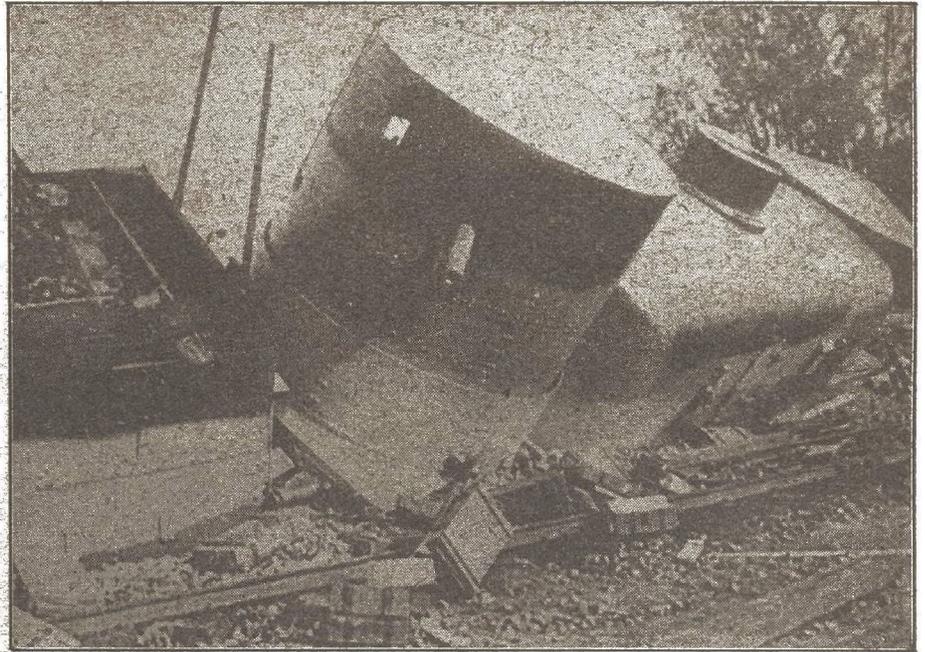
Imagine, if you can, standing on the ground and watching one of these coming directly at you. In the first place, the Ju. 87 is one of the ugliest airplanes ever put into the air. It looks like nothing so much as a railroad bridge gone mad and tearing through the sky. There seems to have been absolutely no coherent attempt to streamline the ship. The first thing you notice as it comes down out of the blue is the inverted gull wing. Usually, a cranked wing has smooth contours; on the Junkers, though, through some genius of the designer, it looks like a barn door broken in the middle.

As the machine dives out of the sky at you, the rear portion of the wing moves downward and forms flaps. Then, to slow it up more for bombing accuracy, right under the leading edge of both wings just about in the center are the diving brakes. From dead ahead these brakes look like a picket fence.

You can't imagine the horrible combination of noises made by all these things stuck out into the windstream. It sounds like a bunch of riveters having a jam session. As if that wasn't enough, the Nazis—who seem to be working on the theory that if they can't kill you with the bombs, they'll scare you to death—hang a siren on the ship to help the general din.

When this bundle of concentrated horror starts its dive it is just a speck in the sky. As it approaches at several times express train speed, the conglomeration of screams, moans, and whistles rising to a crescendo seems to precede it. As it pulls out of its dive, usually with all machine guns yammering, at about one thousand to fifteen hundred feet, the bomb is dropped from the telescopic bomb rack. And as the ship with an unearthly howl levels out, the bomb with Mr. Hitler's little screamer whistle adds its own contribution to the general racket. Then the whole thing is crowned by the shattering explosion and the screaming of fragments. Before you have a chance to recover and pull yourself together, the whole thing is repeated by the next Stuka in the formation.

These three pictures depict the havoc wrought in Poland by German dive-bombers. Top: "Against aircraft, such antiquated weapons as armored trains are utterly useless," say the Nazis. Center: The remains of a bombed bridge. Lower: A train wrecked in a Warsaw junction. (Photos from March of Time)





Complete with camouflage. A Junkers Ju. 87 sits on its home base "somewhere in France." McBride says that these ships are the ugliest machines ever built for air-war purposes.

I'VE BEEN in the middle of several of these little tea parties, and believe me it's one thing you never get used to. No matter how often you hear it, every one of those bombs seems to be aimed directly at your head. That's what I meant when I said that the psychological far outweighed the actual damage done by these dive-bombers. Although it took two full weeks to level Beauvais, the troops in the vicinity were mental wrecks at the end of that period.

I noticed that a great number of Stukas never pulled out of their dives but flew right into the ground to explode with a roar destroying plane and crew.

There are several logical explanations of this, but after putting the facts together and talking it over with several high ranking French Air Officers and other observers, one fact seemed to stick out above everything else. Whenever there was enough left of the wreckage so that it could be examined properly, it was noticed that the ship was equipped with telescopic sights. This, of course, is standard equipment on practically all military planes of almost any country and if correctly used is a boon to the fighting pilot. However, if improperly used and particularly by a green pilot—which the Nazis obviously were as witness the method of sending a competent flyer ahead to locate and mark the target for the following flights—the same telescopic sight could be a curse.

For example, the Nazi pilot, we will say, commences his dive at approximately 10,000 feet. The average French small town usually consists of nothing more than fifteen or twenty houses clustered around the intersection of two dirt roads. At 10,000

feet such a target is pretty small. In a dive-bombing attack the pilot must line up his plane on the target early in the dive, as once the dive is well under way it is very difficult to change the track if the pilot finds the target is to the right or left of his dive path.

The natural thing to do in such a case would be to use the telescopic sight to line the ship on the proper track. This is what was usually done. On the face of it, this seems to be the correct procedure and it would be if the telescopic sights were used only at the beginning of the dive.

A considerable number of the young Nazi pilots, though, evidently used these seemingly helpful sights all through the dive. Any person with normal eyesight can judge distance well enough to tell when he is getting too close to the ground to be able to pull out. It is foolish to suppose that the Nazi pilots' eyesight was anything but the best, but even the most perfect eyes in the world cannot judge distance through a telescope. That's what telescopes are for: to make distance an illusion. And trying to gauge your height from the ground, and at the same time keeping the cross hairs lined up on a specific target while traveling at nearly 200 m.p.h., is impossible.

This evidently is what happened in numerous cases in France. The young Nazis, thankful for the aid of the extra sights and not realizing that they were approaching too close to the ground, tried vainly to pull out of their dives and flew right into what had been their targets a moment before. Sometimes they destroyed the target, but usually because they tried to pull out at the last second, they missed the target

but destroyed themselves and plane.

One of the boys who was in France with me and who, incidentally, is a prisoner in a German camp at the present, according to information I have received since my return, told me a story that illustrates my point.

This chap, whose name is Pat Slanders, was born in Canada and at seventeen, with a little judicious lying, joined the Royal Canadian Air Force. After due instruction, with which he had no trouble, being already a pilot before his enlistment, he was assigned to a pursuit squadron near Quebec.

The particular squadron to which Pat was ordered was equipped with Hawker Furies, which were among the fastest military ships in the world.

One day they were sent out to do some practice strafing on ground targets. For this work the Fury had a camera gun mounted on the nose. Alongside, with the rubber eyepiece inside the windshield, was a telescopic sight.

One by one, as they arrived at the vicinity of the target, the boys peeled off and started their dive, forming a gigantic chain of follow-the-leader. They all made their first dive successfully and chandelled up and around for their second and last shot at the target, which was located on a beach.

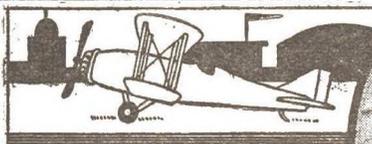
This time as they dived, Pat decided he was going to get a good shot at the target from close quarters. And as the leader started down, he realized that everyone seemed to have the same idea.

Each succeeding ship seemed to come closer and closer to the target. Pat, who was fourth in line, held his

*(Continued on page 74)*

# HAPPY LANDINGS

BY ARCH WHITEHOUSE



## The RAF's Eagle Squadron

SO MUCH misinformation has been offered and so many wild statements have been made concerning Americans who are flying with the British Royal Air Force that we feel it is about time someone made a special effort to present the true facts of this most interesting case.

At this writing there are 34 Americans in the Eagle Squadron, many of whom are typical soldiers of fortune who have seen air action in other wars since 1914. They wear regulation RAF uniforms, but are pleasantly identified by small patches on the upper portion of their sleeves which carry the initials E.S. and in addition have an embroidered American eagle bearing the usual olive branch and spears in its claws. Some of the pilots have seen action with other British squadrons, but have been re-assigned to this group at their own request in an effort to build it up and make it worthy of the spirit that originated it.

This new American squadron is a successor to the old Lafayette Escadrille of the last war. An attempt was made to reorganize the Lafayette in this war. As a matter of fact Charles Sweeny, who was a first World War Lafayette man, served with the French in the present war. Sweeny is now a Group-Captain in the Eagle Squadron and ranked as the Commanding Officer.

Sweeny, with his nephew Charles Sweeny, long a resident of London, is actually a Colonel in the U.S. Army but he has given up all that to help organize this valiant band of American volunteers in Great Britain. Young Sweeny, I believe, is the noted amateur golfer.

The real Commanding Officer, however, is W.E.G. Taylor, a native New Yorker who now holds the British rank of Squadron-Leader—and we wish some of these birds would stop writing stories about Captains, Ma-

jors, and Colonels in the Royal Air Force; there are no such ranks. Taylor is an ex-U.S. Marines pilot and had service with the Fifth Fighting Squadron aboard the aircraft-carrier *U.S.S. Lexington*. He was in England a short time before the war broke out in 1939 and immediately resigned his Marines commission and offered himself to the RAF. They gladly accepted him and he saw service aboard the ill-fated *Glorious* before she went down in the Norway



fiasco. He also served aboard the British carriers *Argus* and *Furious*.

Taylor was for a short time with a British Purchasing Commission in the United States which was responsible for a substantial order for Brewster fleet-fighters.

Today, then, there are 34 Americans with the British in the Eagle Squadron. They range in age from 19 to 48. They're all trained pilots with at least 250 hours to their credit. According to recent available information, they all passed through the refresher training stage with flying colors and the Eagle Squadron is now outfitted with Spitfires. In fact, a short time ago they were shown in newsreels with their new fighters, diving, zooming, and stunting for the benefit of the camera.

Americans in the Royal Air Force Eagle Squadron do not lose their American citizenship as the result of a special decision on this subject by the State Department. No oath of allegiance to the British crown has been demanded, either. We hope this very important point has been made clear.

And now for the effort to forestall the hundreds of letters we expect to get from readers who have read this far. We hope they will all clip out the next paragraph and paste it in their hats for future reference, even though it is not presented as a "want ad."

The recruiting office for the Eagle Squadron is located at the Mount Royal Hotel in Montreal. Those who have pilot licenses and who wish to volunteer for the Eagle Squadron, or for other American volunteer squadrons that may be formed later, should make formal application to the Eagle Squadron at the Montreal address. Those accepted will first be drafted to Great Britain where they will be commissioned as Pilot Officers which is comparable to a 2nd Lieutenancy in the Army. The American squadron will be engaged in fighting duties but its aircraft will not necessarily be American. The squadron will be run and organized according to RAF policy.

American volunteers who are not pilots but who wish to join in other capacities may also apply, but their applications should be sent to Air Vice-Marshal L. D. McKean, Jackson Building, Ottawa, Canada. Preliminary selection will be made in Canada but all training will be done in England.

The writer does not know what the medical or educational requirements are. All available information on this matter has been given here, and it is hoped that the presentation of these facts will be accepted as news not as an appeal for volunteers.

# "I Knew de Gaulle"—Lt. Pinkham

by Joe Archibald

Author of "Crow de Guerre," "Leave La Fraunce," etc.

THE CURRENT World War has spawned a long list of military experts, correspondents, and commentators. Every night there are at least a half a hundred armchair strategists diagnosing Dictatorial devilment for the radio customers. Perhaps most of us did not hear the broadcast from a little station in Iowa a few weeks ago. A veteran of the first world melee that night took to the air again—but without his Spad. He used a mike at station YHOO and he spoke of the Frenchman who refused to believe that the Fleur-de-lis is to be permanently choked out by the vegetable used in making sauerkraut.

"I met this General de Gall in 1917," piped the guest speaker for YHOO. "Even then the Fr-er-General was gettin' ready to revolutionary future guerres. Me an' de Gall was what you would call strange bed fellers an'—haw-w-w-w-w-w. I ain't tryin' to steal Fred Allen's stuff as I am only a stranger here myself. Well, it was back in 1918 like I said before Hitler started smokin' opium an'—"

\* \* \* \*

BUT LET US tell Phineas' story. His time on station YHOO was limited, anyway.

It was the tag end of a particularly tough flying day outside of Bar-Le-Duc. On the drome of the Ninth Pursuit Squadron eleven Spads were be-

ing patched and pilots' nerves were singing in all four keys.

"I am goin' to Barley Duck," Phineas said to Bump Gillis. "I need soothin' syrup an' giggle water. Anythin' to take my mind off the guerre. I want to see doves an' maybe read poetry an' hear a dame's soft voice. I have got to git the beast out of me."

"I am too tired and scairt to go anywhere," Bump groaned. "I want to be let alone. Did you see that wing come off my Spad just when I got down? Do you think we'll git bombed ag'in t'night?"

"If we do I will not feel it," Phineas sniffed. "I am goin' to git spiffed to the gills. I hope I can git that motorcycle without the C.O. seein' me. Adoo."

Fickle Fate was waiting in Bar-Le-Duc with a blackjack in her hand. Phineas Pinkham had no sooner dropped off his mechanical bug when he saw the mademoiselle in front of The Cafe De La Vache Rouge. Never had Phineas seen a more delectable member of the distaff side. And he had been at the *Folies Begere*, The Columbia Burlesque in the U. S., and a bathing beauty pageant at Cannes.

"I don't get it," Phineas mumbled, rubbing his eyes. "Alone, too, an' looks very sad. Maybe she was stood up. Well, a rabbit would not lift its nose up an' pass by a nice lettuce leaf. Haw-w-w-w-w-w-w-w!"

Phineas passed close to the brunette who was dabbing a big dark peeper with a little crumpled ball of linen.

"Ah-er," Phineas began, "bon sour,

mad'miselle. Voose ate trays unhap-pee, wee? I am not Polly and Anna both ce swat monself. Vooley voose avez ze coneyac avez moy, non?"

"*M'sieu. Non*, eet ees not ze vin zat weel help *pauvre Lisette. Non non*. She ees despair an' nozeeng weel help. Only some beeg brav' *homme*."

"I am not a midget," Phineas chuckled. "Haw-w-w-w-w-w! Tell eet to me ze troubles, mad'miselle. We go an' have ze coneyac at ze same time."

The French girl began to tear her *mouchoir* to pieces in her little fingers.

"Maybe ze beeg Americain do zomething for *pauvre Lisette*?"

"Who is it vous want killed?" Phineas grinned. "If it is even ze Frog cabinet or all of the—"

"*Non*. Ha ha. Lisette she ees blackmail. One time eet ees she write ze lettairs to a man. Zen she ees vary much in love weeth anothair man who she wants to marry. A ver' jealous man with ze mind that ees narrow. So zees firs' man he say he weel show ze lettairs to ze second man. *Comprennez*?"

"It is not easy but I think I do," Phineas grinned. "Where is the blackmailer, huh?"

"He ees een ze cafe, *M'sieu*. He have ze black zoot an' ze black tie like ze artiste. He have ze beeg eyes an' beeg head," the French girl sniffed. "He does not dreenk ver' moch so eet ees no use to try an' geet ze key."

"Huh? Oh, yeah," Phineas said. "You have tried to git him boiled an' git the key to where he hangs out, huh? Er-well—will he take one drink?"

"*Oui. Vin blanc*."

"The dirty bum!" Phineas said. "There is nothin' lower than a blackmailer unless it is an M.P. I will have a try at the Frog. Is he inside there?"

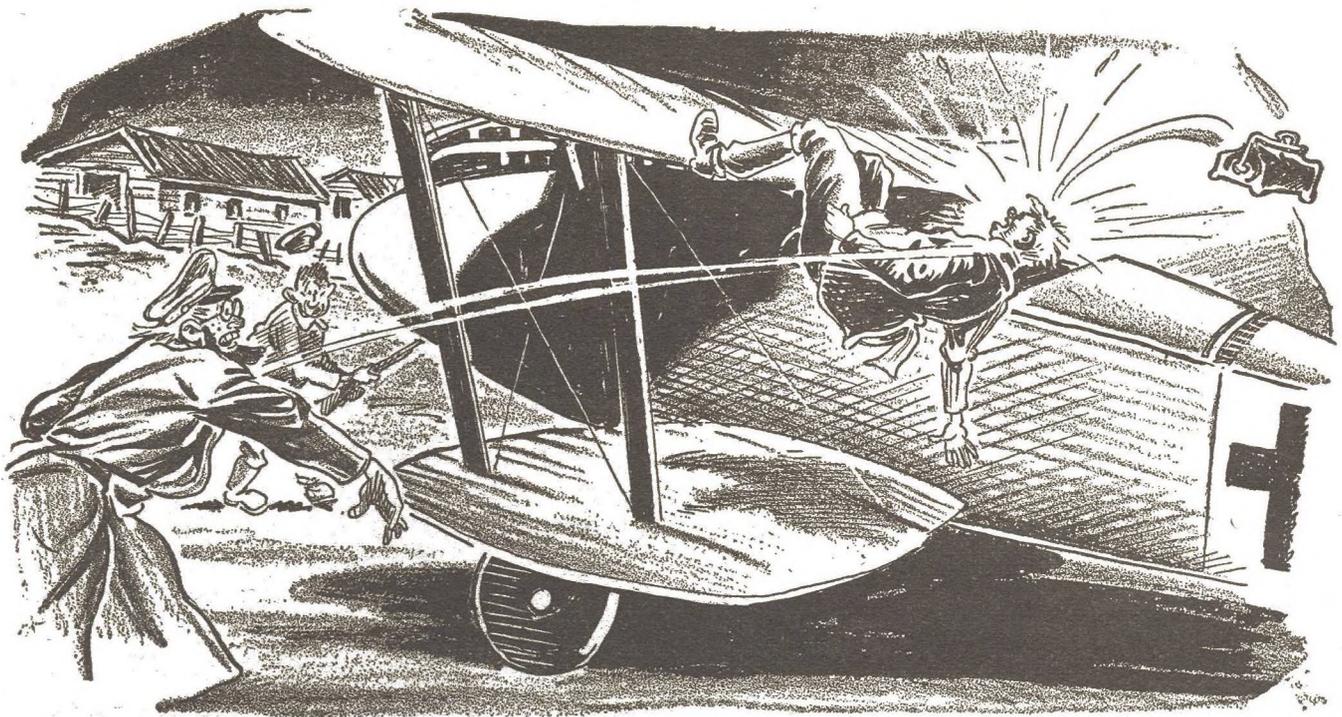
"*Oui*. You get ze key, *M'sieu*, for *pauvre Lisette*?"

"It is duck soup. Why, I have stole iron crosses off Kraut Herr Oberst's wishbones," Phineas said proudly.

Phineas, gripped with chivalry, strode into the estaminet. He made his way toward a table and sat down. Across from him was a very queer looking character. The man's head was shaped like a light bulb. He had long hair, combed down the back of his neck, and his eyes were hidden behind a pair of thick lensed cheat-ers. He wore sombre black and his tie

Charlie de Gaulle explained his system to Phineas. "Now, *M'sieu*," he chirped, "one of us mus' get out of zis Boche camp an' take ze plan to ze French."





was patterned after that of Mike Angelo.

"Bon sore," Phineas said. "I hope you are ze poet as I am a U.S. aviator an' want peace an' quiet for awhile. It is awful up there fightin' them vons. Garcong!"

The waiter came over. "I will have Burgundy," the Boonetown miracle man said. "How about you, Franswat Veeyon?"

"Ha ha," the Frog said. "Francois Villon drinkin' Burgundy. Ah, you mak' ze jok'. Jus' one vin blanc for Jean Bouballaise, M'sieu."

"One will be plenty," Phineas said. He let his hand drop into his pocket and it came up with a little cigarette case. He put it down on the table and waited for his wine.

The Frong lifted his glass to Phineas and toasted La Belle France and Uncle Sam. A little pellet dropped into the glass of vin blanc, and for a long time after that a certain Frenchman believed in the adage of the skuldiggerians to the effect that the hand is quicker than the eye.

In two minutes the Frog was asleep. Phineas timed himself before he got up and lifted the Frenchman out of his chair. He half-dragged Jean Bouballaise out of the cafe and the keeper of the oasis gaped.

"Zat ees funny. Nevair have I seen ze man dreenk zo much before."

"It is his birthday," Phineas said. "He tol' me. I will git him home."

**MAJOR GARRITY'S** stormy petrel finally got outside with his victim. Lisette stood under a light at the entrance to an alleyway and she quickly ducked out of sight. Phineas carted the citizen hit by the Mickey Finn into the alley and Lisette quick-

ly went through the dupe's pockets. She found the key.

"I go now an' search hees rooms, *oui. Merci, mon brave* Lieutenant," Lisette crooned. "He won't wake up, *non?*"

"He still has three hours to caper and gambol with lambs in dreamland, mon cherry. You could look up his family history you have so much time. Haw-w-w-w-w-w! He will wake up awright an' will not know what happened. Well, bon sore. Partin' is such sweet sorrow. If you do not happen to marry ze second bum, look me up. It is Lieutenant Pinkham of The Ninth Pursuit. Adoo."

Phineas went on his way. After sampling the stock of two more bistros, he got on his motorcycle and rode back to the drome. The hour was late. He walked into his Nisson and found Bump Gillis wide awake in his bunk.

"Hello, Bump," Phineas said. "I saved a life that was going to be wrecked. It is a caution how I feel. Not since I was made a Eagle Scout back in Boonetown an' did my firs' good deed have I felt so big an' clean. Instead of M.P.'s after me, blowin' their whistles, I hear *her* voice sayin' I saved her from a fate worst than death. Ah, it is a voice that sounds like the pluckin' of a harp string. It is Listte callin' an'—"

"O-oh, yeah?" Bump gulped. "It is Mercedes you mean. That strummin'

Phineas had to get to that Alb job—and there was only one way to dispose of the Jerry pilot in a hurry. He tossed his pill-carrier, slamming the Heinie bohunk smack on his noggin!

is Boche an' I'm gettin' out of here."

"No imagination," Phineas sniffed. "His nerves are snappin'. Poor Bump. I—"

Bla-a-a-a-a-a-am! Bo-o-o-o-ng!  
The Nisson shivered and crabbed a foot out of line. Phineas was deposited in a corner on his empennage and his dental assembly rattled inside his head. He got up and dived out through the door.

Wha-a-a-a-am! Blo-o-o-oey!

The Boonetown trickster ducked a piece of tree limb, got his mouth filled with dirt just as he reached the entrance to the dugout sapped for just such emergencies. He had an argument as to the right of way with another patriot and he won it with a hard right hook.

"I don't like to be shoved," Phineas snapped as he joined those already in the underground shelter. "That bum is half inside and half out. Somebody pull him in."

"D-don't bother," a dangerous voice yelled above the crump of Heinie eggs. "It is only me! Pinkham, you will help them ground hogs fill up shell holes when th-this is over. S-slug me, will ya?"

"Er—the C.O." Phineas choked out. "If I shot into a herd of elephants in Africa, I would hit a walrus at the North Pole. It is the breaks

**Phineas handed that Frog a Mickey Finn to put him in dreamland—but it stripped the gears of his mental assembly at the same time. The Pinkham scion finally found the cure in Kaiserland and came back with the title of "Herr Doktor" and a plan that was an even worse headache for the brass hats!**

I git. I was not myself Major as the bombs—”

The Gothas went away a few minutes later. The Equipment Officer wiped his sodden brow and kissed a Bible he carried. “It is only because they ain’t good shots,” he said. “If anybody ever invents somethin’ in them bombers to line up what they are supposed to hit, this gare won’t last long. An airdrome wouldn’t stand three days.”

“You mean a ring sight fixed onto a kind of chute like rockets go out of, huh?” Phineas offered. “Haw-w-w! It is silly. I bet you think there is life on Mars.”

“I just was supposin,” the E.O. growled. “You shut your face!”

Major Garrity and his pilots went out onto the field to look over the damage. Two of the bombs had tagged the tarmac and the others had hit on the fringes of the drome. Groundhogs poured out of a shelter with Sergeant Casey yelling at them. Major Garrity called Casey over and pointed to Phineas.

“Give the smart Alex a shovel and put him to work. Take off that tunic, Pinkham, so’s Casey can insult an officer without bein’ busted for it. Ha-a-a-a-a-a-a-a!” Garrity howled. “I will teach you to smack me.”

“I don’t need lessons,” Phineas hurled back. “Who could miss that anvil you call a chin? Haw-w-w-w-w-w-w!”

Phineas Pinkham suffered humiliation for fully two hours. It was long after midnight when he trudged to his hut with a sore fuselage and blisters as big as grapes on his hands. He deposited his weary frame on his bunk and grabbed at welcome sleep.

The next day brought a carload of Frogs to the Ninth Pursuit. Four of them wore the uniforms of the French Republic. One of them was clad in black burlap and he wore a tie that belonged with an easel and a set of paints. A General of Foche’s army banged his way into Major Garrity’s office and he demanded that a traitor be turned over to him at once.

“Ah-er-take it easy,” the C.O. said. “What did you say again? I got a bad left ear, mon amy. Did you say ‘traitor’?”

**N**OT A MAN got a chance to cough out a word for the next ten minutes. Jean Bouballaise took the floor and nailed himself to it.

“*Oui!* Ze man who help ze German spy. Ze accomplish of ze German

mad’moiselle. Ze wan weeth ze beeg buck teeth an’ weeth spots on ze faze! He help ze spy to rob me, Jean Bouballaise! He geeve me ze dreenk weeth ze knockout an’ when I am open ze eyes once more, I go to ze room an’ ze plans zey are gone. For two years I work ze eyes to ze bone an’ I have eet almos’ feenished when—pouf! She ees gone!”

“What is?” Garrity yelled. “Stop dancin’ and pointin’ an’ tell me what the h— is the matter here. General, I have got a war to fight an’—”

“Thees man ees a very famous inventor, Major,” the Frog General said. “He was workeeng on ze sight for ze bombs, so ze Allies they do not mees when they drop ze bombs—”



“Wha-a-a-a-a-a-t?”

*Oui.* Ah, *Mon Dieu. Sacre bleu!* the inventor moaned. “Ze plans. I trust ze Americain offizier. I say I have eet wan dreenk an’ eet puts me to sleep, M’sieu. When I wake up, ze key ees gone. I go to ze room. Eeet ees upstairs down an’ every’eeng ees all mess up. Ze plans are gone. Some-wan fin’s out I am workeeng on ze bomb sight an’ ze spies zey fin’ out an’ the Germans send ze woman to make eet ze goo-goo eyes at Jean Bouballaise but I do not trust ze no one. Zen ze Americain or ze spy weeth ze Americain uniform—”

Major Rufus Garrity clamped his hands to his head and howled like a Comanche Indian.

“Shut him up!” the C.O. finally said. “General is this guy on the level?”

“*Oui, Monsieur Garrity.* This ees

terrible. I come las’ night to get ze invention an’ M’sieu Bouballaise tells me eet ees stolen. *Mon Dieu!*”

The Old Man dropped into his chair and began to think calmly. A beautiful woman . . . Buck teeth . . . A Mickey Finn. There was only one answer when you added up the three.

“The Lieutenant is out on patrol,” Garrity groaned. “We will have to wait. I hope a Boche gits him in the groove this time. What can save him? A bomb sight! Only last night, General, my E.O. said— Believe in mental telegraph—telepathy General? That crackpot wouldn’t sell out the Allies, but who’ll believe it? The U. S. D.A. will trace his ancestry back. They’ll find he had a great-great-great-Grandfather who fought with Attila or Frederick the Great. That’ll cook him. Just go outside and wait, gentlemen. I got to be alone. Oh-h-h-h-h, that fathead!”

The Boche had proven themselves tough customers against the early Spad patrol. Phineas came in just a few seconds after Flight Leader Howell and the Pinkham crate’s power plant was steaming like a swamp on a foggy morning. The tail fin looked like a sampler and there was hardly enough fabric on the top wing to cover the roof of a doll house.

“Does he look like a German spy?” Garrity growled at the Frog general as the two men bore down on the pilot who was getting out of the pit.

“Never can tell, Major. That’s what makes them so dangerous,” came the reply.

Lieutenant Pinkham was flattered with the attention accorded him.

“Bon mattin, Major. Another high rankin’ officer an’ I would think I was goin’ to git decorated. It was an awful time we had. Them Albs breed like mosquitos, an’ as fast as you knock one off, three more come in. Why, what have I done? Didn’t I make a good landin’?”

“Did you meet a dame in Barley-Duc last night?” the Old Man wanted to know. “Sure. I am twenty-one. My ma knows I go out with girls. I am single an—haw-w-w-w-w-w!”

“You slugged a guy’s drink, huh?”

“I did. He was a blackmailer. The dame wanted to marry somebody else an’ he held letters she wrote an’ he was goin’ to show ’em to—” Phineas bit off his words. The Old Man’s vocal chords were drowning them out, anyway.

“You sap! That was a Kraut spy.

(Continued on page 75)

# JOIN THE FLYING ACES CLUB

## Honorary Members

President and Mrs. Franklin D. Roosevelt  
 Vice Pres. John Nance Garner

Casey Jones	Rear-Admiral Byrd
Wallace Beery	Col. Eddie Rickenbacker
Al Williams	Colonel W. A. Bishop
Col. Scaroni	Major G. A. Vaughn, Jr.
Major von Schleich	Willy Coppins
Lieut.-Col. Pinsard	Glenn L. Martin
G. M. Bellanca	Walter H. Beech
Capt. B. Sergievsky	Zack Mesley
John K. Northrop	Dwane L. Wallace
Colonel Roscoe Turner	Josef Veltjens
Charles W. A. Scott	Col. A. P. de Seversky
Richard C. DuPont	Donald W. Douglas
Mal. A. W. Stevens	Major C. C. Mesoley
Capt. O. A. Anderson	Clarence D. Chamberlin
Major Fred Lord	Mrs. Charles S. Baylus
Lieut.-Col. Theodore Roosevelt	

## Official Charters

F.A.C. Flights and Squadrons are recognized at GHQ only after they have received their official charters. These illustrated documents, printed on fine paper and portraying various features in the field of aviation, are excellent for framing and display. Their inspirational text is in keeping with the high ideals and aims of our Club. Each charter application must include a full list of proposed group members and their addresses. Each of these members must hold his regular F.A.C. card, obtained by clipping and sending in the membership coupon printed on this page. If applications are approved, Flight Charters are issued for 25c, and Squadron Charters for 50c. Send the correct fee with your application. It will be returned if the Charter is not granted.

## WIN YOUR WINGS

Save This Whole Coupon for  
**CADET OR PILOT**  
 insignia of the F.A.C.



Gold finish Actual size

All members with Official Membership Cards are eligible for Cadet Wings. This coupon, with two others and 10c, entitles members to Cadet Wings. Do not send this coupon alone. Save it until you have three. Then send them in all together with a self-addressed envelope and 10c to cover cost of wrapping and mailing.



Silver finish Actual size

All enrolled members who have won their Cadet Wings are eligible for Pilot's Wings. This coupon, with four others and 10c, entitles Cadets to Pilot's Wings. Do not send this coupon alone. Save it until you have five. Then send them all together with a self-addressed envelope and 10c to cover cost of mailing.

### Send the Whole Coupon

regardless of which kind of wings you wish. Separate sets of coupons are needed for each insignia. Canadians send 15c, or three International Reply Coupons. Overseas readers send 1/-, or five Reply Coupons secured at the Post Office. Only one pair of either kind of wings to a member. If yours are lost, send 25c for new ones (2/-overseas). [21]

## Do Your Full Share to Advance Aviation

To advance the cause of aviation, over 50,000 men and women, boys and girls, have banded together to form the FLYING ACES CLUB.

It is the easiest club in the world to join. Just clip the membership coupon, fill out, and mail it to GHQ with a stamped, self-addressed envelope. Your official card will then be forwarded to you. After joining, you can quickly win promotion and the right to wear the various insignia of the Club.

In the FLYING ACES CLUB there are two kinds of local organizations, known respectively as Squadrons and Flights. A Squadron must have eighteen members, including its leader. A Flight must have a total of six. You can start either of these groups in your own community by enrolling your friends in the Club, then applying for an official charter as detailed in the column at the left. Each member must hold an F.A.C. card.

Meetings and activities are conducted among the squadrons and flights according to the wishes of the members. GHQ has established no rulings in this respect, nor are there any dues or red tape whatsoever. The entire idea of the Club is a common meeting ground in an international organization for the lovers of aviation in its various phases. Many local Squadrons and Flights hold regular contests and public events. Many hold weekly meetings for model building, and instruction, and even regular flight training.

## Awards and the Aces Escadrille

After the membership card, and Cadet and Pilot's wings, comes the Ace's Star. This is awarded for enrolling five new members, using, of course, a separate coupon for each. As an Ace, you are then eligible for membership in the FLYING ACES ESCADRILLE. Then you may win truly handsome awards. Among these are the Distinguished Service Medal and the Medal of Honor, two of the finest decorations that have ever been designed.

Any member who has reached the rank of Ace is eligible for membership in the FLYING ACES ESCADRILLE, an advanced organization which replaces the old G-2 unit and opens the way for participation in a definite program contributing to the forward movement of aviation.

To enroll, an Ace must apply direct to Escadrille Headquarters, giving his name, age, address, rank, and highest award already won in the Club, and enclosing a stamped, addressed return envelope. If he is approved for membership his instructions will be forwarded. Membership in the Escadrille is limited to American and Canadian members only, at present.

## For a Limited Time



Beautiful  
**STERLING SILVER**

F. A. C.  
 Ring

**ONLY 50c**

We have on hand not more than one hundred official F.A.C. rings which are being sold, while they last, for .50 cents apiece. This beautiful STERLING silver ring is self-adjustable to assure a perfect fit. Formerly offered at \$1 apiece, the rings will be shipped post-paid anywhere in the U. S. and possessions to those whose requests arrive first. Take advantage of this excellent offer now. As a loyal Clubster you'll be proud to own one!

## Keepers of the Log

In order to keep in touch with GHQ, every squadron should appoint a member with a facility for writing as Keeper of the Log. It shall be the duty of the Keeper of the Log to send in regular reports of interesting doings of his squadron. His is an important job, because it is only by means of interesting squadron reports that life can be given to the Flying Aces Club News.

Photographs, too, are an important consideration for the Keeper of the Log. Either the Keeper himself, or any other member with a camera, should keep a photographic record of the squadron's activities, for reference purposes, to show prospective new members, and to allow a selection of pictures to be sent to GHQ for reproduction in our monthly Club News pages.

The cost of film, prints, etc., would be a legitimate charge against the squadron's own treasury or could be covered by members' contributions. A number of flights and squadrons, incidentally, send us prints which have been taken, and completely developed and printed by foto-fan members of the outfit.

## Correspondence

In all correspondence with GHQ where a reply is desired, enclose a stamped, self-addressed return envelope with your letter. GHQ receives thousands of letters weekly, and cannot undertake to answer those who do not heed this rule.

## Official Supplies

Due to popular request, we have ordered a new supply of F.A.C. paper penants. These attractive stickers, which have glue on the back so that they may be stuck onto car windows, etc., sell at 6 for 10c, or 20 for 25c.

We also have a new supply of swell embroidered wing insignia that'll look top-notch on your sweater. They're made of the official Flying Aces Club colors, blue and gold, and are available at 25c each. Order now before the supply is exhausted.

(Overseas prices: Penants, 20 for 2/-; wing insignia, 1/6.)

## February Membership Application

I, the undersigned, hereby make application for membership in the Flying Aces Club. I agree to live up to its rules and regulations; to foster the growth and development of aviation; and cooperate with all other members in the work of spreading aviation information, building up confidence in flying for national defence and transportation. I will aim to build up the Club and its membership, and do my best to win the honors that the Flying Aces Club offers.

My name is .....

Age ..... [21]

Street .....

City ..... State .....

Do you build airplane models? .....

Mail this application, enclosing a self-addressed, stamped envelope. Canadian and overseas readers send the application, self-addressed envelope, and an International Reply Coupon worth 5c, secured at the Post Office.

**FLYING ACES CLUB, 67 W. 44th St., New York**

# Flying Aces Club News

**H**ELLO, CLUBSTERS! What say you leave your ships out there on the F.A.C. tarmac and bounce right into our hangar? All here? Okay! We're holding a meeting of the biggest and best flying club in the Yunivoice—the FLYING ACES CLUB! Yes, fellas, the letters that have been pouring into headquarters every day have certainly made your ol' N. A. feel right proud. Squadrons are being formed everywhere—North, South, East and West—and that includes Canada, too. Don't know whether it's the war in the air, aviation headlines, or what have you. But, by golly, when Clint checked back on his log book and saw the increase in the number of Clubsters that three-pointed down on this tarmac during the last twelve months, the "dog ears" of the pages almost stood up in sheer astonishment.

Anyway, it's been a great year for the F. A. C. membership drive. Think of it, you feather sprouters, there are more than *one hundred thousand* of you—all over the world! But Clint hain't satisfied yet. It's the million mark—or bust!

So before we get into the real news, your N. A. wishes to remind you FLYING ACES readers that joining the Club is the easiest thing in the world to do, and it's never too late—young or old. So c'mon, all you Cadets,

Mr. Old Year has at last been Kayoed and Baby New Annum is the champion! But is Clint sorry? Not a bit, fellows. Instead, he's mighty glad—because we've got twelve more issues to gab and make more friends before again warbling "Auld Lang Syne"!

*by Clint Randall*

National Adjutant, Flying Aces Club

Pilots, Aces, Escadrillions, let's bind together and strive to increase the membership to the FLYING ACES CLUB on to its next one hundred thousand!

**C. O. ROSS SMYTH** is still on the job up there in Toronto, Can., and recently sent us the thirty-third report of his Squadron's activities. His letter reads:

"Our guest speaker at the first meeting for the Fall season was Mr. James Davidson, inspector and engineer for the Fleet Aircraft Company at Fort Erie, Ont. He drove over a hundred miles to address the members of our unit. At the end of the session the Club presented Mr. Davidson with a little gift in appreciation for his interest in our work.

Among those present at the meeting were Bob Grossman, Ronald Bell, Malcolm Inglis, Milton Patterson, Murray Sommers, Bud Wyatt, Bill MacLaren, Ben Bramble, Niel Gil-

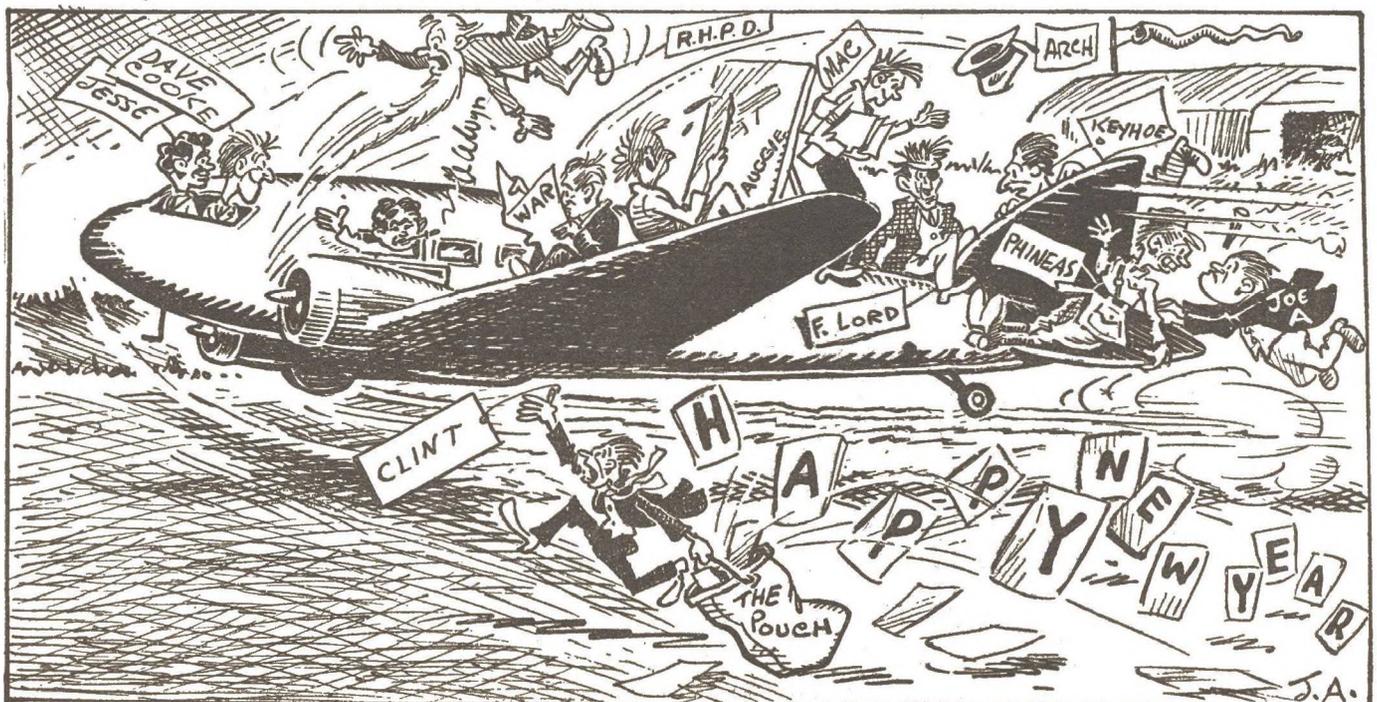
lespie, Gord Batley and Ross Smyth. Guest Speakers were Mr. Frank Walker, Business Manager of "Commercial Aviation," and Miss Helen Harrison, one of the foremost flying instructresses in the Empire.

"The reason for not reporting this meeting earlier is that Sec.-Treas. Malcolm Inglis is employed by the DeHavilland plant here in Toronto and has been on night shifts. Norman Dawber is now serving with the Royal Canadian Air Force in Trenton, Canada's largest military aviation center.

"Former member Bob Currey, who moved to Niagara Falls, Ont., has obtained his private pilot's license. Ben Bramble, who has not missed a single meeting since the inauguration of the Squadron in January, 1938, was presented with a silk scarf as a token of recognition for his splendid record."

As you other Clubsters probably know, the Toronto Squadron is one of the most active organizations in Canada. And it might be a good idea for some of you other C. O.'s to have various aero personalities visit your club meetings and address the members. The best method would be to

Hey! What's going on here? Well, bless our buttons if it isn't the whole F.A. gang—once again taking-off to wish you F.A.C.'s a Happy New Year! And it looks like Pilot Dave Cooke and Co-pilot Jess Davidson gave 'er the gun too soon, 'cause Clint missed out entirely, Joe Archibald and Don Keyhoe are just hangin' on, and Ed Smalle was left in the slipstream. But Arch Whitehouse takes it easy through it all—still reading his war news!

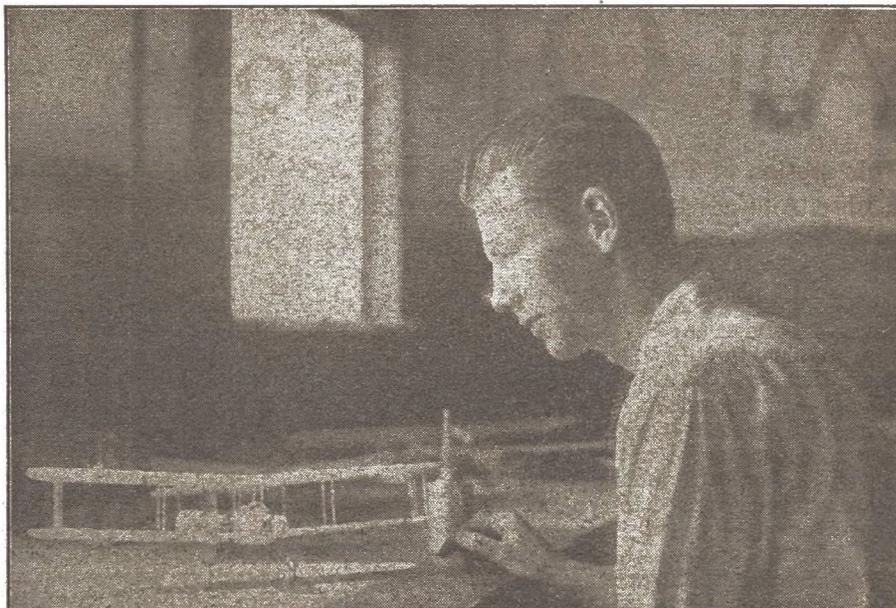


form a committee of three and visit the person in question and ask him. Your N.A. is quite sure these "regular guys" will go out of their way to help do it. Since we're all working for the same "boss" they'd be more than glad to further the cause through educational talks and tours around the local airport.

**Q**UITE a number of letters addressed to the N. A. during the past year seemed to be bent on finding out whether Clint still gets a kick out of flying. Now that's a fair question and deserves a fair answer. And just as we were about to go to press, a letter from Ed Mathiew, of Yonkers, N. Y., arrived, wanting to know about the whole gang up here and when we manage to do a bit of eld hopping to keep fit.

In answer to your question, Ed, you're right about Clint being a pilot. Your N. A. has a commercial rating and he buzzes around most of the neighboring New York air fields. Also, Arch Whitehouse has been flying since the days of the First World War. Don Keyhoe is a Reserve member of the Marines and at this moment is standing by for immediate call. Joe Archibald is a Navy man who has had wide experience. Model Editor Jesse Davidson is an active amateur pilot and Editor Dave Cooke also manages to get his hand in whenever time allows. As for Major Freddie Lord—ah, there's a flyer's flyer. He flies everything from Cubs to winged machine gun nests.

So you see, Ed, FLYING ACES has one of the best group of experts any aero mag can boast. As far as paying a visit to the F.A. office, I can only tell you this: The boys here are busy all day long with very little time to devote to "visiting firemen," so to speak. Your N. A. drops in once a week to pick up mail, say howdy to the gang, and then dashes right out again. Since trips to the office are so irregular, it would be difficult for Clint to make a definite appointment. However, if there's something important on your mind, the boys up here



Shhh! Genius at work! Here's Henry Struck (Hank, to you) popular F.A. model designer, pondering over some intricate problem. Probably about that super-super for the 1941 Nationals.

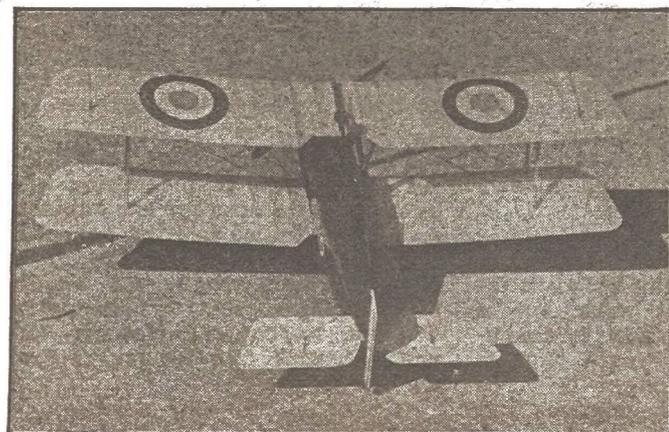
will be glad to help you out.

A short note from Charlie "Chuck" Barranco, of Chicago, Ill., advises the F. A. headquarters of a new unit to be called "Flight 13" because it has been organized with thirteen members. All meetings will be held at Charlie's home, 1321 Elmdale Avenue. Chicago readers who live in this vicinity are welcome to join the club. Following is a list of the original thirteen members: Bob Casey, Santo Abbato, Tony Hibbs, Bob Peterson, Tom Wright, Edward Houlihuro, Robert Dremmer, Earl Podowsky, George Hughes, Norman Rose, Bob Miller, John Dickens, and Charles Barranco.

From Frisco, Texas, Ben Parker writes: "I've tried unsuccessfully to get boys interested in aviation and model building by organizing a club and holding contests. So when our school library started to subscribe to new magazines I spoke to the teacher in charge about listing an aero magazine among them. She asked me which one would I suggest and I told her FLYING ACES. I believe the new issues of F. A. will make these fellows sit up and take notice."

Well, Ben, don't fret if your efforts were to no avail in attempting to get the boys to join the bandwagon. We're sure, though, that they will if you

Club member Edmund Wood, Jr., of South Bend, Ind., turns out to order such excellent jobs as this built-up S.E.5. The models are made to a scale of three quarter inch to one foot.



keep plugging. And thanks for suggesting F. A.

Cecil Dorminey, of 1211 Mortimer Place, Atlanta, Ga., would like to join the local squadron and would appreciate its secretary informing him if members are still being accepted.

Clubster Robert Flapnick, of Ambridge, Pa., who is down with rheumatic fever, writes us of a new movement in his district which is going a long way in making the folks air minded. The movement, called "The Flying League of Pennsylvania," is aided by a plan through the cooperation of local merchants who pass out "Flying League" stamps. Six hundred of these stamps entitle the holder to one flying lesson. Bob has saved up 400 to date and hopes to be well enough soon to get his first lesson.

Well, Bob, the N. A. admits this plan of collecting aviation stamps is an original one. It would be a swell idea if some national food concern would offer such a plan. The experience of flying at least once would then come within reach of thousands. And here's hoping, Bob, that you get well in short order so's you can take that hop.

**B**ECAUSE of the many letters that piled up during the Xmas rush, GHQ has been so loaded down with other pressing duties that it's been impossible for the Brass Hats to get together on the choice of this month's Distinguished Service Medal winner. Besides, when the DSM letters were separated from the rest of the pile and opened, a hasty glance showed that the photos were pretty poor. Tsk, tsk, tsk.

Now, fellows, you know this contest is the easiest possible way to win a handsome DSM, and we're really

(Continued on page 73)

# All Questions Answered

This section of FLYING ACES is at your service. So if you have an aero query, fire away and we'll answer it here. All questions will be considered in the order they are received. For a personal reply, send stamped, self-addressed envelope.

**"Canadian," Campbell Ford, Ont., Can.:**—I believe the St. John Model Shop, of 644 Portage Avenue, Winnipeg, Can., will be able to take care of your supply needs. Most build-yourself model motors are fairly easy to assemble. I am quite sure you will be able to put one together if you study the directions carefully before you start work.

**Don Jacobson, Jerome, Idaho:**—Your clipping on the plane with a retractable wing is very interesting. I seldom see the magazine you clipped it from, but the idea is not new by any means. Several such ships have been built and flown abroad, and there is some future to the idea, but so far the expense and the weight of the wing-retracting gear does not fully warrant its use even though it does add materially to the speed.

**Anthony Coppa, Philadelphia, Pa.:**—Sorry, but I do not know the official speed of the Lockheed XP-38. The newspapermen, who never know, say it does "over 400," and that is as near as we shall get to it until the Air Corps says different.

**Bob O'Brien, Maplewood, N. J.:**—Yes, the autogiro has been stunted and looped on many occasions. Anthony Fokker died of natural causes, as far as I know. The word Stuka is a contraction of a very long German word meaning dive-bomber, which has been picked up as a catchword by newspapermen. I believe 14-Gs is the hardest pull-out ever registered in a test dive.

**Bob Fulton, South Gate, Calif.:**—The Beechcraft factory is at Beech Airport, Wichita, Kansas. You can get Brewster plans from the Brewster Aeronautical Company, Long Island City, New York.

**Billy Kellam, Morgantown, W. Va.:**—The Boulton & Paul Defiant does not carry twenty-one guns. Some models carry but four, those in the gunners turret, and others carry six, where two fixed guns are provided for the pilot. There are no air cannon aboard the Defiant.

**Joseph Welch, Villa Park, Ill.:**—The *Air Corps News Letter* is issued by the office of the Chief of Air Corps, Washington, D.C., which is where all correspondence should be directed. I do not know whether it is available to all citizens. Army

markings never use a company call-letter. You simply must know the designation to determine the make of ship. In the Navy, however, the maker is always indicated. SBC-4, for instance, means Scout Bomber Curtiss-Type 4.

**Stuart Bergstein, Midland, Mich.:**—FLYING ACES was first published in October 1929. The Blackburn Shark's top speed is 152½ m.p.h. The Stinson-105's ordered by the French were to have been used for liaison work.

**Ellie H. Silverstein, Dorchester, Mass.:**—Class "A" powered models use engines up to and including .20

desire and it is just another version of the flapping wing idea which was abandoned years ago.

**Charles Shaughnessy, Brooklyn, N. Y.:**—Sorry, but the 1936 issues of F.A. are sold out. I suggest you get Hamilton's *Complete Model Aircraft Manual* if you want World War model plans.

**Herbert Tims, 180 Stafford Street, Timaru, N. Z.:**—I am quite certain many of our readers would like to correspond with you and exchange model plans. They also might be interested to know that you desire plans of the Laird Solution, Curtiss Hawk P-6E and the Beechcraft bi-plane.

**Bob Frasier, Buffalo, N. Y.:**—Modern aero engines of certain types can run for about 600 hours without a complete overhaul. In the case of the Kerry Keen stories, which are presented purely as fiction, we feel that we allow plenty of time between adventures for Barney to get the ship in shape again after any undue battering. About the wear and tear on the lawn when the Bullet is being moved in and out, you must remember that Keen also has boats and cars there, and any tracks noticed from the air might be mistaken for normal around-the-estate traffic. Sorry you didn't like Barney's silk-hat detective idea.

**Sid Brady, Beardstown, Ill.:**—We appreciate your desire to swap magazines and photographs, but we cannot undertake to start a column of that sort in this magazine. It has been tried too many times before and it usually turns out unfortunately. Suppose you made a swap with someone in California, for instance and when you received your article in the deal it was not satisfactory; you would feel justified in complaining to us who run the department. I suggest that you insert an advertisement in our Classified columns and do it in a business-like manner.

**James Chocomey, New York City:**—I am at a loss to understand why so many readers ask what subjects should be studied in High School if they wish to become Airline pilots. I repeat once again, you should know algebra, geometry, chemistry, English, mechanical drawing, science, Spanish (for foreign routes) and geography.

THE END

## And Now We'll Ask You a Few

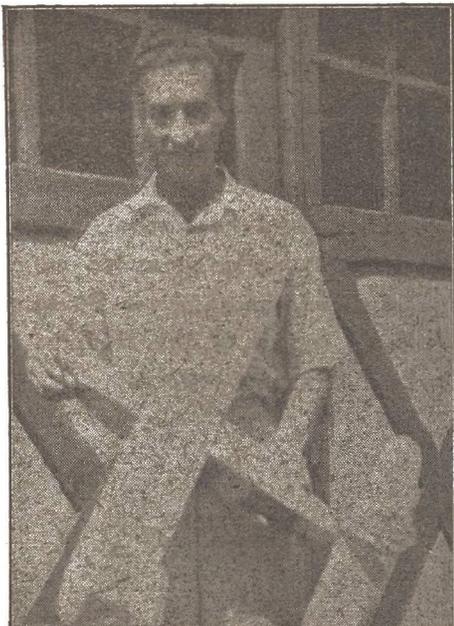
- 1—How was the first German Zeppelin destroyed in the last war?
- 2—Do Americans who volunteer to serve with the Royal Air Force lose their citizenship?
- 3—What is the Fairey Fulmar?
- 4—What is the outstanding weakness of American war planes?
- 5—How many of the following authorities have seen actual air-war service? Major Al Williams, Major G. F. Eliot, Col. Charles A. Lindbergh, Major Jimmy Doolittle, Col. Charles Kerwood, Col. Clarence Hartney and Col. Roscoe Turner.
- 6—What is a hydrovane?
- 7—How many American war planes have been sent to Europe since the beginning of the war?
- 8—What are the performance specifications of the Bristol Blenheim?
- 9—What is the actual strength of the Army Air Corps?
- 10—Where do enemy air pilots daily sit down and eat their meals together?

(Answers on page 76)

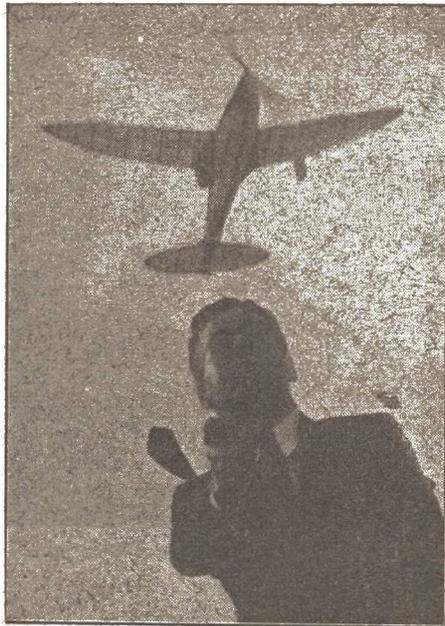
cubic inch displacement. Class "B" engines are listed between .20 and .30 inches, and Class "C" engines are between .30 and 1.25 cubic inch displacement.

**Ken Bishop, Victoria, Australia:**—Yes, I have since remembered that there were three D.H. Comets in the Australia race. Sorry, I had forgotten the other two—and who wouldn't after Scott's and Black's show?

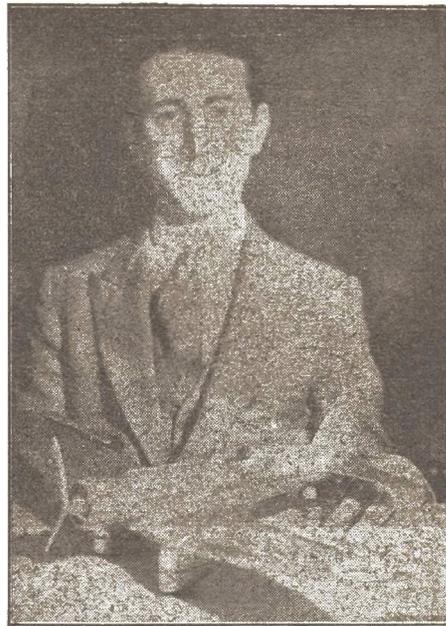
**A. G. Ganvilnowski, Irvington, N. J.:**—Your new wing design is interesting and might work, but it seems like the hard way to accomplish anything. It would require tremendous motor power to force the wing through the motions you



Herb Lozier, of Brooklyn, N. Y., forsakes his cardboard models for the moment to pose for this shot. Herb's contributions are popular with many FLYING ACES readers.

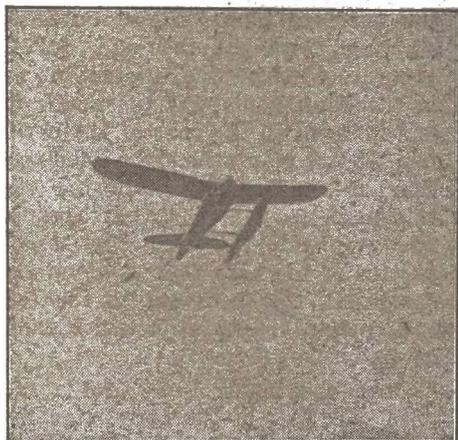


Here's Herbert K. Weiss, of Phoebus, Va., enjoying his favorite outdoor sport. H.K.W. is associated with the aeronautical experimental division of the NACA at Langley Field.



One of the finest producers of miniature metal aircraft is Joseph Battaglia, of the Bronx, N. Y. Leading airlines use his excellent models for display purposes.

# With the Model Builders

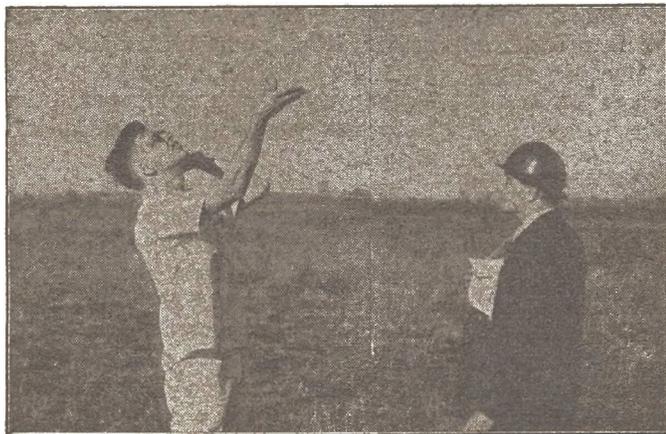


Joe Kopas, of Socorro, New Mexico, an oil geologist by profession, sent us this shot of his six-foot gas job. The floats were built from plans appearing in Nov. 1940 F.A.

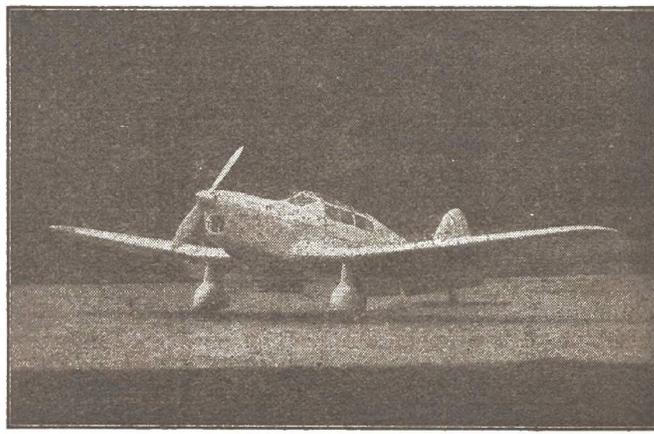
This is your page, modelers. Flying Aces welcomes all photo contributions from its readers everywhere. You may send as many pictures of your model planes as you wish, but they must be clear and contrasting. In your letter, or on the reverse side of the photo, write any interesting data concerning the craft and also your name and address. Address letters to Model Editor, Flying Aces, 67 W. 44th St., N.Y.C.



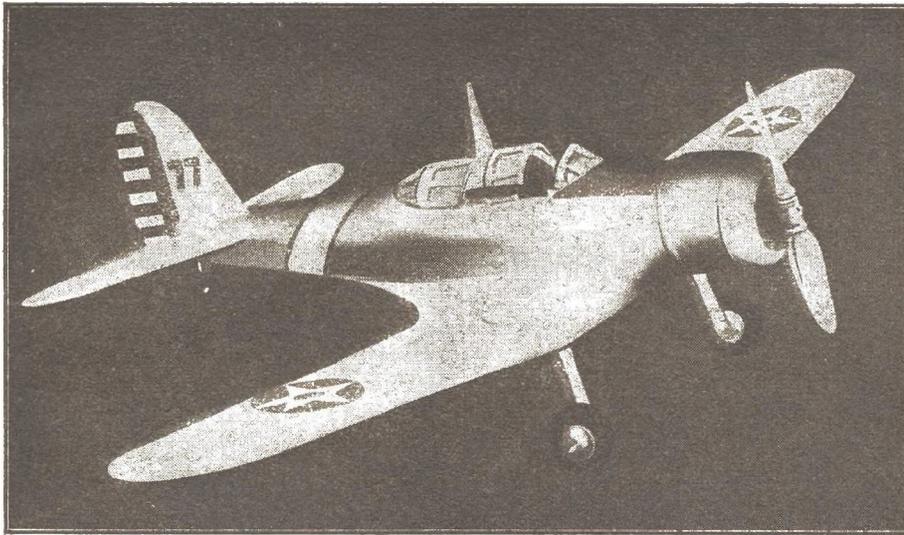
Michael Diaz, of New York, a member of the Air Screws Club, prefers baby engines. He's shown here with his seventh Atom craft which he flew at a Creedmore, N. Y., meet.



The latest fashion in headgear is effectively modeled by Timer Joe Nelson at the Chicago Park District's recent championship contest. Walter Fromm, the lad on the left, isn't feeling for raindrops. He just launched his ship which remained aloft to win the cabin event.



This beautiful built-up scale job is a replica model of the English Percival "Vega Gull." Although the builder did not give his name, notes on the reverse side of the photo state that the ship has folding wings, complete cockpit layout, movable controls, and hatches.



Clean lines and simple construction will attract the modeler who prefers a display job.

Many U.S. fighting planes will soon sport the tri-color bull's-eye of the RAF under our recent 50-50 armament policy. And here Abe Shaw presents replica plans for one of those new ships—a flying scale model of the Douglas Export-Attack.

by

Abe Shaw

# DOUGLAS EXPORT-ATTACK

WITH the announcement by President Roosevelt of a program to share military plane production with the RAF, the British Purchasing Commission decided to forego certain available types and wait for the latest production models which are now rolling off the final assembly line of several aircraft factories. Among the newest types destined for service "over there" are the Douglas 8A-5 Export-Attack Bombers.

These ships are modifications of the U. S. Army Air Corps' types A-17A which were originally manufactured by the Northrop Aircraft Company, recently absorbed by the Douglas Company and now known as Douglas's El Segundo (the second) Division.

Externally, the latest version appears to be identical to the A-17A. Several changes in its interior and stepped-up power rating, however, have given the 8A-5 a good edge over its predecessor. The fuselage is all-metal aluminum alloy with semi-monocoque stressed skin. The wings are also of stressed skin metal construction. Trailing edge flaps are hydraulically operated as is the retractable landing gear. Tail surfaces are cantilever, of metal construction, with fabric covered rudder and elevators. Tail wheel is full swiveling.

Armament consists of seven machine guns and room for a substantial bomb load. Power is supplied by a Wright Cyclone which delivers 1200 h.p. and pulls the ship along at a top speed in excess of 265 m.p.h. Recently the Norwegian air unit of the RAF received several dozen of the 8A-5 ships.

## FUSELAGE CONSTRUCTION

THE TYPE of construction used in our flying replica of the 8A-5 is a smooth outer skin which simulates the metal covering used on the actual ship. Another feature is the hollowed out interior which in itself makes for extreme ruggedness. Such type construction, though, has its drawbacks, inasmuch as plenty of rubber power is necessary to keep the model aloft. However, the body is stressed to take it.

Select two knot free soft balsa blocks of identical proportions. Cement them together only lightly because they must later be separated. Trace the side view of the fuselage on both sides of the block and remove all excess wood with either a sharp knife or a small block plane. When this portion is shaped, trace the top view outlines onto the partially-shaped body and continue to cut away until semblance to the actual fuselage is obtained. Use successive grades of sandpaper to smoothen the surfaces. While this is in procedure, check from time to time for alignment with the fuselage cross-sections

which are shown on Plate 2. These are cut from stiff paper.

Carefully pry apart the blocks with a long, thin-bladed knife. Now, make another inside template by following the series of dotted lines shown on the fuselage plans. These outlines, starting from the tail end, follow about 1/16" below the outside line up to the glass housing, underneath it, and in front to the rear of the cowling. At this point, the cross-lined section of the cowling indicates the thickness necessary at that area to add weight to the nose. The under portion of the body follows along the same wall thickness out to the tail end, where cross-section lines indicate a thicker area.

Once the inside lines are traced onto each half of the body, start by scooping out chunks of balsa. Work carefully and do not attempt to remove chunks that tend to tear up other parts of the body. Use a sharp knife and keep handy an adequate supply of rough sandpaper. When nearing the bottom of the shell, put aside the knife and do the rest of the cleanup work with sandpaper. Complete the inside job with smooth sanding.

Apply at least three coats of dope to both inside and outside of each shell and brush over lightly between applications. Join the shells by applying cement along the inner sides of each half. Press the shells together firmly and then wrap with stout rubber bands. Allow the shell to remain in this state for several hours. After the wraps have been removed, shape the tail skid and glue into position as shown on Plate 2.



The little ship banks gently as she gains altitude.

From the three views given for the tail plug, carve a perfectly matched piece to fit snugly as shown. Attach the rear hook after it has been shaped from a piece of .020 wire and bend the rear portion so that it hooks in properly. Cover the area with cement.

The nose plug may be purchased at your local model supply house. Of course, before boring the hole in the cowling be sure the plug is handy so that it may be measured for a tight fit.

The next addition to the fuselage is the cockpit enclosure. Strips of bamboo, sliced to the width called for on the side view drawing, are bent into half-round hoops with their ends imbedded part way into the fuselage. The work required to build up the "glass house" is quite intricate, so be patient with the bamboo as it is quite temperamental. Allow the various connecting strips to harden after the cement has been applied.

While it is not entirely necessary, the forward portion of the cockpit enclosure may be made to slide forward and backward. The portion between the celluloid covered framework is sheet balsa which is bent to shape while damp, cemented, and pinned down until thoroughly dry. The window may be bored by using a sharp pencil point to force an opening, and then worked carefully until a hole of the required size is turned out. This is, of course, done on both sides of the hatch. To achieve a realistic framework effect for the "glass top," apply black paint directly over the bamboo framework with a small brush, following the outlines carefully.

#### FILLETS AND WINGS

**T**HE FILLET sections are shaped from medium balsa. Being a very important part of the model,

they should be carved to shape with extreme care and accuracy. Study the front, top, and side views of these parts as you progress with your work. Use the rough and smooth sandpaper alternately until the desired scalloped effect is obtained. Following this, apply a healthy application of cement to the inside of each fillet stub and to the sides of the shell. Press the stubs into position and rub



Fully wound, Abe Shaw's model climbs plenty steep. Loss of altitude does not result when the craft recovers from a stall.

all the displaced cement around the surrounding area. Allow several hours to dry. To prevent possible slipping, temporarily insert a couple of small pins.

A plan view of the left wing panel is shown complete. To make a copy for the right panel, merely go over the outlines with a hard pencil, applied with sufficient pressure to make its shape visible on the reverse side of the page. This outline may then be used as a construction layout.

Before proceeding further on the wing structure, get the center and leading spars organized. Note the splice joints. Be sure the correct amount of dihedral angle is measured before actual cementing.

After the leading edge spar is cemented in place, it may be rounded

off to conform with the general shape of the airfoil section.

Ribs No. 1 and No. 2, nearest the root, are cut to shape from  $\frac{1}{8}$ " thick sheet balsa. The remaining six ribs for each panel are made from  $\frac{1}{16}$ " sheet. Pin the center spar down on your work table, set each rib in its respective position, and cement them in place. Add the trailing edge after it has been sanded to the required shape and place it flush against the edge of the ribs, using cement.

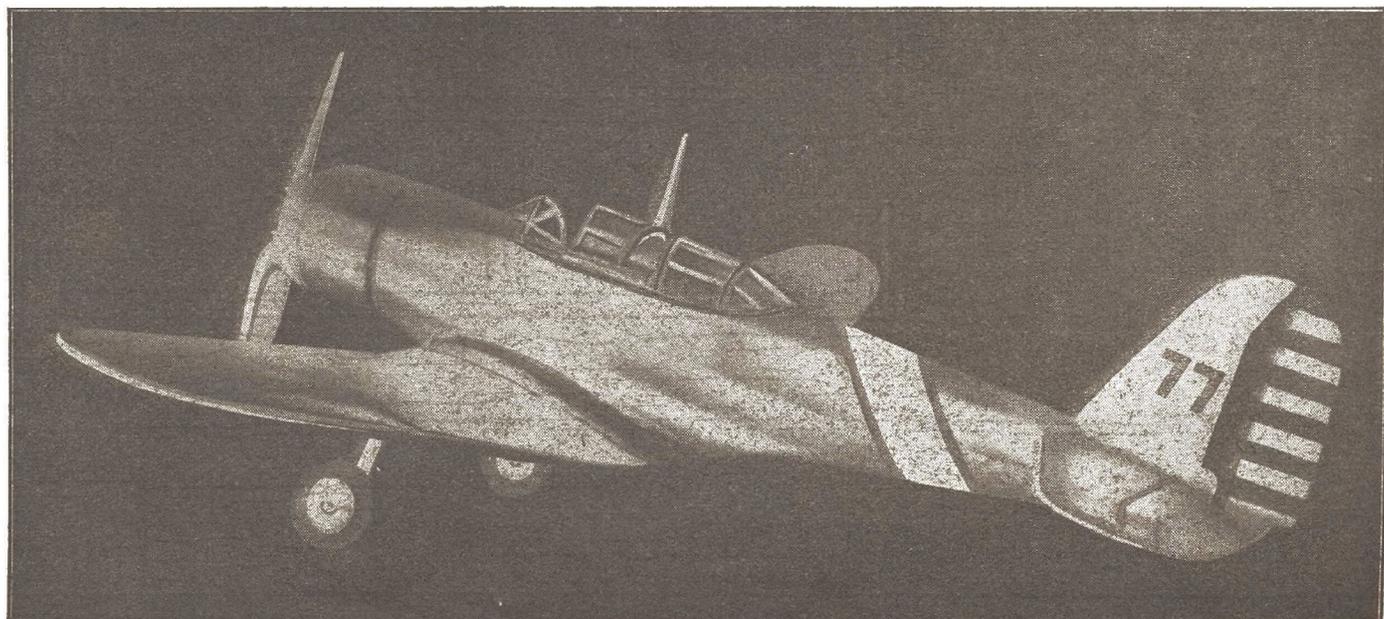
Next, the leading edge is placed in position, cement applied, and set aside to harden. The tips are cut to size and shape after their outlines are traced directly from the plans. Sand all the rough spots and make sure all connecting joints are secure before covering. Upon completion of the skeleton framework of both right and left panels, cover the wings carefully with fine Japanese tissue and water spray to shrink the paper. Apply one or two coats of dope—and that completes the wing.

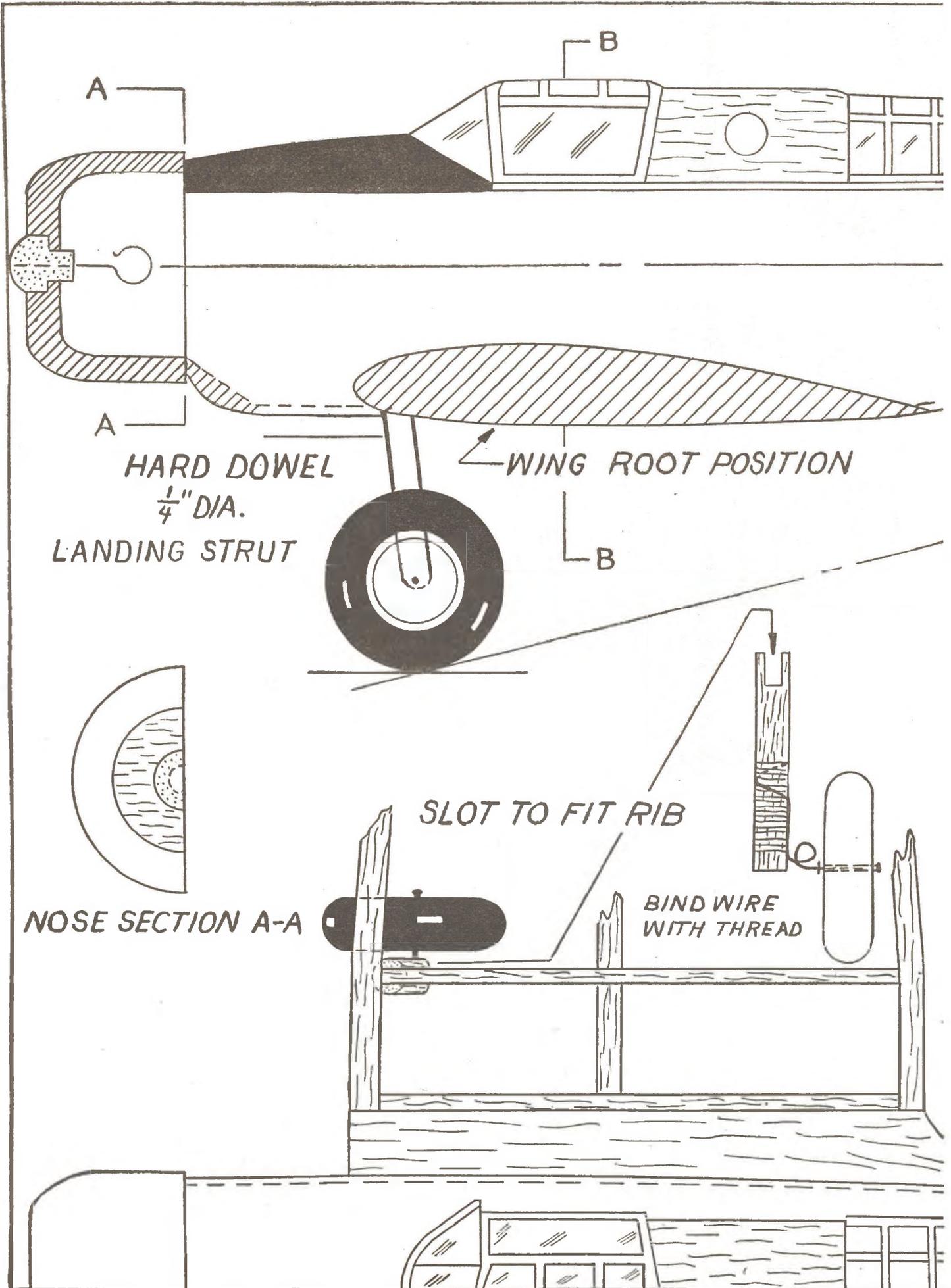
#### TAIL AND LANDING GEAR

**R**UDDER and elevator surfaces may be constructed directly from Plates 2 and 4 since they are full scale. The innermost rib of each half of the stabilizer is cut to size from  $\frac{1}{8}$ " square balsa. This is done so that there will be a greater glueing area at the point where the stabilizer rests, against the sides of the fuselage. The leading edge, center spar, and trailing edge, as well as ribs of the stabilizers and rudder, are cut to size from medium balsa measuring  $\frac{1}{16}$ " by  $\frac{1}{8}$ ".

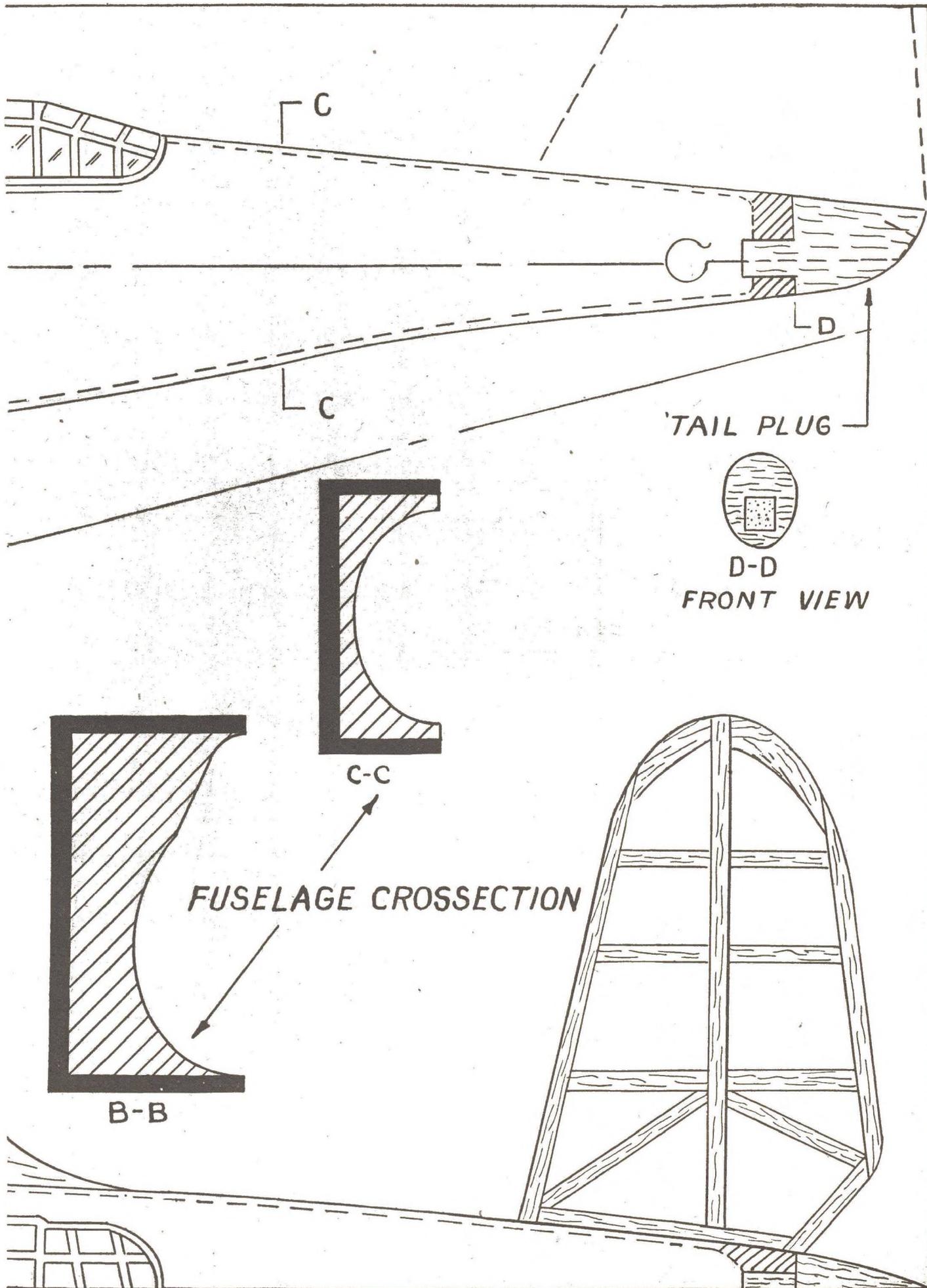
Apply the cement carefully at all joining ends, keeping the parts flat  
(Continued on page 80)

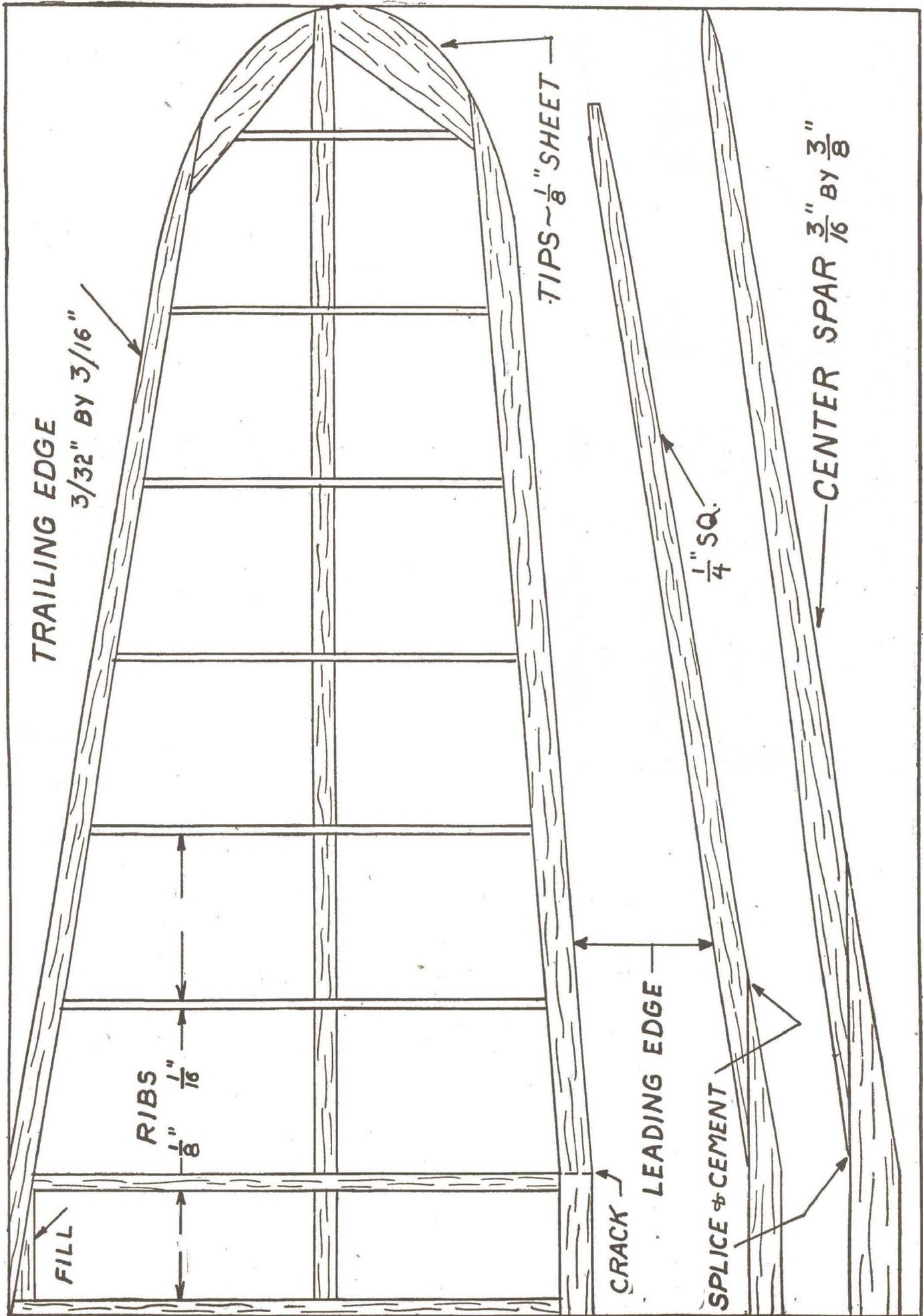
Under the glare of photofloods, the Douglas Attack replica seems realistic enough to be the actual ship ready for a night flight.



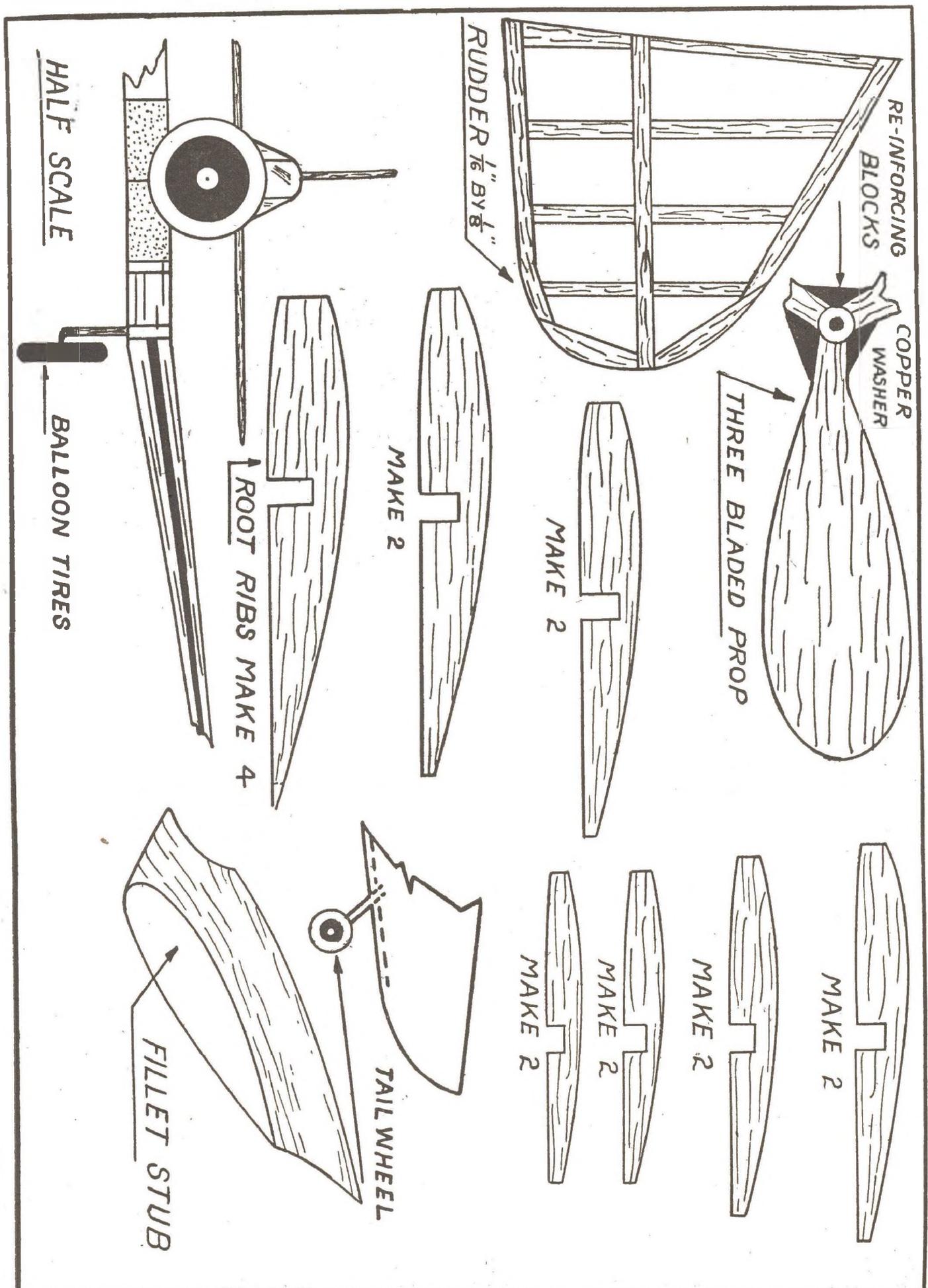


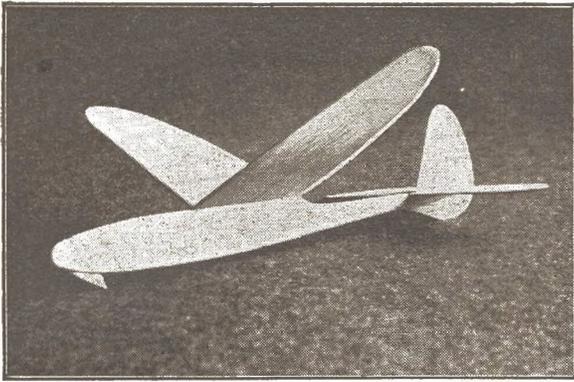
PLANS FOR THE DOUGLAS EXPORT-ATTACK—Plate 2





PLANS FOR THE DOUGLAS EXPORT-ATTACK—Plate 4





This three-quarter side view displays the graceful lines and well proportioned surfaces which make "Whisper" a glider of outstanding performance.

**A**LTHOUGH not listed as a *type* in the AMA rules, catapult-launched gliders are nevertheless widely used at local contests. For sport, "sling shot" soaring offers a thrilling diversion from the old heave and hope method. An extra "something" is required in the design of this type of glider, since the speeds of the heavier jobs vary from more than fifty miles an hour to the regular gliding speed of less than fifteen miles an hour.

The heavy catapult gliders used for contest work are very sensitive to adjustments and a beginner, flying one of these jobs for the first time, would have a pretty fair chance of washing it out. It was to give the novice necessary experience to prevent such occurrences that "Whisper" was designed. With a span of only nine inches, "Whisper" embodies on a miniature scale all the soaring qualities which the big gliders possess.

#### CONSTRUCTION AND ASSEMBLY

**T**HE SMALL size of the pieces used in this glider make it possible to utilize scrap balsa. All wood is selected quarter grained stock and of the size indicated on the plan. Wings and tail surfaces should be shaped from fairly soft balsa, while the fuselage is shaped from heavier stock in order to take the knocks.

Make tracings of all the parts and cut them to outline shape. The tail surfaces are sanded to a streamline pattern and the wings to a conventional rib section. Sanding the surfaces should begin with No. 3-0 sandpaper; use No. 10-0 later. This will give you a beautiful satin-like finish which will help a lot in stretching the glides.

The fuselage should also be sanded smooth, and a headless pin thrust into the wood and faired with a piece of 1/20" sheet balsa will make the launching hook and complete the body.

In order to rig up the sweepback angle of the wing, first cut the panel

in half and carve a quarter inch wedge from the trailing edge as shown on the plan. Cement generously when setting the dihedral angle in the wing.

In assembling the glider, the tail surfaces and the wing must be sanded to perfection before they're



Designer Ernest Copeland demonstrates the catapult launching method. Note the angle.

cemented to the fuselage at 0-degree incidence. Check for perfect alignment and be sure all parts are clean and secure at the joints.

As soon as the glue has hardened and the weather is suitable, take "Whisper" out for some test flying and real enjoyment.

#### ADJUSTING AND LAUNCHING

**A**S A preliminary step, release "Whisper" from shoulder level, gradually adding clay to the nose until the glide is smooth and

Just the right amount of dihedral and sweepback assure you of lengthy flights under perfect control.

If you're the outdoor type model flyer, then this zipsy-doodle dandy is the thing for you. You'll have lots of fun with this little fellow, thrills that'll make you want to shout. But don't, just continue with a —

# "Whisper"

by Ernest Copeland

Author of "The Mosquito Sportster," etc.

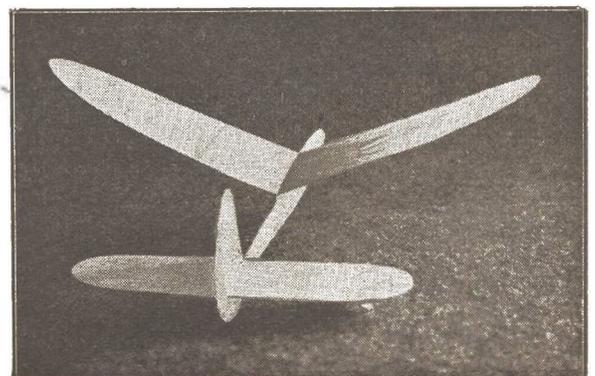
free from "mushing" tendencies. It should be noted that in glider work careful and patient adjustment is equally important as accurate construction.

Using a one-foot loop of 1/8" rubber, try the first catapult launch—but gently. The hand holding the rubber should be held still until the ship has been released. Try various angles of bank until you get the one most satisfactory for a smooth launch.

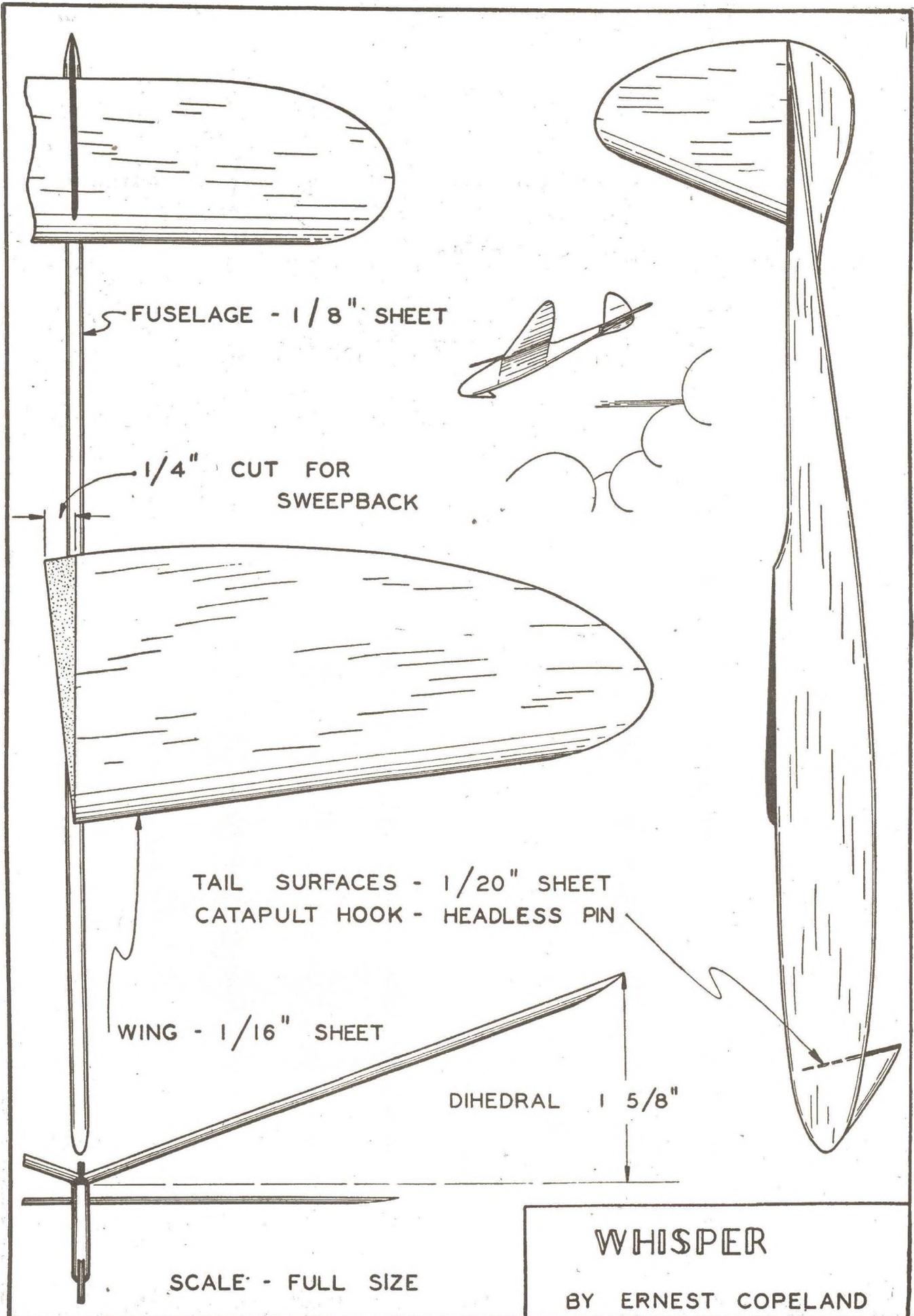
It is not necessary to point this glider straight up, since it climbs of its own accord due to the excessive speed. Watch very carefully the pull-out at the top of the climb, for this is where most of the trouble of adjustment comes. If the ship rolls out too soon and does a stall before starting to glide, remove some clay from the nose and warp the elevators down. If it does not pull out soon enough, add clay and warp elevators up. The wing will probably also need warping to prevent "twisting" during the climb. Gradually increase the speed of the launch and iron out the bugs.

Another catapult method suggested is to drive a stake into the ground with a rubber strand tied to the top. The other end is attached to the launching hook of the glider, and after stretched to its maximum point the driving force of the rubber will be powerful.

If you learn all the tricks of adjusting "Whisper," there are lots of thrills in store for you.



TRY THIS "WHISPER" CATAPULT GLIDER



# News of the Modelers

All model clubs are urged to send us reports of activities for inclusion in this department—advance dope on contests, club activities, and results of meets. Such news should be sent to us as promptly as possible, and advance notice of contests should be in our hands at least six weeks before the tourney. Address letters to Model Editor, FLYING ACES, 67 West 44th St., New York City.

## Elm City Results

MORE than 5,000 spectators witnessed the Second Annual Connecticut Gas Model Championships contest held at the New Haven municipal airport. The Elm City Gas Bugs, one of the most active clubs in the East, sponsored the meet which drew 154 entrants.

According to a statement by the AMA, the meet was declared the largest ever held in the Northeast. It was directed by Salvatore Russo who was ably assisted by William Paulson, Joseph Paulson, Fred Paulson, Leon Bombalicki, Edward Lipowski, Jules Agne, Melvin Agne, Mr. and Mrs. Agne, Hellen Paulson, Irwin Polk, and members of the New Haven Exchange Club. Winners:

Class "C"—First, C. Kawalkowski, of Bridgeport, Conn., 6 min., 42 sec.; second, B. Johnson, of Poughkeepsie, N. Y., 5 min., 42 sec.; third, W. Gillette, Norton Heights, Conn., 3 min., 21 sec.; fourth, W. Schroder, of Glen Ridge, N. J., 2 min., 29 sec.; fifth, P. MacCready, Jr., of New Haven, 2 min., 17 sec.

Class "B"—First, J. Beshar, of Patterson, N. J., 3 min., 3.1 sec.; second, M. Karl, of New Canaan, Conn., 2 min., 26 sec.; third, A. Downs, of Boston, 1 min., 29 sec.; fourth, L. Garami, of Woodside, N. Y., 1 min., 25.1 sec.; fifth, G. Travis, of Norwalk, Conn., 1 min., 25.1 sec.

Class "A"—First, K. Allery, of Holyoke, Mass., 1 min., 48 sec.; second, E. Soltis, of Yonkers, N. Y., 1 min., 17.3 sec.; third, G. Gerard, of Yonkers, N. Y., 1 min., 15 sec.; fourth, W. Spiecer, of Norwalk, 1

min., 13 sec.; fifth, W. Schroder, of Glen Ridge, N. J., 1 min., 6 sec.

The outstanding flight of the day was made by Chester Kawalkowski's ship, which soared about for a high time of 17 min., 38 sec., to win the Class "C" Trophy and the Connecticut State Championship Trophy.

## Perpetual Records

IN KEEPING with its aims and purposes of advancing model aeronautics, the AMA, through its contest board, presents for consideration the following plan for the recognition of model aircraft records:

"The view has been expressed that past aeromodeling achievements were not properly preserved to authenticate the remarkable flights made with model planes under accepted standardized national regulations. Whenever new rule changes were required to keep abreast of modeling progress, the slate was wiped clean of all the old records and started anew, even in categories which were not affected. This system has been termed inadequate, because when old regulations were reestablished former records made under the same regulations were unable to be recognized. Consequently, flyers who advanced to other age classifications no longer had the opportunity to regain former records with new record-breaking flights.

"For these reasons, it has been suggested to the AMA Contest Board that two types of records be recognized. One group would be set up as Annual Records to publicize high-time flights made during the year,

while the second and more important group would be classified as National Records and would continue through the years until either superseded or until new rules changed the specific categories. Then, only those National Record categories which were affected by the rule changes would be displaced. These performances would be kept on file as they are now. Should any old rules be officially reestablished, the former National Records would automatically be reinstated."

## YMHA's Active

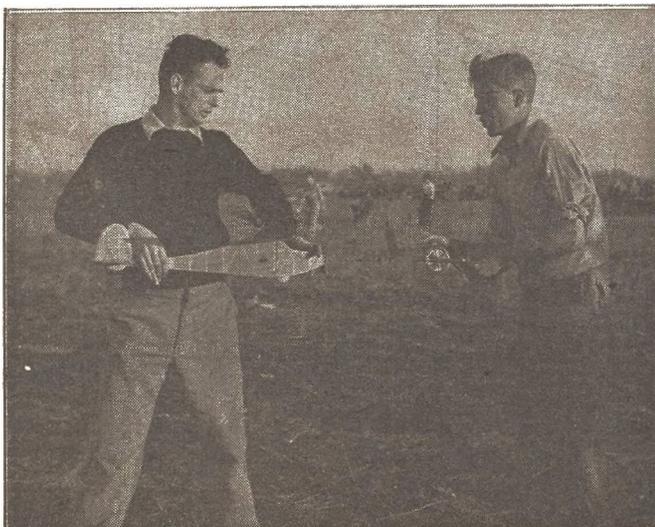
MANY MEMBER groups of the National Jewish Welfare Board are sponsoring junior aviation activities as part of their Fall program, announces Nathan E. Cohen, director of research for the Board.

Following the participation of a representative number of YMHA's, YWHA's, and Jewish Community Centers in the "Youth and Aviation" conference sponsored by the AYA during the past Summer, these groups are making plans to tie the current interest of their members into the program of Winter activities. While some groups are centering their plans around model plane activities, others are taking up projects related to full scale aviation.

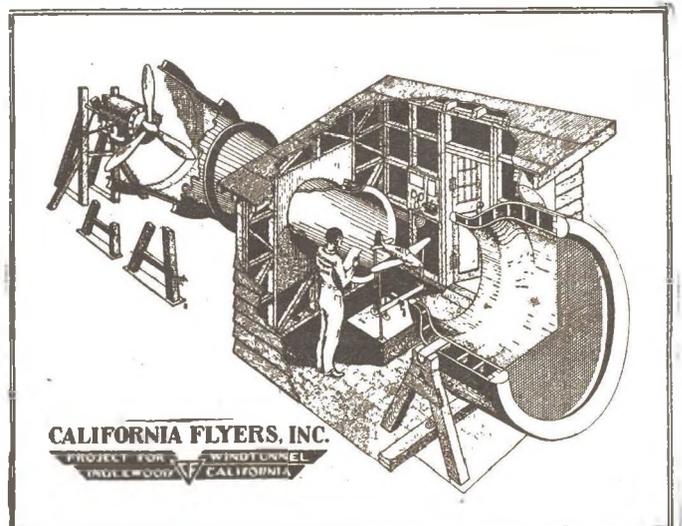
## Milwaukee Champ

GORDON J. WISNIEWKI, member of the 1938 Wakefield Team, was recently presented with the Judge Nohl Award for his outstanding record of achievement in the 1940 season of model flying. He received the award at a dinner given by the Mil-

The final windup! Here's Walter March holding Wally Simmons' cabin commercial while he packs the power. Scene: Recent Chicago Nationals.



This cut-away sketch shows the wind tunnel recently installed at the California Flyers School for use by aero engineering students.



waukee Propeller Club in association with the Milwaukee Gas Model Club. The presentation was made before an audience which included the city's leading business men.

Previous to the dinner, a group of men interested in model aviation met to form the Milwaukee Model Aviation Council as a non-commercial group seeking to promote interest in junior aviation. Mr. Carlson was elected president of the Council. The membership list includes Alvin P. Dietz, E. Eugene Kohls, Dr. B. M. Lorimer, Henry Gebhard, Herman Holtz, J. F. Wetzel, and Lawrence Halpenny.

#### Air News

**R**ADIO LISTENERS within the range of station WOLF, of Syracuse, N. Y., may get an earful of aero news, including modeling, over a fifteen minute broadcast each Thursday at 5:15 P.M. Harry Copeland is the commentator.

#### Propspinners Perform

**T**HE BROOKLYN, N. Y. Propspinners Club staged their first annual gas model contest several weeks ago at Creedmore, L. I. Winners:

Class "A"—First, Pinky Fruchtman, 2 min., 37 sec.; second, N. Santelli, 2 min., 22.4 sec.; third, Fran McElwee, 1 min., 33 sec. Class "B"—First, W. L. Schroder, 2 min., 15 sec.; second, Fred Gross, 1 min., 53.2 sec.; third, E. Monahan, 1 min., 45 sec. Class "C"—First, N. Fowler, 3 min., 11.2 sec.; second, Jerry Brofman, 2 min., 43 sec., third, H. Marvel, 2 min., 3 sec.

#### Paging Southern Gentlemen

**T**HE Miami (Fla.) Model Aero Club has devised a plan to make tourney attendance a "must." In effect, the idea is to plan a contest, set the date, and have the meet centrally located in that state so those attending will not have so far to travel. Then, each large city represented would be notified and asked to furnish a prize for one event.

#### AYA Prizes for Ideas

**T**HIS is aviation year. With the paper full of aero news, aircraft factories humming night and day, airports crowded as never before, many aero clubs and school groups are planning programs built around junior aviation projects.

To encourage junior aviation, Air Youth is offering a prize for the best account of such project submitted during the Fall months. The winning entries will be published in the AYA publication, *Horizons*.

Prizes will consist of a set of five Air Youth model airplane construction kits, plus a copy of *Model Airplane Contest: An Air Youth Guide*. Rules of the contest are simple, and all your club has to do to enter is:

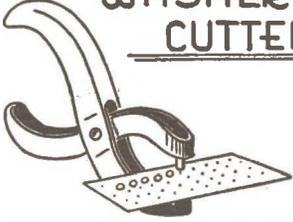
Submit a brief account of not more than 1,000 words, descriptive of a game, contest, or study project re-

# NOTES

FROM THE WORKBENCH

BY RAY WEEKS

### WASHER CUTTER



PUNCH HOLES IN THIN METAL SHEET WITH OLD PHONOGRAPH NEEDLE. FILE OFF ROUGH EDGES AND THEN PUNCH OUT WASHERS WITH PAPER PUNCH.

### COWLINGS



VARIOUS SIZES AND SHAPES FOR SMALL MODELS CAN EASILY BE MADE FROM DISCARDED BOTTLE CAPS

### WHEELS



FOR EASILY TURNING WHEELS, (1) CEMENT A WASHER ON EACH SIDE (2) CEMENT A BEAD IN CENTER.



### CEMENT AND DOPES

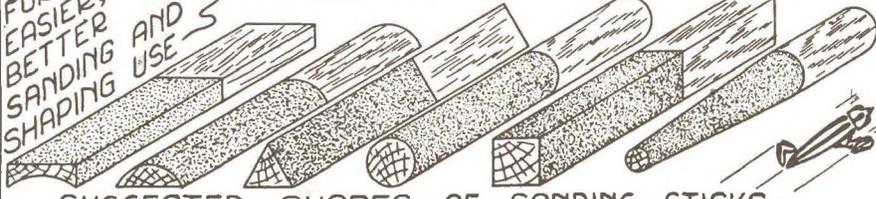


IF STORED UPSIDE DOWN WHEN NOT IN USE WILL NOT EVAPORATE.

### SANDPAPER

FOR EASIER, BETTER SHAPING AND USE

### STICKS



SUGGESTED SHAPES OF SANDING STICKS

lated to aviation which is suitable for a group of young people of school age.

The account or report may be written by the club members, leader, or instructor, but it must be submitted by the leader or instructor.

The project or game should be an original one, actually worked out by the group submitting it. If possible, the material should be accompanied by pictures, diagrams or other illustrative material. Address all entries to the Editor, *Air Youth Horizons*, 30 Rockefeller Plaza, New York City.

**PMMA Celebrates Anniversary**  
**T**HE PHILADELPHIA Model Aeroplane Association, sponsored jointly by the Playground & Recreation Association, the Aero Club of Pennsylvania, the Aircrafters, and the Franklin Institute, begins its twelfth season with the New Year. The Association has prospects of an enlarged membership and a full year of action has been outlined.

The territory served by the PMAA covers Southeastern Pennsylvania, South Jersey, Delaware, and the Eastern shores of Maryland. Chapters of the Association may be formed anywhere in this area by a group of ten or more. Offices of the PMMA are located at 1427 Spruce Street, Philadelphia. Officials of the organization are: Charles H. English, director; Victor R. Fritz, field director; Percy Pierce, solid scale model director; Nelson V. Johnson, flying scale model director; Leroy S. Streeter, registrar; and Virginia Paxson, secretary.

**Terrible Torques' Meet Success**  
**T**HE FIRST Open Class gas model tourney sponsored by the Terrible Torques aero club of New Hope, Pa., was held October 6, 1940, at Mercer Airport, N. J., with many modelers from neighboring states attending. The success of their first meet brought forth an announcement that  
*(Continued on page 62)*



# Secrets of Endurance

Rubber powered fans will welcome this highly informative article. Herein, Mr. Petrides clearly discusses the principles governing flight characteristics of model planes and their proper application.

by *Thracý Petrides*

**I**T GOES without saying that if a task is to be performed it should be done in the most efficient manner. Our task (Or is it? Ed.) is to design and build a rubber powered model for maximum endurance. In order that we may undertake this work efficiently, we must have a thorough understanding of what our problem entails. Therefore, with this in mind, let us enumerate the factors that an airplane must embody for successful flight, and call these the "given." They are:

1. A means of lift.
2. A means of propulsion.
3. Stability.

Next we must have an object, and, of course, this is endurance. Now our problem is to efficiently utilize the factors "given" so that we may obtain the most satisfactory "object" possible; or in other words, to get maximum endurance.

Before we delve into the aerodynamics of the subject, let us clearly understand what we mean by endurance. If a clock mechanism consumes one tenth of the total energy of the spring daily, the clock will last for ten days. Accordingly, the endurance of the clock is ten days. Similarly, the endurance of a model is the sum of the endurance of the power plus the endurance of the glide.

We can now clearly see that the endurance of a model is directly concerned with the attainment of the maximum endurance in the power and in the glide. Expressing these symbolically, we have, *Total Endurance* = *Endurance power* + *Endurance Glide*.

Let us investigate each of these units separately. The amount of energy that can be stored in a rubber motor is only dependent upon the weight of the rubber. Just as much

energy can be stored in twenty strands of 1/16" flat rubber as can be stored in ten strands of 1/8" rubber of the same length.

The amount of power that is available from brown rubber was found by J. P. Glass, to be 30,000 inch ounces per ounce of rubber. This means that, provided the energy could be utilized properly, it would lift one ounce 30,000 inches. Truly an enormous height. Now the power available to fly the model would be 30,000 multiplied by the weight of the rubber in ounces. Thus it becomes immediately evident that the more rubber we have in our model the more power we will have available. In fact, it has been determined by maxima and minima that the ratio of rubber weight to complete model weight should be 2/3. In other words the endurance of a model will increase by the addition of rubber until the weight of the rubber is 2/3 of the weight of the complete model, after which the endurance will fall.

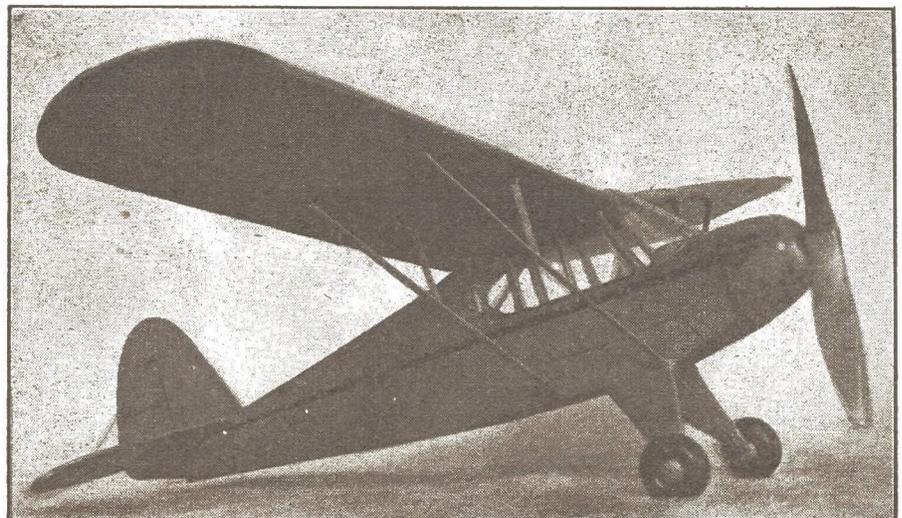
Of course, all the energy of the rubber is not utilized in flying the model, as there are losses due to the inefficiency of the propeller and to the resistance of the model. We may express that the endurance of our motor is equal to:  $\text{Endurance Model} = \frac{\text{Energy available from motor}}{\text{Energy used in unit time}}$ . It is ob-

vious from this expression that the smaller the value of the energy used, the greater will be our motor endurance. The energy used in unit time is concerned with the weight and resistance of the model. We can do very little with the weight of our model as it is fixed by rules, but we can certainly do something about the resistance. We shall go into the subject of resistance shortly, but for the present let us return to the second unit of our total endurance namely, the *glide endurance*.

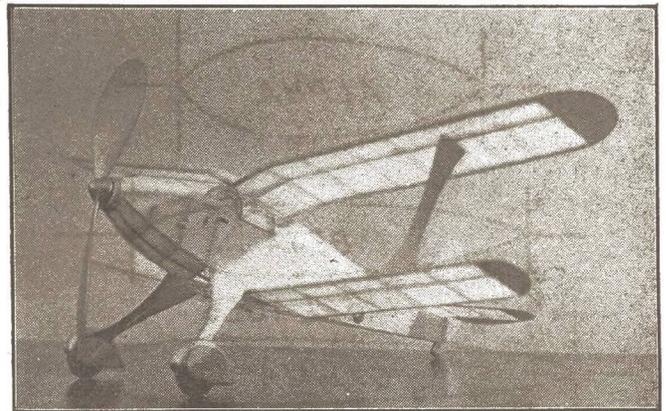
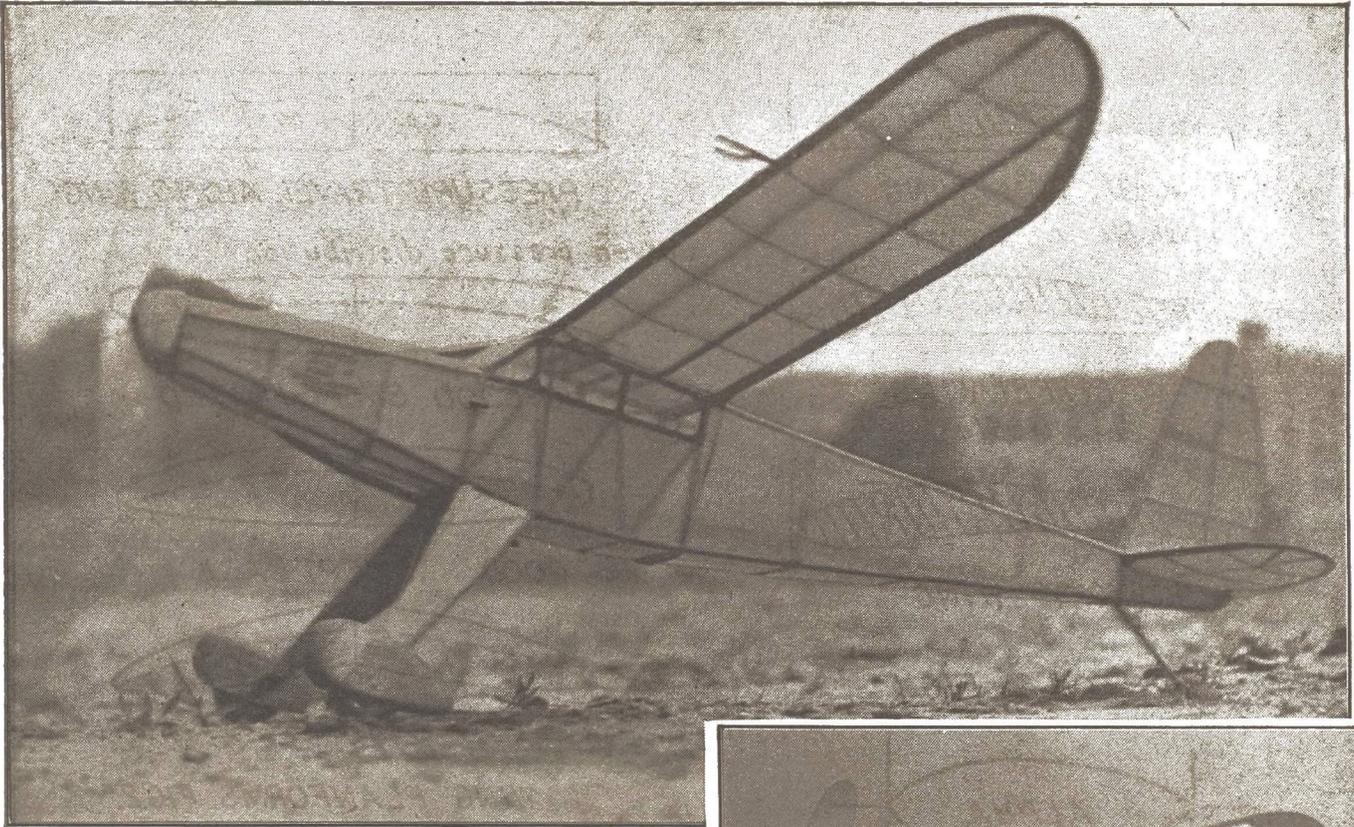
The glide endurance is expressed as the *sinking speed* of the model multiplied by the maximum altitude attained from the climb. The sinking speed of the model is a function of the gliding angle multiplied by the speed of the model, and the maximum altitude is controlled by the product of the motor endurance and climbing rate.

**L**ET US analyze each of these relations so that before we design our model we will have certain known facts in mind that must be incorporated in our design.

We already know that to get the maximum motor endurance, the rubber motor should weigh 2/3 the weight of the complete model. Let us make this item number one below the



This Porterfield-Turner flying scale (August, 1940, F.A.) exemplifies careful application in design of the tail surfaces, wing setting and propeller. It is a consistent performer with long flat glides.



Above: Henry Mayors' "Convertible Ski Job" (March 1937 F.A.) is another excellent design for outdoor commercial types. Right: The "Kiltie Gull," also by Mayors (February 1939 F.A.) displays streamlining with little frontal area. General design rates A-1.

"object" list of our endurance problem. Next we want our model to climb as high as possible. This comes under maximum altitude attainable which we know is:  $\text{Max. Alt.} = \text{Motor endurance} \times \text{Climbing rate}$ . Item number one tells us about motor endurance. Therefore, all we need to get the maximum altitude is the climbing rate. We determine the climbing rate thusly:  $\text{Climbing rate} = \frac{\text{Pexc.} \times 30,000}{\text{Weight}}$  Pexc. (power excess) is the difference between the power required to fly the model in level flight and the power available at the propeller. Multiply this by the 30,000 constant and divide by the weight of the model and the result will be the climbing rate. It again becomes evident that the less resistance the model has the more power will be available for power excess. Thus we have item number two for our endurance problem.

Our next consideration, the sinking speed of the model, is determined by multiplying the speed of our model by the gliding angle. These factors are controlled by the resistance of the model and the general efficiency of the whole plane. Thus we can readily see that the primary requirements for endurance are:

1. Proper rubber to model weight ratio.
2. Minimum of drag.
3. General efficiency of plane: Which includes proper arrangement of surfaces and setting of angles.

We have thus far discussed the model from purely a physical view-

point. It remains for us now to investigate the aerodynamics involved.

When a body of any shape is wholly immersed, and subjected to motion, in a fluid medium, its resistance to motion will depend upon the following factors. 1. The speed of the body, 2. the shape of the body, 3. the size of the body, and 4. the nature of the fluid medium.

Dealing with these factors it is well known that the resistance of a body in air increases as the speed increases. The mathematical expression for the resistance includes each of these factors, and is expressed thusly:  $R = K V^2$  where K is a constant depending on the shape of the Body. This relation holds true for windspeeds of 20 m.p.h. and over. However, since most rubber models fly under this speed, this law, by which all the airfoils used by model builders have been designed, does not hold true with the model builder. Obviously then our first consideration for endurance is to obtain an airfoil that will give us the greatest possible lift with the least drag in the range concerned. The speed at

which most models fly ranges from zero to fifteen m.p.h. A few airfoils embodying these requirements are shown in Fig. 1. It has also been found through wind tunnel tests that the tear drop is not the most efficient shape at low air speeds, as so commonly believed. When designing fuselages abide by the shapes shown in Fig. 3.

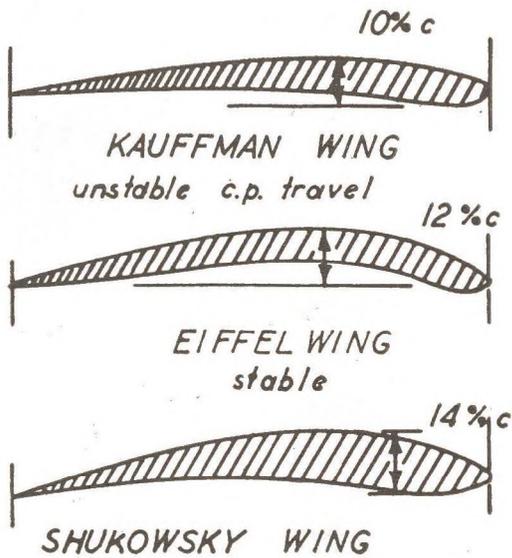
**T**HE IMPORTANCE of streamlining every part of the model cannot be over-emphasized. But we must not duplicate real airplane streamlining for we are only working under low speed conditions. High speed streamlining, necessitating greater fineness ratio, results in longer and heavier structures. See Fig. 4.

Thus we can understand the model builders' complaint that streamlined models were unnecessarily heavy. Their models were streamlined after real airplanes with the obvious result of overweight.

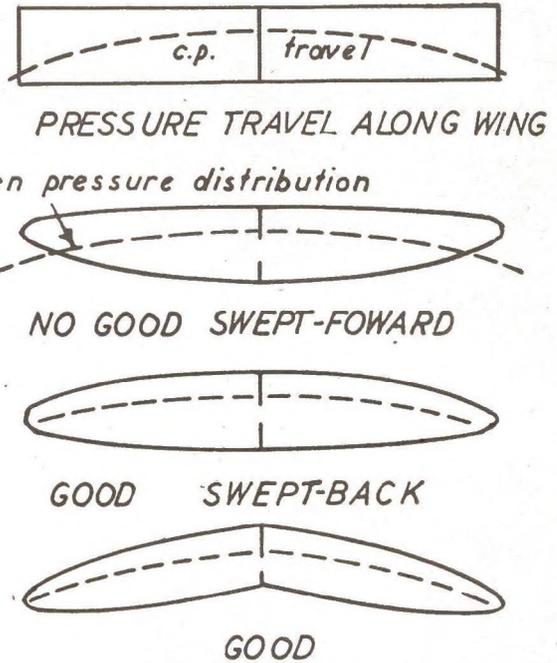
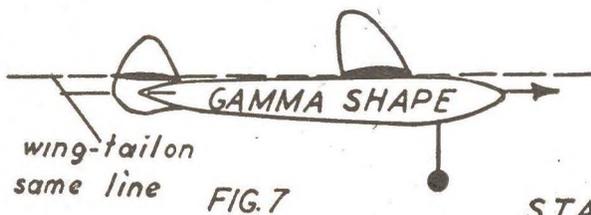
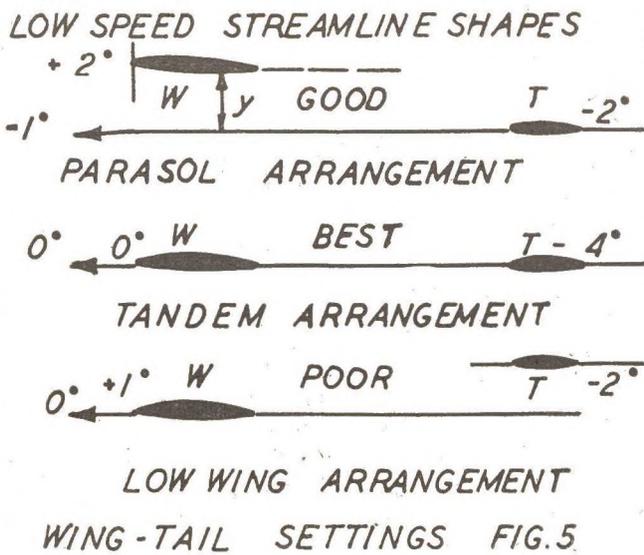
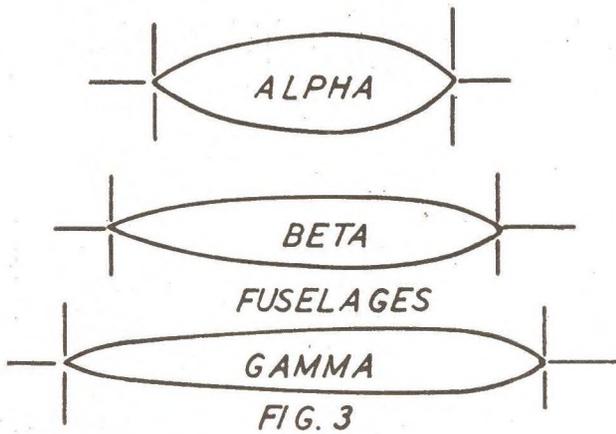
We can classify the resistance of a model into three divisions:

(Continued on page 61)

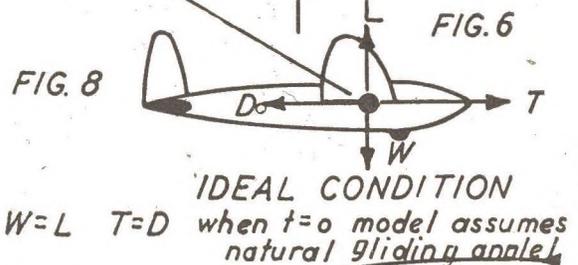
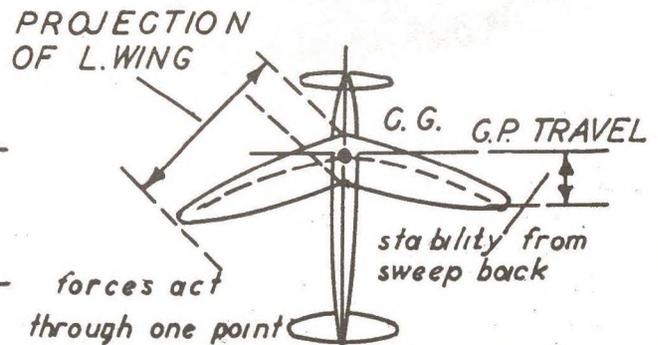
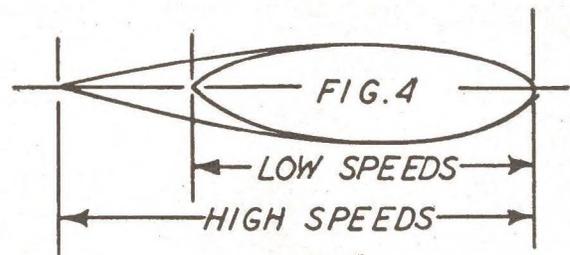
# SECRETS OF ENDURANCE



AIRFOILS FIG. 1

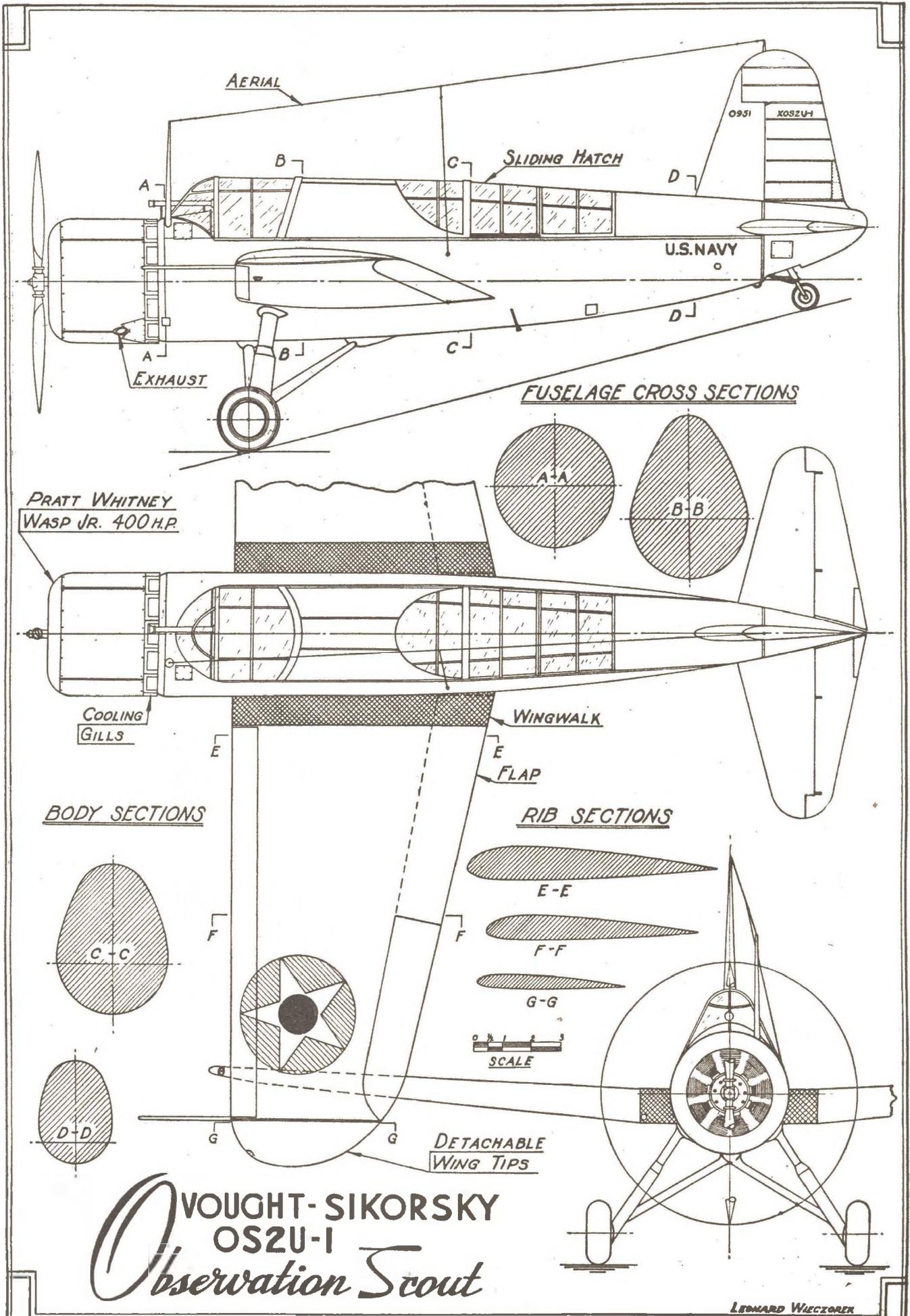


WING PLANFORMS FIG. 2.



STABILITY

TRY A SOLID OF THE VOUGHT-SIKORSKY OS2U-1



## You Said it!

*Here's your corner, buzzards, and it's open to all readers who have a model argument they want to get off their respective chests. Make your comments short and snappy, and we'll try to squeeze 'em in.*

### "Gull" Darn Good!"

Model Editor, FLYING ACES:

The "Gull Sport" (November 1940 F.A.) is one of the best stick models I've ever built. She turns in flights of 15 seconds consistently.

MITCHELL TOLAND,  
Long Beach, Calif.

### Four Designers "Tops"

Model Editor, FLYING ACES:

I built Mayor's nifty "Scotch Monoped" (December 1939 F.A.)

and, boys, is it a honey! I'm also going to make his "Kiltie Gull" (February 1939 F.A.).

Hurray, too, for Claude McCullough, Manley Mills, and Gilbert Shurman.

HERB RIDYARD,  
Bethlehem, Pa.

### "Cue Ball" Flies OOS

Model Editor, FLYING ACES:

I've been an ardent reader of your magazine for the past few years, and never had the occasion to write to you before. However, I now want to break my silence and tell you that your model plans are most helpful to all modelers in any stage of the game.

Not having enough time to build the big jobs, I naturally go in for "quickies" and recently built the "Cue Ball" (October 1940 F.A.). Was I amazed! Heck, I never thought that I'd fly anything out of sight, but

after a few simple adjustments she hit the road to Mandalay! All I can say is that there must have been something in the design of Ericson's ship. Let's have more like it.

ED. SANDBERG,  
Brooklyn, N. Y.

### Lost One So Far

Model Editor, FLYING ACES:

I've built every endurance job that has appeared in F. A. and every one flew very well. In fact, I lost one "Ol' Reliable" (January, 1938, F. A.) and came near losing several others.

EDWIN J. SUTORIUS,  
St. Louis, Mo.

### Polls Open on "Moth"

Model Editor, FLYING ACES:

All the models built from F.A. were swell flyers, and I want to go on record to cast my vote for the reprinting of the "Moth" plans (Au-

# Logging the Motor Market

## The Ohlsson "23"

WITH the exception of the larger cylinder, the Class "B" Ohlsson "23" is identical in appearance to the "19."

The crankcase manifold is aluminum alloy die cast in one unit. An outstanding feature of the "23" is that its crankcase, fuel tank, needle valve, and timer are the same as the "19." A change or replacement of the two engines for competitive flying in Class "B" and "A" is allowed, inasmuch as the mounting specifications are the same.

The fuel tank on the Ohlsson "23" carries a poppet valve-type gas cap which is known as the Ohlsson "Jiffy Fill" tank. Gas caps of this type are featured on all Ohlsson engines for 1941.

Included in the features of the "23" is a ground, matched, and lapped piston and cylinder, enclosed fool proof timing, one piece spot-welded crankcase cylinder construction, and

ball bearing thrust bearing.

The engine may be mounted radially or upon beam mounts, and it is reported to function equally well upright or inverted. Also, according to the makers, all engines are block tested before shipment.

Specifications: Bare weight, 4 ounces; flying weight including specified batteries, 9 ounces; cubic inch displacement, .23; bore, 11/16"; stroke, 5/8"; cycle, two; ports, 3; rated horsepower, 1/6; r.p.m., 500 to 10,000; fuel ratio, 3 parts gas to one part oil; propeller pitch and diameter, 6" to 7", 10" to 12"; static thrust rating, 30 ounces. Minimum weight of model powered by Ohlsson "23" permissible under AMA ruling, 16.98 ounces.

## Forster "29"

MODEL "29," manufactured by Forster Brothers, is a Class "B" engine which develops 1/5 h.p. at 7,200 r.p.m. The weight of the complete engine is 5 3/4 ounces.

Its aluminum alloy crankcase is diamond bored and provided with strong mounting lugs. The streamlined exhaust pipe, by-pass manifold, and crankcase are cast in one unit. Additional cooling fins on the crankcase and exhaust stack assure better cooling as well as adding to appearance.

The cylinder is machined from solid bar alloy steel and micro-finished to the closest limits, the manu-

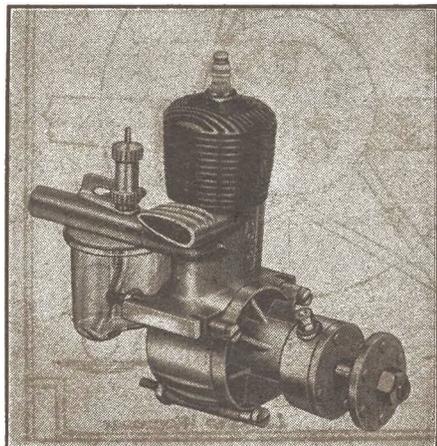
facturers claim. Extra long cooling fins on the cylinders increase circulation of the airflow.

The crankshaft is one piece alloy steel, fully counter-balanced, hardened, and precision ground. The high dome piston is made of alloy steel. The wrist pin, which is made from alloy steel, is full floating with a "snap" lock retainer.

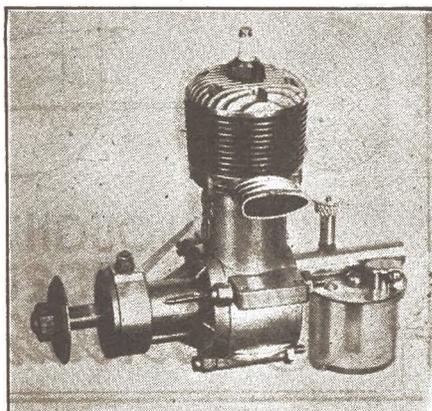
The new rotary valve developed by the Forster Brothers is claimed to be the most efficient type for high speed two cycle engines. Oversize high speed bearings are used throughout. The timer is of the automotive type with adjustable tungsten points.

Specifications: Flying weight with two medium batteries and spark coil, is 10 1/2 ounces; recommended propeller, 11" to 12" diameter with 6" to 7" pitch.

Each Forster "29" is block tested before shipment. Minimum weight of model powered by Forster "29" permissible under AMA ruling, 23.7 ounces.



Left: The Class "B" Ohlsson "23."  
Right: Forster Bros. Model "29."



gust 1937 F.A.). Maybe if plenty of other readers will cast votes, perhaps someday before I grow a beard that long I'll be able to build this craft. So how about it, modelers?

MERLE HUGHES,  
Glen, N. Y.,

**Sent Out 40 "Moth" Plans!**

Model Editor, FLYING ACES:

After sending out 40 sets of plans for the "Moth" (August 1937 F.A.) I am sure that all the fellows who received them liked building and flying the ship as much as I did.

I have received requests from all over the U. S. for these plans, and I still have on hand about twenty-five more. So if any of you readers want a set, hop to it and send me a stamped, self-addressed envelope and I'll rush 'em out pronto.

LEO A. WALSH,  
1738 S. E. 33rd Ave.,  
Portland, Ore.

**Sticks to Sticks**

Model Editor, FLYING ACES:

Your model section is the best of all the aero mags and I think "You Said It!" is a swell department. I've built the "Snowbird Stick" (April 1940 F.A.) "Mosquito Sportster" (June 1940 F.A.) "Bambino Bipe" (July 1940 F.A.) and the Bell XP-39 stick (January 1940 F.A.). Every one of these ships were super. Here's to more models like the "Mosquito Sportster" and the "Bipe." They sure can take it!

RAY FOREAKER, JR.,  
Berkeley, Calif.

**Wants Super Ships**

Model Editor, FLYING ACES:

Without forgetting the younger fellows, couldn't you give us more super jobs and some articles on gen-

eral design? Every now and then there have been some really outstanding models published, but they're too few and far between. We're expecting a bigger and better model department now, so don't disappoint us.

JACQUE HOUSER, SEC.,  
Mobile Model Aero Club,  
Mobile, Ala.

**Wants Boeing Plans**

Model Editor, FLYING ACES:

I was just about to build a solid scale model of a Boeing B-17 Flying Fortress, when I was sent to the store. When I returned I discovered that my kid brother (Grrr) had set the plans on fire. I'll be very grateful to anyone who will send me three view drawings of this ship.

ANDREW SHUMEK,  
36-23 30th St.,  
Long Island City, N. Y.

**Workbench Tip**

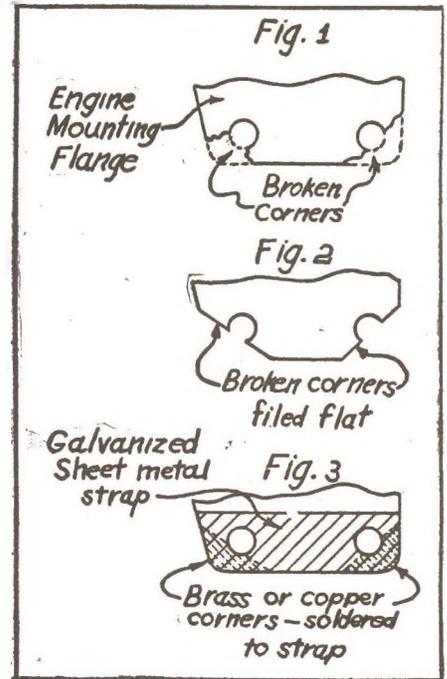
**Mounting Lug Repairs**

The accompanying sketch shows a simple but effective method for repairing a broken engine crankcase of the pot metal type, which may be minus a couple of corners at the flanges or across the mounting holes.

As shown, the break (or breaks) on the mounting flanges which invariably occur across the straight corner and through the hole, are filed to a straight, smooth edge. The engine is then placed between two boards so that it rests on the flanges. Now draw on the wood, in pencil, the outline of the flange as it originally appeared, select a small piece of copper or brass about the same thickness as the flange, and form the piece, using a small flat file.

As the brass or copper corner piece being formed will probably include a portion of the mounting hole, form this in it with a very small rat-tail file. Cut a flange strap from rather heavy galvanized sheet metal and shape by filing it to fit the outline of the flange. Note the correct size of the hole and spacing when making provisions for such.

Prepare the corner for soldering



to the strap by thinning the surface. Then assemble in position and "spot" on the edges with solder to hold temporarily. Lift up the unit and proceed to sweat the corner piece to the strap very securely. Finish the job by filing smooth.

ELBERT J. WEATHERS.

**SHOOTING A BRACE OF TRACERS**

for the

Next *Streamlined* FLYING ACES

**FACT**—"Parachutes Never Fail" declares Douglas J. Bintliff in his picture-packed feature. In this article you get the lowdown on how parachutes "percolate"—and why they must always open. Did you ever hear about the airman's haven of California? Well, Captain Louis De Jean, ex-RCAF, explains it in "The Hangar is Home."

And there'll be three other articles that you won't want to miss—along with our regular features and departments.

**FICTION**—Dick Knight and his "Seeing Eye" pal Lothario Doyle. Kerry Keen in another thrilling Griffon corker. Plus our old friend Phineas in another laff fest.

**MODEL BUILDING**—Herb Schaeffer's new "Miss Tillie" gas job. "Outdoor Commercial" by Harry Appel.

And in addition to the usual departments, there'll be another pic page.

**In March FLYING ACES**

**On Sale Jan 28** (Canada One Week Later)

## TELEVISION TRACERS

(Continued from page 16)

### CHAPTER II

#### BLIZZARD BARRAGE

The bumper was caught and it was several moments before Trent could pull it loose. As he stopped, shifting gears for a quick plunge, the swirling vapor thinned somewhat. A blurred shape appeared, ominously suggestive of a human form. It lay on the ground, twisted, motionless, with something horrible beginning to take shape as the lights penetrated that weird smoke.

"Good Lord!" Crabb said hoarsely. "It's—it's turning into a skeleton!"

**T**HE GRIM lines of a skull began to emerge, with a frightful effect of something coming alive. Below it, Trent could see a bony arm and hand, then partially revealed ribs. The bones were a dull, mottled green in the lights, half obscured by the acrid smoke that still rolled upward. Sickened, Trent got out of the car and approached as close as he dared. Fragments of smoldering cloth and the man's shoes were all that remained when that strange dissolution was ended. Trent bent over, saw a tarnished, lumpy object on the skeleton's left hand.

"Class ring," he said, under his breath. "Mort, this was Captain Brennard!"

Crabb looked away, with a nauseated expression. "I knew—it must be. But how in Heaven's name Eric, could those fiends—"

"I don't know," Trent said thickly, as Crabb's words trailed off. "But we'll even the score, if it's humanly possible. Get in—we'll both be sick if we stay here another second."

"We can't leave him there," Crabb mumbled.

"There's nothing we can do for him now, poor devil," Trent said. "We'll go back to the hotel and I'll call G-2 at Washington. They'll have Army Intelligence in this area work with the Seattle police on it. I'll tell them to keep it as quiet as they can, while we go ahead on the other angle."

Crabb was silent a moment as Trent backed the car and turned. "What do you mean—other angle?"

"Fairbanks," Trent said. "The answer to this horrible thing lies up there. I failed Brennard—I could have saved him if I'd moved faster. I'm going to follow this through."

"Count me in," the inventor said gruffly. "But I still don't see how my television set could be important enough to lead to—a thing like that."

"Did Brennard have time to tell you anything?"

"Only that he'd been delayed—he was on the liner *Alaska* that was grounded the day before yesterday on the shore of Elliott Bay, up in British Columbia. And when he got to the hotel he found that fake message—"

"The *Alaska*, eh?" Trent said

thoughtfully. "Queer about that. Grounded on a clear, calm night—ran aground at full speed, and no explanation given."

"He said a seaman was reported to have seen a submarine almost in their path," Crabb told him. "Brennard said it might have been an attempt to sink the ship and destroy the set. He was bringing one of the two they had at the Fairbanks station. It was in the forward hold that was flooded, so the set was ruined."

A police-car siren moaned, somewhere nearby. Trent had turned into the first main street. He watched the cruiser go speeding by, toward the "Wing High" taproom.

"We'd better get rid of this car before we're picked up. We can lie low until we take-off, in case the driver describes us—but I think he was too scared for a good look."

Trent turned the machine into a dimly-lighted street and followed it until he found a suitable parking space. After the car had been backed in, they went on foot toward the hotel.

"How are you going to get a plane—through the Air Corps?" asked Crabb.

"No. Whoever's back of this might be watching the Army fields. We'll get G-2 to contact Navy, to give us a ship."

"We ought to tip off the police about that mob at the 'Wing High,'" Crabb said grimly. "They'd round up those killers in short order."

"Maybe not," said Trent. "They'll expect that and keep out of sight for a while. Even if the police did nab them, they wouldn't talk. We'd still be in the dark about what's back of all this."

"I can't think of anything but Brennard. How did they do it? How could they turn a man into a skeleton in that short time?"

"Some powerful acid would do it—but they'd hardly risk carrying anything that deadly in a car. It must have been done some other way."

"I've got to stop thinking about it," Crabb was silent for a minute, then asked: "What was the idea of that act at the piano?"

"I had a hunch they were mixing me a knock-out. I wanted an excuse for turning it down without making it clear I suspected. And playing that Nazi song was a gag to find out if they were spies, as I thought. Don't worry, G-2 will have them covered after we flash word to Washington."

Crabb nodded slowly. "I know, Eric. Ordinarily, I'm not a vindictive person, but right now I'd like to get my own hands on the fiend back of that business."

"So would I," said Trent. "No death would be hard enough."

They were silent the rest of the way.

**A**BOVE AND BELOW the cruising Curtiss Navy SO3C-1 scout there was only a white world of snow, gradually thickening to a blizzard.

"All I hope," Mortimer Crabb said gloomily, "is that we haven't missed Alaska completely. Maybe we're headed for the North Pole."

"That's a fine compliment on my navigation," said Trent. "I flew you all over Europe and back, and never got you lost."

"You got me into plenty of spots worse than being lost," Crabb retorted. He peered out nervously into the snowy murk. "I haven't seen that other ship for ten minutes. Hope he's got enough sense to keep clear."

"I radioed him to fly at odd-number altitudes, if it got any worse," said Trent. "You were asleep—at least, I judge you were from the noise. I thought for a while the engine had burned out a bearing."

"All right, so I snore," Crabb said morosely. "I'm lucky to be able to do that, after a year and a half with you. It's a wonder I don't have perpetual insomnia."

"Forget the grouching," Trent said with a grin, "and give me the dope on that televisor. Is there any way I can pick up the radio part on this receiver?"

"No, it's a special wavelength. I called them Z-rays in my patent papers. They're higher than any frequency used in the States, except maybe in some experimental work."

Trent glanced at the clock, made an estimate of their position. "Why is the Air Corps using television up here at Fairbanks?"

"Well, that's the cold-weather testing station, and they wanted to try out a television-guide system, to bring pilots back to the field, even with snow blanking out the visibility. The idea was to hook it up with a radio-beacon, so they'd get a signal and also get a flash of conditions at the field—the ceiling and all. They hadn't got the transmitter finished, but two of my receivers were up there, and they were working on a special lightweight set to put in P-40's and Airacobras."

Trent shook his head. "I still don't see why anybody should get steamed up about it. But if it meant enough for some country to risk a war by sending a sub after the *Alaska*, it must be important."

"That might have been just a rumor," Crabb said.

"Maybe, but I'm inclined to believe it. Well, we're within sixty miles of Fairbanks, according to my figures. I'll call in and see what the ceiling is."

Trent switched on the transmitter. The message was half-completed when Crabb let out a yell.

A huge white eagle dived past above the ship, then turned and vanished in the blizzard.

"I thought birds didn't fly in snow—"

storms," ejaculated Crabb.

"I don't know about that," said Trent, "but I never saw an eagle that big before."

He stared out into the snow, then turned back to the transmitter. The operator at Fairbanks answered, and Trent gave their estimated position and time of arrival. Just as he switched the receiver off there was a blur of wings to the right and ahead. The next moment a trim fighter loomed up, a ship with the outlines of a Seversky P-35. On its wings was the rising-sun insignia of Japan.

The Seversky's guns blazed, and two more Japanese fighters whirled into sight. Trent backsticked, hurled the two-seater into a tight bank while he cut in his gun circuit. Over the Scout's blunt, smooth nose he saw the tilted wing of the first Nipponese ship. He pressed the gun-button, and the Brownings loosed a savage blast. The Seversky rolled wildly, almost collided with another fighter. Crabb flung a quick burst at the third ship from his rear cockpit guns, and the Jap's tracers twisted hurriedly aside.

The first Seversky came out of its roll nose down, went into a hasty zoom. Trent whipped the Scout onto its wingtips, poured a furious hail into the cowl of the Nipponese ship. There was a gush of oily smoke, then a spurt of flame which swiftly enveloped the fighter. As it plunged down through the snow, the two remaining Japs charged in fiercely. Tracers smoked into the turtleback, and bits of dural flew against Trent's shoulders as solid slugs went pounding through the metal section.

Crabb swung his guns dead-on as the nearest Seversky dived. The Japanese pilot sheered out at the last instant, and Crabb's fast-shifting guns raked the tail. The other fighter had pulled up after a burst that went into the deep belly of the Scout. Suddenly both the fighters banked, started to flee. Trent jerked around to see what had caused the swift change of course.

**THE STRANGE** eagle was swooping down toward the fight. As the Nipponese planes reversed, the mysterious white bird lurched around toward the SO3C-1. Trent rammed the stick forward, and the eagle whirled by overhead. As he pulled up, banking tightly, another plane appeared hazily through the blizzard. For a moment he thought it was one of the Seversky jobs, then he saw the SO3C-1 which the Navy had assigned as a special escort, at the request of G-2.

The white eagle was plummeting straight into the path of the escort plane. Trent saw the Scout skid madly, then a blinding flash hid everything for a moment. He circled, at half-throttle, saw the escort ship

pitch down, with snow whirling eerily about it. It was an instant before he realized it was not snow, but a queer, whitish cloud . . .

"Eric!" Crabb shouted. "In Heaven's name—look!"

Some of the whitish vapor blew aside in the precipitous descent of the crippled ship. Trent had a glimpse of a shattered cockpit enclosure, of a face that was more like a skull. Then the escort plane pitched headlong into the blizzard—and was gone.

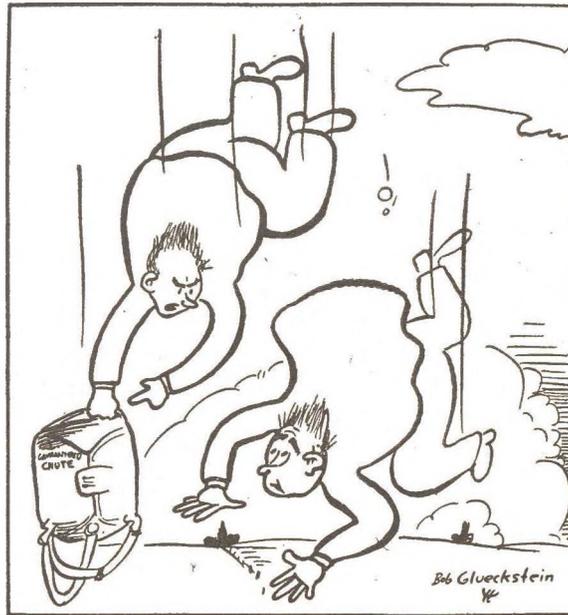
Trent looked back at his partner. Crabb was deathly pale.

"The same thing that happened to Brennard!" Crabb gasped.

Trent gazed down, shaken, at the spot where the Curtis had disappeared.

"You're right—it was the same thing. But there wasn't any white bird in that alley."

"You don't know. We didn't get there until it had happened—whatever it was."



"Make up your mind, Heathcliffe. Is this yours or mine?"

Trent opened the throttle, set the Scout back on its course, his eyes tautly searching the whiteness about them.

"What do you think it was, Eric?" Crabb asked hoarsely.

"It couldn't be an eagle. No bird ever exploded like that. But how could it be—" Trent broke off, reached for the radio switch. Then he shook his head. The Japanese ships had appeared just after his call to Fairbanks, announcing their position. There was no use in risking another attack, though it seemed impossible now that anyone could find them in this weather.

"I'll wait until we're a few miles from Fairbanks before calling in," he told Crabb. "Keep your guns ready, in case we happen to run into those Japs again."

But there was no sign of the Nipponese fighters, and after twenty

minutes Trent called the Air Corps station. It took fifteen minutes more of careful maneuvering, with three attempted landings, before they came through under the ceiling and saw the field, off to the left. Trent landed, taxied up to the hangar, where a group of men in heavy coats and parka hoods waited.

Mechanics rolled the ship inside as soon as the engine went dead, and Trent and Crabb climbed out. One of the officers took a quick look at the bullet-scars on the ship. His swarthy face twitched back toward Trent.

"What happened? Where's your escort ship?" he asked with a tight-lipped precision.

Trent saw the group of staring mechanics beyond. "I'd rather explain inside. I'm Eric Trent, and this is Mortimer Crabb. I take it you're the C.O.?"

The other man nodded brusquely. "Major Palmer—glad to know you. Come along."

Three of the waiting men followed, from the hangar across to the office of the experimental laboratory. As they went into the warm hall, Major Palmer turned to the first of the trio, a big, genial-looking man.

"This is Mr. Christie—our chief civilian expert. And Captain McCabe, Engineer Officer—" nodding to a stocky, ruddy-faced officer who was taking off his parka. He gestured to the third man, a thin, wiry civilian, with a sallow face and intense dark eyes. "This is Mr. Howard—Christie's assistant."

The men shook hands. Palmer led the way into a nearby room, looked sharply at Trent. "All right, let's have it."

"It's not a pretty story," Trent said. "We ran into some Jap planes—but that's the least of it. I'd better start with—Seattle—I'm sorry to tell you that Captain Brennard

has been murdered."

**ALL FOUR MEN** started. Trent went on, described what had occurred in Seattle. Palmer lost his brusque manner, sat down heavily at the desk.

"Poor Brennard," he muttered. "And to think I sent him to his death."

Trent eyed him a moment. "You don't seem surprised about the way he died."

The major slowly wagged his head. "It's already happened up here. One of our men died the same way. It was—ghastly."

"You said you were attacked by Japanese?" Christie asked. He had a slow, deliberate voice.

"Three Seversky fighters with Jap insignia," said Trent. "But here's something stranger than any air attack."

He told them about the mysterious

white eagle, and the fate which had overtaken the escort plane crew. The four men looked at him, open-mouthed, then at each other.

"Preposterous!" Major Palmer said harshly. "How in hell could a bird—"

"I'm not saying how," Trent interrupted calmly. "I'm just telling you what I saw. Mort, you've a reputation with the Army. Maybe they'll believe you."

"It's just as Eric said," Crabb agreed, gloomily. "I know it sounds insane, but it's true."

McCabe turned to the major. "After all, we know what happened to Lowdray. Headquarters wouldn't believe us on that, either, till we sent the pictures."

The C.O. slowly nodded. "Lowdray was the man who was killed," he explained to Trent and Crabb. "It was the night when the first set went bad. Everyone else was at mess, and when we came back—we've been working at night—there was this green skeleton, out there in the hall. The door was open, and there was a charred spot on the floor. I thought at first it was somebody's idea of a joke—that it might be an old skeleton dug up from somewhere. Then the Medical Section checked the teeth, after we found Lowdray was missing. That's who it was—but how it happened, we've never had the slightest idea, until now."

"No clues at all?" asked Trent.

"Nothing. Sentries hadn't seen any strangers. But one of the television receivers was dead. Christie and McCabe and Howard worked on it three days without any luck. Then one night we found the other set had gone dead, too. That's when I sent word to Washington for you, Mr. Crabb. Headquarters thought we'd expedite things by having Captain Brennard take one set down to Seattle—maybe you'd have to take it back to your laboratory or something."

"I'd like to look at that other set now, if I may," said the inventor.

"It's almost time for mess," answered Palmer, "but that can wait. McCabe, telephone them to go ahead, that we'll be over later."

The captain made the call, and then they went out into the television-radio room. A motor was humming softly.

"What's that?" exclaimed Palmer. "Some one's left the television transmitter dynamo on."

"I guess I did that, major," said Howard. "I was running a test and then I heard the plane—"

"All right, shut it off so Mr. Crabb can check his receiver."

Mortimer Crabb went over to a workbench on which a compact television receiver had been set up. He peered at the cabinet.

"We transferred it from the original case," explained Christie, looking over the top of his glasses at Crabb. "Major Palmer wanted a small set capable of being used in a fighter—"

"I gathered that," Crabb said tart-

ly. He looked in at the back of the set.

"If you ask me," offered Howard, bending to follow Crabb's gaze, "it's an inductive short."

"I didn't ask you, and keep your nose out of here until I can see what I'm doing." Crabb's mournful visage registered a growing resentment, and there was silence for a moment. Then Eric Trent chuckled.

"He's like a dog with a bone, gentlemen, when he starts tinkering with some gadget—especially one of his own pets. Best thing is to leave him alone."

"I'VE BEEN thinking about those Seversons," said Captain McCabe. His ruddy face had a serious look. "You know, Russia built some Seversons under license. They're our closest potential enemy—are you sure those ships had Jap insignia?"

"Positive," replied Trent. "But that could have been a fake. Judging from the Reds I've encountered, they wouldn't be averse to throwing the blame on Japan. Might even be glad to start a war between the Japs and us, so they'd have a freer hand in the East."

"There's been a lot of monkey-business up here in the Arctic," Major Palmer said in his thin, clipped voice. "We've had Intelligence reports of Jap and Red activity right across from the Aleutians—and plenty of evidence that the Nazis were behind the scenes."

"Not to mention losing a B-17," McCabe said grimly.

Palmer gave him a sharp look, then shrugged. "It's been a closely-guarded secret," he said to Trent and Crabb, "but you might as well know it—G-2 seems to have taken you into its confidence on everything else. We had two Flying Fortresses up here for tests—flying in sub-zero weather, testing instruments, new oxygen equipment, and so on at temperatures down to fifty below zero, along with some special surveys of the farther Aleutians. One day the Number One ship just didn't come back. No hint of trouble—radio communication Okay up to an hour before they were due back—then silence. We sent planes over a wide area, but never a trace."

Trent took out a coin, absently juggled it. "The crews of those B-17's are hand-picked, aren't they?"

"Absolutely," said Palmer. "As it happened, there were some additional—"

"Humph!" growled Mortimer Crabb. "No wonder this thing didn't work. The rectifier circuit's been changed. Give me a soldering iron."

"But it couldn't be changed!" said Christie. "We took care not to break a single connection."

"Don't tell me you know my set better than I do," snapped Crabb. "I tell you it's been changed. Whoever did it made a clean job of it—even tarnished the solder so it wouldn't look fresh."

He set to work, and in fifteen min-

utes the circuit was changed back. As he switched on the receiver, the others crowded around the bench. Trent lit a cigarette, idly watching the ground-glass screen.

"Turn on that transmitter," ordered the inventor. "We'll make a reception check. One of you stand in front of the scanning beam."

Captain McCabe went over to the switchboard, but before he could turn on the transmitter there was a humming sound and then a flickering image came onto the receiver screen.

"What's that?" Palmer said, startled. "There's no other television transmitter in Alaska."

"That's what you think," Crabb said acidly. "Somebody's got one close enough to—" he stopped, and the C.O. gazed at the screen goggle-eyed.

"Impossible! Why, that's a television of this base—taken from the air!"

### CHAPTER III

#### BIRDS OF DOOM

TRENT WHIRLED, snatched up a parka, and dashed for the hall, with the two Army officers at his heels. As he ran outside he heard a faint moaning sound somewhere up in the sky, but he could see nothing through the snow.

"The hangar!" he flung back at Palmer and McCabe. "The Scout's guns are still loaded."

A sentry helped them shove the SO3C-1 outside. Trent started to climb into the front pit, then he saw something sweep down through the snowy gloom. He scrambled into the rear cockpit, hastily swung the rear-guns. The blurred shape of an enormous white eagle showed for a moment. As the mysterious bird banked sharply, Trent's finger closed on the trigger and the twin fifties let go with a deafening roar. There was a bright flash, up in the snow, and a dull reverberation. Tiny fragments of something fell to the ground near the edge of the field, and a steamy vapor drifted down, spreading into a huge cloud, barely visible in the blizzard. Trent watched it settle beyond the hangar, sluggishly drift away, dissipating as the wind thinned it out.

"What in Hades was it?" Palmer said tensely, as Trent climbed out of the ship. McCabe spoke up before Trent could answer.

"It looked like a big white bird—I got a glimpse of it just before Trent hit it."

Men were running out of the barracks, and officers with hastily-donned parkas came out of the mess.

"Tell them what happened!" the C.O. ordered McCabe. "Have everyone stand by for emergency orders."

Trent stared up into the snow. "I don't hear any others, but you'd better have some gunners ready for action. The things make a humming noise—"

"I heard it," said Palmer. "It

wasn't any bird. It's some kind of flying bomb."

He turned and dispatched the sentry to have gunners posted, then followed Trent back into the laboratory. Mortimer Crabb was at the entrance, bare-headed, shivering.

"Get inside, man!" said Palmer. "You can freeze in a hurry up here."

Crabb looked at Trent when they were inside. "I saw it. Another of those white eagles, but bigger than the first. They must be aerial torpedoes disguised as birds."

"What's more important is that television business," said Trent. He turned to Christie, who had come out into the hall. The big man was listening with an incredulous expression.

"Did you say that explosion was an aerial torpedo?" Christie exclaimed.

"If it wasn't, that eagle must have had a bad case of indigestion," Trent said. "Did you see anything else on that television screen after I went out?"

"The outline of the field building showed for a few seconds after that explosion," said Christie. "Then everything faded out slowly."

"I didn't notice that," said Crabb. "I was getting ready to dive into a bomb-proof. But there must have been a ship up there with a televisior it could lower on a cable."

They went back into the workroom and Crabb switched on the television receiver.

"Nothing on it," Howard said quickly. "I tried through the whole range."

"It might come back on," grunted Crabb.

"Cigarette?" Trent asked Christie, reaching inside his coat.

"No, thanks. I don't — Howard, have you gone mad?"

Howard had lunged toward a small fire extinguisher secured at the end of the bench. He spun around toward Mortimer Crabb. Trent's hand snaked out of his coat, the .38 in his fingers. But Christie wrenched the fire extinguisher out of the other man's hands, struck him a furious blow.

"Ach, Gott!" Howard groaned. He crumpled to the floor, lay there with his eyes closed. Crabb gaped at him.

"German—did you hear him, Eric?"

Palmer and McCabe came in before Trent could reply. They looked at the scene in astonishment.

"Howard—he tried to attack Mr. Crabb," Christie said huskily. "I still can't believe it—but he must be a Nazi spy."

"A spy?" rasped Palmer.

"He let out a yelp in German, just after Mr. Christie beamed him," Trent said coolly. "I think you've found the answer to the sabotaged television sets—maybe some other things."

"Howard was working on that B-17," interjected McCabe. "He could have planted a time-bomb or fixed it some way so the ship would be forced down over the Bering Sea."

CHRISTIE TURNED a distressed face to the C.O. "I had no reason to suspect him. He was sent out here after Military Intelligence selected him from others at the plant."

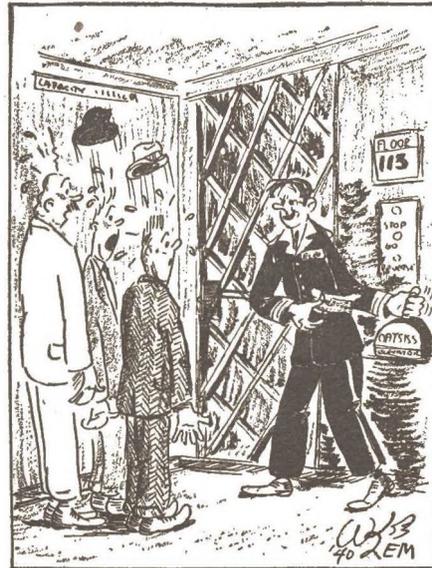
"Nobody's blaming you, Christie," began Palmer. He stopped as a guttural voice suddenly came from the television receiver.

"*Herr Kommandant*, we cannot establish contact with the torpedo... Liedner began a message, but it was broken off almost at once."

A flickering image appeared on the ground-glass screen, a shifting glimpse from the cockpit of a large plane. The scene took in a maze of instruments and then turned to include a blocky, worried face.

"The missing B-17!" McCabe blurted out. "The Germans have got it!"

"*Herr Kommandant*, this is Number G-11 identifying for reply, on wavelength Two," said the televised figure. The shadowy background of a



"Gentlemen, we now go into my famous 9-G terminal velocity dive to the street floor!"

Flying Fortress navigator's compartment showed behind him. The message was repeated, then the image abruptly disappeared. Almost immediately another scene replaced it, with two men seated at a desk in a small, windowless room with concrete walls. One of the men was a Japanese in naval uniform, the other a gaunt German in the tunic of the Luftwaffe. Behind the two was a third figure in civilian clothes. He had a dark, Slavic face.

"*Der Kommandant*, to G-11," the gaunt Nazi said curtly. "The torpedo was destroyed by gunfire at the Fairbanks base. You will prepare to—" the German broke off, as the Japanese muttered something and touched his arm. "Stand by, I will give you orders in a minute or two."

The screen went blank. Trent slowly laid down his gun, turned to look at Howard's still unmoving form.

"Liedner, eh? Major Palmer, you've the secret in the palm of your

hand." He explained what the Germans had said. "Put the pressure on that squarehead and you'll get the secret of that hidden television station—and whatever the Japs and Nazis are up to."

"Don't think we won't work on him," Palmer said savagely. He started toward the prostrate spy.

"Stay where you are!" Christie ordered in a suddenly hard voice. He had Trent's gun, and as he backed away, covering them, he smiled mirthlessly. "You should have thought twice, Mr. Trent, before disarming yourself."

Trent's mouth opened, with a foolish look. "You—a spy, too?"

"Let us say an agent of the Greater Reich," Christie answered coldly. "Don't move, Palmer! Get your hands up, McCabe!"

There was a frozen moment when no one moved, then Christie's left hand closed on the fire extinguisher he had snatched from Liedner. He backed toward the door, the gun still leveled. Tiny drops of perspiration came out on his forehead, and Trent saw him feel underneath the rear end of the device.

"I think this act has gone far enough," Trent said pleasantly. He dropped his hands, leaped at the big spy. Christie frantically pulled the trigger. There was a click—and nothing else. Trent's fist thudded into the spy's face, and the man staggered back. With a swift movement, Trent jerked the fire extinguisher from his hand. Then Mortimer Crabb and the C.O. sprang in, seizing the spy's arms.

"You see, I did think twice," Trent grinned. "Long enough to unload that gun before I set my little trap."

"*Verdammt Schwein!*" raged the prisoner. "Liedner, you fool, do something!"

The sallow-faced spy was trying to get up, but McCabe had him collared in an instant. Liedner glared at the other captive.

"If you hadn't been so smart, knocking me out, this wouldn't have happened!"

"Trent would have shot you—he had his gun halfway out," snarled Christie. His glasses had fallen off and his formerly genial face was twisted with fury.

"They're coming back on the air!" Mortimer Crabb said hurriedly. He turned up the volume, and the scene at the unknown station reappeared on the screen.

"K-11," said the gaunt *Kommandant*, "we have changed the plan. Return to Viskya, and be ready to refuel and carry out a full-demolition attack on Fairbanks. Keep tuned for any relay-messages from Liedner or Reudemann. We will give them three hours to report. If they have not accomplished it by then, we will proceed with Plan Three."

THERE WAS a brief interval, then the Nazi in the B-17 answered. "G-11 acknowledging, proceeding to Viskya."

As the screen blanked again, Trent looked at the big spy. "So it's *Herr Reudemann*. Just a great big friendly cutthroat of *der Fuehrer's*." He told the others what the *Kommandant* had ordered. Major Palmer's eyes darted to the clock.

"Three hours. We'll have every ship in the air—we'll show those dirty rats!"

"You'll never block them that way," Trent said calmly. "You're up against some devilish chemical gas that'll kill everybody on this base. Besides that, it will be dark by then and with this snow you'd never have a chance fighting them off."

"Then we'll evacuate the base," rapped Palmer, tautly.

Trent saw a surreptitious look pass between Reudemann and Liedner.

"We've missed the point of something here," he told the C.O. swiftly. "What if that attack is meant for all of Fairbanks, not just the base? And that Plan Three—it sounds like some big-scale move—perhaps a blitzkrieg."

Palmer turned pale. "A blitzkrieg against the whole Territory? Good Heavens—we haven't enough ships to meet any sizable force, especially if they use that hellish chemical."

"Where's Viskya?" Trent asked crisply.

"It's a Russian weather reporting station, just across the Bering Straits, near Cape Deslmef."

"That means the Reds are in on it, too. Either bribed or forced to let the Nazis and Japs establish a base there. That televised scene looked like an underground room. They've probably built up a secret base, subterranean hangars and quarters, to keep the word from getting around. The only way we can block them is to hit that base or their runways with a full load of bombs. They've got to have space cleared for taking-off, though they might be catapulting those aerial torpedoes."

Palmer jerked his head toward Reudemann. "Watch this big butcher, Trent, while I phone the guardhouse."

Trent had slid the magazine back into his .38. He snapped a cartridge into the chamber, covered Reudemann.

"All right, Mort, you can let our Teutonic friend loose now." He handed Crabb the fire extinguisher. "Hold that until Major Palmer can lock it in his safe. Watch out for that safety catch near the end, or we'll all end up like poor Brennard."

Crabb looked at the device, horrified. "You mean it's filled with that stuff?"

"I think that's fairly certain. It isn't any ordinary extinguisher—probably lined with glass or porcelain so the chemical won't eat through. Liedner lost his nerve and intended to do away with us and run for it. Big Boy Reudemann there had the same idea—only he was going to let his spy-pal die along with us. He'd have blamed it on us, most likely—"

"A guard squad will be over for these two," Palmer cut in, turning from the phone. "I ordered the Number Two Flying Fortress made ready, with a full bomb load. It's a desperate chance—how we can ever find Viskya I don't know—"

"Why not make our two playmates find it for us?" queried Trent. "Mort, how long will it take you to transfer that television transmitter and your receiver to the B-17? You can hook it up while we're in the air."

"Maybe half an hour or less," Crabb said after a moment. "We'll have to cut the transmitter in on the ship's 110-volt line, with a special transformer—but we could do that after we took off."

"What good will all that do?" demanded Palmer.

"When we get in range of Viskya, we'll put Big Boy in front of the scanning-beam," explained Trent amiably. "Mort can blur it a little, so it won't show any slight disgruntled expression. I know German, and I think I can fake Reudemann's voice enough to get by. I'll report that it was nec-



"Flying fish—phooey!"

essary to cut loose from Fairbanks and ask for a guide-signal, if they haven't got a radio-beacon."

"You *Schweinhund*, you'll never succeed with that trick!" fumed Reudemann.

"Then what are you so worried about?" grinned Trent.

The guard squad came in, took charge of the prisoners.

"Tie them securely and put them aboard the B-17," ordered Palmer. "An armed guard will be kept on them every second. McCabe, go rush the bomb loading. We'll get the television sets aboard as fast as we can."

"How far to Viskya?" Trent asked, as the prisoners were taken out.

"About six hundred and fifty miles. It's going to be a close squeeze, if they stick to that three-hour limit," answered the C.O. "I'm going to cable Seattle and have the Corps Area Commander warned about this. I'd radio the Navy, at Sitka, but I'm afraid

the Nazis would hear, and set off the attack."

"You're right," said Trent. "It's a lone-wolf job—or lone-bomber, if you're going to be technical. They'd get suspicious if they heard more than one ship coming."

It was thirty-two minutes later when the huge Flying Fortress roared into the murky darkness and headed West, toward Bering Strait. The prisoners had been put in the crews' quarters, under guard. Mortimer Crabb and Captain McCabe set to work hooking up the two television sets in the navigator's cubby and the space behind it. Trent sat in the co-pilot's seat, beside a stolid-mannered first lieutenant named Good. After setting the course, Palmer disappeared aft. Trent plugged in on the radio hook-up, intermittently checked the signals from Fairbanks and the Juneau station, for which Palmer had arranged, as a cross-bearing check on their course.

Fully an hour and a half had passed and Crabb was almost finished with the televisor adjustments when Major Palmer came forward. He touched Trent's shoulder.

"Come on aft." His voice had a tense note. "I've finally broken Liedner down and he's starting to talk."

## CHAPTER IV

### PLAN THREE

TRENT followed back to the crews' quarters. A dim light was on. He saw Liedner, haggard and perspiring, over in one corner. Reudemann, gagged as well as bound, lay on the floor, with an armed mechanic grimly watching him.

"I had to shut up the big German," Palmer said harshly. "I promised Liedner he'd get consideration as State's evidence, if he came clean. I won't tell you what I promised him if he didn't."

"I'll tell—everything," Liedner said in a shaken voice. "Only don't let—him—at me." His eyes rolled toward the other Nazi, and Reudemann gave him a savage glare.

"Never mind him—talk!" snapped Palmer. "Go on about Crabb's televisor."

"The Gestapo stole the blueprints of his set, while he was in Europe," Liedner mumbled. "Germany wanted a television set with wavelength no one else was using, to put in observation planes. We thought Crabb was killed in France, and we went ahead and put a special small set in a flying torpedo, disguised as a bird. It worked and we made more of them. Then the Reich laboratories discovered the corrosive-acid gas from nitric and sulphuric acid, and they put it in one of the torpedoes. They were afraid to use it on England for fear of reprisals, but it was kept in reserve. Then Hitler made Russia agree to Plan Three, for a sudden attack on the United States by Japan, Russia and Germany if it became necessary. He made Stalin give us a base at

Viskya, for a blitzkrieg on Alaska, so the three axis groups would be able to seize it for an air and sea base against the Pacific Coast and Hawaii."

Liedner stopped, shivering under the murderous look Reudemann gave him.

"Might as well go whole hog, *mein Freund*," Trent said. "He can't hate you any worse than he does now."

"Everything was about ready, in case *der Fuehrer* gave the order," Liedner continued unwillingly, "when Reudemann and I came to Fairbanks. We were planted in America four years ago, as radio engineers. When we got to Fairbanks and saw the Crabb Z-ray sets, we knew they would pick up the Viskya telecasts as soon as regular operations began. We warned Viskya and then sabotaged the sets. One of our agents smuggled us a container of the acid-gas in the extinguisher you saw, to get rid of anybody who learned the secret. Lowdray caught Reudemann one evening—"

"Forget that part," Palmer broke in. "What about this case? How many ships there? How many of those torpedoes?"

"Most of it's underground, except a launching platform for the torpedoes. I don't know how many planes—there were two hundred and fifty a month ago, half of them bombers."

"Lord help us, if they ever get into the air," the C.O. told Trent. "They'd wipe out our Alaskan defenses at one stroke."

"This is Plan Three," Liedner said. "They expect to take Alaska in six hours—follow up the bombing by landing troops from transport planes. They've a shuttle schedule worked out, to put an army in the Territory within three days. Some of the troops are already massed at Viskya. After they've seized Alaska, they'll use it as an air base for raiding the air and naval bases and aircraft plants on the Pacific Coast."

Trent looked at the Air Corps major. "It sounds fantastic, but so did the blitzkriegs in Europe. I've a hunch they'll have Japan ready to attack at other points if this first attempt succeeds. It puts us on the spot to save the bacon."

"This is no time to be joking!" grated Palmer.

"Pulling a long face won't get us to Viskya any sooner." Trent turned back to Liedner. "About those torpedoes: I get the flying-eye idea. They flash back scenes of whatever they're over, or glimpses of planes in the air, to the control point—whether it's the base or the B-17. But what sets off the stuff, contact or radio?"

"Either one," mumbled Liedner. "The engineers back at Viskya transfer control to the stolen B-17 and it follows within thirty or forty miles, to keep in television range. They guide the torpedoes by Z-rays. And when they're over a target they can dive the 'birds' straight down and let them detonate when they hit, or they can aim one at a target and set

## Aero Book Reviews

*Any volume described in this department may be obtained, at the price quoted, direct from the publisher named and at the address given. When writing for a book kindly mention that you saw it reviewed in FLYING ACES.*

### From the Ground Up

*Win Your Wings*, in two volumes, by Colonel Roscoe Turner and Jean H. DuBuque, Frederick J. Drake & Co., Chicago, Ill., \$3.50 per volume.

No reader of *FLYING ACES* needs an introduction to Colonel Roscoe Turner, for he is as well known to aviation fans as Benny Goodman is to jitterbugs. In fact, the name Turner is almost another way of spelling aviation racing.

Now, Roscoe Turner is soaring to new and possibly greater heights as a writer. He is putting down on paper what he has learned from experience and what he has seen. Both volumes of *Win Your Wings* are written in the finest possible style, list the best possible case examples, and give the best ground instruction we have yet witnessed in an aviation book.

Instead of reviewing these books separately, as would be the usual custom in such a case, we will review them collectively so that reference may be made from one to the other when necessary.

As a whole, Book Two proved more interesting to your reviewer, for it contains more advanced material. It explains in details the more intricate maneuvers, principles of engines, structure, and radio instrument avigation, to mention a few topics. However, Book Two is not as useful unless one also has Book One. The material in these two volumes is interwoven in such a fashion that Book Two is not only a logical sequel to Book One, but is what college is to high school. That is, the groundwork is laid in Book One, and is then paved and leveled

*Also see pages 68 and 74 for other reviews*

to a finer texture in the second volume.

Fundamentally, Book One is composed of primary instruction. It goes farther, however, and presents a list of aeronautical terms and expressions which should be at every air-minded person's disposal. And this list is very complete—covering no less than 80 pages. It is, in fact, something short of a miracle that the authors were able to trace down so many of the terms and words connected with the game!

Illustrated with carefully selected photographs and sketches, even the absolute layman can get more than a grasping foothold of the material contained. Moreover, the section dealing with flight instruction is so complete that it will really make the readers feel as if they are actually seated in a cockpit. Your hands are automatically on the throttle and stick, going through the process of banks, landings, take-offs, glides, spins, and everything else possible.

To be perfectly frank, it seems almost impossible that two lone men were able to collect such a vast wealth of material and present it in such an interesting fashion. Your reviewer is only too glad that the task was not his.

An important chapter of Book Two is set aside for a "heart-to-heart talk" with graduate students who are ready to make their way into the aviation business. In true father and son fashion, all the important points of self conduct, personal appearance, making an impression, planning a letter, and the salary question are handled in such an enlightening manner that the reader should find it an extremely easy task to proceed as directed.

Co-Author Jean H. DuBuque, we should mention, has also had wide experience in aviation. He is at present connected with the Civil Aeronautics Board and is not only a pilot, but also an engineer and a competent instructor.

off the charge any time. They use the last hundred kilocycles in the Z-ray spectrum to detonate the charge that releases the acid-gas."

"I saw an exhibition today," Trent said with dry humor. "Somebody tried to hit our ship, but they got the other one by mistake."

"That was a small test-torpedo," Liedner said dully. "The regular ones are three times that big. They let loose enough acid-gas to cover a space three or four hundred feet square. It will go through any gas-mask, and it will kill a man in less than a minute, even diffused. If it hits him full strength, it—well you saw what it does."

**T**HE RADIOMAN came aft just then, a young chap with alert blue eyes. The plug-in wires of his ear-phone helmet were dangling over one shoulder.

"What do you want?" demanded Palmer.

"Lieutenant Good sent me, Sir, to tell you we're only about 105 miles from Viskya. We've been riding a strong tail wind."

"Thank God for that," said the C.O. "Trent, we'd better use Liedner for that fake telecast. He'll say what we tell him."

The mechanic-guard turned to take Liedner's arm. Without warning, the radioman leaped at him from behind.

A .45 butt thudded onto the guard's head, and as he fell the radioman spun around, covering Trent and Crabb. His face was pale and frightened.

"Get your hands up, both of you! Liedner, untie Reudemann."

A sick terror came into Liedner's eyes. He went down on his knees beside Reudemann, then made a desperate lunge at the radioman's knees. The young spy jumped aside, kicked him fiercely in the stomach, and Liedner collapsed with a groan. Trent snatched at the zipper of his heavy flying-suit, but before he could reach his gun the radioman had him backed against the bulkhead.

Reudemann had been chewing madly at his gag. He suddenly got it loose. "Keep them covered, Hans, and untie my right hand. I can unfasten the rest."

Hans hurriedly obeyed, and in another minute Reudemann was free. He seized the unconscious guard's pistol.

"I'll watch these two *Amerikaner* swine. Tie up Liedner; I've a score to settle with him later."

The young spy bound Liedner, hastily gagged him, and started to tie the mechanic.

"Let him go," snapped Reudemann. "He's clear out and we haven't time to waste. What kept you so damned long?"

"Lieutenant Good had me checking our position every five minutes after Trent came back here," Hans said defensively. "Before that, they had me helping with the televisor. It would have made them suspicious if I'd sneaked out."

"Then that message was true?" Reudemann said brusquely.

Hans nodded, nervously watching the passage. "We must be within twenty minutes of the base by now. And it's stopped snowing. They'd have an easy time with their bombing."

Reudemann's eyes narrowed as he looked at Trent and Palmer. "We're taking you two forward. If you try to warn them, you'll be killed. Wait—Hans, you'd better search Trent. Palmer doesn't have a gun."

As Hans stepped toward Trent, the C.O. made a frantic attempt to jump behind him and seize his pistol. Reudemann drove a furious blow at the major's jaw, missed, but caught him squarely in the throat. Palmer made an agonized, strangling sound and slumped to the floor.

"Fasten his hands behind him—use his belt!" grated Reudemann. "You'll have to gag him—he might come around in time to yell for the gunners."

Trent made no move, coolly waiting a better opportunity.

"Why not tie Trent and leave him here, *Herr* Reudemann?" Hans asked anxiously.

"We may need a shield, the first few moments up there," the big spy said callously. He took Trent's gun, forced him into the passage.

"Remember, no shots if we can

help it!" he muttered to Hans. "I'll take McCabe and Crabb. You go for the pilot—and make sure he doesn't use his microphone and warn the gunners."

CRABB and McCabe did not look up until the three men were inside the shadowy control compartment. Then the inventor's jaw sagged and McCabe stood paralyzed for a moment as he saw Reudemann. Hans sprang past them, rammed his gun into Good's back. The pilot jerked around, froze.

"Switch on that televisor!" Reudemann rasped at Crabb. The inventor hesitated, with a taut look at Trent.

"Do what he says, Mort," Trent told him. "I'm afraid the game's up."

Crabb swore, turned to the small panel switchboard which had been laid against the navigator's desk. A flexible cable ran from the unit to the nearest 110-volt socket.

"Face around, all of you!" barked Reudemann, as the tubes warmed up. "Watch that pilot, Hans!"

Trent heard the dynamo hum, then Reudemann said swiftly, "R-51 calling *der Kommandant* at Viskya . . . R-51 calling *der Kommandant*—"

He repeated the call three times, then from the corner of his eye, Trent saw him switch on the television receiver. The scene in the underground headquarters came onto the screen, with a uniformed Nazi captain hurriedly giving up his seat to the gaunt-faced *Kommandant*.

"*Der Kommandant* to R-51. Go ahead!"

"I am in the other Flying Fortress, within fifteen minutes of Viskya," Reudemann said. Trent stared down at the flexible cable as the big spy moved a little closer to the scanning-beam unit. "The Americans intended to bomb Viskya, but we have seized the plane. Be ready to guide us in, and have men to take the prisoners when we land."

"*Lieber Gott!*" came the voice of the gaunt Nazi on the screen. "Are you sure you have them safely under control?"

"Absolutely," snapped Reudemann. "But Plan Three will have to go into operation at once. Get the entire force ready. I will explain when I land."

Trent's hands were raised, like the others. But as Reudemann reached out to cut off the televisor, he flicked his left hand down with a lightning motion and gripped the radioman's dangling head-set wires. Hans' gun roared as the sudden pull hauled him backward, and Reudemann whirled. Trent flung himself down, jerking the flexible cable up from the floor, as the big spy sprang at him. Reudemann tripped, and the .45 in his hand blasted deafeningly as he fell. The shot drilled the right cockpit window, and splintered glass gashed Trent's cheek. He brought down his stiffened hand on Reudemann's biceps in a swift jiu-jitsu blow.

Reudemann's numbed fingers contracted and he dropped the gun. Trent seized it and jumped up, but

Hans was already on the floor, with Mortimer Crabb's ham-like fist smashing into his face.

"*Kommandant!*" Reudemann bawled wildly. "The Americans—we are captured!"

McCabe frantically cut off the televisor, but the damage had been done. As Trent switched on the receiver a scene of panic in the Viskya base became visible. The gaunt *Kommandant* was trying to call Reudemann back.

"R-51 . . . R-51! What course—what altitude are you?" Then, as though realizing it was useless, he whirled to a small knot of Nazis and Japanese showing as blurred figures on the screen. "Get all planes ready for take-off! Have all torpedoes hoisted to platform level for—" one of the Germans sprang forward, obviously to reach the televisor controls, and the screen went blank.

One of the B-17 gunners came dashing into the forward compartment.

"What happened, sir?" he asked McCabe. "We heard shots—"

"Two spies!" McCabe said tensely. "We've got them—get back to your post. We're going in at Viskya—be ready for their pursuit!"

The ship nosed down, crookedly, and Good slid sidewise from his seat.

"Lieutenant Good—he's been hit!" exclaimed the gunner.

"You'll have to fly the ship, Trent," McCabe said as he eased Good to the cockpit floor and hastily bandaged his shoulder. "I've got to climb out there and handle the bomb-sight."

The gunner raced back to his gun-turret. McCabe crawled out to the bombardier's post in the nose, and Trent sent the B-17 down in a long, full-power glide for the secret base, while Mortimer Crabb covered the two Nazis.

"Don't worry about these two," he told Trent. "Say, where's Palmer?"

"Reudemann knocked him out—no time to think about that now," Trent flung back. The B-17 was roaring down through the dark Arctic night, with the air-speed needle climbing past 300, to 310, 325 . . .

ABRUPTLY, a searchlight blazed up, ten miles ahead. Two more joined it, swung toward the hurtling bomber. As the B-17 streaked closer, now down to eight thousand feet, Trent saw two fighters, then a third, climbing at desperate speed. One of the turret-guns pounded, and McCabe let go a fiery blast from the guns in the nose. The base seemed to leap up at them in that thundering approach, and Trent saw other planes rolling out of a black maw in the earth. Then something white whirled up from a catapult platform.

Three Severskys raced in, tracers lancing at the B-17. There was a drum-roll from McCabe's fifties, and the nearest fighter burst into flames. One of the turret-guns aft caught the second, and it plunged down, its tail shot cleanly off. A burst from the third Seversky tore through the top of the pilots' compartment, rid-

dled another window.

Then a whitish shape whipped through one of the searchlight beams, charging straight for them.

"It's a torpedo!" screamed Reudemann. "We're doomed—we're doomed!"

"Mort—cut in the televisor!" Trent shouted. "Roll your rheostat to the last tap."

There was one more frightful instant, with the deadly eagle-torpedo plunging at them head-on, and Reudemann's frenzied shriek filling the cockpit. Then the televisor went on.

A bright flash lit the sky, and the torpedo disintegrated directly ahead of the Flying Fortress. Trent shoved the controls down, in a desperate dive under the lethal white vapor that spread in their path. The B-17 screeched as he pulled out, and then he saw a vast whitish cloud enveloping the base below.

Mortimer Crabb's televised relay-wave had set off every torpedo prepared for operation!

The B-17's bombs hurtled down as the ship swept past, and Trent zoomed with the bomb-flashes luridly yellow behind. When, a few minutes later, he banked over the spot at two thousand feet, there was only a scene of chaos and ruin, with not a sign of life.

Trent wiped the blood from his cheek, sat back, relaxing his taut nerves. McCabe crawled back into the cockpit, then Trent saw him stare down at the floor. He turned. Reudemann lay there in a crumpled heap, motionless. Frozen on his face was a look of indescribable horror.

"He's dead," said Mortimer Crabb. "His heart must have stopped when he thought that torpedo was going to hit us."

Trent slowly nodded. "Maybe there's justice after all. I've heard of men dying from sheer terror. He must have gone through hell in those few seconds."

"Let's hope so," Crabb said grimly. "Take Hans back and tie him up," said Trent. "He'll get his later—maybe a little slower. But he'll get it."

\* \* \* \*

IT WAS seven o'clock in the morning, but the Arctic sky was still dark as midnight. Captain McCabe

## Wisecrack-Ups

### OVER-TIME

*Head mechanic:* What in the devil have you been doing all this time? You should have had that engine ready 'way last week!

*Green greaseball:* But ya said it was brought in for a 200-hour check. Well, I've done 168 hours o' work on it—but I still have 32 more hours ta go.

### OR EVEN A SNACK

*Phineas:* I'm tellin' ya, Bump—never fly above 20,000 feet after a full meal.

*Bump:* B-but why?

*Phineas:* Because ya won't find one up there! Haw-w-w-w-w!

### THE WAY YOU LOOK AT IT

"That smart alec stunt flyer gives me a pain in the neck!"

"Yeah, I got a kink in my neck from watching him, too."

### NOTHING AMAZING

"Dere I vas," related Pilot Schnicklehans, "surrounded *mitt* British Hurricanes! First, dey shodt dem off *mein* wings. Den dey knocked off *der* tail *mitt* more bullets. Nexdt, idt vas

broken in *der* two halves *mein* fuselage—"

"Ja!" broke in a listener. "How exciting! *Und* den vat did you do?"

"I crashed! *Dumkopf!*" came the reply.

### DAWN AND OUT

*Stewardess:* Will you please throw the plane into a vertical at 5:59 a.m.?

*Sky-Sleeper pilot:* What's the big idea?

*Stewardess:* Well, that passenger in Berth Ten told me to make sure he gets out of bed at 6.

### FOOL ON YOU!

Crackpot Jim banked his haywire crate

Eight inches over the airport gate; Outside-looped her hanging by his knees,

Didn't listen to his engine's wheeze. Then he let her spin and wham on down;

Boy, did he kick that plane aroun'! But this poem doesn't end with Jim's ruin;

He landed neat and asked, "How'm I doin'?"

came into the quarters which had been assigned to Trent and Crabb, a satisfied look on his tired face.

"Lieutenant Good will pull through, and the major's going to be all right in an hour or so. I notified Washington by code, but they said to keep it quiet. With this thing blowing up in their faces, the Axis will be held off a while from attacking us, and they'd only say we started the war if we went ahead now."

"It's better this way," agreed Trent. "You have that sample of the acid-gas and they won't risk using it again."

"The country owes you two a big debt," said McCabe. "Too bad it has

to be kept under cover."

"That's all right," Trent answered. "But there's a little matter of financial compensation."

"I don't think there'll be any kick on that," the Air Corps captain said, but he looked a trifle surprised.

"Humph!" said Crabb. He glowered at Trent. "First time I ever heard of you trying to gouge your own country."

Trent chuckled. "Never mind, old bean. I guess Uncle Sam can afford the price."

"The price of what?" said Crabb. "A new hat," said Eric Trent. "I like mine without bullet-holes."

THE END

## SECRETS OF ENDURANCE

(Continued from page 49)

1. Fineness ratio or shape of the body.
2. Surface or skin friction.
3. The general arrangement of surfaces which is known as the mutual interference.

Most model builders employ the first and last considerations effectively, but they underestimate the importance of skin friction. It has been shown by wind tunnel tests that at least 50% of the total drag of a body under low wind speeds is due to skin friction. Minute as it seems,

we should not let the model wings, and tail go unsanded. In fact, every part of the model should be waxed to the point where it glistens.

Let's turn to what is probably the most important phase of model designing; the arrangement of forces necessary to produce stability.

If we are to attain our endurance goal, we must design our model so that it consumes all the power available for climb, and yet retain the gliding characteristics of a sea-gull. Yes, a difficult combination, but far

from impossible. What we must embody within the design is a powerful combination of lateral, longitudinal and directional stability. Investigating each, keeping in mind the goal of maximum climb and maximum glide.

First, our model must contain the following:

1. 2 degrees positive incidence in the wing.
2. Wash-out in wing tips.
3. 2 degrees negative incidence on tail.
4. Right and negative thrust on motor.
5. An adjustable tab on the rudder.

With above and proper arrangement of areas we may reach our goal.

The first step is to design your model plane for maximum glide. To do this we must embody within the design a principle which is known as Phugoid oscillations. This term refers to the longitudinal motion of a stable model, gliding under the influence of gravity. When the longitudinal attitude of an airfoil is changed, the angle of attack of the wing is altered and the center of pressure travels in an unstable manner. It becomes necessary to introduce a means of restoring the normal position. This we do with a negative stabilizer. A combination of washed-

out wing tips, negative stabilizer and a tight spiral will produce the dip-turn motion so necessary for soaring.

Our next consideration, the means of getting the greatest climb is concerned with the negative, right motor thrust arrangement and the proper proportioning of the rudder. Models not possessing features to the proper extent usually make wide circular turns which is known as spiral instability. This instability is due to incorrect proportioning of the rudder and is caused by too large a rudder area behind the center of gravity.

When the rudder is too small the

lateral oscillations become unstable, so that in flight the model sideslips and turns with an increasing rate of banking until it finally either overturns or loses speed and falls.

The effect of the propeller slip stream upon the rudder is to exert a side pressure, which tends to make the model yaw to the side. This effect is corrected by inclining the motor axis to the right of the longitudinal axis of symmetry. The advantage of this method depends only on the motor output and there is no detrimental effect during the glide.

THE END

## NEWS OF THE MODELERS

(Continued from page 47)

henceforth contests at Mercer Airport will be held the first Sunday of each month. Results of the meet were as follows: First, Clarence Wells, New Hope, 2 min., 43 sec.; second, Tom Fresco, Lambertville, N. J., 2 min., 33 sec.; third, Les Parsons, Lambertville, 2 min., 20 sec.; fourth, Jacob Jacobson, Trenton, 2 min., 13 sec.

### GHQ Motors Loaned

GHQ MOTORS, of 40 East 21st Street, N. Y. C., wishes to call to the attention of model builders clubs that it has available a limited number of factory assembled engines which may be borrowed upon payment of postage both ways. Interested clubs should write to GHQ for an application blank.

### Gas Modeling a Sport?

IN A LETTER to AMA headquarters, A. B. Brand, of Rockford, Ill., pleads for honest recognition and definition of the purpose of gas modeling. Portions of his letter follow:

"What is gas model flying all about, anyway? Is it a game, a sport, a hobby, a form of exercise, or a nuisance? Does it tell its followers anything about practical aeronautics; if so, how much? Does it attract only queer people who are carried away by a craze, or can it have some appeal to sober-minded, substantial folk?"

"My conclusion is that gas model flying should be primarily a sport—a competitive game which requires careful training and preparation, through knowledge of the equipment used, recognition of responsibility toward the property and persons of others, and an accepted code of fair play and good sportsmanship. Let's quit trying to tie it up with high-speed aerodynamics of full-scale aviation. Let's make the sport appealing and worthwhile.

### New AMA Contest Manual Out

THE FIRST edition of the *Contest Manual* published by the Academy of Model Aeronautics is now on sale for 50 cents postpaid. Copies may be

secured direct from the AMA headquarters, Willard Hotel, Washington, D. C.

As the official handbook for model activities, the *Manual* contains scores of charts, illustrations, official competition forms, and detailed explanations on how to set up and run meets.

One of the most interesting features is the inclusion of contributions by competition directors who present the latest ideas in promoting, publicizing, and conducting model meets.

Prepared for use by club leaders, recreation officials, sponsors, and dealers, the *Manual* contains the official national and international regulations, as well as special rules covering all types of experimental and exhibition models. Complete arrangements are detailed for setting up and conducting competitions, ranging from simple beginners' contests to National Championships. Also, for the first time, helpful directions are given on how to prepare publicity for newspaper consumption and how to secure radio time. The latest national records are included, as well as a break-down on the various types of models which may be flown in record attempts.

THE END

## BREED OF THE HELLFIRE

(Continued from page 24)

know that. Perhaps he was going to do the two loops.

But Swain's ship only started up the second and then fell off.

"Hey, Swain!" barked Crash. "Swain . . . Report, Swain! What are you doing?"

But all Carringer got in reply was a dull guttural sound that might have been a choked sob, a harsh cough, or the first gutting gasp of strangulation. Still, it might have been some form of radio tube break-up. There was no answer in words, at any rate.

"Swain! . . . Swain!" Carringer called again. "Are you all right? Answer me, Swain!"

The lead Hellfire was falling into a tight spin now and Crash was speaking distinctly and calmly, trying to contact the Canadian Group-Captain: "What happened at the end

of that loop, Swain? What happened?"

There was no answer, and somehow Crash knew that Swain was dead . . . or doomed. The two-engined fighter was going down full tilt in an erratic tight spin. If she held together with all power on like this, there could be no question as to her ability to stand structural stress and strain.

Then before Crash knew what was happening, a new terror crept into the picture. But this was a terror that could be seen—and fought!

For an instant, Carringer could not believe his eyes. He saw the plane, he saw the insignia, and he saw the guns firing at him. Still, he couldn't believe it. But there it was, and the bullets were slamming into the dural wings and fuselage of the Hellfire!

From the turrets of an odd-looking

Douglas B-18A carrying American Air Corps markings, came a hosing of bitter fire.

That was enough. Crash made a game effort to get his nose around and draw a bead on the strange Army job, but the effort only completed what the bomber's guns had started. The starboard wing came away and slapped over the back of the Hellfire with a thunderclap of metallic inferno. Cruel .50 caliber slugs had cut away the main spars at the wing-root and the torsion ribs had been slashed as if by giant knives. The battered Hellfire swung around hard, tried to get her nose up in a final game effort to fight back, but Crash knew another flamer was about to go down in his log-book.

### CHAPTER II

#### A DEFIANT OATH

ALL VIEW of the Douglas was blotted out by the fractured wing, but Carringer had retained enough

in his memory to recall certain salient features of the plane. It was a regulation B-18 with regulation markings, but above all he had seen that squadron insignia—a gay sword-in-hand Cavalier astride a black shield.

All that flashed through Crash Carringer's mind as he fought to get clear of the tangle of wreckage that fouled the sliding hatch of the doomed Hellfire. He slipped the catch of his safety belt and shoved himself back as far as possible. He reached up and rammed the palms of his hands against the curved top of the hatch. He yanked at the release bar and tugged at the slide handles, and for the first time in months he sensed the talons of Fear—not only sensed them, but felt them!

"They got Swain one way, and then made sure of me another," he fumed, sweating as he struggled. "If I ever get out of this, I'll at least have something to work on."

But there was the matter of getting out. The hatch was sticky. He managed to get it back about three inches and realized that he would have to work fast if he was to get out at all.

"Crack-up came at about 14,000," he calculated. "If she'll spin flat a few minutes I might make it. If she goes down nose first, she may pull the other wing off and I'll be down before I can open that sardine can."

The Hellfire was swirling in wide, uneven circuits so far and he had some hope. Still, there was nothing he could do with the hatch. He could kick out the Plexiglas panes if he could get over on his back and get his heels up, but the frames of the hatch were too small to allow egress with his parachute. He'd see that that item was fixed—if he ever got out.

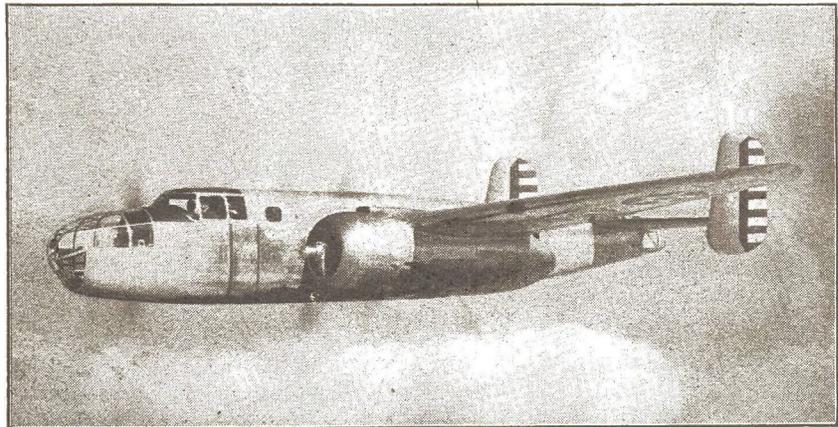
He swore and glanced about. Was there another method of getting out? Why didn't that wing root come away clean and leave a big hole? No, the main fuselage structure had been too well built. There wasn't room for a toy terrier to escape that way.

He wondered about Swain and then fought to erase the memory of that crazy loop. He tried the hatch again and sensed that the Hellfire had gone into a new movement—a movement complete with high-pitched wails and screams. She was nosing down, getting herself into a lather about diving fast and splashing herself all over the landscape.

Crash fought madly now, but the pressure of the wreckage was even greater. If only that other wing would come away. That might clear the whole mess. He sat back and took the gambler's chance.

Whirl after whirl was spun off. The screams increased and the retch of outraged metal joined the chorus until the elements took their toll and the gambler saw the dice turn and show the desired spots. There was another soul-rending banshee wail of dural and the other wing came away, letting the nose down steeper. That

## The Plane on Our Cover



AT THIS writing, there is very little information obtainable concerning North American's B-25 Medium-Bomber. However, it appears to be a development of the NA-40 which was presented in "Modern Planes Album" some months ago. And because of this lack of information, we find it necessary to draw upon deduction for details.

First off, probably the most interesting and important feature incorporated in the B-25 is the use of a tail turret. RAF bombers for years have had this type of protection, but when all-metal ships became the vogue, America seemed to drop the idea. One of the few U. S. bombers equipped with a tail turret since the days of the old Curtiss B-2 Condor is the Consolidated B-24, 26 of which were recently

ordered by the British.

The B-25 is an all-metal, full-cantilever mid-wing monoplane, carrying its bomb load in special bays within the fuselage. The mounting of the engine nacelles is exceptionally interesting. They are slung almost entirely beneath the wing, with just a small fillet portion above. The undercarriage retracts directly into the nacelles and is housed in by folding.

Apparently, a crew of either four or five is carried. This would include a nose gunner, a tail gunner, a pilot and co-pilot, and possibly a radio man-bomber.

After our cover went to press, incidentally, North American requested that we change our cover line from "B-25, Fastest Medium-Bomber" to "B-25, Fast Medium-Bomber."

was all she needed. The wreckage of the starboard wing swept off and the hatch was cleared.

"Baby, oh baby!" breathed Crash as he ripped the hatch back and climbed on his knees to the seat.

Then began a new battle for life. The whirling projectile which was carrying Crash down at well over 500 m.p.h. was really in its stride now. Getting the hatch open was simple compared to the struggle of getting his body into the clear. The first hammer-blow of slipstream almost took his head from his shoulders, but he hunched up and struggled to get his shoulders clear. The pressure forced his stomach against the raw metal of the hatch and almost winded him, but he struggled on fighting for life and breath and finally got his feet under him and gave a mighty push.

The slipstream did the rest. A giant unseen hand took a "bouncer's" grip beneath Carringer's windbreaker and gave the desired heave. Crash's body went out with all the force of a circus performer being blasted from a cannon. He went away, somersaulting like a flying pig, clearing the

tail fin by inches.

He found the ring and pulled. He closed his eyes and relaxed into the slow tumble of a solid body falling to earth and then got the clap of the pilot chute and the responding jerk of the risers. The harness stiffened and yanked him with a thud into a numb semi-consciousness. The big canopy opened and he was swung back and forth for several seconds.

Then he hit—and hit hard!

They found Crash crawling about on his hands and knees, trying to spill the air from the chute which was dragging him. His nose was bleeding and he fought invisible enemies with his hands and elbows as he tried to gather in the shrouds and blank out the pull of the canopy. They ran their car into it, tearing the chute to ribbons, and then leaped out and cut him from the tangle of linen cords and webbing.

"Swain . . . Where's Swain?" was the first thing he asked.

"Take it easy, Carringer," Granville Hale advised. "There's nothing we can do about Swain. He really got a packet."

"Dead? Crashed?"

HALE NODDED and then stood aside while a medical man kneeled and began to go over Carringer.

"He didn't pull out of the loop," muttered Crash, holding his head in his great hands.

"No. He came down all the way, full tilt, and hit smack. Didn't try to get out. What happened to you?"

"Didn't you see?" asked Crash, raising his head quietly.

"See? See what?"

"Never mind. Prepare another Hellfire for me. I'm going up again and clear up this mess for once and for all. Get one ready, just as these two were fixed up. Same equipment, same weights, and everything—and get me a drink!"

The medical man got up and looked at Hale: "He seems all right. Dragged about a bit, but no real damage. But he shouldn't go up again today. There's a certain amount of shock to a thing like this, you know, and he should rest."

"That's the reason I ought to go up, Doc," Carringer argued, trying to get to his feet. "Get out of a crash and go up again as soon as you can. I'll go right away if you have a ship ready. Only thing to do."

"No," the medical man said. "I want to look you over closely first. After that, you can do as you like."

"Get me back to the office."

The group was enlarged by now. Two more cars came up and mechanics, CAB officials, and a couple of State Troopers made up the circle.

"Get me on my pins," Crash ordered. "I'm flying again in an hour."

Carringer sat in a Packard with Hale, the doctor, and a CAB man. A State Trooper rode with the driver up front. They ignored the two wrecks and went back to Hale's office where Crash lounged on a settee while the doctor gave him a more thorough check-up.

"Swain was alive when we started that loop," Crash explained slowly. "But you probably heard him on your set. He was talking to me right up until we started the loop, but he never spoke again and he never actually pulled out of his loop."

"We heard that," nodded the CAB man. "But what happened to you?"

"I didn't get what Swain got—whatever that was. I was shot down!"

The faces of the men in the room took on a new mask of incredulity. To a man, they turned on the Doctor as if to inquire: "Is this guy Okay?"

"I know you don't believe me, but go out and look at that wreck—if there's anything left of it. You'll find bullet holes all right."

"We didn't hear or see it," someone else said.

"You saw me come down," argued Crash. "There was a layer of clouds up there and that might have blocked it off, but it was there."

"What?"

"A strange-appearing Army Douglas B-18A bomber. Carried the identification marking BS-21 on the fin and a squadron insignia on the fuse-

lage, just forward of the rear gun turret, of a guy in a big floppy hat with a sword. There was a black shield in the background."

The CAB man got Crash to repeat that and then said: "BS-21 is the No. 21 plane of the 19th. Bombardment Group. That ship disappeared less than two weeks ago during a flight from Selfridge Field to New York. It had a new-type turret and a deeper fuselage."

"That doesn't make any sense, Carringer," argued Hale. "If that plane had been swiped, they wouldn't keep the same identification numerals on her."

"But I don't get that insignia of the bird with the sword. I thought I knew them all. A hobby of mine, but I've never heard of that one, and the 19th Bombardment Group certainly doesn't have that," the CAB man went on.

"You can't argue those bullets out of my ship," Crash belted back at him.

"But why the devil would a U.S. Army bomber attack you?"

"That's what we've got to find out. They didn't fire on Swain, and they blasted at me only after he began to go down. Now the argument is whether they first got Swain one way and then used their guns on me. That's the crux of the mystery here."

Hale began to stride up and down his office, running his fingers through his hair. "How could they tell you from Swain? You both had planes carrying Canadian—that is, British markings."

"If I knew all these things, I wouldn't be sitting here," snapped Crash. "All I know is that Swain didn't pull out of his loop. I did, and I got a packet of Browning for my trouble."

"But that plane—if you caught the identification letters and numerals correctly—disappeared two weeks ago."

"You said that before. So what?" Crash demanded.

"Well, where has it been all this time—and who flew it?"

"That's one I'll answer after I get those birds down. And, baby, I'll get them down next time!"

"There may be no next time," mooned Hale. "This isn't being directed at you. This is at the whole Hale plant. They're trying to stop our deliveries to Canada. And if they have a bomber, they can take a crack at the factory."

"They could have done that before, but instead they just picked on me," Carringer went on. "But what is the connection between the bomber—which had disappeared—and the crazy business about these poor Canadians? They get it one way, and when I go upstairs to find out I get mine another."

SHOP INSPECTORS came in with two reports on the crashes. As Crash had stated, his plane was riddled with machine gun fire, while that flown by Group-Captain Swain

had simply crashed for no apparent reason. The pilot had sat there and had made no attempt to escape from the fighter.

"So that's that," said Crash coldly. "Now, we'll get another ready, and I want it prepared by exactly the same men who serviced the other. You have the list of mechanics Hale?"

"Sure, but what good will it do?" Hale wailed. "The same thing will happen, and the next time they'll get you."

"So you're quitting cold, eh?" growled Crash. "What are you going to do, chuck this Canadian order? Are you giving in to some mug who has a hate for you because you build a better plane than anyone else in the country? Are you going to let down those guys in the shop? If you are, I'm not, Hale. I'm going up there if they shoot me down a dozen times. I'm going to find out what this is all about, if I go out trying!"

"Maybe they won't shoot you down, next time," Hale argued. "Maybe you'll get what Swain got."

"No I won't. I think I know now what Swain got—at least, I'm going to find out. Stick around, Doc. I got a swell idea."

"I wish you had one that involved going to bed," the medico said moodily.

The group broke up because there were a number of newspapermen outside who wanted to see and talk to Hale and Carringer. Crash agreed to lay low and keep quiet until they had a plane ready. They left him and he had time to think it all over.

He was pretty certain what had happened to Group-Captain Swain. He'd make sure of that before he took off again. Swain, he was convinced, had been snuffed out through one act of carelessness on their part.

But the other business had Carringer puzzled. Why had they taken the risk of being caught with a Government bomber carrying a new turret when they could have carried on in the same way? Why had they decided to get him by firing on him in the air that way?

"There's only one answer," he muttered to himself. "They had the business on hand to get Swain, but they didn't have two. They figured that if they could get me by gunfire it would put us off the scent as to how they were getting the others."

He relaxed with that thought and satisfied himself that he was at least on the right track. There was only one way to find out now—and find out he would!

### CHAPTER III

#### THE STAGE IS SET

THEY HAD another Hellfire ready by 3 o'clock in the afternoon, and Crash was eager to get into action again. He had a routine all set, but he went about the business in a somewhat confusing manner. He ignored the newspapermen who tried to ques-

(Continued on page 66)

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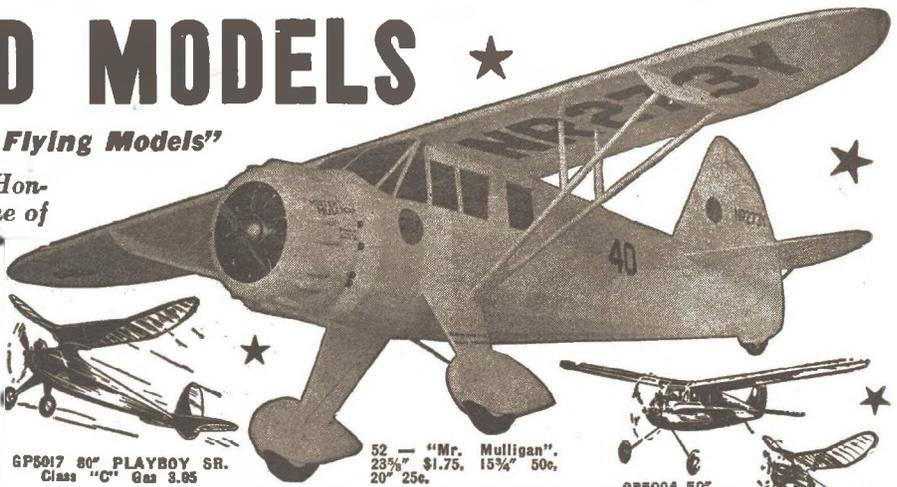
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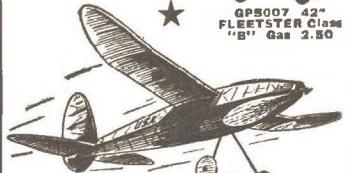
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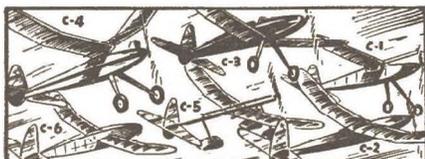
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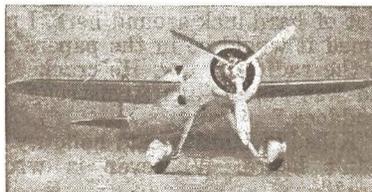
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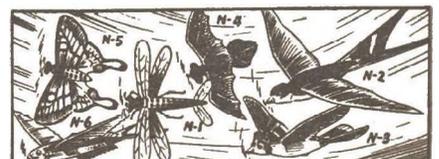
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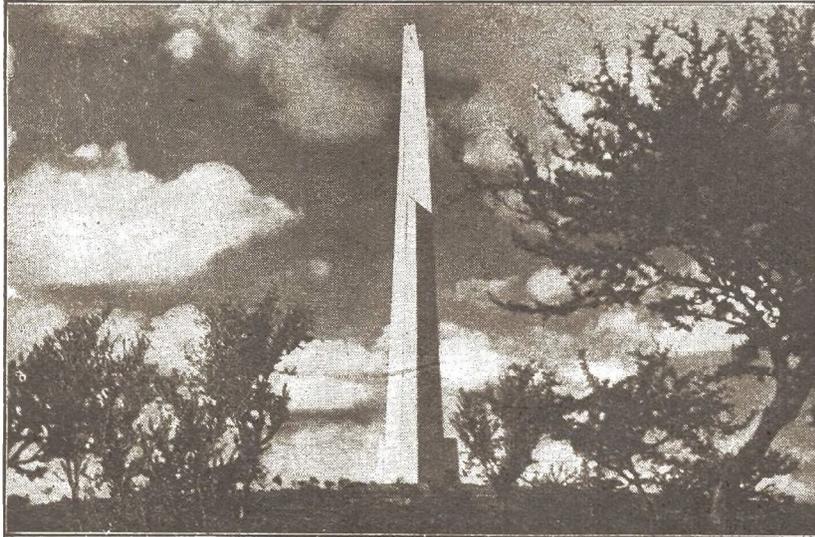


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## In Memory of Myriam Stefford

by A. M. Hutchings



**T**HE FIRST woman flyer to be a martyr to aviation in South America is honored by a monument at Alta Gracia, near the city of Cordoba, Argentina. Myriam Stefford is her name, a Viennese by birth and an American by adoption who came to South America from "The States." Her daring and love of flying soon attracted public interest. She was especially enthusiastic over sport flying and tried to popularize it among her air-minded friends. It was while making a tour of the fourteen provinces of Argentina that she crashed on August 26, 1931.

This outstanding monument was erected by friends in 1935. It is the tallest private one in the world and is also a beacon for planés. It is reminiscent of the Washington monument and is over 260 feet in height. Built of cement, stones, and steel, its heavy metal door bears the simple inscription, "Myriam Stefford."

Its construction is such to defy decay, so that in time it may rank

with historic landmarks of early civilization of South America. In the crypt under the foundation stone are documents pertaining to aviation of today. Near them are buried the jewels which Myriam Stefford used to wear. They are very famous and many of them priceless, having belonged to crowned heads of Europe. There are stories about several of the jewels that catastrophe always overtakes the wearers of them. To stop this run of bad luck all the jewels are buried in the monument.

The tomb of the aviatrix is covered with black granite upon which the outline of a cross is projected. The lighting of the inside of the monument is so arranged that, although no openings can be seen, artificial light is not used. As a warning to those with possible evil intent a stone in front of the sarcophagus bears the cryptic inscription, "*Maldito sea el violador de esta tumba*" (Cursed be the violator of this tomb).

tion him and hurried through the milling crowd outside Hale's office.

As he made his way around the Administration building, a taxicab rolled up to the main doorway and a broad-shouldered man in civilian clothing stepped out with his bags. His eyes came at once on Carringer, and for an instant Crash caught a slight grimace of surprise—or perhaps it might have been a glint of recognition.

"You looking for anyone special?" Crash inquired.

"I'm Hardin—Squadron-Leader Hardin—Canadian Royal Air Force,"

the man said.

"You on the Purchasing Commission?" asked Crash putting out his hand. "I'm Carringer, Chief test pilot."

"Of course. I've heard about you. Is Swain about?"

"Bad news about Swain. We've had a lot of hard luck around here. I presumed it would be in the papers and on the radio by now. He cracked up and was killed—like Armstrong and Craddock."

"Killed?" Hardin said hollowly. "I hadn't heard. Whatever is wrong here?"

"That's what I'm trying to find out. I'm taking up another now in hopes of finding something we can put our fingers on."

One of the Hale field mechanics came up and stood nearby: "What do you want?" demanded Crash.

"I'm to take Squadron-Leader Hardin's bags, Sir," the man said. "These are your bags, aren't they Sir?"

"Of course they're his," snapped Crash, who wondered how the man knew Hardin's name.

"Thanks," Hardin interrupted. "But be careful of this Gladstone, will you? I brought a few bottles of the best down." He winked at Crash.

"Not a bad idea," Crash agreed, watching the man pick up the bags and hurry away through the wide doors. "Does Hale know you were coming?"

"Well, I don't know. You see, I was selected when we heard about Craddock."

Carringer looked straight into Hardin's eyes, trying to fathom all these twists. Hale hadn't mentioned any more Canadian officers that were to join the test crew, but that mechanic knew his name right off.

"I see. Come on along with me and you can meet Hale on the line."

Hardin peered about. "I'll go along with this mechanic chap," he said, "and see that he gets my stuff in. You won't be buzzing off for a minute or so, will you?"

"No, I won't. You'd better take care of that whisky; you may need it," Crash said, adding it all up in his mind.

Crash strode away, his mind a turmoil of distrust, suspicion, and fuming rage. He went blindly out to the apron where a Hellfire was being tuned. The CAB men were there. Half a dozen celebrated newspaper men were standing about with press cards in their hat bands. There were several selected mechanics and the Maintenance Foreman. Glenworthy Hale was in the clear, striding up and down and smoking a big black cigar.

"There's another Canadian in your office. Know anything about him?" asked Crash.

"Another? No."

"Well, he's here and he acts dumb about Swain's crash. It's in the papers, isn't it?"

"Yes. On the radio, too. They're having a holiday out of this. I wish you'd give this up until tomorrow, Crash."

"Well, this guy must have heard about it, if he flew down from Ottawa or Montreal. He must have come into La Guardia, and you can't hire a hack today without getting an earful of radio. But he acted dopey about it."

"Trying to maintain an open mind, I guess," Hale said dubiously. "But why don't you give this up for today?"

Carringer ignored that and set about checking for the flight. He looked the men over and went to the test table where the outdoor radio

was still set up. He went back to the plane after a few words with a State Trooper who stood nearby and then stood watching a man fumbling in an open panel just aft of the cockpit. . . . It was the same man who had carried in Hardin's bags.

"That oxygen set working Okay?" asked Crash, selecting a cigarette and lighting it calmly. "I may go pretty high today."

"Yes, Sir. I have just made certain, with a new bottle."

"Fine. Slip up into the seat, will you, and take a snifter just to make sure she's all right."

The man went stiff and fumbled uncertainly with the panel catches. "But this is a new bottle, Sir. I'm sure she's all right."

"All right. Just make sure. Take a sniff of it."

"I. . . . I don't like to use your helmet nozzle, Sir. You'd better check it yourself."

"You're responsible for the oxygen equipment, aren't you?" Crash demanded suddenly. "Well, get up there and try it. You put the bottle in."

"But it makes me ill. I somehow can't take it. . . . I get ill, Sir," the man said, plainly frantic now.

"Okay! That's all I want to know." Crash turned and nodded to the State Trooper. "Hold this man. I'm going to have the oxygen bottle checked. He refuses to test it himself and he just put it in."

The man darted around the plane, twisted away, and went under the wing just as the Maintenance Foreman snapped the Eclipse switch that started the motor on that side. The unfortunate mechanic charged full into the slashing steel blades of the prop. There was a leaden thock, a low scream, and he went down in a heap, holding his head with his hands. A stream of scarlet trickled out from under his arm-shielded head.

**T**HERE WAS commotion galore. The motor was stopped and the Maintenance Foreman climbed down, chalk-faced.

The blade had slashed the mechanic from his shoulder, across the side of his neck, and had opened his skull for about seven inches. He was dead when they had dragged him clear.

"What happened?" demanded Hale, coming up. "Is this field haunted?"

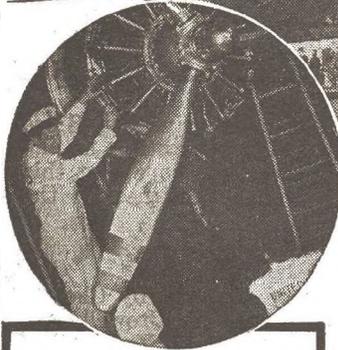
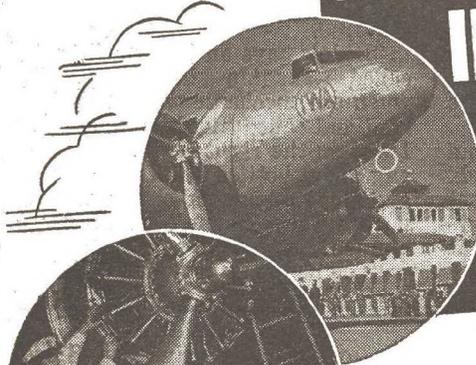
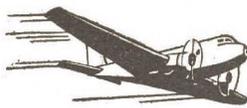
"I don't know, but I'm going to have that oxygen bottle tested," snarled Crash. "Get it out of there and bring a new one—one you know is Okay!"

"Did you say the oxygen?" gasped Hale.

"I'll bet all the tea in China that stuff has been tampered with. I'll bet Swain, Craddock, and Armstrong got it the same way. Why didn't we think of that before? They were breathing some sort of gas that knocked them out. Hey, Doc. Come and get this bottle."

"But you tried yours didn't you?" the medical man said when Crash had explained.

"Sure, but mine wasn't doped. This



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guy apparently had only one left. He got some more just now. . . . that phoney Canadian."

There was a jumble of mechanics, newspapermen, and others around the dead man. They were all shouting and bellowing. The newspapermen began racing for the phone booths and the place was again in an uproar.

"Come on. Let's get that guy who just arrived. I don't believe he's a Canadian at all."

They moved cautiously and skirted the hangers, avoiding the rest of the mob. They cut between a shop and the paint loft and then darted for the Administration building.

"Why would that guy come here like this?" demanded Crash.

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"I don't know," panted Hale. "The others were staying at a small hotel in town. He had all his bags with him?"

"Sure. Bags and bottles!"

But the man called Hardin was nowhere to be found. There was no trace of his bags nor any evidence that he had even been into Hale's office. No one had seen him anywhere in the building.

"Arrived, delivered the goods, and the bird has flown," said Crash. "Well, that puts it off again. I'm not flying that boiler, oxygen or no oxygen, until we check that prop. Might have pulled her out of line."

"I'll put a teletype report out for him," the State Trooper said as he darted into a side office.

They went on into Hale's office and sat down again.

"How did you get the idea?" Hale inquired.

"Didn't have an idea until that so-called Canadian showed up. Then, when our mechanic walked up to the bird and called him by name, I knew I was on the right track. They had a gag about bottles in a Gladstone bag, and I had a hunch about what sort of bottles they meant," Carringer explained.

"Too bad that mug walked into the

prop. We might have caught the rest of the story. Hope they can get this other bird; we might put the screws on him and make him talk," Hale went on with his gloomy attitude.

"I still think there's an angle to that Douglas business," Crash argued. "They came after me today for some particular reason, and I'm going to find out why. In the meantime, we ought to check with Canada and find out who this guy Hardin was supposed to be. There must have been a Hardin—a real Hardin—some-where."

"I'll bet he's dead by now, if there was," Hale said in a subterranean growl. "This is big, Carringer. Only a large and powerful outfit can go into all this. They can get to our men, they must spend big money, and if the two angles are connected it must cost them a fortune to handle that Douglas that tackled you. They would need a field, a hangar, and a crew to man her."

"Well, they're playing for real chips. If you pull out of this Canadian business, they'll step in and grab it and probably sell those guys a lot of junk—and the U. S. can't afford to have junk go abroad."

"What do you mean?"

"Well, suppose this mob sells Canada a bill of goods. The stuff will go to England and have to compete against the best they have over there—on both sides. If it doesn't stand up, it will be a black eye for American military aircraft. We've got to think beyond this war. When it's all over, we'll be back in the commercial market and we will have to live down that junk someone else sold."

Hale didn't answer, but he knew there was a lot in what Carringer had said. There was no need to answer. It was the obvious truth. "Well, what are we going to do about it?" Hale finally went on. "Should we tip off the Army Air Corps about that bomber and have them put out an aerial drag-net?"

"By now, they should know something about it. You made a formal report to the CAB guys, didn't you?"

"Sure."

Crash suddenly jerked around as though someone had stabbed him with an ice-pick. "Wait a minute! They may figure on that, and have half the Air Force out searching. That will give them an even better chance of doing damage, if the sky is full of planes—Army planes."

**H**ALE STIFFENED as much as his bulbous body would stiffen. "Wow! That sure cooks it! Now we have made a mess of it! The only way we can tell is by that nose—and we probably won't get close enough for that!"

And as if in answer, there was a dull, massive drone outside and Hale swung around in his desk chair and stared up out of the wide windows of his office. A formation of Army observation planes was winging to the North.

The search for the mysterious

## Aero Book Reviews

Any volume described in this department may be obtained, at the price quoted, direct from the publisher named and at the address given. When writing for a book kindly mention that you saw it reviewed in FLYING ACES.

### Covering the Field

*How to Get Into Aviation*, by John B. Walker, Random House, 20 East 57 St., New York City.

This "how to" book covers every phase of aviation and flying from "How to Become a Pilot" to "Where to Get a Job in Aviation." Also, a special section is devoted to the "Opportunities in Aviation," telling exactly how the air-minded can find a place in the divers sections of this great game.

This paper-bound volume is really not just one book, but is in reality an encyclopedia of the aviation business, even telling how much you can expect to earn on the various jobs connected with aviation. Moreover, between the colorful covers of *How to Get Into Aviation*, each of the forty-odd subjects covered are dealt with thoroughly without mincing of words or without the usual editorial "padding" we are so accustomed to seeing in books where authors find they have nothing to say and want to say it in the longest possible way.

John B. Walker, author of *How to Get Into Aviation*, incidentally, is not just another self-styled "expert" trying to make an impression. He learned to fly in 1930, is holder of a Transport license, and in January, 1939, joined United Air Lines as regional traffic manager. In addition to that, Mr. Walker is a member of the Quiet Birdmen, the National Pilot Fraternity, the NAA, and was Vice-President of the New York World's Fair Aviation Exhibit.

The only fault we can find with this book, after careful study, is that FLYING ACES is left out of

the aviation magazine list. Since this is the first printing of the book, however, we hope that this mistake will be rectified in the future.

### An Aero History

*Heroes of the Air*, by Chelsea Fraser, Thomas Y. Crowell, 432 Fourth Ave., New York City, \$2.50.

This standard and popular book on aviation has been kept up to date and as complete as possible, by repeated revisions and reprintings. It lists the full aviation record from the time man first tried his feeble wings, or entrusted his safety to a gas bag, to the present. In the office of FLYING ACES, we keep this book handy at all times to check and double check to be sure that our records are at all times correct—just to show how important a place this volume deserves in any airman's library.

As usual in a book of this sort, a photograph of Colonel Lindbergh and his famous Ryan Spirit of St. Louis is displayed as the frontispiece. This is the only photograph in the book, but 86 maps are included, tracing paths of famous flights.

This new printing—the first printing was in 1926—includes accounts of Howard Hughes' trip around the world, Corrigan's "wrong way" voyage to Ireland, the Berlin-to-Tokyo expedition, and many others. Also, there are separate stories devoted to such pioneers as Macready, Maughan, MacMillan, Byrd, Chamerlain, and Lindbergh.

The 874 pages of this book constitute one of the most enjoyable reading periods your reviewer has ever spent. Through this volume, he paced back down the long trail of historical flights that are usually forgotten but which contributed so much toward present day aviation and safety. We're sure that you will also encounter the same experience when eagerly devouring the interesting accounts contained in *Heroes of the Air*.

Also see pages 59 and 74 for other reviews

Douglas bomber was on, but both Carringer and Hale sensed that this official effort would only make their task that much harder and give the mysterious raider a wider scope of action.

"That means, of course," Carringer said coldly, "that I'll have to stay in the air over this field for hours and hours until I can suck them in and do the job right."

There was a knock at the door and the doctor came in. He had the metal bottle of oxygen in his hands. He stood just inside the doorway, hunched up as if he had bad news to impart.

"Okay, Doc. What is it?" asked Crash, throwing a leg over the arm of his chair. "I'll bet I was right."

"You certainly were. Know what was in this air bottle? Nothing less than di-phosgene. That is to say, trichlor methyl chlorformate, a gaseous mixture of decidedly deadly effect if inhaled direct as this must have been. Di-phosgene has been considered in chemical warfare, but it is too dangerous to handle. Those Canadian pilots must have been dead within a few seconds after they took their first inhalation."

"Where can they get such stuff, Doc?"

"They couldn't buy it without exciting suspicion. They might have produced it themselves, if they had the equipment. Or they could have procured it through various means from abroad. You can have your own guess."

Crash took the metal bottle and stared at it with interest. He held it in the palm of his hand and studied the laboratory markings and the intricate stopper. The gas in that cylinder, if accidentally released, would kill all three of them before they could get out of the room.

"Did you give this story out, Doc?" Crash asked.

"Well, yes. The newspapermen stopped me on the way in. I simply told them the oxygen bottles had been filled with something else."

"Good! Then all the evening newspapers will have it and we'll give out the impression that all the trouble is over. First thing in the morning, we'll start testing again as though nothing had happened. Make sure that is released also, will you, Hale?"

"I'll make sure our insurance still holds, too," Hale said with a gloomy gesture. "What are you going to do about the rest of the oxygen, Doc?"

"I'm sending it all back for a complete check-up. We can't take chances on the rest. You'll have to manage without it until some time tomorrow afternoon, Carringer."

"I won't need any. I'll take that chance, anyhow."

CHAPTER IV

CRASH CRASHES!

BY THE next morning the plot was thickened even more. The body of a man had been taken off the Mon-

**EXTRA! EXTRA! RECORDS SMASHED!**

COMPLETELY ASSEMBLED

**\$10.95**

**HOLDS 3 OFFICIAL WORLD'S RECORDS**

**Time in Air**  
On October 1, 1938, Phantom broke the official world's record for time in air. Time: 2 hours 46 minutes 43 seconds non-stop.

**Air Miles Flown**  
On the same date a Phantom powered ship broke the official world's record for number of airline miles flown. Miles covered: 55 airline miles non-stop.

**Altitude**  
Again on the same date a Phantom powered ship broke the world's altitude record. Altitude: Climbed to an elevation of 11,500 feet.

**\$7.25**

**Phantom Motors**

**NEW PRICE OFFER**  
Puts Phantom Motors within reach of all!

Now everybody can own a Record Breaking Phantom Torpedo or Bullet! The tremendous demand by model builders for these 2 motors has enabled us to lower production costs... AND OUR POLICY OF SELLING DIRECT TO THE BUYER allows us to pass these savings on to you, meaning savings \$5.55 on the Phantom Torpedo; \$5.50 on the Phantom Bullet.

NOW there is no reason why you, too, can't install a Record Breaking Phantom in YOUR model... the same type motor that took one model to 11,500 feet, has flown another 55 miles, has stayed up 2 hours, 46 minutes, 43 seconds.

Don't delay! Send the attached coupon today! And your Phantom Motor will come streaking back to you ready for installation. Ready to break records for you!

**BULLET & TORPEDO CLASS "B" ENGINE FEATURES**

- New special heavy duty type radial motor mounting (replaceable plus standard beam mounting).
- Special float type gas gauge (Torpedo only).
- Newly designed larger sturdier gas tank made from Magnesium alloy.
- Gas tank can be mounted on either side of the fire wall.
- All motors equipped with the new Smith "Fire-Cracker" Coil.
- Torpedo produces almost 1/5 horsepower with weight of 4 1/2 oz. Bullet produces almost 1/6 horsepower with weight of 4 1/2 oz.
- Motors built to be used upright or inverted.
- Your motor on its way 24 hours after order received.
- Every motor power block tested in our factory and sold to you under a bonded factory guarantee.

PLEASE RUB THE ITEMS CHECKED BELOW:

Torpedo  Bullet  Send C.O.D.  Add 3% if delivery point is in California

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been placed aboard the Hale Hellfires. The general public was beginning to wonder how soon the Dominion of Canada would declare war on the United States. A Group-Captain and three Squadron-Leaders in that many days was a little too much to stomach.

"And to think," Crash fumed in his hotel room that morning when he read the story, "that I had my hands on that guy—the mug who killed the real Hardin. What a dope I was!"

But he was certain now that there was little chance that he would ever see the man again, so he turned his attention to the more pressing feature of the problem—the mysterious Douglas bomber that had made such an effort and taken such a chance on getting him down.

There was the crux of all this—aboard that Douglas B-18A bomber. And there would be dozens of bombers, fighters, and observation planes searching for it from the Canadian border all the way down to the Mason and Dixon line. There was no telling. Next time they might even strike from a Curtis Hawk or a Lockheed.

After breakfast, Crash left the hotel, slouched into his new automatic-top convertible coupe, and rambled at a comfortable speed out to the

Hale field. Two formations of Army fighters were doing a routine patrol up and down Long Island and a formation of Navy Grummans was booming along the shoreline. It seemed improbable now that the Douglas would risk all this, but they had been taking wild chances all along.

When he arrived at the field there was a full squadron of new Curtis P-40's lined up in front of the hangars. Crash stared at them as he slid from behind the wheel of his car and caught himself wondering just what would happen. And then it did happen!

There was a low scream at first, like the laugh of a loon across a lake at nightfall. The scream increased in tempo and pitch until it became an insane retch of Death.

C-r-a-s-h! W h a n g! Car-r-u-m-p!

Three great greenish streaks spewed out of the sky and struck full among the P-40's and blew them to a tangle of wreckage. Two more hit a dozen or so yards away and flamed out great holes in the Tarvia runway. Another brace fell wide and exploded with a mad roar at the far end of the field.

Car-r-r-u-m-p! C-r-a-s-h!

More fell, and Crash threw himself flat near the car. Another bomb struck amid the lineup of fighting planes, and chunks of dural wing and shattered sections of fuselage went sky high and banged back on the ground with a clatter of old iron.

Men ran in all directions. Some crawled in agony and then lay flat, kicking their toes into the concrete apron. They screamed and rolled over and tried to crawl again. Another explosion belched out nearby and blotted out slabs of the mad scene with concrete, dust, and smoke.

Through it all, Crash charged for the open door of the Test hangar. There was a Hellfire standing there and he roared orders left and right. The mechanics swarmed back toward it and Crash raced for a locker where he knew he would find a parachute and a jacket. The helmet should be ready in the cockpit.

Army men stood staring at the wreckage of the P-40's. A mechanic had one engine of the Hellfire ticking over.

"Get her wound up! Get her wound up!" Crash was bellowing as he snapped the swivels of his harness. "Get her going!"

It seemed minutes, but it was actually only seconds before both engines were thumping over. Crash was in the cockpit, buckling the helmet and tightening the safety belt. Outside, more bombs were striking with savage ferocity. Machines were afire and the field was half obliterated with smoke and debris dust.

A man who was bleeding and holding one arm stiff, got the doors open wider and Crash charged the Hellfire outside and let her rumble through the smoke to a position where he could risk a take-off. It would be a risk, too, for the engines

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were hardly warm. But he had to take that chance now. None of the Curtiss fighters were available now. Those that had not been struck were tangled up in the wreckage of the others.

Someone came yelling out toward him as he fanned the tail of the Hellfire around. Crash waved him off. He knew that the man would tell him that there was no oxygen aboard and not to risk altitude. He knew all that, of course, and would have to take that chance.

He ignored the man and let the Hellfire charge into the swirling column of smoke that was rolling across the field. He came out still fighting to get her off. The engines were cold and sluggish and he did not dare risk forcing them for fear of choking them off completely. It was too late now to pull out. He was struggling into the air on about 40% of available power and he was glad that the Hellfire was only fairly lightly loaded.

Somehow he managed to get her into the clear and begin a crazy climb upstairs. He settled himself for minutes of anxious effort and hoped he would be able to find out just what it was that was releasing that death and destruction from above.

**T**HE TEMPERATURE needles went up gradually and he was able eventually to open the radiator shutters a trifle. He checked his instruments in sequence and was so intent on reaching the raider that he forgot all about contacting the ground. While he sat there counting the minutes and watching the altitude needle move around the black and silver dial, he drew up his oxygen mask and snapped on the valve, just to see if there was a bottle available.

Just as he thought. There was no sweet warm hiss from the nozzle and he smiled and snapped the valve again. He settled back for the climb and tried to pierce the early morning haze above for some sign of the raider. He wondered what he would find up there. Would it be a Douglas bomber with Air Corps markings? Would it be several light bombers? Or would it be a bomber of foreign origin?

"No use sitting here wondering," he argued with himself. "They're still slapping sticks of bombs down below, so they're still up there."

Crash glanced at his altimeter and saw that he had made the 12,000-foot mark. He forced her still more and began to sense the outside cold and decided to do something about the guns. They would at least need warming up.

He glanced at the ammunition box indicators, and then for the first time realized the hopelessness of it all. That's what the mechanic ran out to tell him. The Hellfire had no ammunition aboard!

He snapped the switch of his radio, took up the mike, and called the ground. They were bellowing at him from there by now.

"... tried to tell you," Hale was saying. "That ship was being prepared for a gun test at the butts, and they had taken the belts out. Better come back, Carringer."

"Well, I'll be..." raged Carringer. "I thought this was the ship you had prepared for today's test. Now what do I do? That guy must be a few hundred feet above..."

But that was as far as Crash got. The radio chatter had been picked up and he was already under a stiff hail of fire from above. A torrent of lead splattered into the Hellfire and Crash knew he was in a tight spot.

"That's what I get for talking too much," he growled, ripping the two-engined fighter around. "Should keep my mouth shut more. Now they know I have no guns. They'll raise the devil with me. No guns, no oxygen!"

Still, he did not stick her nose down. Instead, he hoiked hard and ripped her into an even steeper climbing turn, oxygen or no oxygen.

The attacking plane was a Douglas. There was no question about that, but it was carrying different markings. They had pulled the stunt Crash had figured they would. The letters were "B.N." and the numerals "16." There was a patch across the nose that glistened more than the other doped area, and Crash sensed that they had daubed off the Cavalier squadron insignia. But that strange-appearing turret and the deep body gave it away at this close distance. Crash knew it was the same job—but he didn't know what to do about it!

"You babies sure worked fast," growled Carringer. "You've got me stuck, too. No guns and no oxygen!"

He held her in the steep climbing turn and darted about as the gunners aboard the Douglas slapped slug after slug at him. He had to fight it out as long as he could keep ducking slugs, because there was only one way he could get them now.

The altimeter needle climbed from 19 to 20 and he began to sense the rarity of the air. His breath came hard and his respiration increased. He was hot and yet cold. Beneath his helmet he was sweating profusely, but his hands and feet were almost numb with the cold! He felt stiff and weak. Much of the marrow of his spine seemed to have dripped away in the last few minutes. He found himself drooping listlessly against the belt or against the seat back.

"Cut it out!" he argued with himself as he slithered away from another burst. "Get hold of yourself, you dope, or you'll be going off to sleep!"

Another burst bashed through the Hellfire and the slipstream whistled through the holes and added a new wail to the screaming agony. He fought against the weakness of his limbs and tried to get the Hellfire up higher. He knew she could do it—but could he?

The Douglas slammed across the nothingness of the sky again and the front gunner went to work. The Hellfire somehow weathered it and

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staggered on. Crash drew deep breaths, doll-danced the Hellfire all over the sky, and tried to hang on. Then he realized that the Douglas was trying to get away. They had played out their string. They were being out-gamed by a man with no guns!

Crash swore and dragged back farther on the stick. The altimeter was up well over the 26,000 foot mark now and he was simply gasping for breath. His legs were leaden and his arms were frozen stiff. By now, too, his eyes were doing strange things and at times he could see two Douglases—one super-imposed on the other.

He had no idea where he was flying, or how. He simply flew by instinct. He could see the Douglas trying to get away now, and he suddenly sensed what they were running away from. They had figured out what he had planned to do and they wanted no part of it.

"That's it," he muttered slowly, hunched up in one corner of his seat. "They know what I'm going to do—and I'm going to do it! They can't get away with this!"

Somehow, he pulled himself up and let his weight rest against the broad webbing of the safety belt. He dragged the Hellfire up a few more feet, and with his last gasp of breath and effort he suddenly slammed the throttle up the gate to the last notch and tore full tilt at the scurrying Douglas.

He could see the rear turret gunner start to swing the fire tubes around at him, but he could also see the gunner stop and stare wide-eyed at him. Or was Carringer seeing things?

The mad duel went on for seconds and finally the gunner was rattled to his senses—but it was too late then. Carringer just remembered ramming the port engine smack into the big tail assembly of the Douglas as the double blast of point blank fire took the top of his hatch away. He had mercifully slumped as the propeller ripped into the tail and fin, eating away the vital controls, and he knew no more until he regained consciousness several thousand feet below.

He finally jerked and stared about. He was going down in a flat spin with the remaining engine flaming like a giant torch. He kicked his feet clear of the rudder stirrups, drew in several long gulps of reviving air, and then prepared to go overboard. He was still stiff and cold, but his mind was clear and faculties were at his command. He stared out and gulped when he discovered that he was still somewhere over the Island. He realized that he had probably worked his way Northeast with a wind without knowing that he was playing safe.

He kicked clear and went over the side, taking his time about pulling the ring. He allowed himself the cushiony pleasure of the easy tumble and stared about as he went earthward. The Douglas was kiting around the sky, about a mile away, slipping, div-

ing, rolling, and throwing away chunks of its tail assembly.

There were two white parachute blossoms, also, not far away, and Crash Carringer was very satisfied.

**T**HE STATE TROOPERS rounded up two of the crew from the Douglas, which crashed in a heavy thicket near a golf course. The third managed to slip away. One of the two caught was the man who had represented himself as Squadron-Leader Hardin. The other was a hook-nosed Latin who had acted as the front gunner. The rest aboard were all dead, the Latin bird said.

"You're nuts," the pseudo Hardin said when they met in the Cloverdale Police Station. "Any guy who will take the chance you did, with no guns, ought to have his head looked at."

"What do you expect from a test pilot?" demanded Crash. "And what do you mean, they're all dead aboard your bus? I didn't fire any shots."

"No," Hardin grinned savagely. "But I did. I wasn't letting those guys get down here and talk too much. I'd have knocked them all off, but they jumped too soon."

"You're a nice guy," a Trooper said. "Sure. But he'll squeal when they stick him in the chair."

The hook-nosed Latin leaped to his feet before a Trooper could stop him.

"You swine!" he blazed. "You did them in like that?"

"Shut up, greaseball! You got out alive, didn't you? You jumped before we were really in trouble. We sure had some brave guys aboard."

"Well, I'll be brave enough to spill the whole story . . . right now," the excitable Latin guy blazed. "What you want to know, Mister?"

"Where'd they get that Douglas?" demanded Crash.

"Three of us got three hundred dollars apiece for that and a chance to get out of the Army," the hook-nosed youth snarled, looking at the man who had killed Squadron-Leader Hardin. "Three hundred bucks, and we blew it all in the first night."

"We were supposed to fly from Selfridge to Mitchell Field one night," he went on. "Instead, we held the bus up. Daubert—he was the radio man—socked Captain Derwent, and he socked him too hard. Derwent died before we got down. Maloney a Mick Flight-Sergeant, took over and brought her down at Zigler's place up above the Adirondacks."

"Zigler? Who's Zigler?"

"This guy," the hook-nosed man said, pointing to the man who had killed Hardin. "He's Zigler."

"Shut your ugly trap," Zigler raged. A Trooper shoved him back in his seat.

"What else you want to know, Mister? It don't matter now, I guess. We blew our three hundred in one night at a hot spot in Albany. Crime don't pay, I guess."

"But what was it all about?" asked Crash.

"We were paid after that to get you—you're the Hale test pilot, ain't

you? They were fixing the oxygen bottles at first, but they ran out of the stuff and Zigler bopped off another Canadian so he could get into the plant with his bag of new bottles. He kills guys for nothing, that guy Zigler."

"I know he killed Squadron-Leader Hardin on the Montrealler, but that doesn't make any sense or clear up why he picked on me and why he swiped that Douglas," said Crash probing for information.

"Look, Mister," hook-nose said with another glance at Zigler, "I'm just a punk in this racket—I must be, to sell out for three hundred bucks—and I don't know the whole story. All I know is that we swiped the Douglas so that Zigler could use it to beat your outfit. If he didn't do it by getting the Canadian test pilots, he was going to bomb the joint. That's what we were trying this morning, when we knew you had got out of that mess yesterday."

"But Zigler doesn't have all the money to pull this, does he?"

"He ain't got none, Mister. All he's got is an airfield up New York State. He tried to sell it to the Government for plenty of jack and they didn't come across, so he sells out to some other punk who wants to put your mob out of business. I don't make much sense, I know, but maybe you can put Zigler on the pan later and heat him up till he talks."

"He gets dough from a rival concern?" asked Crash.

"I guess so. He didn't sell his field to the Government. He had picked it up quick and cheap and figured to make a few grand, but the deal didn't work—so he just took dough another way. An' we mugs sold out for three hundred bucks! Now we all get the hot seat, eh?"

"I wouldn't know, kid," said Crash. "What made you sell out that way?"

"Zigler starts off by telling us we're in a suicide mob and shows us how to get out, with three hundred bucks. But we slop it all up in one night and we have to stay with him because we had deserted."

"You changed the letters on that ship, didn't you?"

"Sure! After we heard you sneaked in yesterday, we figured you would remember something about it; we changed 'em to make it harder. That was Zigler's idea, of course. He's a tricky guy, all right."

"Well, we'll see if he can wriggle out of this one. You keep talking, kid, and you may talk yourself out of this rap. You didn't hit your pilot, did you?"

"No, Daubert—the radio guy—did that. I was just the gunner—for later on. I'll talk Mister. I'll talk that guy Zigler straight through the little green door. Hell, he kills guys for nothing!"

"Well, they'll put him away for plenty, kid. Take 'em away, Trooper," grinned Crash. "I've got a lot of Hellfires to test until a good live Canadian comes along."

THE END

## CLUB NEWS

(Continued from page 35)

ashamed of the results you have been turning out. This monthly special award feature was started in the first place to make decoration winning a little easier for you Clubsters. If the response doesn't get better, though, we'll have to ditch the whole idea. And that means you'll be able to earn the handsome DSM only through the Escadrille or by performing some outstanding deed in the promotion of aviation. They were the rules in the first place, you know, but we changed them just to make it a little easier for you Clubsters to win the small DSM.

Sorry Clint has had to bawl you boys out like this, but it just had to be done. And there's only one way you can salve his feeling, too—enter the Distinguished Service Medal Contest right away. Don't be discouraged if you don't win the first time; just keep at it, and one of these months you'll be sporting one of the most outstanding medals in the world.

Here's a note from John J. Jeckell, of Wilkes Barre, Pa. His communicate says:

"I read about your Club while I was stationed with the National Guard encampment in up-stat New York recently, and, as you see, I've decided to join the F. A. Club. I've been building models for the last twelve years, the first being out of cigar-box wood. I belong to the NAA and am also a charter member of the Wilkes Barre Aero Modelers, the most active club in town. Anyway,

## WHAT MAKES—?

(Continued from page 7)

boom. Many times during the last war I heard people say: "I certainly never thought *he* would ever become a great soldier. Why, he would never even take a dare! He was always reading books and he never made one athletic team in high school. How can you figure that?"

Perhaps it is fear that makes great airmen, not courage—the quality of fear that turns them into raging madmen when their life or safety is threatened. I am quite sure that Sergeant Hannah more feared the prospects of being taken prisoner, had he jumped from that Handley Page Hampden, than that of burning to death or crashing in a flaming bomber with no parachute to save him.

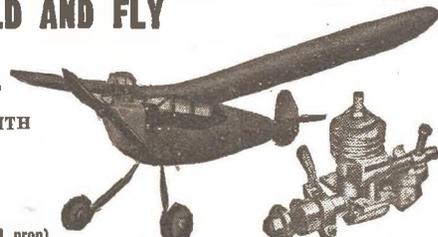
The writer, who spent many months in various capacities on the Western Front with the Royal Air Force, can still recall the clammy sensation of fear that came when an engine began to falter miles over the enemy line. The same fear never arose when enemy planes attacked

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Clint, I thought I'd better tell you to reserve a nice D.S.M. for me—for I'm quickly completing a 'Plecan Paragon.'

Okay, Johnny. You just send in that snapshot of the "Paragon" and if it shows up as good as you hope, the judges will all agree, then we'll call you the "Master."

Personal to Bob Flapnick: Sorry, but there are no complete "Trail Blazer" sets available. However, we may have some back issue containing certain plans you wish. Write to the Subscription Dept., c/o this magazine.

Well, fellows, this winds up our session for this month. *Adios, Amigos Mio.*

THE END

our machines. All of us agreed time and time again that it was the fear of being shot down and being taken prisoner that made us put up our best efforts. We feared being confined behind barbed wire and subjected to the indignities of a prison camp.

**WHAT DOES** all this add up to? We are trying to determine what makes a great fighting airman, and so far we have not found an answer. If I could look at any group of men and say definitely that this fellow and that fellow would be top-notch, then I am sure I could command a towering salary in any country. As a matter of fact, it's even impossible to tell this during the training or peace-time service stage.

The officials of the Army Air Corps and Navy Air Service draw up a certain physical and educational specifications to which candidates must conform. Then they demand that the Cadets undergo certain ground and air training. At the end of two years, we have a graduating class of military airmen—but we have no idea of how they will perform in actual war. They may be great at aerobatics, navigation, theory of flight, and gunnery, but all that goes by the boards

### \$\$\$ CASH FOR PICTURE-TAKERS \$\$\$

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when the enemy's guns begin to spit.

With all this, though, there are still fundamental qualities necessary to become a fighting pilot. Some of them don't show for quite some time, and others are apparent immediately. But, regardless, every real fighting pilot should be an excellent marksman. This can be developed only through handling of fire-arms. It is not something that might be called a "gift." He must at all times, during a battle, have a clear mind and be able to reason thoroughly. Even though some of the World War pilots

flew into a blind rage during the heat of battle, the greatest aces were always composed and they usually had their actions planned long in advance.

A fighting pilot need not be an airman in the strictest sense of the word—that is, it's not necessary for him to know how to land on three points every time and how to come to a stop within so many feet. He must be a natural pilot, however. There is a great deal of difference. In the air, a natural flyer will always fly rings against one who "just wanted to learn."

And, as you have undoubtedly gathered by now, a truly great fighter must have fear. Courage is for the usual run-of-the-mill pilots who "just don't give a damn." If you have fear of being captured, for instance, you'll move heaven and earth ten times a day to keep that from happening.

And now we come to the most important item—one that is never taught but has to be learned through experience. That is—respect your enemy. Respect his flying, his machine, and the cause for which he is fighting. Remember, he is just as good a man as you are, and he might be better. Don't underrate him during combat, because you may be overrating yourself. Instead, feel him out, cautiously, and determine exactly what type of an airman he is, how he flies, whether he is a good marksman, and whether he can think as rapidly as you.

Beyond that, there is nothing more that can be said. True, various causes made many World War aces the great flyers and fighters they were—causes which we undoubtedly will never know. However, the above listed are the basic principles—and maybe that's the reason there are so few real fighting pilots.

THE END

## Aero Book Reviews

Any volume described in this department may be obtained, at the price quoted, direct from the publisher named and at the address given. When writing for a book kindly mention that you saw it reviewed in FLYING ACES.

### The Whole Works

*ABC of Aviation*, by Lt. Col. Victor W. Page, Norman Henley Publishing Company, 2 West 45 St., New York City, \$2.50.

That Lt. Col. Page is one of America's outstanding authorities on aircraft construction and maintenance, is a well known fact. His numerous books on all phases of aviation are used in practically every aero school throughout the country. *ABC of Aviation*, which was written several years ago, has been brought up to date and thoroughly revised. Its 436 pages are interspersed with 200 authentic photographs and line drawings.

The book contains twelve chapters, each simplifying the exposition of all types of ships with condensed instructions on their basic principles of construction and operation. It includes descriptions of important recent developments in airplanes, engines, airliners, inspection, and trouble shooting prior to flight, instruments used in blind flight, and ordinary and acrobatic flying.

Each chapter is followed by a quiz so that the reader can test himself. All technical terms are defined and explained so that they can be understood by the lay reader.

The reader going into the flying end of the game will find that the review questions will enable him greatly to prepare quickly and economically for his private pilot's license after he has put in the required flying time. In short, *ABC of Aviation* is interesting, readable, and instructive.

### Flying on Paper

*How to Fly a Plane*, by H. P. Oldham, Waverly House, Boston, Mass., \$2.50.

When Lindbergh flew from New York to Paris fourteen years ago, aviation and private flying gained new impetus, and to aviation book publishers it was a holiday. Any volume giving "dope" on controlling an airplane turned out to be a best seller.

In those days, a barnstormer with any old crate was an "instructor," with the result that many student pilots learned flying in a slipshod fashion. Instruction such as that lasted until the CAB took measures to re-rate all instructors. This was done so that all those learning to fly privately, or under the College Program, would have standardized instruction.

*How to Fly a Plane* is a recent book, written by an old time RAF pilot who came to the United States and interested himself in the American way of flight training methods. Primarily, however, his interest was in helping people not only to learn the mechanics of flying, but to help them understand how it feels to fly—to make the beginner feel perfectly at home in what is at first a strange element.

To this end the author has planned his book so that the reader will know almost exactly how it feels to fly a ship of his own. We go as far as saying that the book accomplishes its purpose very well.

The book covers the basic elements of flight instruction that takes the reader through every phase of the course outlined by the CAB for a private pilot certificate, plus some additional air work. Line drawings, illustrating many typical maneuvers, give a clear picture of the manipulation of the controls required to accomplish them.

H. P. Oldham's book is a sympathetic approach to the reader who wishes to know all about planes, yet who feels that he must have a scientific mind. The author's style of writing quickly dispels any such viewpoint. As mentioned above previously, Oldham has been an instructor, and after reviewing his work we cannot help but feel he is still a good one.

## THOSE STUKAS

(Continued from page 28)

dive until the circle of the target entirely filled his sight. He clicked the shutter on his camera gun and at the same instant hauled back on the stick. As he did so, his head seemed to have been driven down between his shoulder blades by a tremendous shock. It was several seconds before he realized that he had hit his landing gear on the beach.

When he took his position in formation at 5,000 feet he was bathed in a cold sweat. He looked around at his comrades to see if anyone had noticed his near crack-up. As he glanced dazedly around he realized that something was wrong; then he saw that the formation was lopsided—one of the ships was missing! As they circled the target he looked down and realized with horror that the pile of wreckage that was burning about fifty yards from the target was his best friend's ship, the one that had followed him in that last dive!

The next day Pat was called into the C.O.'s office. He was shown the pictures taken from his camera gun, and the C.O. told him that by measuring the size of the target they figured he was approximately only 18 to 20 feet from the ground when the trigger had been pulled!

The following day an order was posted that all pilots were hereafter to use only open sights when diving on ground targets. That order still stands in the R.C.A.F.

THE END

Also see pages 59 and 68 for other reviews

**"I KNEW . . ."**

(Continued from page 32)

She stole plans for a bomb sight!" Major Garrity yelled. "That black-mailer was a great inventor from Paree and he come to Bar-Le Duc to work as he was afraid there was too many spies in Paree. She got the key to his room and stole the plans. You are under arrest, Lieutenant Pinkham. This time, you can be shot."

"L-let me sit down here f-for a m-minute," Phineas gulped. "Now y-you s-said—er—never mind. I remember. Oh-h-h-h! She was a snake in the grass. I w-was p-putty in her han's. G-give me a gun, Major, I w-will end it all."

"You go to your Nisson, Pinkham," Garrity said weakly. "You got to stand trial like any other spy an—I will tell you what you have done, Pinkham. The Krauts will perfect that bomb sight and come over here and not miss with a single egg. An' when everybody is dead or dyin' an' everythin' is in ruins, it will be because of Phineas Pinkham who was a pushover for a dame. You can hear your pals screamin' with agony now can't ya, huh? They—"

"Let me go after that dame! I'll—"

"Ha ha," the Frog General pushed through his spinach. "He thinks we are so easy to fool as heem, non? Major Garrity, I hold you responsible for ze prisonair. He escape an' eet go hard weeth you, *Oui!* We take ze aviator over an' have Jean Boubal-laise identify heem, so!"

"I confess," Phineas yelled. "I give him the Mickey. But I didn't know the doll was a Kraut. I want a lawyer as I got a case. I am a country boy who never met no sireens before an'—"

"Shut up," Garrity said. "It will be used against you."

**P**HINEAS was taken over to his hut and a guard was placed outside, until some cops came to pick him up and toss him into a stronger klink.

"Write me out a pass," Bump Gillis said to the C.O. "I ain't goin' to risk gettin' knocked on the dome by one of them doughs."

The Old Man even felt a little sorry for Phineas. He knew it would take more than the Pinkham sleight of hand and black magic to get himself out of such a sling. He sat down and tried to take his mind off the flyer. He thought of the Heinie ammo dump behind Metz. G.H.Q. would do a lot for an outfit that managed to smear it. D.H.'s and Handley-Pages had failed to break through the ring of anti-aircraft guns that hemmed it in. There were two big Boche air-dromes close by and they generally were doing business from four to four.

"Suicide job, huh?" Garrity growled. "If I knew a guy who wanted to end it all—yeah. Why not? They'll bust Phineas for keeps. They

might go as far as to shoot him to placate the Frogs. Er—H-m-m. I'll go see the crackpot."

The Old Man did. He hinted to Phineas that a guy might easily steal a Spad if it was put in the right place and the word passed around. There would be a couple of Cooper bombs at the Spad's brisket too, a coincidence.

"You are a pal," Phineas grinned. "Instead of bein' shot by my side you want the Krauts to do it and I will git a post humorous medal. How can I thank you? It is too much. Go on out as I would not want nobody to see me cry. An' fall down and break your neck as you leave!"

"Don't tempt me," Garrity snapped. "I can change my mind—like that!" And he snapped his fingers.

"You should. You could not git a worst one. Haw-w-w!"

The word went around. The pilots of the Ninth Pursuit tried to hide their feelings when Phineas was escorted into the mess shack.

"The condemned man ate a hearty meal," Captain Howell said. "Boys, you shoulda seen Phineas dive into that mess of grub!"

"I heard there was swell dames out West," Gillis chirped. "I wonder if there are any freckled ghosts, huh?"

"Warm or cold," Phineas threatened, "I will come back an' git hunk. You bums would send a present of an electric iron to a guy who was goin' to git the chair. The breaks I git! I was just tryin' to help a dame. I am through with women."

"You think you aren't?" Bump mumbled.

The Boontown Bam was stopped for a moment by that one. He knew that the job was going to be tough—like smoking a stogie without lighting it. "Yeah?" he eventually chirped. "Anyway, if there are any where I'm goin', I'll make it still hotter for 'em with a good, old-fashioned Pinkham special hot-foot! Haw-w-w!"

An hour later Phineas was flying toward Metz with his Cooper bombs. Major Rufus Garrity watched him go and he felt a tug at his heart. Phineas was not a bad guy. The C.O. knew what would happen when the Frogs heard about the Boontown pilot's departure. Maybe Major Rufus Garrity would be arrested as an accessory. Maybe he would get shot, too.

"Yeah," Garrity ground out. "They'll say I-let Phineas go so's he could pick up the dame who stole the plans. That crackpot better git that ammo dump and at the same time he better not come back. I git into the d---dest messes!"

"That guard is sore, too," Howell said. "He was wishin' Phineas would try and escape so's he could git a shot at him. That freckled crumb gave the guard one of them loaded bon bons an' he's got the brook nearby dried up he drank so much water."

**M**ILITARY EXPERTS who told of the defenses around the ammo dump back of Metz had not been kid-

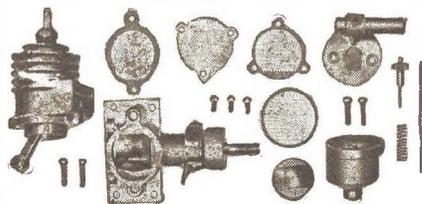
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ding. Lieutenant Pinkham got within range of the Kraut anti-aircraft and they threw enough iron up at him to build four locomotives. Searchlights stabbed at him. Phineas was in the spotlight and he knew he was going to take a bow.

"I got to git them Coopers loose," Phineas gulped as he dived at the ammo dump, running a gantlet of whining, spitting shrapnel. Machine guns mounted on trucks peppered him. Small arms went bang-bang.

"I am glad the Kraut Navy can't git here," the Boonetown marvel yelped and let loose the bombs.

Kerwha-a-a-m! Bo-o-o-o-o-o-om!  
"Got it," Phineas said and pulled the stick back. He felt the Spad lurch and buck and shimmy when it got its nose up. Heinie lead spewed up from the ground. Then came a series of explosions that lifted the Spad a thousand feet higher. Upstairs, Phineas met three Boche Fokkers and he knew his luck could run very little further.

"This is der tag. I can stand bein' tagged only once more," Phineas yelped. "This crate is flyin' n-now w-with one an' a half wings an' no tail. Well, hurry up with the hay-maker, you dirty burns! Goodbye ma. It was a swell fight, but the most guys won. Haw-w-w-w!"

A Spandau burst whanged through the Spad's superstructure. A mid-wing strut kissed the mother ship *adieu* and a wire curled around Phineas' neck and began to sing.

Lieutenant Pinkham went down to the carpet and made the messiest landing of his hectic career. Before the lights went out, he knew he wouldn't walk away from such a wreck.

Phineas Pinkham woke up seven hours later. He was in a make-shift bed and the smells all around him did not ooze out of a candy kitchen. Phineas whiffed ether and liniment and all kinds of things one associates with a hospital or a mortician's hut. His peepers clearing, the Boonetown pilot saw that he was in a Kraut repair shop.

A nurse came over and looked down at Phineas. The fat Fraulein had a kind face. Her eyes bugged out when Phineas grinned at her. "Wee gates, leebchin," he said.

"Ach! Alife he is! No ordinary man would be alife after such *ein* headache, *nein*. Doktor! Der miracle. Der *Amerikanischer* is alife. Idt is gut he was hidt on der headt, *ja*?"

They told Phineas that he had been brought to the hospital of a prison camp. The good Heinie hospitals were overcrowded and he would have to make the best of it. Anyway, he was booked for a Kraut klink so they had not wasted time on him.

"This bed is made out of a stone slab, huh?" Phineas yelped.

The Fraulein left him. Phineas turned his noggin to the left and he got a good gander at the pan of the prisoner next to him.

"You look like a Frog," Phineas grinned. "How long you been here?"

"Over a year, *M'sieu*. I am here weeth ptomaine as ze cuisine *ici* is not so good, *oui*. I am Lieutenant Charles de Gaulle. Wounded at Douaumont. Ah, so glad I am to see you, *mon ami*."

"Haw-w-w-w-w! Can't nothin' kill me? If you knew what I have been through M'sewer. I wonder if I can escape?"

"Nobody ever did, *M'sieu*. Some have tried. *Sacre bleu*. Pouf!"

The doktor came and examined the Pinkham pate. He was a Teuton with a small black goatee and he wore a

ze talk.' Wan of us mus' escape. I have somezing under ze mattress for ze Allies—For ze nex' war, Lieutenant. Efen if der Kaiser loses, he vill try again, *oui*? He, ze Boche nevair change ze mattress for ze prisonairs an' so zey don't find ze papairs I breeng from ze barracks. Ever since I am here, I work on zem. Ah, ze Allies mus' have zem. In the next guerre, everyt'eeng she weel be on wheels an' bullet proof an'—"

"You are nutty," Phineas said. "Look, I will just call a nurse or somebody—"

"Please *M'sieu*. Do not jok'," de Gaulle begged. "Listen, *mon bon ami*."

"*Bon Ami*?" Phineas said. "Haw-w-w-w. Go ahead an' scrub!"

## Answers

### TO QUESTIONS ON PAGE 36

- 1—The first Zeppelin destroyed in the first World War was brought down by Lieut R.A.J. Warneford who dropped a hand-made bomb on it.
- 2—According to a new ruling by the State Department, Americans who volunteer to serve with the British Royal Air Force do not lose their American citizenship.
- 3—The Fairey Fulmar is a new British high-speed carrier-deck fighter.
- 4—According to American air officers who have been abroad, American war planes are sadly weak in armament. They require more guns, and the multi-place planes should be provided with automatic power turrets.
- 5—Only Colonel Kerwood and Colonel Hartney of that group have ever experienced war-air action. Major George Fielding Eliot was an artillery officer with the Australian forces.
- 6—A hydrovane is a planing device set into the undercarriage of land planes that fly over water. It prevents the plane from nosing over hard in case of a forced landing on the water.
- 7—About 2,000 American war planes have been sent abroad to Britain and France since the beginning of the war.
- 8—The present Bristol Blenheim has a top speed of 295 m.p.h. with a full military load, a range of 1,900 miles, and can climb to 15,000 feet in 12 minutes.
- 9—At present the Army Air Corps is composed of six Wings in which there are 25 Combat groups. Two of these Wings are distributed through overseas possessions. Since many squadrons are not as yet fully equipped, it is impossible to compute the number of planes on hand.
- 10—At the Cintra Airport, outside Lisbon in Portugal, British, German, and Italian airline pilots meet daily on their regular runs and actually sit down together at the airport restaurant and enjoy(?) meals together. Portugal is a neutral country.

pair of bifocals that made his peepers look like bullfrog's optics.

"So! You lifft, *hein*? You drop der bombens on der ammo dump an' idt ist a sad blow to der Faterland. You vill gedt shot, *Leutnant*."

"That is what they say everywhere I go," Phineas gulped. "Well, say la gare, huh? But I couldn't stand up for *ein*, dry days yedt, Doc. How about some mess?"

The night wore on. Close to dawn, Phineas was awakened by someone tugging at his sleeve. Garrity's prodigal son lifted his aching noggin and looked into de Gaulle's face.

"Sh-h-h-h-h-h, *mon ami*. Let me do

TWENTY MINUTES later Phineas Pinkham had an idea as to the method of procedure the military tacticians of the next war would follow. It sounded plausible. Why, ten years back there had been no Spads or Fokkers and such.

"I will escape," Phineas said with feeling. "The Krauts were never able to hold me before, Haw-w-w-w! I weel let you know when to slip me ze papers."

The Boonetown trickster's one hope was the German Florence Nightingale. She had conversed with him in spasms. He had learned that she had a soft heart besides a husband and six kinder. At dawn, Phineas called Fraulein Goober over to his bed.

"Loogk, leebchin. Boys, you are a gorgeous!"

The Fraulein giggled. "Go vay mit you," she said.

"Loogk," Phineas said and drew a photograph out of his back pocket. "Der wife undt nine kindlin's. They vill shoodt me, *mein* cherry, undt what becomes of der kids, huh? I mus' try and eggscape, *ja*. Efen if I gedt shot tryin'. Idt ist terrible, huh?"

"Such *ein* var, *Herr* Pingham. Idt giffs me der tears when I loogk at such *ein* nize family," Fraulein Goober sniffed. "Ja, I help you. Budt idt ist one chance in der million. Der *Herr Doktor* vorks in der liddle office over there at nightdt undt he vorks all alone on der new vay to kill der liddle germs. You go by der office when all ist asleeb an' dress op like him, so! I take care of der guards. Hee hee. Der Cherman soldiers like Fraulein Goober."

"Boys, I would fall for you meinself if I was able," Phineas grinned.

The prison camp hospital at night was a drab place. Most of the prisoners were too miserable to think of freedom. The guards inside were about as alert as turtles with hookworms. They knew that none of the Allied convicts would ever get beyond the barbed wire outside. Then there were the machine guns.

Phineas Pinkham started his skulduggery at midnight. He laboriously yanked horsehair out of the old mattress that was under him. He got



vas, to sell so we get money for der wedding."

Schmidt fainted this time.

"HAW-W-W-W-W-W!" Phineas howled. "Adoo, *Herr Doktor*. I would like to take your temperature now. It is dames for you. They will double-cross anythin' or anybody. Boys, I am glad cousin Hiram sent me that picture of his family. It is a w-wonderful th-thing, the maternal instinct. Mercy, Frawline Goober. Haw-w-w-w!"

Phineas landed on the drome of the Ninth Pursuit without the aid of petrol flares and with plenty of Allied machine gun lead in the two place crate. The C.O. came out to the field with his britches at half mast.

"I am a little late," Phineas yipped at him. "Is this where the case of measles is? I am *Herr Doktor Schmidt undt*—"

"A Heinie ship," Garrity choked out as he yanked at his galluses. "That coat you got on. A beard. W-who—why it is y-you?"

"It is not a Jeanie out of a lamp. Well, I blew the dump up an' I got all kinds of plans. One has got a way to fight the next gare on wheels and everybody gits a ride. No doughs will suffer from fallen arches no more an'—"

"Take him to his hut," the Old Man said to the pilots and ground-hogs who gathered around. Put him to bed and tie him in. He is nuts!"

Late the next day, in Garrity's place of business, three high ranking U.S. brass hats and two Frog generals listened to what Lieutenant Pinkham had to say. General Game-lin took swift ganders at the pages of the notebook scrawled with diagrams and such.

"It will revolutionize things, huh?" Phineas asked. "Boys—"

"Bah-h-h-h-h!" the General spat. "Eet ees crazy. Ha-a-a-a-a-a! An army all in ze autos. Bah, encore! Zees ees what I theenk of thees do Gaulle's plan. *Viola!* I tear eet up like zees an' zees! Ha-a-a-a-h!"

"N-no," Phineas yelped. "D-don't tear up—oh-h-h-h-h! You weel be

sorry some day. You wait an' see. That is what I risked my life for an'—you dumb—"

"Shut up, Pinkham!" Garrity roared. "You are talking to a general an' h-he can still have you shot for helping a spy."

"Well, maybe I got other plans," Phineas said and fished into his pocket. He looked at the torn pieces of the notebook on the floor and felt the pangs of grim foreboding. The Boonetown pilot tossed an envelope to the brass hats. The General examined the contents of said envelope and he let out a wild yell that lifted Phineas right off his chair.

"*Mon Dieu!* Look veet veet! Ze plans of ze airplane bomb sight. Ze Lieutenant breengs them back. Ha-a-a-a, he have ze leetle jok, when all ze time—Lieutenant eet ees medals for you, *oui*. How ees eet you fin' them, huh?"

"Why-er-I just went over there an' I met that dame again. She handed them to me. Haw-w-w-w-w. It is silly and you will never believe it." Phineas tossed out. "Who has some aspirin, as I think my dome is letting in air again. I still say you will be sorry you tore them other plans up, though. If you bums could see ahead you would know everything will soon be dragged across the ground—and not by horses. In fourteen ninety, who would believe Columbus would discover America in fourteen ninety-two, huh? De Gaulle was not perfect, but who is? Anyways, I bet that bomb sight won't git perfected for a long time. H-huh, there will come a day when you Frogs will kick yourselves from Parea to the Pyrenness for being such dopes. Adoo."

Glad Tidings Goomer, mess attendant of The Ninth, swept up the remnants of Charles de Gaulle's brain child and carried them to the incinerator.

Lieutenant Pinkham was decorated. So was the squadron. At a Ninth Pursuit binge, the Boonetown citizen proposed a toast to Charles de Gaulle. He hoped for the sake of France that Charlie would live

through this gare and he told his skeptic listeners that he better had, or maybe France would take a knock-out punch.

"Yeah," Phineas vociferated. "Maybe the U.S. won't be able to git here an' save you the next time as we might be busy some place else. If de Gaulle has carbon copies of his plan and gits them back here, you snap them up. If you don't, well-er-don't forgit that Phineas Pinkham warned you.

\* \* \* \*

SO FROM that small radio set-up in Iowa not so long ago came words that would have bit into certain sad French military bigwigs like acid biting into a raw wound if they could have heard them. But Hitler shoots Frenchmen for tuning in on foreign broadcasts. Alas and Alackaday!

"—Yeah, I warned 'em. They laughed at de Gaulle twice," Phineas Pinkham's voice oozed through the loud speakers of a small audience. They laughed at me oncet when I spoke to a waiter at the Paragon restaurant in French but—haw-w-w! I must pop off as the big commuters say—as I have a novelty factory I have to attend to. If you want things to fool your friends at parties or anythin', we carry a big line of rubber gum an'—"

"Er—pardon me, Mr. Pinkham," the announcer cut in on station YHOO. "No plugs. Ha ha. Well, folks, you have heard a veteran of the last war telling about his remarkable experiences and his meeting with General de Gaulle. Now, Mr. Pinkham will tell you what he thinks of our product, the Gabriel Earphone. Nobody has to ask you to repeat any more. Our earphone has helped millions. Mr. Pinkham. . . ."

"H-hello again soaks-er-folks. Haw-w-w-w. My Uncle Wolford used the Gabriel Earphone for the first time yesterday. What do you think? The next A.M. he heard from his brother in Alaska! Haw-w-w-w-w!"

"Er—goodnight f-folks," the announcer for Station YHOO said in a very weak voice.

THE END

## RENDEZVOUS AT 25,000!

(Continued from page 11)

short a time will mean that the plane will fly into the revolving, turbulent air churned by the propeller of the plane ahead, endangering its stability. As the seconds tick by you check the panel once again and push the throttle forward. With your feet on the brakes, you test the manifold pressure, the tachometer, and listen to the motor as it throbs and roars.

Suddenly the signalman waves his flag and motions you off. When your feet leave the brakes the 1,000 h.p. up front seem to take hold, and an invisible hand from behind lifts you forward. Like the acceleration of a high speed auto, the interceptor fight-

er roars down the deck, yielding to the roll of the ship, struggling to become airborne. You press forward on the stick to get the tail up, tentatively trim the rudder to aim your plane down the deck between the two white lines that are supposed to guide you. The ship hits a trough and the deck falls away. You are in the air!

FIVE MILES straight up is your aim. A quick right turn off the bow of your airdrome to remove your own propwash from the man behind. Then pulling back on the stick, you start to climb, leaning back at an angle that reminds you of the den-

tist's chair but is lacking in the painful accompaniment. At the rate of 5,000 feet per minute it isn't long before the altitude is noticed, becoming evident by an uncomfortable crackling in your ears.

At the end of the first minute, all such minor duties as wheels up, propeller in governing pitch, cabin closed, gas on main tank, cowling adjusted have been made. And at the end of the second minute, it is time to get that oxygen tube out and check it, because at 15,000 feet the average person needs oxygen; at 20,000 feet it is imperative, although one feels normal. So insidious is the effect of oxygen deficiency that a pilot hardly knows he is becoming faint. The world and things in it simply slow down—the reasoning is faulty.

The story is told of a pilot who

accidentally dropped his oxygen "pipe" at extreme altitude. He leaned over in the cockpit to pick it up, but it was out of easy reach. It that short space of time he took two gasping breaths of the thin, upper atmosphere—and they did the trick. He thought he was acting promptly, but it took him so long to reach the tube that the plane fell out of control. Everything, he later said, seemed clear to him, but actually he was moving in slow motion. Observers remarked that his plane fell out of control and dived to 10,000 feet!

At that altitude he slowly regained consciousness, got his "pipe," and went in for a landing. But he was so doped that he would have landed with his wheels up had not a friend called over the radio, "Put your wheels down, Bill!"

So with your oxygen pipe between your lips you level off at 25,000 feet. With the supercharger in high blower, your plane is bucking the high atmosphere winds very nicely. Far below, like a toy ship on a painted ocean, the carrier steams toward her four-hour position—her own rendezvous with the torpedo-planes, scout-bombers, and scouts when it is time to land aboard.

Now, with seventeen other planes in the squadron of fighters, it is your duty to maintain a careful watch for "enemy" bombers. Upon you and the manner in which you carry out your assignment depends the lives of the 2,000 men aboard the carrier. With her top speed of almost forty miles an hour, she will be hard to hit; but when you remember that just one unlucky bomb will make the deck unfit for landing operations, you wonder.

In the cold, thin air you find that it is hard to see things clearly. Even in wide formation, with eyes off and on the leader, a good pilot cannot see everything and the "enemy" could slip through without much trouble. The job could well be assigned 180 fighters instead of eighteen.

Without warning, several specks appear on the horizon, moving toward you at 250-300 m.p.h., making your combined speed of approach nearly 600. Hardly have the propeller, engine, and mixture controls been adjusted before you are in a gigantic sham battle, diving at the bombers in an attempt to blow them out of the sky before they drop their deadly

messages upon your carrier. The thin air makes maneuvering difficult, and your tremendous speed during the pull-out inflicts body-beating punishment upon you.

During the melee two of the bombers evade the protective fighters, and far below, aboard the carrier, anti-aircraft guns commence a simulated fire. The carrier is zig-zagging like a hunted rabbit.

If this were actual conflict your war might soon be over. As the "enemy" wheels for home, you join up with your scattered squadron, and the leader points for the carrier below. Poking her blunt bow into the wind, she waits for her brood of tired, hungry pilots to land aboard. The trip down is uneventful, you adjust the mixture control and forsake the oxygen for sea level atmosphere.

The flight deck is tossing and rolling as your section roars overhead. When the leader peels off from the formation you let the wheels down and check off your long list of preliminary actions: parachute off, gas on main, flaps down, cabin open. . . . Then a low, sweeping turn is made until you are just astern of the ship and only a few feet higher than the deck.

Now is the critical moment; watching the signal officer, who directs your approach by means of little semaphore flags, you jockey the plane into position. Just over the ramp he sends "Cut the throttle," and like a bird dropping to earth the plane sinks to the deck. The landing wires check your run with a jerk; then the handling crews rush out and you taxi up the deck. Home again!

As you begin to slowly thaw out and inhale the sweeter air of sea level pressures, your ears crack and some of the words of the loudspeaker become audible.

"Rendezvous . . . at 25,000 . . . dawn tomorrow . . . pilots may secure."

Another one in the morning! Time to eat and go to bed. Time to sleep some of that altitude and carbon dioxide out of the system. A dawn patrol at five miles up will be no child's play, and there'd probably be another dog-fight along with it. Between now and then a rendezvous with your bunk for about eight hours will just fill the bill!

THE END

about 400 feet over Ithaca, Scotty calmly shouted that the door was open and that it stood a good chance of blowing off unless they sat down pronto.

They circled over Cayuga and got set for a landing. When they were up about five feet above the runway, a nasty gust hit them and set them down very hard.

Anyway, it all held and they took-off again after closing the door. From that point on, they had a good flight, except that Scotty added an extra thrill by clearing Ithaca's radio tower by about fifty feet while in the

## PLANE TARMAC

(Continued from page 21)

Walt's brother Lenny. In Lenny's fraternity there are several fellows who fly under the CAB, so we coaxed the best one, whose name is Scotty, to rent a Cub so that he could take us up and get a bird's-eye view of Cayuga, Cornell, and the surrounding country. Scotty isn't exactly a Howard Hughes, but he has got 40 hours—a whole forty hours.

When Scotty and Walt were up

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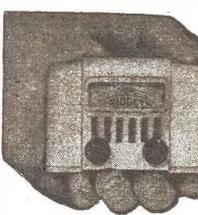
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process of trying a power turn.

By this time it was Don's turn, after he had seen that business with the radio masts, he wasn't feeling any too good. But Scotty was careful this time and cleared the tower by fully sixty feet. So we have hopes that next time we go up Scotty will have had more experience and be able to run his wheels along the aerial.

DON BURKERT, JR. WALT PAWFOUSKI, JR. "The Two-Bladed Props"

Now there isn't a great deal to this letter, but we used it for a particular purpose. The business about Scotty and the aerial tower was all in good sport, of course, even though it was dangerous. That's one of those things that must stop, though. In case of a crack-up, that would have only added to the public's ill feeling toward aviation.

We were also interested in that business about the door. That sort of thing happens too many times. We have been barking about the doors on the average light plane for years, and we still get ships with entrance

panels that wouldn't be put up with on a thirty-five dollar used car.

The writer, a short time ago, was talking to a man who is buying flight training at a very respected school. He's crazy about it and he's taking time so that he can step up and say he has a ticket in case of national emergency. He confided in me that he's scared to death of the doors on most light planes he has flown so far.

He said: "When they're closed, you can't get them open; and if they open while you're in the air, you can't get them closed. I'm supposed to fly with a parachute, but what good would it do me if anything happened?" He went on, "I'm about six feet tall, and loaded down with the average parachute they give me I could no more get out of that plane than I could crawl down the exhaust stack."

Some of these days, after a lot of people have been killed trying to bail out of light planes, we're going to see a great furore about doors. We hope the manufacturers will take a tip from this, though, and do something about it right away.

THE END

DOUGLAS MODEL (Continued from page 39)

until the cement hardens. Cover all three parts of the tail assembly with fine Japanese tissue and then water spray. Do not dope these parts.

The landing gear legs are as simple as can be. Obtain a length of hard white pine dowel, 1/4" diameter, and cut two pieces to the proper length. A slot 1/8" wide and 1/4" deep is made in each dowel leg and cleared out. This requires a little care, so take it easy with the coping saw.

To the lower ends of each leg place the landing gear, shock wire (as shown in the front view drawing on Plate 1) against the dowel, apply cement, and wrap tightly with thick black thread. When dry, cut a small opening through the wing at the No. 2 location and fit the slot up into the rib. If the joint is snug enough, remove the leg, apply cement into the slot, and finally install it in position as shown in the top view drawing on Plate 1. Later, a pair of balloon-tire wheels are slipped onto the axles and the extreme tip is bent up a bit to prevent the wheels from rolling off.

CARVING THE PROP

ALTHOUGH the model in the photographs shows a two-bladed propeller, the actual ship uses a three-bladed one. Our model was flown with such and did quite well—with plenty of power behind it.

Shape three separate blades from 3/16" sheet balsa. Join them with cement at the center and then re-enforce additionally by cementing small triangular blocks between each blade. After thoroughly dry, drill the hole for the prop shaft, send the shaft through and bend over for insertion

in the usual manner, and cement. To the extending end of the prop shaft add a couple of beads or copper washers and insert through the opening in the nose plug. Shape the end of the hook as shown in the side view drawing on Plate 1.

For power, use eight to ten strands of 1/8" flat para rubber. Attach the rubber from hook to hook in the usual method.

ASSEMBLY AND FLYING

JOIN THE WINGS to the fillet stubs with plenty of cement and pour a little into whatever openings there may be between the rib and fillet. Attach both wings at the same time, using small pins to aid in holding them in position. Small blocks of wood to serve as "props" may be used to keep the wing tips in place.

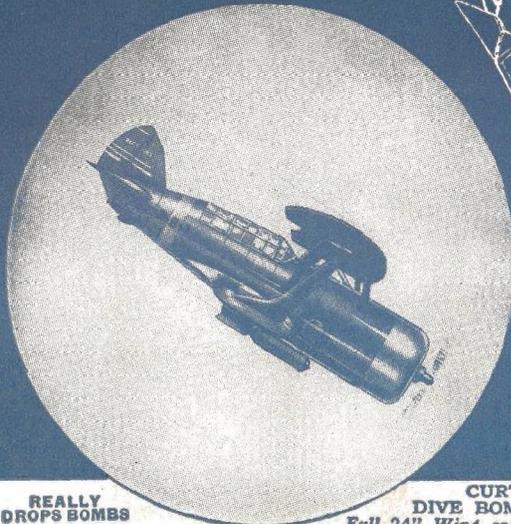
The position for the stabilizer parts are not noted on the plans, but they should be cemented 1/8" below the top of the fuselage line; the top view of the body indicates their position in relation to clearance of the removable tail plug. Use small pins to aid in holding the rudder and stabilizer in position while the cement dries. Later, these pins are removed.

If desired, the ship may be painted. Use aluminum paint throughout with the exception of the parts shown black on the drawings. The tri-colored bull's-eye of the RAF is located on the upper and lower surfaces of the wings and on each side of the fuselage.

Before test hopping, glide the ship over clear ground until you get an even glide. Short power flights should follow while you note any tricky characteristics. If any crop up, correct them at once. Add weight to the nose or the tail to counteract these faults.

THE END

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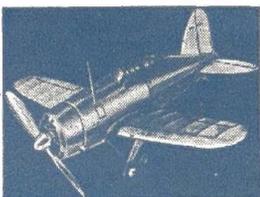
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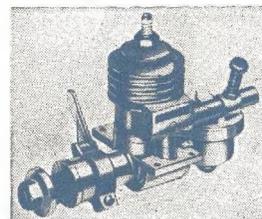
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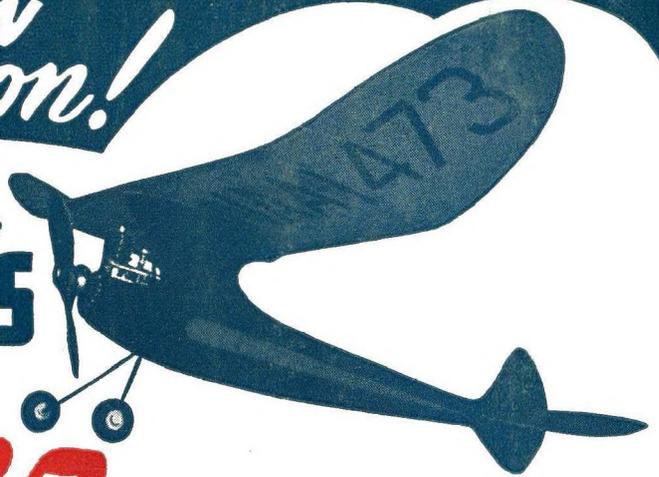
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