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MODEL
BUILDING
FACT

IS OUR AIR FORCE READY FOR WAR? by DAVID MARTIN

FLYING ACES

MARCH
15¢



SKY-CAPTURE OF A U-BOAT

AUGUST SCHOMBURG

STIRRING TRUE STORY—"ATTACK AT DAWN" . . PLUS CAA-INSPECTOR FEATURE ERIC TRENT, NEW FICTION ACE! ALSO "GRIFFON" AND PHINEAS MODEL BUILDING: THE "WINDMILL PLANE," SCALE BOMBS . . GAS JOB ARTICLE

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1930
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COMET starts off its Jubilee Year with a bang! All over the country Comet dealers, in co-operation with the Comet Model Airplane and Supply Company, are preparing to stage big, thrilling Model Building Contests—offering as many as 50 valuable prizes! Anyone can enter—everyone has a chance to win—and everybody who enters gets a lot of worthwhile experience and has a lot of fun! Watch for the big, colorful Comet Contest display in your dealer's window—then get your entry blank, which gives you the Rules, and go after the prize you want! These contests are scheduled to start soon—ask your dealer when he expects to put on a contest in your neighborhood!

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Planes alone are not enough. For we must have a formidable army of skilled skymen to fly them. Only through painstaking training can we develop men who know strategy, tactics, and sky gunnery—men who can fly tight formations at 250 m.p.h. and keep it up hour after hour. Representative of such training are the flyers of our 1st Pursuit Group, seen below staging a formation show. The ships are Curtiss P-36C's.



Is Our Air Force

Ready For War?

By David Martin

Author of "Italy's Boot Boasts Wings,"
"Sky-Power Facts vs. Sky-Power
Fancies," etc.

With a Drawing by Arch Whitehouse

WHETHER we like it or not, there is a grim possibility that the United States will ultimately be involved in the Second World War now raging in Europe. It is no longer a simple conflict between the Franco-British forces and Germany. The Russo-Finn contribution has made it more than ever a war of ideologies. In other words, the democracies are fighting the dictator nations.

It is not that the United States is partial to the Allies. Rather, the fact remains that unless some great front is put up by the Democratic countries, they will eventually be playing second fiddle to the dictator nations—if they're not entirely engulfed by them.

A short time ago, I spoke to a man who is high up in our military system. I asked him whether the United States would take any part in a European war if there appeared any chance that the Allies would

be defeated in the current conflict.

"I don't believe the United States will fight in the present European war," he replied, "no matter what happens."

It was a certain emphasis he put on the word "European" which caught my ear, so I plunged in deeper, intent on drawing out his ideas:

"Isn't Europe important enough to America any more?" I asked.

"Why certainly Europe is important to us—but you were speaking about war, not commerce, if I understood you right."

"Well, let's put it this way: Would the United States give military aid to the Allies if an imminent defeat of the Allies promised European dictator trouble on the North American continent?"

"What you seem to miss completely," he replied, "is the fact that Amer-

ica's direct worry is not Europe. What is more menacing right now is the situation in the Far East."

"Japan?"

"Of course! Japan—and possibly Russia. You can't laugh off the possibility of an alliance of those two totalitarian states. If Germany and Russia were able to find a basis on which they could get together, the Japs and Russians may, conceivably, also find a basis."

"Then there is a possibility of a war in the Pacific?"

"I believe so. But I do not say it is beyond the realm of possibility, either, that we might become involved in the other war—in Europe."

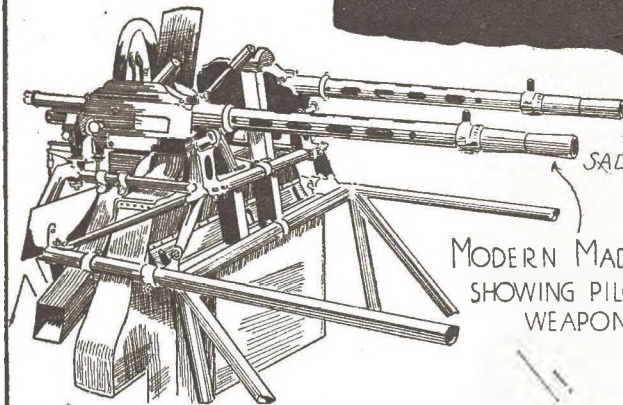
GIVING you readers that to munch on for the time being, I'll now get to the question of our preparedness: I have discovered that the public is now asking more sensible questions concerning our nation's air strength than I would have believed possible six months ago. For the first time since the end of the last World War, Americans are becoming really air-war conscious. In fact, several times a day people I meet on the street ask me what America will be able to do in the air if another war comes.

How sharp are the talons of our American Eagle? No question is more important today. For the dark world of 1940 finds the white dove virtually banished. And regardless of our deep love for peace—the Dictators may force us to fight!

CAN THE U.S.A. DEFEAT

ANY FOREIGN POWER WITH THE AVIATION MATERIAL ON HAND?

THE U.S. AIR SERVICES COULD USE A GOOD TWO-SEAT HIGH SPEED FIGHTER



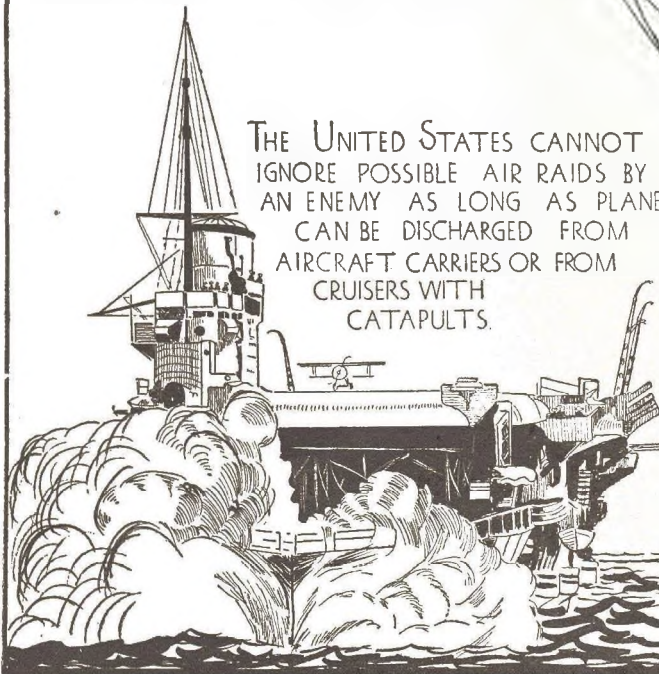
MODERN MADSEN GUNS SHOWING PILOT'S FIXED WEAPONS

AMERICAN MILITARY AIRCRAFT REQUIRE MORE AND HIGHER-CALIBER MACHINE GUNS

BUT, THE UNITED STATES IS SADLY SHORT OF ANTI-AIRCRAFT GUNS!

AMERICAN PURSUIT PLANES ARE EQUAL TO ANY SINGLE-SEAT FIGHTERS IN THE WORLD, FROM THE POINT OF SPEED AND MANEUVERABILITY

THE UNITED STATES CANNOT IGNORE POSSIBLE AIR RAIDS BY AN ENEMY AS LONG AS PLANES CAN BE DISCHARGED FROM AIRCRAFT CARRIERS OR FROM CRUISERS WITH CATAPULTS.



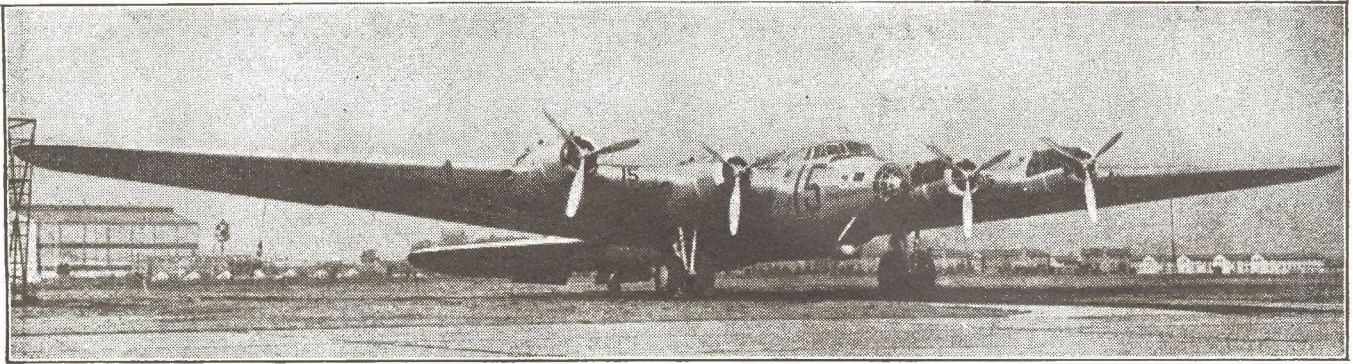
ALL ATTACK SQUADRONS HAVE BEEN CHANGED OVER TO LIGHT BOMBER PLANES BECAUSE GROUND ANTI-AIRCRAFT FIRE HAS BECOME TOO EFFICIENT FOR LOW FLYING TACTICS

Such a question demands the consideration of a number of factors. Mr. Fletcher Pratt, a noted writer on military subjects, in an article published recently in the *Saturday Evening Post*, indicated that the

United States is particularly behind the times in building up ground defenses by which to halt proposed enemy air raids. But he goes on to discount this laxity by stating that owing to the geographical situation

of our country, no enemy air force could cross the thousands of miles of ocean to bombard our cities or defense points.

Is it possible that Mr. Pratt has never heard of planes being cata-



America boasts speedy, mammoth bombers which are among the world's finest—namely the B-17 Flying Fortresses and even larger B-15, shown above. Certain authorities, however, now doubt that their huge size is practical. And others hold their gun turrets and armament to be inferior.

pulted from cruisers and battleships? Or that there are such things as aircraft-carriers? Whether cities in the United States can be bombed is not a matter of how far the planes must fly to drop their high explosive—but how soon the Navy and ground defenses can destroy them once they start. Any city in the world can be bombed if the war staff of a big foreign power decides on such a move. The important point is how soon the enemy bombers can be intercepted and their bases destroyed once their scheme is recognized.

For if you can't strike back soon enough, the enemy's got you.

It has long been known that the United States has lagged in air defense measures. You see lovely pictures in almost every magazine or Sunday picture section of an anti-aircraft gun and a Sperry detector at work with the usual background of searchlights showing "how they would spot an enemy fleet." But what the picture captions never say is how many of these guns are available, how many detectors are in service in

the Army, how many crews have been trained to use them, and whether they are being stationed at the proper places.

We believe there are some 338 new anti-aircraft guns "on order" now. But that's far from meaning they're in service. Meanwhile, we don't know how many detectors have been called for "to give them eyes," and we have no idea how many crews are being trained to use these weapons. It has been stated that the ground defenses



of the United States are no better today than were those of Poland before the Nazis attacked in September. Actually, Uncle Sam is in the same category of anti-aircraft strength as Turkey!

So much for the ground defenses against enemy invasion.

Now what about air defense — the defense which can be put up by our flying men?

It is accepted that the first line of our defense

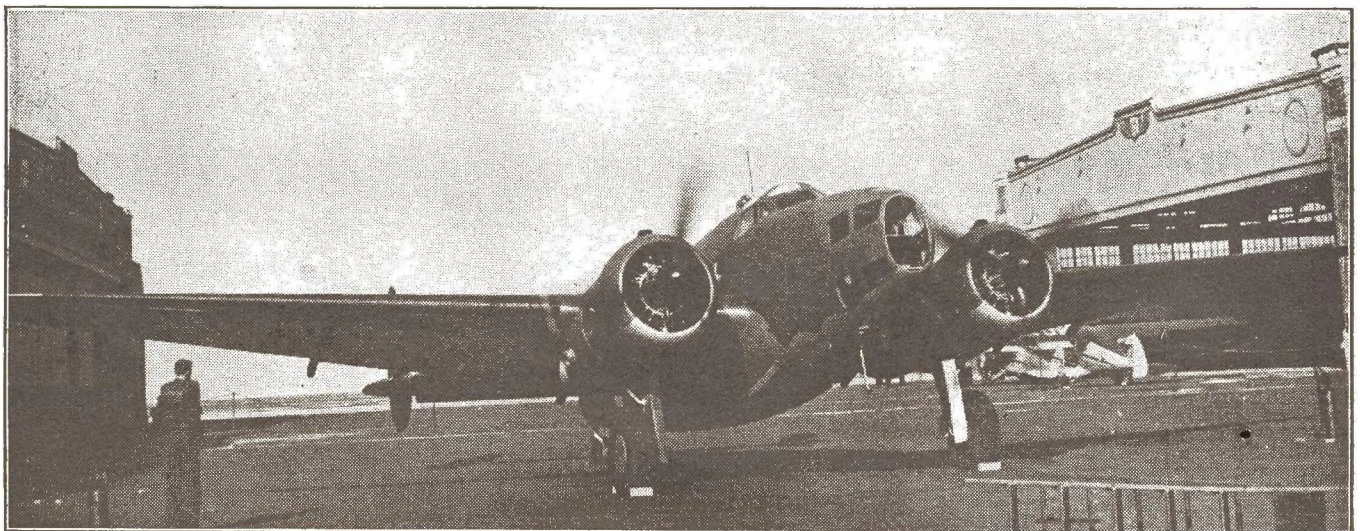
is the U.S. Naval Air Service. By this is meant that aircraft operated by our Navy airmen would be the first to meet and fight enemy aircraft attempting to raid the United States. Initial contact, no doubt, would be made by the long range patrol boats of the Consolidated PBV class.

That these machines are tops in their class there can be no question. We might tell you that the British have accepted a PBV for experimental purposes, and the raves about it in the British aeronautical journals are music to American ears. These machines are efficient. They have good range, a fair amount of speed, and handle well in all departments. By that we mean they are not just boats easy to fly; rather, they offer good radio accommodation, good gun turrets, good avigation facilities, and are efficient as bombers as well as spotters.

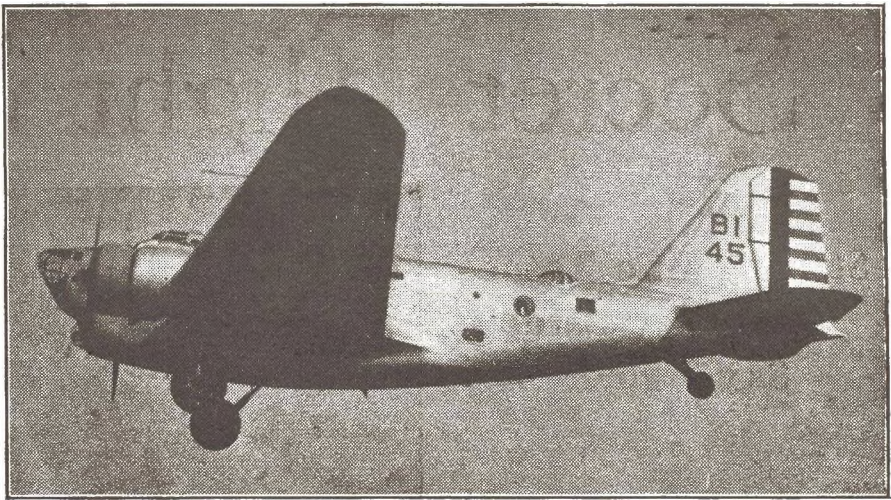
Other Navy types, such as the two seat reconnaissance bombers, likewise are suitable for repulsing an enemy, whether they are discharged from catapults or from the flight deck of a carrier. American fighters of the Grumman, Curtiss, and Brewster class meantime can offer plenty of aerial defense for the bombers and reconnaissance machines.

Most Navy planes appear to lack

Below: This American Lockheed Hudson bomber is, by all accounts, a first-class military job. Certainly, the British have taken a flock of them for Royal Air Force service. Yet our own Air Corps seems to lack interest in them. Can it be that we're not on our toes?



Right: Our service-type medium bombers, exemplified by this Cyclone-powered Douglas B-18B, are improving every year. France has taken a number of such Douglas craft for her own air service, and through their Western Front fighting record we are gaining pertinent information for future designs.



modern air weapons, since high caliber guns seem to be frowned upon in this country. But on paper, at least, the U.S. Naval Air Service would seem to be fairly efficient.

On the other hand, however, we continue to get news stories to the effect that many improvements *must* be made soon. There is a sum of \$1,000,000,000 authorized for finer development, maintenance, and the procurement of better equipment. Much of this money, of course, will go into the new expansion Navy program. Considerable new equipment of a secret nature has been built, tested, and purchased. It's being delivered as fast as factory production will allow.

Then again we hear that more naval stations are to be built at several new strategic points, such as Alaska, Cape May, N. J., and San Pedro, California, and the expansion of present bases is called for in various other sections. It has long been known that many strategic points of our country have never been given proper ground-base facilities to assist the Navy. The sooner these matters are taken up and remedied, the stronger will be the defensive value of our air Navy.

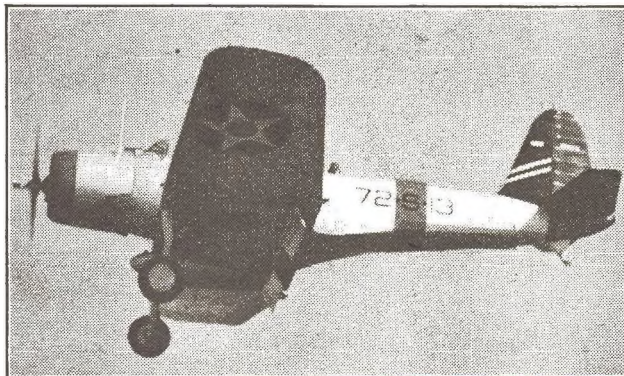
At the present time, the Navy has hundreds of new planes on order. But in most cases these craft are simply replacements for obsolete equipment, so that actually they do not presage any true increase in flying equipment. Until new bases are completed, new vessels launched, and flying and ground personnel

trained, it will be impossible to add to the numerical strength of the Navy air force.

Those Americans who spout off about the wide oceans which separate this country from possible foreign invaders should also look at the picture from another angle. The bigger

consider the coastline-miles from Maine to Florida or from Oregon to Mexico, it is no laughing matter when it comes to providing a suitable air and naval defense to protect that extensive sweep.

I, myself, incidentally, was amazed the other day to learn that the coastline of the Gulf of Mexico is much longer than that of the Pacific. The Pacific line is 3,250 miles, the Gulf 5,727, and the Atlantic 12,350 miles. All told, then, the Navy and its air force is responsible for 21,327 miles of coastline!



Our Navy craft are rated high. Here we see the famed Vought SB2U-2 Fleet spotter-fighter, which has ample speed, armament, and avigation and communication equipment. We use this class of plane aboard our aircraft carriers, and it is now said that France has ordered a number of them for her carrier "Berne."

the ocean means the longer the coastline we must defend and the greater must be the defensive force needed to maintain a certain vigil. When we

THE POINT modern military experts often forget—and this in spite of all the examples that have been offered in the past few weeks—is that modern war is in no way like wars of the past. These "experts" still compute their conflicts in terms of men, speed, distance, and military power alone. They do not figure enough in terms of psychology and civilian morale. Nothing in the present war has really lived up to the prophecies of the "wise boys" who fought it all out on paper months before it happened.

For a time after the scrap got going, these fellows sympathized with themselves by calling it a phony war. There were no great massed naval actions, no massed bomb raids on cities. The war in the air failed them for other reasons, however. While scaring us with their forecasts of mass sky attacks on the super-grand
(Continued on page 70)



Left: Uncle Sam's fighters are fast and highly maneuverable, but the author declares they are under-gunned as compared with foreign machines of the same type. One of our Army Air Corps' first-line sky scrappers is this Seversky P-35. She mounts a Twin-Wasp.

Secret Flight Sixteen

**Starring Eric Trent
Devil-May-Care
Sky Fighter**

CHAPTER I

DUTCH RIDDLE

BYOND the windows of the burgomaster's office, lights were starting to twinkle in the picturesque Netherlands city of Arnheim. The plump little Dutchman at the desk switched on a green-shaded lamp, then broke the seal of the confidential record which had just arrived by afternoon plane. On top he found a scrawled memorandum from the Amsterdam chief of police. It read:

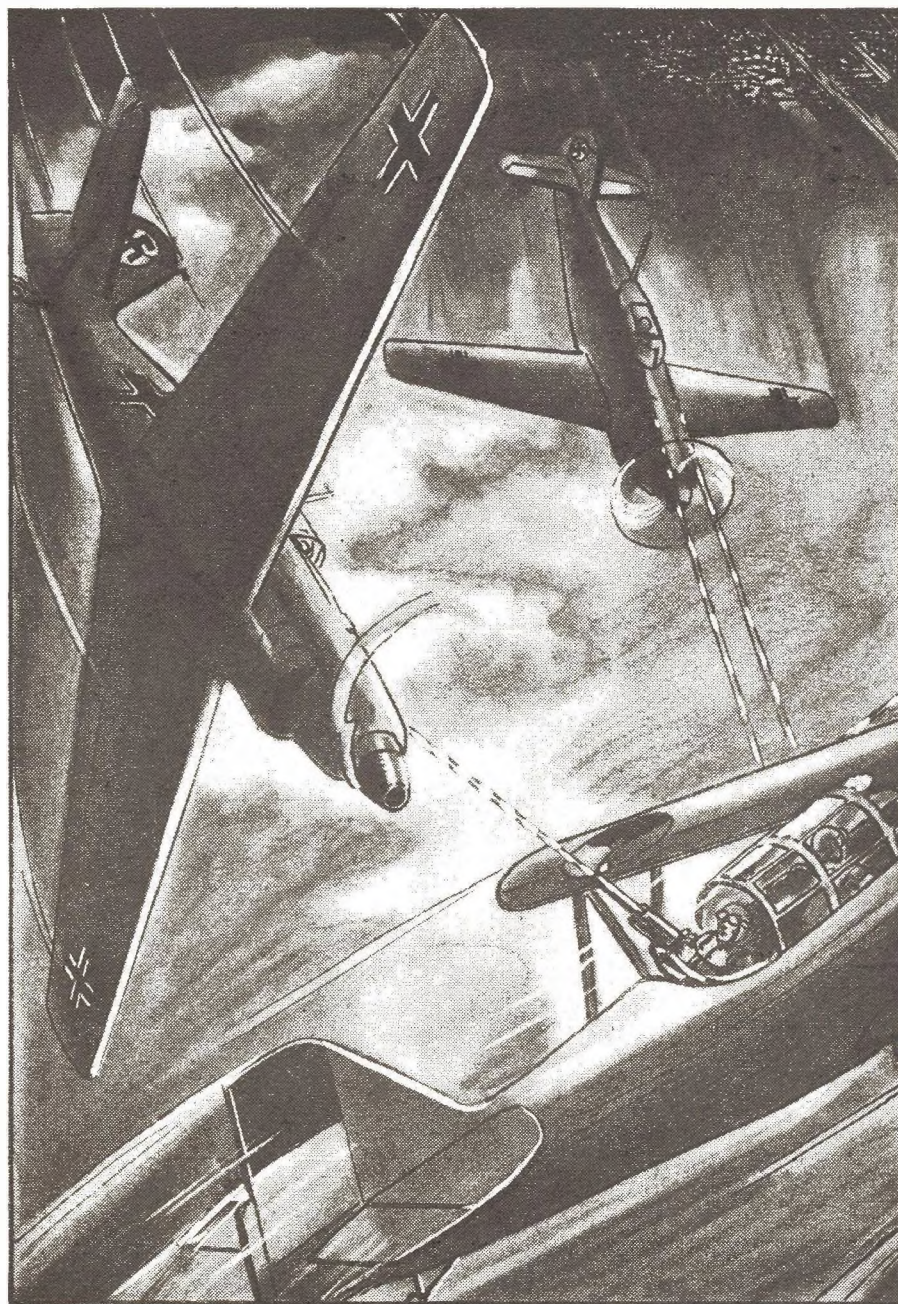
Mynheer Voorst— Here, as requested, is our file on the American, Eric Trent. Take my advice and get him out of Arnheim before he turns your city upside down. Trent is a crazy adventurer, a modern D'Artagnan living by his wits—wits which unfortunately are entirely too sharp. He has been mixed up in a score of intrigues on the Continent, and it is a miracle the secret police haven't caught him. Don't try to trap him. He'll simply laugh at you. I know from experience.

Burgomaster Voorst looked out absently at the lights of a steamer beyond the pontoon bridge over the Rhine. After a moment he turned and pressed a button.

"Get the American, Trent," he told a uniformed police sergeant who answered. "And have some one bring the other man up to the anteroom."

The sergeant went out. Burgomaster Voorst bent over the confidential file, and with increasing amazement read:

February, 1937, Trent kidnapped two Gestapo agents who tried to arrest him near German border, later turned them loose in their underwear on Champs Elysees, Paris, in broad daylight . . . April, reported in Singapore, with a small fortune in pearls, refused to pay duty, told British he found them in an oyster stew, collected five hundred pounds for false



arrest. . . . Detained by Scotland Yard for masquerading as Guards officer, later privately released with apologies of Prime Minister, reasons unknown. . . . Reported executed in Manchukuo after scrape with Japanese. . . . Suspected in shooting of Greek black-mailer Nimopolis, no evidence. . . . Secret rewards offered for his capture by Nazis in Austria, Czechoslovakia, also by Spanish authorities, in last two years. . . . January, 1939, broke the bank at Monte Carlo, purchased a flying boat with which he is said to have effected the mysterious Devil's Island escape of Jacques Genay, later proved innocent of the murder for which he was sentenced. . . .

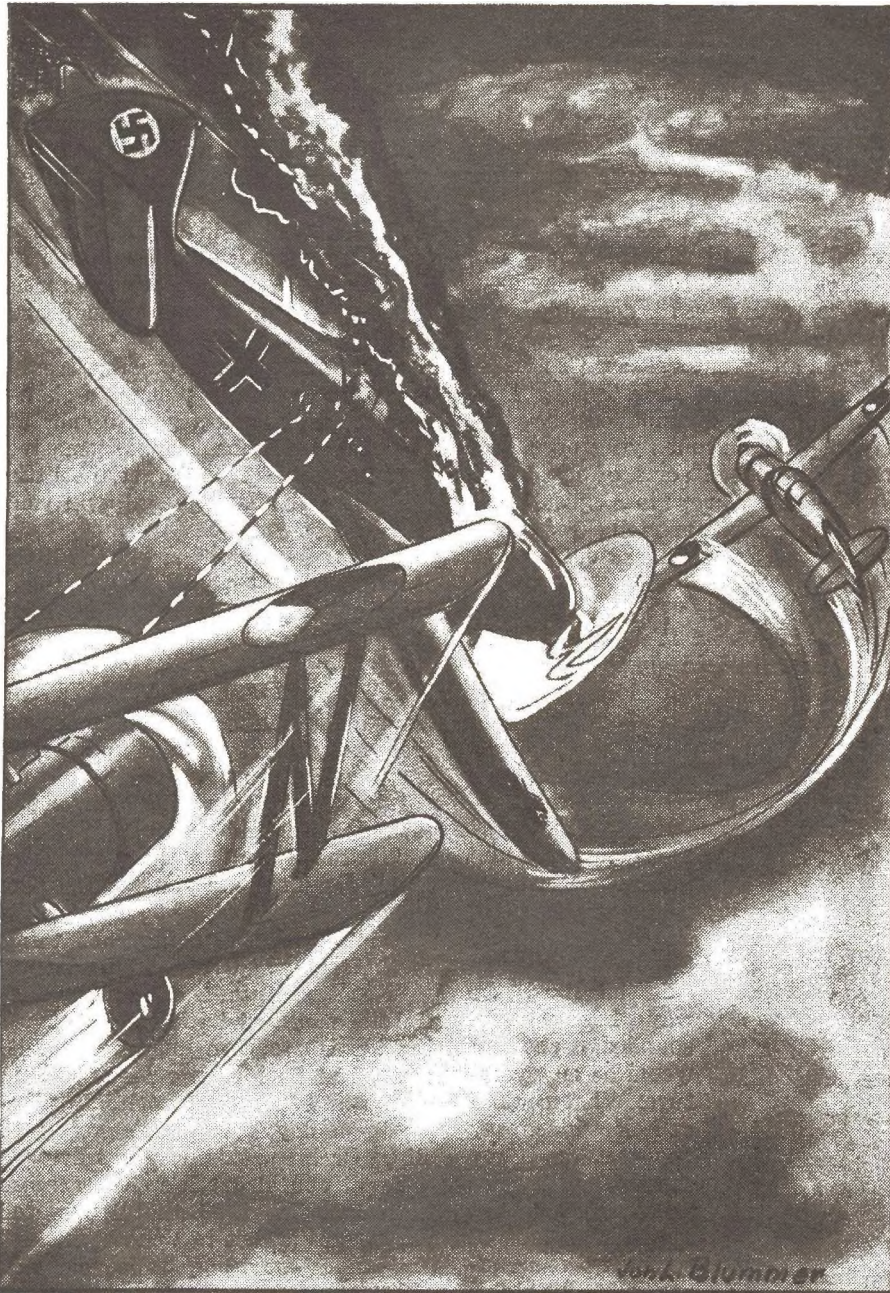
BURGOMASTER VOORST raised befuddled eyes to the door as the sergeant reappeared with Trent. For a moment he stared, fascinated. He had expected to see a tense, wild-eyed Yankee, with recklessness written all over him. But this man might have been some polished European from the salons of Continental society. There was something reminiscent of the Riviera about him, a dashing, almost Latin darkness of hair and eyes, and white teeth under a close-clipped black mustache. With increasing bewilderment, the burgomaster noted that despite sixteen hours in a special detention-cell this incredible American was clean-shaven, his linen fresh,

AN ACTION-PACKED NEW-WAR AIR MYSTERY

By Donald E. Keyhoe

Author of "The Golden Strafe," "Death Flies the Maginot Line," etc.

Illustrated by Jon L. Blummer



Trent's fingers closed on the stick trigger and his wing guns thrashed, sending two fiery streaks which raked the Messerschmitt from prop to tail. Then a puff of flame swirled back from the Nazi fighter's cowl—a puff which was instantly fanned into a roaring inferno.

his clothes immaculately creased.

Trent returned the burgomaster's stare with a politely impudent grin.

"Come now, Burgomaster, you surely didn't expect me to be wearing horns?"

The burgomaster gulped.

"One moment, and I'll be at your service," said Trent. He reached inside his coat, handed some folded guilder-notes to the suddenly astonished sergeant. "Give this and my

thanks to the detention-cell corporal for arranging the valet service and that excellent luncheon from the Cafe Grande."

The burgomaster's jaw dropped.

"Why wasn't this man searched?" he demanded furiously, in Dutch. "You know prisoners are not allowed money or special services."

"But I searched him myself!" moaned the sergeant. "I swear I emptied his pockets."

"May I cut in? I speak a little Dutch," Trent said pleasantly. "Don't blame him, *Mynheer* Burgomaster. It was a simple matter of palming a

He talked fast, flew fast, and fought fast! That was Eric Trent, who took everything as it came—and who went after it when it didn't. He made life insufferably unusual for his sad-faced pal. And he made it unusually insufferable for everyone else. But Eric Trent had to have action. That's why he faced hell in the heavens to sky-jack spies for an aero device they didn't want—only to turn around and sell it to agents who wouldn't have it for a gift!

* * *

few bills—a little thing I once learned as a magician's assistant, before we came to a sudden parting."

"This is outrageous!" sputtered the little Dutchman. "I will charge you with theft."

"Of my own money?" Trent said amiably.

The burgomaster reddened. "Sergeant, place that blockheaded corporal under arrest."

"I'd hardly advise that," said Trent. "You see, he'd have to bring up the item of your wife's cousin at his trial, and she probably wouldn't like the publicity."

"My wife's cousin?" gasped the burgomaster. "What are you talking about?"

Trent smiled, carelessly took a gold-crested cigarette case from his pocket. While the sergeant goggled at the case, Trent extracted a monogrammed cigarette.

"Would you care for one, *Mynheer*? They're my own special brand—D'Artagnans."

"No!" roared the burgomaster. "Just what is this about my wife's cousin?"

Trent lighted his cigarette, withdrew a slip of folded paper from his packet of matches.

"I took the liberty of filling out one of those initialed inter-office blanks the sergeant conveniently had on his desk. Just a few words to the effect that I was your wife's cousin, temporarily in trouble, and that I was to be given special privileges. I showed it to the corporal later. A few remarks about my estimable cousin, the Burgomaster, and—" Trent swiftly touched the half-burned match to the scrap of paper, before

the sergeant's frantic lunge brought him in range. The charred bits fell to the floor.

"Let them go," groaned the burgomaster. He glared up at Trent. "*Mynheer*, you and your companion were involved in a fight at the Rathskeller's on Zandort Street last night. There was something peculiar about that affair, and I intend to know what it was."

"Let me know what you discover," said Trent. "I've been wondering about it myself."

The burgomaster bristled. "I demand an answer! Why did you fly to Arnheim last night at such a late hour?"

"We were totally lost," said Trent. "We were heading for Paris—and when we landed, here we were in Arnheim."

The little Dutchman jumped to his feet. "For the last time, why did you go to that Rathskeller last night?"

Trent shrugged. "I suppose I'll have to tell you. You will keep it confidential?"

"If officially proper," snapped the burgomaster.

"Very well." Trent glanced toward the door, lowered his voice. "It was a strange thing; possibly you yourself have experienced it."

"Yes?" said the little Dutchman quickly.

"We were hungry," Trent said solemnly.

The burgomaster turned purple. "Get that other man in here!" he shouted at the sergeant. "I will get the truth of this if it takes all night."

When he turned back, Trent was calmly reading the confidential report on himself that had come in from Amsterdam and which the burgomaster had failed to cover up when he came in.

"Interesting, but inaccurate," said Trent. "The *Gestapo* men were in Paris and tried to take me to the border. If you wish, I can fill in some gaps—"

The burgomaster snatched the record out of his hands.

"Mr. Trent!" he exploded. "You are insolent—you are mad—you are utterly impossible!"

"You can say that again," interrupted a funereal voice.

AT THIS, Burgomaster Voorst spun around. A mournful, gawky figure, a man about forty years old and dressed in rusty black, had ambled into the room ahead of the sergeant. His face was long and gloomy, and a protruding Adam's-apple worked up and down resignedly

between the tips of his wing collar as he chewed on a wad of gum. The burgomaster looked at him twice, as though doubting his first glimpse.

"You are Mortimer Crabb?" he queried in passable English.

"That is my name," said the other man gloomily. His voice had a sepulchral sound, as though it came from the bottom of a well.

"I want certain information," the burgomaster announced. "Perhaps you will have more sense than your friend."

"He's no friend of mine," Crabb said dismally. "I was fool enough to let him talk me into this business—"

"What business?" demanded the burgomaster.

"I am an inventor," said Crabb. He looked bitterly at Eric Trent. "This young lunatic hypnotized me into buying a plane and flying over here with him to sell some of my ideas. We landed in Europe in August. Since then I have been arrested three times, shot at twice, and chased out of four countries."

Trent laughed. "Pay no attention to him, *Mynheer*. It's his dyspepsia that makes him so gloomy."

"What were you doing at that Rathskeller?" the burgomaster said grimly.

"This idiot got a mysterious phone call from some woman," Crabb replied in a mournful voice. "She wouldn't give her name, just told him to meet her in Arnheim, after mid-

night, at that place on Zandort Street. So we flew here. He said he liked the way her voice sounded, and it would be an adventure. What could I do? He hides my passport and my money, and I don't speak anything but English. I had to come. It was an adventure, all right. Four thugs tried to

drag us into a back room, and I guess you know the rest."

"Yes, I have the report of damages," said the little Dutchman, dryly. "Four hundred guilders for the smashed window and the other breakage. To that I am adding three hundred guilders fine. Your romantic tendencies, Mr. Trent, will cost you and your companion three hundred and fifty guilders each."

Crabb groaned. Eric Trent smiled, squashed out his cigarette.

"Sorry to disillusion you, Burgomaster," he said politely, "but there is a provision in the existing America-Netherlands treaty that no American citizen shall be held more than

twelve hours without giving him the right to appeal to the nearest American consular office. If so held, the American citizen can sue for damages to the amount of ten thousand guilders on the grounds—"

"Wait, I withdraw the assessment," said the burgomaster hastily. "You are both free," he went on, biting his lip in suppressed rage. "But I warn you, leave Arnheim at once. I will give you until seven to reach the airport. Your plane will be wheeled out and waiting."

"Tut! Tut!" said Trent. "Where is your famous Dutch hospitality?"

"We'll be there by seven," Mortimer Crabb said sourly. "You heard what he said."

"I'm afraid it's impossible," said Trent. "I've already planned a shower, a cocktail, and a good dinner at the Hotel les Bains. The burgomaster won't object—if we forget the little matter of the damage suit, will you, *Mynheer*?"

"Get them out of here!" the little Dutchman said wildly. "Give them their effects. Hurry up, before I go completely mad."

FIVE MINUTES LATER, Trent and Mortimer Crabb emerged from the old palace which now served as the Arnheim town-hall.

"It's a lucky thing you knew about that treaty," Crabb growled.

Trent laughed softly. "My dear Mort, don't tell me you fell for that story, too?"

"You mean there's no such thing in the treaty?" Crabb said, staring.

"Not a whisper. But that confidential file mentioned the time I nicked the British for five hundred pounds, and I had an idea our plump friend wasn't an expert on treaties."

"Some day your foot's going to slip," Crabb predicted gloomily.

Trent chuckled. "It's slipped more than once, Mort. "Didn't I ever tell you about the time in Venice when—"

Without warning, a large black sedan suddenly cut in from the street just as they started across an alley. Trent leaped back, snatching at Crabb's arm. But the inventor gave a jump to one side and was forced into the alley before he could turn back. The car's brakes went on hard, and one door was instantly flung open.

"Get in, you *Schweinhunde!*" a voice snarled, and a blocky face, marked with a saber cut, appeared above the muzzle of an automatic.

Crabb stumbled toward the car. Trent leaped around behind it, jerked open the opposite door. A blond girl frantically lifted a pistol.

"*Hoch*—raise your hands or I shoot!" she cried.

"Not so loud, you little fool,"

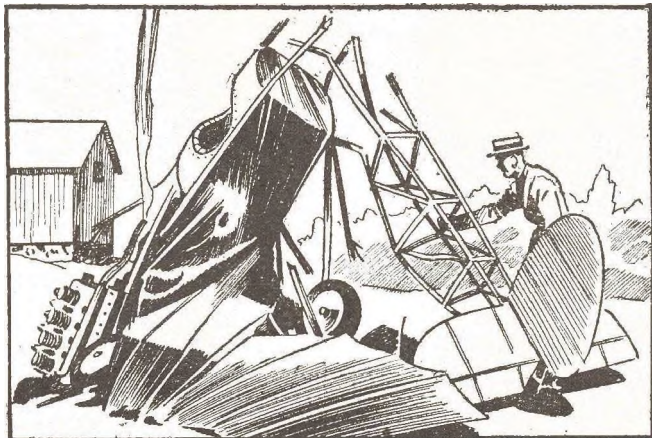
(Continued on page 56)



They Had What It Takes

XXXVIII—GROVER LOENING—DYNAMIC DESIGNER

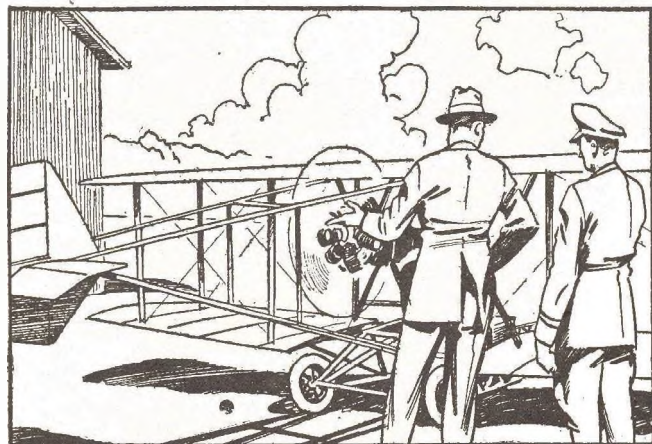
By ALDEN McWILLIAMS



1—Born at the United States consulate in Bremen, Germany, on September 12, 1888, Grover Cleveland Loening spent much of his spare time building model airplanes. In 1908, at the age of 20, his mother took him to see a real airplane. Despite the fact that the crate crashed, young Loening decided, as he surveyed the wreckage, to become an aeronautical engineer.



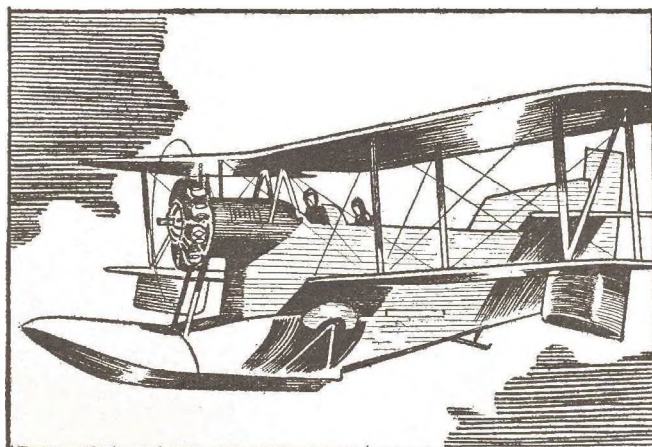
2—While enrolled at Columbia U., he founded the first American student flying club. In the spring of 1911 he was named a Master of Arts in Aeronautics, this being the first such degree awarded in America. Soon afterward, Loening became Chief Engineer of the Queen Aeroplane Company and directed the building of the world's first monoplane flying boat.



3—Early in 1914, Loening became Chief Aeronautical Engineer for the U. S. Army. Immediately he condemned all of the Army's obsolete Wright and Curtiss pushers, thus paving the way for the procurement of more modern equipment. While with the Army, he designed the Signal Corps Tractor plane, which established three-passenger and cross-country world records.



4—In 1917, Grover Loening organized his own company and constructed the famous Loening seaplane. The next year he brought out the Loening Fighter, which was quickly rated as the fastest and most practical two-place Army pursuit built during the war. For his work in developing this ship, Loening was honored with the Distinguished Service Medal.



5—After the war, this brilliant designer developed his renowned amphibian design. In 1921 he was awarded the Wright Trophy for his outstanding work and the following year the Collier Trophy. His ships saw several years of Navy service. And in the Army they proved their worth in the 1926 Pan-American Good Will Flight, covering 22,065 miles.



6—Loening disbanded his company in 1928, selling his interests to the Keystone firm. But he still continued to be an active figure in aviation, being connected with Roosevelt Field, also the Aeronautical Chamber of Commerce, which he helped to organize. In the first rank of honored aero Americans stands Dynamic Designer Grover Cleveland Loening!

Attack at Dawn

By Lieut R. C. Paul
Who Took Part In It

MY SOUND sleep is interrupted by some one rudely shaking me. And I resent this abrupt pre-dawn disturbance to such a peaceful rest, feeling as if I had only just lain down that minute and closed my eyes. As I shake off my drowsiness, I recognize Lieutenant Jones standing in the barracks aisle.

"Up and at 'em, men!" he is barking. "We have a mission immediately. Meeting in the Major's office in ten minutes—ready to go!"

I hear groans and gripes from the other five pilots bunking in the same

war! My body is loathe to leave the warmth and security of the bed, even though it is only an army cot. A mental picture of climbing into a cold airplane and flying two hundred miles in the dark flashes before me as I hug the blankets for that last delightful moment.

"Come on! What do you think you're getting paid for?" This from one of my "pals" who is already jumping into his clothes.

A few minutes later we all stumble into the Major's room—nine sleepy-eyed men hastily putting the finishing touches to their dressing. A tie here, a last button there.

Lieutenant Jones, the Intelligence Officer, is busily decoding a message that has just come in. The Operations Officer, maps spread before him on the floor, is going over the

situation with the Major, meanwhile marking in changes in the enemy front lines and positions.

Jones has finally translated the message into plain English. It seems that our outfit is slated to attack the enemy artillery brigade which is moving north on the road leading over the dam "at 14:23 and 12:48." The figures given are coordinates that give us the exact geographical location. We mark the position on our maps.

The Major explains our problem in detail. Since the target is relatively narrow, an attack by three-ship elements will cover the area satisfactorily—each element leader taking the road and his two wing men the sides. This side business should give the works to the enemy that seek cover at our approach.

The Major assigns us specific portions of the road. So the leading element will concentrate on hitting the area composed of the dam, while the other two elements will attack the road on each side, respectively. The elements will rally and re-form

Here is the stirring true story of a recent American air battle. So graphically is it told that you, too, will feel you are flying in the warplane as it streaks through the lightning-forked overcast to the fiery sky fray with the enemy—and to the drama's final tragedy.

"Already my gunner has his weapon ready. He is awaiting the worst."



immediately after completing their assault from the sky and speed for home, with the rear seat gunners keeping a close lookout for hostile pursuit craft.

Since these pursuits will probably be watching for us, we will fly a circuitous route to the scene of battle—so as to come upon our objective from the rear. The terrain is hilly, hence we will have a certain amount of cover from our objective as we approach.

While all this is being drummed into our heads we mark our maps with the required information and necessary courses. The mechanics have already warmed up our ships. We hear the roar of the powerful motors as they are being groomed for the flight.

The meeting is dismissed by the Major with: "If there are no questions, gentlemen, that is all. Stations in ten minutes!"

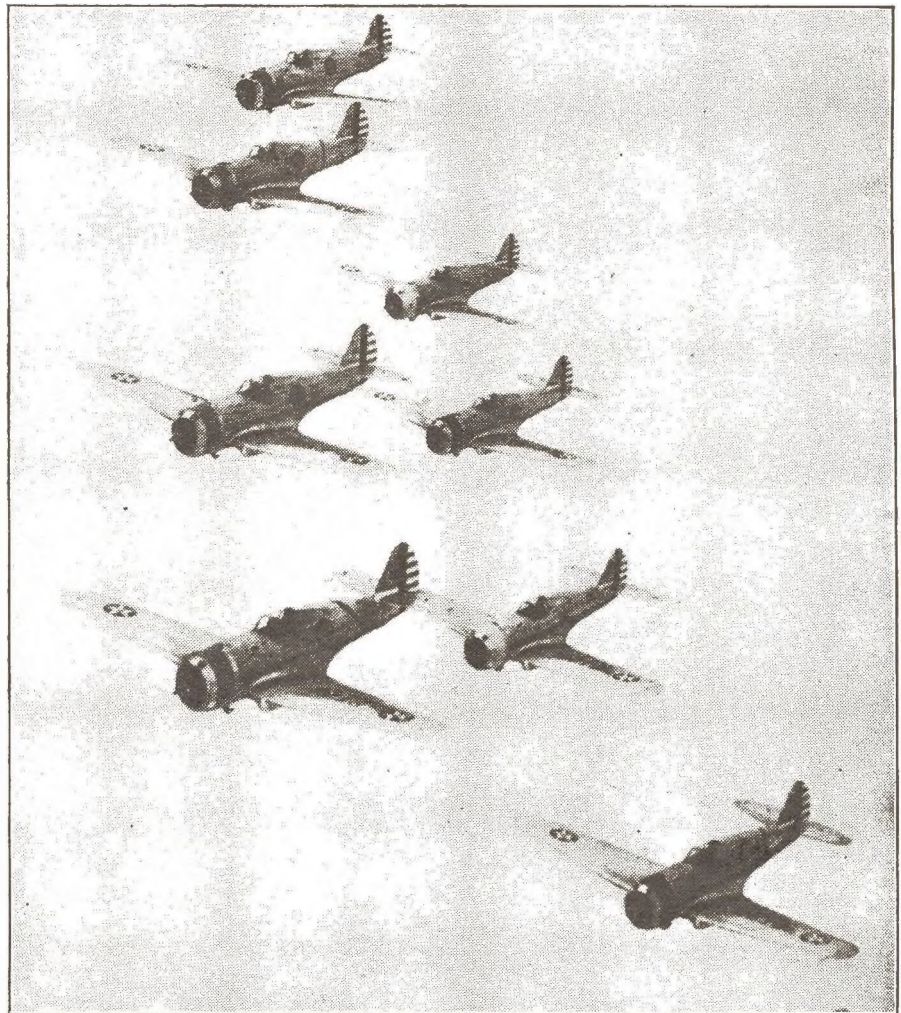
A hasty cup of coffee, then we are climbing into our ships. The cold air has removed all vestiges of sleep that any of us may have retained. A call of, "She's Okay, Lieut!" from my crew chief assures me that I can rely on the thousand horses in my motor. It'll perform faithfully for me on this dark flight.

WE TAKE OFF by elements. The leading three ships make one circle of the field, giving the rest of us time to get off and join them. Then we start off on our course. It is a mighty black morning, I can tell you. Not a star is visible.

Off in the direction we are heading we see occasional forks of lightning, the jagged flashes disclosing ugly thick clouds. Pennons of motor exhaust stream back with an erie blue flame against the murky curtain of the night, and the few early lights from farm houses glow hazily, each circled by a misty halo like dim lamps seen through dirty glasses.

A look at the map. Yes, we're now over our first check point, so we drop down several hundred feet, having been initially flying in the edge of low, soupy clouds. In the East, where not blotted out by thunder heads, there is now a slight perceptible glow, the harbinger of the coming dawn.

The weather looks more and more forbidding. A slight qualm goes through me, and I wish that I were back safe in my bed. But I have confidence in our leader. We fellows have been through many such "shows" with him, and he has never let us down. We have all flown together many hours, and each flyer knows



"A glance back—and I see hostile pursuit ships. They have finally spotted us!" (Air Corps photo)

that the other can be relied upon. Confidence is born of long association and trying experiences.

It grows lighter as dawn tries to break through the towering portals formed by the black clouds. A light rain is falling as we pass our final check point and change our course for the objective. We are now hurtling along very low taking advantage of the rolling hills—worming our way through the valleys.

All my senses are sharp as I anticipate the radio signal from our leader that will indicate that the initial point of our objective is near. Then his signal barks in my headsets, blasting my ear drums! Every nerve and muscle in me is now alert. We skim over the rim of a hill, dive close to the surface of a lake. Not much time to look around while flying my tight wing position—but I do catch a glimpse of the dam ahead and men and horses on the road. The enemy!

The timing has been perfect. Our element swerves off to the road above the dam. Down to the very tree tops. Over my gun sight I see men scatter-

ing to the sides of the road and horses rearing. I grit my teeth and with a certain exhilaration press hard on my machine gun trigger. With the other hand I flip my switch that releases my chemicals. Quick death from the skies!

Out of the corner of my eye I glimpse a hastily set up machine gun popping up at us. For thirty seconds we blast away at them, then swerve and go low over a hill to get away and out of range as fast as possible. I can almost sense hot slugs pursuing us as we turn our tails and jam our throttles full on.

We re-join the other elements. And now we have but one thought—that is to get home as quickly as possible. We have shot our venom.

I chance a glance back—and see hostile pursuit ships. They have finally spotted us! A few moments pass. The sky is now black with them, swarming above for an attack. We will pay for our ruthlessness, an eye

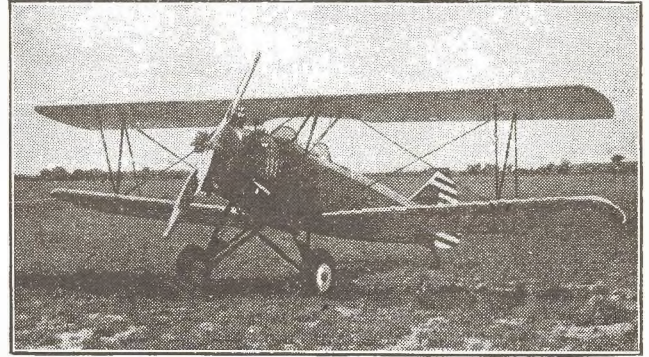
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A GRIPPING FEATURE BY A FIGHTING FLYER

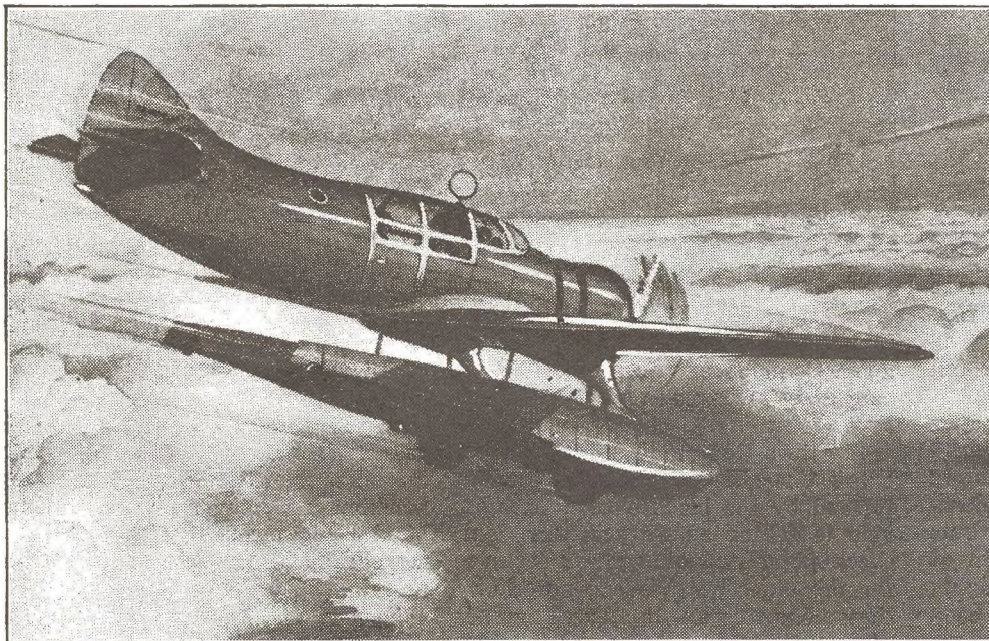
Britain's Auxiliary Air Force squadrons are still using these obsolete Hawker "Demons" for defense work. Yes, they're old—but they've been doing fine work around Scapa Flow and the Firth of Forth. They scored thirteen victories in seventeen days soon after the war broke out.



Canada is expected to play a big part in the war against Hitler. Thousands of Canucks signing up for the E.C.A.F. will learn to fly in American Fleets like this. They're powered with 125-h.p. Kinner B-5 engines, and thus are faster than the First World War's pursuits.

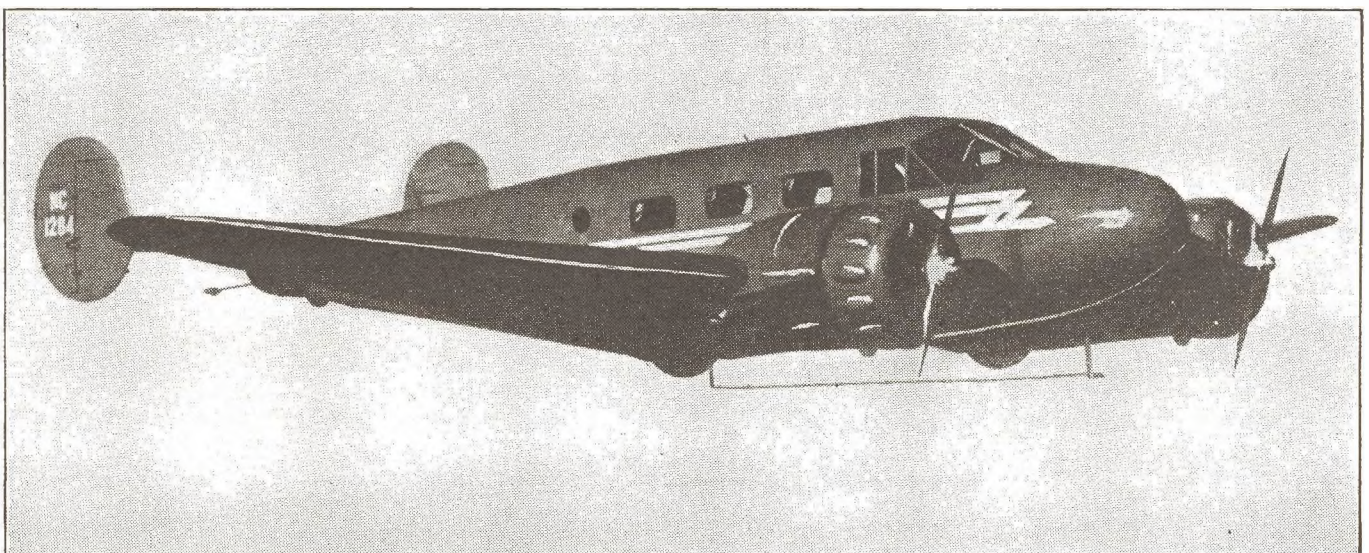


Through the Aero Lens



Left: While his own company was still in operation, Colonel Alexander P. deSeversky had great plans for turning a flock of 6-place Air Yachts of the type portrayed in this painting. But now that the firm has been changed to the Republic Aviation Company, that dream bubble may have burst. Note the trim Seversky gear with which the artist equipped this ship, also the smooth fairing of the fuselage back to the tail. The wind-tunnel model of this job showed there was very little parasitic resistance.

Below: Flying on one engine! Here's the Beechcraft Model 18 showing its worth by cruising with its left power plant dead. (Yes, the right one's still moving). Under power from both engines, this light transport-bomber type has a cruising speed of 195 m.p.h. The ship is a full cantilever job and its center-section is integral with the fuselage.





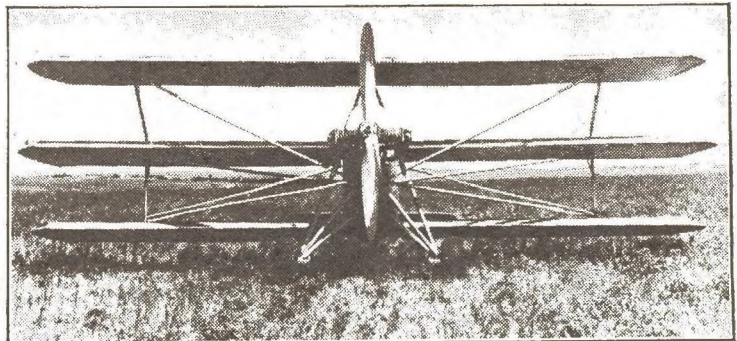
"First Scheduled Autogiro Air Mail Route in the World" are the words lettered on the fuselage of this Kellett KD1B. This job is a one-place craft, with an enclosed compartment. The high speed is 125 m.p.h.—and the low speed, from what we've heard, is 0 m.p.h. The plane plies daily from the Camden, N. J., Airport to the Philadelphia postoffice, where it sets down on the roof.



The line forms on the right for flying lessons from Miss Barbara Kibbee, who is one of the few girls in the country licensed to instruct. A graduate of the Ryan School of Aeronautics, she was recently awarded her instructor's rating by CAA inspectors.



This Fokker C-15A is many years old, but the Air Corps still finds use for it as a flying ambulance. Originally designed as a cargo craft, the C-15A is powered with a 575-h.p. Cyclone. Every one is comfortable in this job during the cold winter—except the poor pilot. He has to sit in an open cockpit right behind the trailing edge of the full cantilever wing.



So you want to fly a triplane and become a dashing Red Baron, eh? Well, the Universal Aircraft Company, of Fort Worth, Texas, builds this 3-wing American Flea ship, which has a First World War Richthofen smack to it. Powered with a Continental A-40 engine, it sells for \$695, according to D. C. Hibbs of the Universal Company.



Right: This photo is hot off an English boat that ran Hitler's sub ganilet. It shows a group of young R.A.F. students being instructed in the adjustment of a machine gun's Aldis sight in relationship to the line of the weapon's barrel. The chap on the right is seated in the dummy cockpit behind a Browning gun. Soon, perhaps, he'll be flying a Spitfire or a Hurricane against Hitler's Messerschmitts and Heinkels.

There came a loud SP-T-T-T-T-T! as Phineas flung the wire into the puddle—and the Heinies were charged like so many jalopy batteries!



Take It Or Leaflet

By Joe Archibald

Author of "Fright Leader," "Impropa Ganda," etc.

Illustrated by the Author

THIS BUSINESS of leaflets boasts a memorable history, since it was first adopted in the Garden of Eden, that Biblical Utopia which Adam and Eve put on the fritz by indulging in the big apple. And now today, judging by the reports from across The Pond, leaflets are being dropped behind the Maginot and Siegfried lines with such regularity that the troops of the scrapping factions are wading knee deep in morale-murdering manuscripts. Indeed, if a Pre-Mauve-Decade resident of the U.S. were to take a gander at the Western Front as this is written, he'd swear he was re-living the blizzard of '88. Yes, so far they have just about fought this whole war on paper.

As a matter of fact, though, the printing presses weren't idle back in the sanguinary days when Kaiser Bill had no idea that he would ever hop off on the Doorn patrol. And we're right here to tell you that one of the presses deserted by a French job printer early in 1914 nearly gave the Allied cause a knockout jolt in the solar plexus. This press was discovered in a deserted cellar by Lieutenant Phineas Pinkham of the U.S. Air Corps—and Phineas dusted the type lice off it and went right to work.

To begin at the beginning, Phineas was having a go at a couple of Gothas one day just after dusk, when the wind drove a sheet of paper against his m.g. ring-sights, thus saving a Heinie Spandau gunner from a permanent residence in a piece of real estate measuring six by two.

The Boonetown trickster peeled this handbill off his sights, crumpled it up, and put it in his pocket. With Captain Howell and Bump Gillis, he then pitched into the Gothas again, but these particular egg crates car-

ried the spooky skeleton insignia which proved they were manned by the toughest Teutons out of jail. And one of them nearly cut Gillis' Spad in twain before the Scot could get out of the sky ring.

The Spads landed back on the drome where Major Rufus Garrity had his doubts about being the commanding officer. Bump Gillis got his war bus down just as most of its empenage fell off, and he immediately got out of his office and offered up a prayer of thanksgiving.

"It was a *close* shave because you are Scotch," Phineas tossed at Bump. "If you would *give* as much as the Krauts, you would not get half-killed every time you go up. Haw-w-w-w-w! Boys, that is a tough outfit, that Kraut Gotha squadron! Them skeletons on them buses seem to dance while you fight them, an' I could swear one of them thumbed his nose at me. Von Ratz is the big boss. Anyhow, I am rough on rats. An' if he thinks no metal can touch him just because he wears an imported pair

ANOTHER ACE-HIGH "PHINEAS" LAUGH TANGLE

Von Ratz was a Gotha-galloping Teuton terror who'd put nitro-glycerin in his own brother's coffee. And when he went to work on the Allies he didn't bother with the coffee! Yes, these were dark days for the Democrats, what with the rabid von Ratz all set to extend his diabolical business into Holland. But Phineas Pinkham hadn't been a devil—we mean printer's devil—for nothing. And he, too, had a business to extend—the heat, flight, and power business!

of Boston Garters—well, he is just dumb."

Howell did not crack a smile. His teeth were making a sound that was fooling Phineas, and the Boonetown pilot quickly asked where the crap game was. The thing was that Captain Howell knew von Ratz was no palooka. The Gotha terror had been the flyer in the Allied big wigs' ointment for weeks and weeks. He had washed out two supply stations and had set off war fireworks in several Allied ammo dumps. Engineers near Varennes had put in a lot of time building a road for Yanks to come up over—but in fifteen minutes von Ratz had reduced the highway to something resembling an irrigation ditch. Pursuit planes of three nations had had little or no luck against him, so it was a safe bet that the pilot who succeeded in flattening him could ask for the Eiffel tower—and get it.

Major Rufus Garrity did not pull his verbal punches. He let his three veteran pilots know what he thought of them as sky fighters—which was not much.

Phineas was indignant. "You should get into a bucket seat an' a flyin' coat instead of an arm-chair an' smokin' jacket," he said to the Old Man. "All the wound stripes you will git in this *guerre* will be from gettin' stuck with one of them pins you stick in a map. Why—"

Major Garrity broke in: "You shut up and don't get so fresh, or I will bust you as wide open as your big mouth. You are mess officer this week, aren't you? Then why have we run out of oleo? Go out an' get some kind of grease to spread on our bread tonight—or we will have to use Hisso oil. An' come back in an hour!"

PHINEAS was glad to get to Bar-le-Duc. On arrival, he got himself three snorts or some puma sweat that the Frogs called cognac, and he was then tuned up like a fiddle.

He next met two doughs wearing brassards that told him they were A.E.F. cops, but that didn't stop him from having his fun. He gave them each a cig-

arette and they went into an alley to get a couple of drags from them.

"He is a swell guy, that Looney," one M.P. said, and he touched a briquet flame to his coffin nail. WO-O-O-OSH! The cigarette was gone—and so was the skin from the M.P.'s nose. Also from one of his eyebrows. "Co-o-ome on!" he roared to his side-kick. "And don't light that thing. Why, if I ever git my mitts on that fresh—! Look! There he goes! He-e-e-y, you, stop or I'll—"

"They would light them things right away," Phineas sniffed as he started running. He raced for two blocks, got into a narrow alley, then saw the black maw of a cellar window and dived through it. In a heap on the floor, Phineas heard the boots of the military police pound the cobblestones outside the deserted house. He waited for several minutes, then got up and pushed the cellar window

shut. Finally, he struck a match and looked about him.

"Why—er—it is a printin' outfit here," Phineas exclaimed. He then walked over to a bench in a corner, found an oil lamp, and got it working. The deserted type-tepee got Phineas to thinking about the paper he carried in his pocket. He spread the crumpled ball out flat and read the black type printed thereon. It was Jerry propaganda and it read:

You Amerikans Do Not be The Fools Yet!

Wall Street Gives It Orders, Ja!

Not Your Generals, Nein!

Cash For Profiteers—KAPUT For You!

Go Home!

"The bums," Phineas snorted. "Well—er—what am I waitin' for, huh? Haw-w-w-w-w-w! What would a mouse do in a cheese factory? I bet this Frog type never spoke English before, but here goes. I will tell them Heinie printers a thing or three. I ain't forgotten that one other kinda devil I've been was a printer's devil in Uncle Luke's print shop back home. Now, where is that form? I—I hope this press works an' there is ink here."

The exponent of skullduggery from Iowa got busy. He set up a form, the work taking him the best part of two hours. Finally, he washed his hands, sneaked out of the cellar, and went about other business.

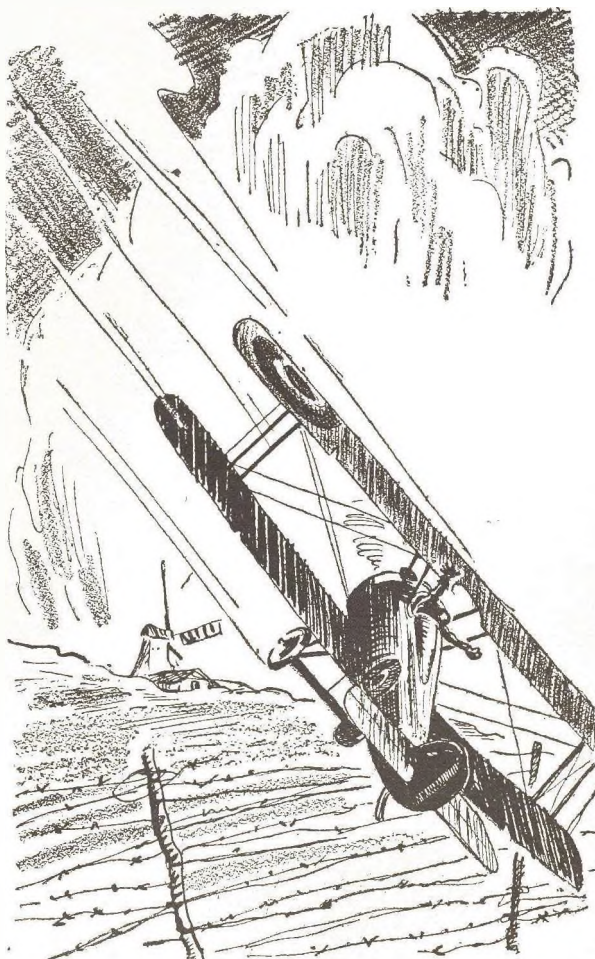
When he got back to the Ninth Pursuit Squadron for mess, Garrity was fit to be tied. The Old Man had almost choked when he found the bread he had started down his esophagus was minus lubrication.

"Oh, what is all the fuss about?" Phineas chirped. "My motorcycle broke down, and can I help that? I had to lay down in the mud, an'—"

"No kiddin'?" Major Garrity stormed when his pipes were cleared. "I s'spose it was the feed line."

"Yeah? How did you know? Why—"

"Them mechanical bugs don't run on *ink!* That's what's all



He came down with a dead stick, nearly kissing a high wire fence. . . .

over your pan. You've got—"

"Oh—er—er—I had trouble with my fountain pen that leaked," Phineas said in a hurry. "I was writin' a Frog a bum ch—er—a check an' the ink splashed out an'—"

"—An' the pen slipped out of your fingers and printed them letters on your kisser, huh?"

"That musta been when I fell in the cellar—I—have got no more to say," Phineas said indignantly. "Anyhow, I did get what you wanted. Here's the oleo margery, an' it is butter than nothin'. Haw-w-w-w-w!"

EARLY the next day, while Howell and Phineas and the rest of "A" Flight were up earning their pay, three brass hats stopped into Major Garrity's war office. One carried a Frog newspaper. And the C.O. did not laugh when the Colonel spoke to him in French.

"Read it in American," Garrity bit out. "I ain't a foreigner."

"Er—ah—disquieting news, Major. Seems that the Kaiser has been trying to dicker with Wilhelmina. . . . Wants to get a right of way through Holland so he can put a sub base at Antwerp. . . . Threatens to go after it by force if the Queen doesn't—well—er—it would be easier for Wilhelmina if she let the Krauts walk through easy-like instead of having them rush through with a mad on, huh? They would tramp down all the tulip beds, and some of them bulbs are worth—say—"

"You're either drunk or nutty," Garrity sniffed. "What are you drivin' at, Colonel?"

"In a nutshell, it is this, Garrity: The Hollanders are willing to negotiate with the Kaiser, and we don't like the smell of things. Chaumont is watching that end, too, and they're pretty skittery. One bad diplomatic move on the part of the Allies—and Wilhelmina and her agents will probably sell out to Potsdam. The Kaiser could put a big bombing outfit right on the banks of the channel—and then London would catch—"

"Yeah! Let a Hun like this von Ratz work outa Holland with a dozen Gothas and—well—even the King and Prince of Wales would have to call a moving van," Garrity admitted. "But why cross a bridge before you find a river? This is just a rumor."

"Can't tell about rumors, Major. My wife had one skip out on her—an he owed three weeks rent. Another set the house on fire by cooking in a closet. Ha! Ha!"

Major Rufus Garrity measured the brass hat. "Look, Colonel! I got one wise-cracker in this outfit already. Don't push me too far, as what I've been standin' here for the last six—"

"All right, Major. Sorry. But this rumor is serious. If the Dutch—"

The props of the returning patrol drowned out the rest of the brass hat's words. The Old Man put on his cap and hurried out. He counted four ships jockeying over the drome. Five had gone out. He looked for Phineas' polka dotted Spad—but he saw no spots in front of his peepers.

Howell landed and told the C.O. that Phineas had trouble with his Spad. He thought the Irrepressible Iowan had smoked down for a landing.

BEYOND BAR-LE-DUC, Phineas got out of his crate and took a home-made smudge pot from his Spad pit. "That fooled Howell awright," he said. "Now I will see to my printin' business. The stuff the Allies have written to the Krauts up to now has been too tame."

Phineas managed to get into the cellar of the Bar-le-Duc dwelling unseen. Going to work with the press, he soon ripped off his first sheet. It was blotched a little and he tossed it aside. The blurred letters screeched out:

*You Dumb Crackpot Dutchmen!
Go Ahead And Be Suckers For
The Kaiser!*

*You Can't Win No More Than
Can a Limey Pug!*

*Keep On Starvin' To Death
An' We Allies Will Lay You
Among the Tulips*

"That 'Tulips' business is better than sayin' 'sweet peas,' as everybody says that," Phineas chortled. "I have been original like all Pinkhams."

Darkness had already fallen when Phineas sneaked out of Bar-le-Duc packing a big bale of his new propaganda. He stowed it away near the place where he had parked his Spad, spreading dry branches and other debris over it. Then he got his Spad perking and flew to the drone of the Ninth.

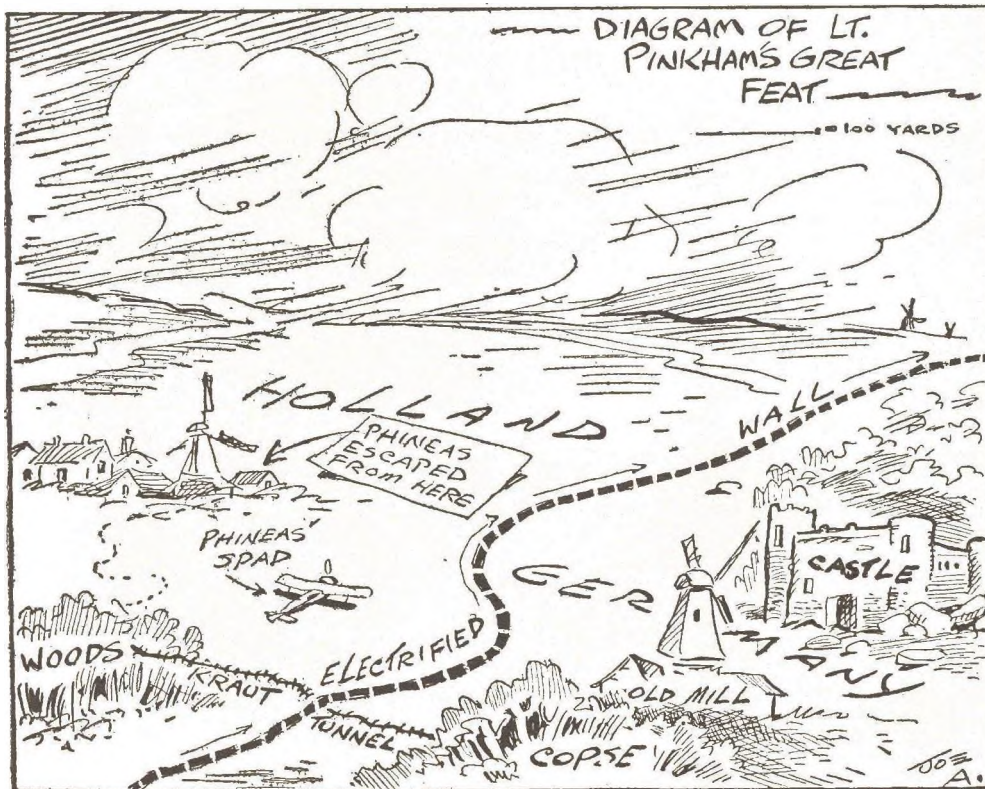
No sooner had the wheels of his air hack kissed terra firma when von Ratz and his Gothas roared through the sky lanes overhead. Von Ratz must have saved a couple of bombs

to drop down on Garrity's drome on his way home from wherever he'd been—for down they came and one of the eggs made a messy omelet out of "C" Flight's hangar. Phineas quickly took off and chased von Ratz, and when the Boonetown Bam dropped back to the field they had to light his way in with petrol flares. Phineas rode right through one and rolled to a stop not a foot from the front door of squadron headquarters.

"If I am goin' to keep on fightin' them Gothas at night," Phineas complained, "I gotta git a light on this crate. How is everythin'?"

"Just fine and dandy!" Garrity sopranoed. "So you didn't get killed? Well, we're out a hangar, and the power truck got a stroke and we haven't any lights. We are burning candles because they lend a certain old-fashioned touch. Now git out of my sight be—"

(Continued on page 72)



Sky-Capture of a U-Boat

THE THRILLING STORY BEHIND OUR COVER PAINTING

WITH BRITISH sea and air power battling with Nazi undersea power for the control of the seas, much drama has marked the war of the waves. One of the stirring scenes of the new conflict is depicted on our cover this month—a big Short Sunderland taking off prisoners from a captured German submarine.

Let us reconstruct the story: A formation of British Blackburn Skua torpedo-bombers has spotted one of the Nazis fast and formidable "baby" subs which has been skulking near the surface, torpedo tubes ready for action. One of the Skuas has dropped an explosive charge which has seriously damaged the submarine. And the freighter which was to have been the U-boat's victim, having been warned, has veered off its course for safety.

The badly damaged undersea boat has had to come fully to the surface. If she didn't, she'd sink with all hands. And now another patrolling British airplane—a huge Short Sunderland—has flown in to capture the U-boat crew. For the Nazi commander has been forced to signal his surrender, because it would be quick suicide if he submerged his ship again and let the remaining air buoyancy be lost through the cracked plates.

Now the picture has completely changed. A few minutes before, a British freighter was destined to have been torpedoed. Many of her crew would very likely have been trapped in the sinking vessel. Others would have had to board what lifeboats were left to take their chances on a wide, storm-tossed sea.

This time, however, a speedy Skua has assaulted the sub first, nipping its attack in the bud. Then the giant Sunderland, capable of nearly 200-m.p.h., has hurtled in to corral the U-boat crew. The flying boat heads for a spot alongside the submarine, while a Skua torpedo-bomber above stands by ready to drop another bomb in event the Germans show any more fight.

The Sunderland lands on the water, then under skillful hands it is warped up close to the sub. A gunner in the plane's nose covers the German sea-

men—just in case. Finally, as shown by our artist, a rope is tossed to the U-boat. One by one, the Nazis will be taken aboard, whereupon the wounded will be attended to and the rest will be put in the Sunderland's crew quarters, where they will be guarded until the plane returns to a nearby coastal station to turn them over to the military authorities.

THESE are the conditions and events that make up the everyday life of British Fleet Air Arm flyers who are serving active duty. Many persons are prone to consider military air warfare as made up wholly of dog-fights, night-raids, observation shows, and the like. But thus far in this war, the hours and miles turned in by the Fleet Air Arm would top those of the land fighting squadrons with plenty to spare.

As a matter of fact, the British

schmitts and Heinkels time and time again.

But it is the Naval airmen who continue to score the victories. By the middle of December, British Fleet Air Arm pilots had destroyed no less than 19 German U-boats. They are reported to have engaged enemy submarines on no less than 57 occasions, being said to have inflicted "substantial" damage in each attack. These figures are from a report made recently by Sir Kingsley Wood, the British Air Secretary, who has a reputation for being conservative with his figures.

Conservative is right! It was Sir Kingsley who once admitted that the Short firm was *considering* a new four-engined dreadnaught-type flying boat. Then the *next day*, twelve of these boats rolled down the ramp at the Short works and flew off to Singapore!

These Sunderland flying boats are now considered among the marvels of the present war. They are on all sorts of patrol duty today. The case of the rescue of the crew of the Freighter *Kensington Court* is another typical example of their capabilities. This was the first time in history that a military flying boat had done ocean rescue service under actual war conditions.

DETAILS of this feat came out recently: The *Kensington Court*, a 4,862 ton grain ship of the Court Line, was attacked by a U-boat on

the Atlantic about noon on September 18. The vessel was on its way from Argentina to Birkenhead with a full cargo of wheat.

The submarine began firing at the vessel and the master, Captain Schofield, turned his ship's stern about and put on full steam. Still in range, however, the submarine crew continued to fire, and their gunnery was deadly. Thereupon, Captain Schofield decided not to risk the lives of his men any further. He halted his vessel, gave a signal that he was abandoning ship, and his crew went to work lowering two boats.

During this time, it is said, the submarine continued to shell the ship, and meanwhile one of the lifeboats

(Continued on page 78)

British Fleet Air Arm flyers are reported to have won victories over no less than 19 Nazi submarines! And here we recount the graphic action of one of these striking dramas of the high seas.



public now realizes that of all the services involved, the flying branch is doing a more striking job than either the Army or the Navy. Already we have heard criticism of the Royal Navy for allowing the *Bremen*, the *Deutschland*, and the *Scheer* to escape capture. The Royal Navy, which for centuries has been the bulwark of Great Britain's power, has lost some of its popular appeal among the British youth, flocks of whom are turning to the Royal Air Force.

It must be admitted that the Allies, so far, have excelled in the air. The British have clipped every Nazi attempt to bomb home naval and military strongholds. And with the French on the Western Front, they have defeated the vaunted Messer-

Meet the Inspector!

Day in and day out the CAA field man is hard at work. Promoting safety and sanity on the skyways is his task. And it's a tough one—as is revealed in this special article by Transport Pilot Scherer, who spent a full day accompanying Inspector Wilfred B. Blain on his painstaking rounds.

By Lieut. John Scherer

ALTHOUGH not so well known to the average man, anyone who flies either for a livelihood or for pleasure knows Uncle Sam's "guardians of the skyways." I'm referring, of course, to that select, intelligent, and job-enthusiastic group of men whose duty it is to see

that modern aviation operates in a safe manner 24 hours daily. Yes, I mean the lads in the General Inspection Service of the Civil Aeronautics Authority.

Of course, even the average man knows that the CAA inspectors are concerned with the licensing of pilots and airplanes. But that function, we wish to emphasize, is only one of the multitudinous duties assigned to them. To give you a good idea of a complete day's work on the part of one of these men, I spent that much time recently with Inspector Wilfred B. Blain at the Municipal Airport in Rochester, N. Y. And I was fortunate enough to obtain some photos showing him at work.

Inspector Blain's job is concerned with non-airline flying in all of New York State west of the Hudson River. His office is located on the Municipal Airport in Rochester, but he spends most of his time flying to the many airports in his territory.

His schedule is made out a month in advance and sent to the various airports he covers. Then when the trim monoplane, with which the government has supplied him, drops out of the sky shortly before the working day begins, airplane owners and

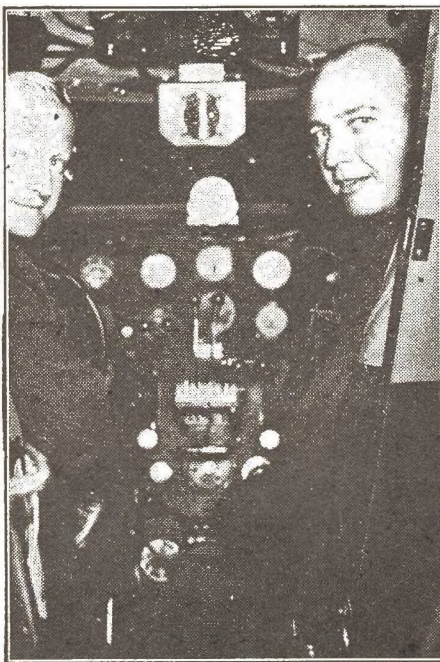
potential pilots are on hand, ready to have him check their "ships" and flying ability.

Anyhow, the proverbial one-armed paper hanger has a snap in comparison with Inspector Blain, or any of the other General Inspection Service men. On an average day, he puts fledglings through their flight tests, inspects airplanes for licensing, checks major repair jobs, checks parachute packing, flies with pilots who are seeking a rating for instrument (blind flying) work, gives examinations to would-be aero mechanics, ground school instructors, etcetera. Nope, there's nothing soft about handling a chock-full program like that!

Planes are inspected "from the ground up" for the slightest flaws that might warn of future trouble, thus nipping in the bud the possibilities of serious injuries for flyers, passengers, or innocent bystanders later. One minute, I saw Inspector Blain under a plane checking a landing gear, then a few moments later he was atop a biplane's upper wing making sure nothing was amiss. Control cables, engines, props—all received the same careful, "eye-on-everything" examination before he would issue an aircraft license to the plane owner standing nearby.

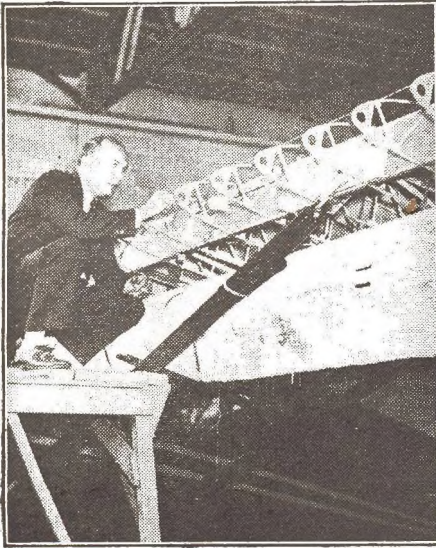
And we don't have to tell you that the said owner deeply appreciates this expert, free inspection service offered by Uncle Sam. A plane in top-notch condition is what every flyer wants.

AS FOR the testing of an applicant for a pilot license, that takes an average of 45 minutes in the air. Written quizzes, on the other hand, require from two to three hours, depending upon the applicant's capabilities. When Inspector Blain finds that a prospective "ticket holder" is not thoroughly qualified in his air work, he informs the fellow of his mistakes and explains to him just how the specific maneuver he flunked on



Left: Inspector Blain, right, gives the author a short check. They're seated in the control pit of the Gannett Newspapers' Lockheed 12. Below: The Inspector casts his eagle eye over a Luscombe prior to accompanying a pilot-instructor on a test hop.





should be done. If necessary, he demonstrates the correct procedure.

It is a serious responsibility, this licensing of a pilot to carry friends or pay passengers, so naturally none of the CAA inspectors take it lightly. By their own example, the inspectors impress on the embryo airmen the fact that it is conservative flying—not flashy, show-off evolutions—that mark the skillful pilot. An inspector does not insist that a flyer be absolutely perfect in his technique, but they do insist that he handle his job in a safe manner.

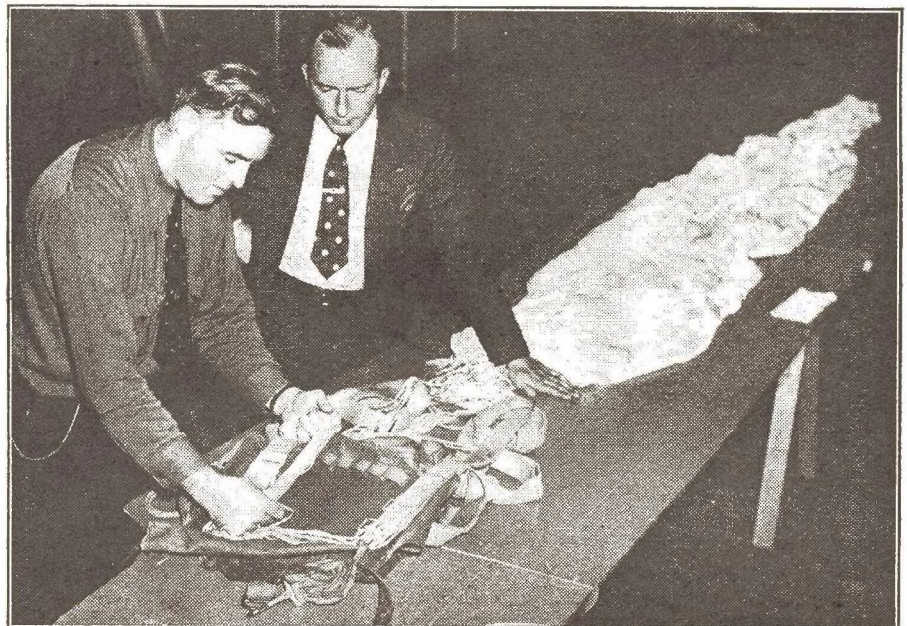
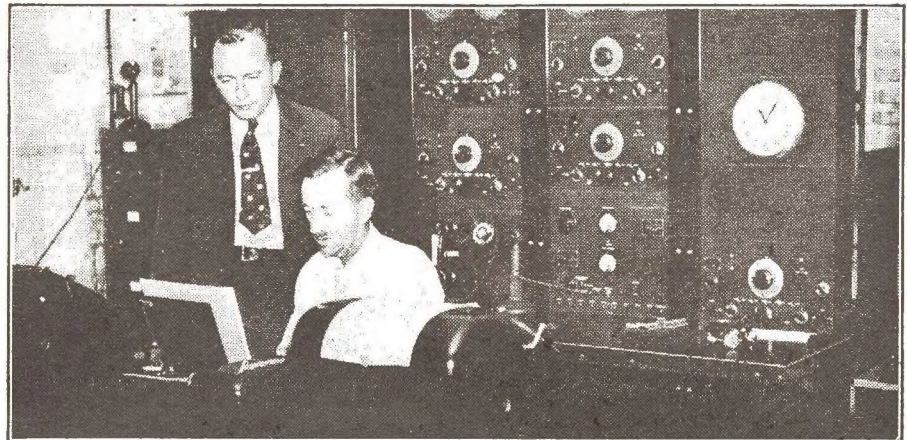
Being skilled flyers themselves, the CAA inspectors can quickly determine whether or not a man is ready to receive the coveted Certificate of Competency. This Certificate, you know, is issued only after the applicant has passed a series of flight tests involving spot landings, spirals, spins, and emergency maneuvers. While I watched, Inspector Blain went aloft with an applicant and put him through his paces. And seeing it with my own eyes, now being a Transport man myself, the realization came to me how painstaking the task is. Recently, during a two-day stretch, Blain had to fly and check fully 25 student flyers who were after their licenses!

Modern planes are equipped with many instruments designed, as you know, to enable the pilot to fly safely even when he cannot see the ground. But such instrument flying naturally

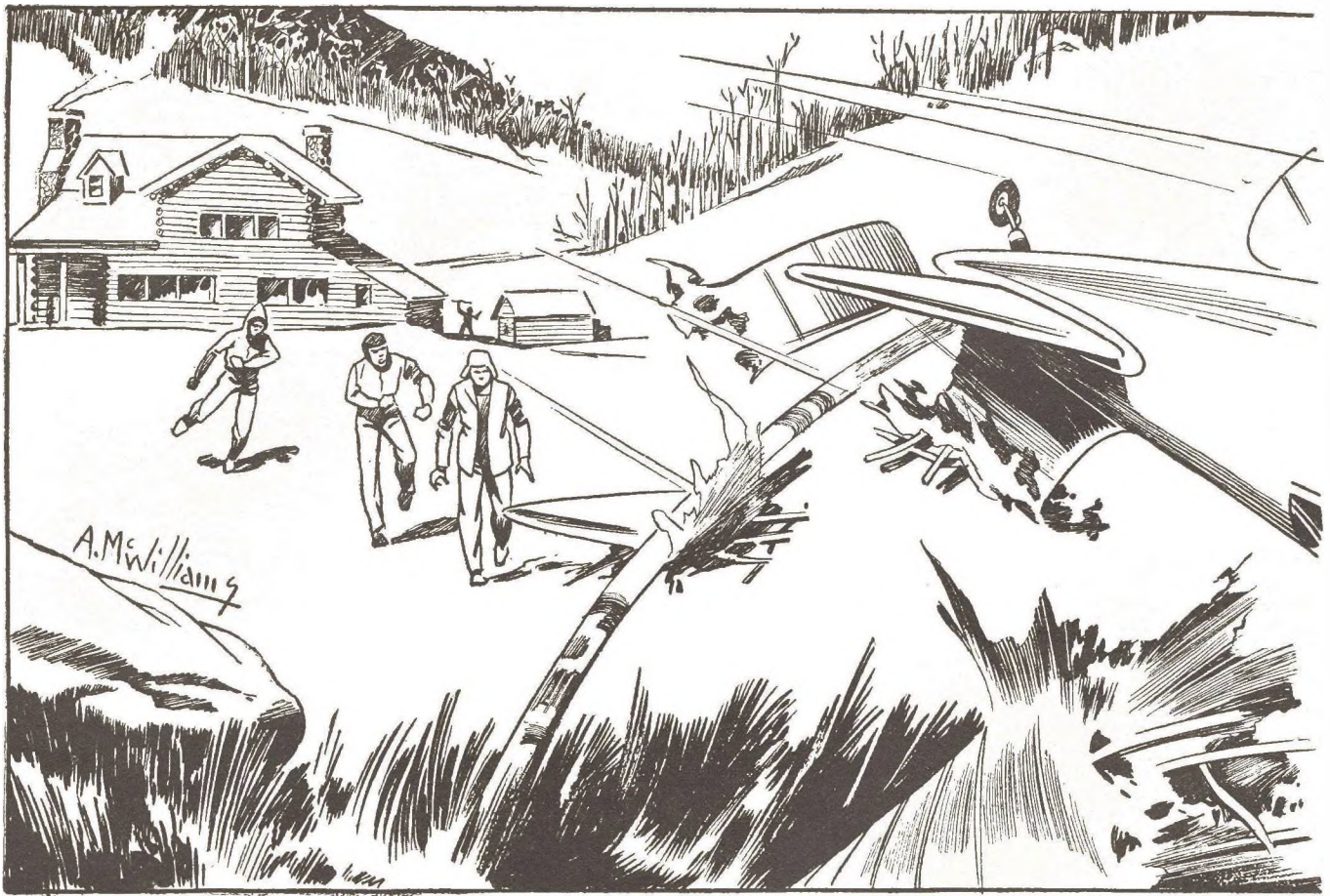
is in an advanced category, and airmen desiring to go in for this blind flying must prove their ability to the inspector so there are no "ands" or "ifs" about it. Critical, but fair, the inspector will issue an instrument rating to the skyman only after be-

Extreme left: Mr. Blain gets down to fine details as he examines the wing structure of a Stinson which is undergoing repairs. Center: A Luscombe's elevator stands inspection before winning its "Okay" tag. Right: "It's this way—" says Blain to a mechanic as he explains one of the important points of a motor check.

ing convinced that the fellow "knows his stuff" and has thoroughly demonstrated that he can run off the
(Continued on page 79)



Two more aero matters which Blain scrutinizes during his perpetual inspection routine are airway communication operations and parachute packing. In the top picture on the right, we see him watching Chief Operator Guy Crandall sending out weather data on the Rochester Airport teletype. Radio transmitters and receivers are seen in the background. In the lower shot, the Inspector observes closely as an applicant for a parachute rigger's license "packs up the silk."



Death Hurtles North

By Arch Whitehouse

Author of "Raider Wings," "Contra-
band Cocardes," etc.

Illustrated by Alden McWilliams

DRURY LANG was calling from New York. As usual, he was in a spot. And just as usual he was busy using his powers of persuasion on Kerry Keen—the man he figured might get him out of it.

"... An' I tell ya it ain't funny, Keen. We're losing too many good men on that job. Now, if you was to tell this 'Griffon' guy—"

"Look," interposed Kerry Keen into the mouthpiece of his phone at Graylands, his Long Island retreat. "Look, Lang. This 'Griffon' business is out. I'm tired of it, and personally I don't see where any of us fit into the picture, anyhow. All right, spies are shooting down a lot of Lockheed bombers in Canada. But since Canada

had already taken delivery on them, that's now Canada's worry, not mine. And as for the Griffon, you find him. I don't want any part of him, either."

"But Keen! In the last week, three dang good American transport pilots 'went West' flying those Lockheeds, and you don't find guys like that growing on plum trees."

"Well, if they're working for four grand per ocean flip—a deal between them and Canada—where do you come in? Besides, as I told you so many times before, I know absolutely nothing about airplanes. They frighten me to death!"

Lang spluttered like a badly fouled outboard motor. Then he tried another tack:

"I tell you, Keen, that those guys will be needed by Uncle Sam if a war comes up. Don't you realize that only a handful of guys in this country are capable of doing those flights? If they all get bumped off, why—"

"—Why that's their own lookout!

I'm tired, I tell you. You think up an idea for a change and go and capture some of those big bad sabotage agents. As for me, I want to go to bed. I really need a rest—a vacation."

"If there was any dough in it you'd be on your toes in a minute."

"Isn't there?"

"No. But we don't want to lose any more of those guys. They're too valuable. Canada or no Canada."

"Hang up, Lang. I was just beginning to think that you might be able to put something worthwhile my way. But of course I always get the 'gratis' jobs, don't I?"

"Not always, you . . . you . . . chiseler! What a public spirited citizen you are! You stage wonders when you get paid a nifty bonus, but you won't raise a mitt to do your country a turn. I hope that if we go to war they grab you first and stick you in the front line trenches," snarled the Secret Service man.

"Well, at least I'd get a good view

ANOTHER SMASHING "GRIFFON" SKY ADVENTURE



... A mad zoom, a slithering side-slip—then with a final roar of its engine the Gregor slashed itself to pieces in the merciless maze of the forest!

of the proceedings there and come back and write a book."

"You're going soft, Keen," taunted Lang. "It's that girl, I guess. Get a dame in a guy's life and he ain't worth wasting good ammunition on. You know, you've never had the same bite since that Miss Colony came into your picture."

"Shut up! When any jane gets me tied up like that, you can write your own ticket and put me on any job you like, Lang. I haven't seen her in weeks, anyway."

"Weeks?"

"A couple of weeks—nearly."

"Well, so long, Keen. They all talk like that just before they get hooked. I'll send you a nice pair of warm carpet slippers when she carts you down the aisle."

"Hey, wait a minute," barked Keen, really growling under the needling. "You can't pull that line on me. What's the story again? I'll show you! You can't get away with that."

At the other end of the line, Lang winked at John Scott. He knew he had pricked Keen's pride in his personal feelings. He knew how Keen felt about being considered in the toils of a lovely girl. Now he resumed the conversation:

"Well, a number of American pilots who ought to know better

have taken these jobs of ferrying Lockheeds across the Atlantic for the British.

So far, none of them have gotten across. They are grooming the planes at the Royal Canadian Air Force field at Ottawa, putting on special R.A.F. instruments and suitable flotation gear. Then they fly them out to St. Johns in Newfoundland—and don't get that mixed up with St. John in New Brunswick."

"Don't worry. I'm not going up there!"

"Well, at any rate, they seem to get away from Ottawa all right, and they seem to get across the Gulf of St. Lawrence and begin checking in with the St. Johns air base. But after that, no more is heard about them."

Kerry Keen was tentatively considering a vacation. But he had to vacate much sooner than he had expected when that strange, grating voice hurled a sinister threat over his phone! The ominous words on that wire were certainly no invitation to a much-needed rest. Instead, they were destined to send him through a mid-air gantlet of lethal lead. And finally he was to face a riddle within a riddle which could only be solved by the crash of a plane that was—pilotless!

"Nothing? They can't disappear!"

"Well, between you and me, the Canadian Government has admitted finding one. It was apparently shot down somewhere in Newfoundland just a short time before it was within sight of the St. Johns base. They found it riddled with Canadian Vickers bullets!"

"Ow!" winced Keen. "And no trace of the others?"

"Look. If you know that country, you can realize how easy it would be to lose a hundred bombers if they were shot down—cold!"

"I suppose so, but don't they get any sort of a report through before they go down? Can't the radio men send something through as a tip-off?"

"So far, no. So you see this ain't an ordinary case, Keen. Anyhow, we thought maybe you'd have an idea."

"If I do, I'll let you know. Hang up now, will you? I'm tired."

"Okay. But don't forget to send us an invitation to the wedding," taunted Lang.

"What wedding? Say, are you still harping on that? Buzz off, you dope." And Kerry Keen slammed the instrument down hard. He was plenty sore over Drury Lang's taunting remarks.

SOON he was fingering a large atlas which lay on the corner of his desk. He turned the pages to a map of the Maritime Provinces and studied the general layout of the area where the American bombers destined for Britain were being lost.

The distance from Ottawa to St. Johns was a trifle over one thousand miles. Now according to Lang, all three of the missing planes had reached the main island of Newfoundland, which meant they had probably followed the St. Lawrence River out to the Gulf of St. Lawrence, then had passed over Cape Ray on the southwestern tip of the British colony. They had, in all probability, flown along the southern coast to the inner end of Fortune Bay, then had cut directly across Placentia Bay to Placentia, from where they could follow the new highway up to St. Johns—if they were flying on contact.

Keen studied the atlas for some time, and finally his eyes came to rest on a group of small islands a few miles south of Fortune Bay. They were tinted a different color than Newfoundland proper, and Keen's eyes closed slightly as he pondered on them.

"That might be the answer. But why the devil should I go up there?" he asked himself.

The telephone bell jangled again, and he picked up the instrument with a tired gesture. He answered it expecting to hear Drury Lang once more.

"That you Keen? Kerry Keen?"

The voice was one Keen had never cataloged before. It was an even tempered voice, ringing in a subdued manner with authority. But the words were clipped and there was an acid threat in their cadence.

"Who is this?" Keen asked in reply. Already he sensed a foreboding of evil.

"This is Whiteface, Keen. You've never heard of Whiteface, have you—Mister Griffon?"

Immediately every nerve in Keen's frame vibrated in anxious expectation. "What is this, a gag?" asked the young ballistics expert to allow his mind to trip into action.

"Sure it's a gag, Keen. It's a gag to shut you up. You see, I caught that Secret Service man's message to you. So you're going to try and stop us from nailing those Lockheeds, eh, Keen?"

Keen didn't reply right away. He was pressing a button to call Barney O'Dare from below.

"Now never mind trying to trace this call, Keen. I'm up to all those old

tricks. We're tapping your line, and I'll be away long before this tap could be located. And now I'm tipping you off to stay out of the air."

"What air?"

"Quit being funny. We know you're the very mysterious Griffon, Keen. We're not dumb."

"That's all very interesting. What's the rest of the libretto?"

"Listen. You stay right where you are for the next three weeks, Keen, and we'll promise to leave your girl alone. Is that clear?"

Keen sat silent. Barney tripped into the room and gave his boss a glance of inquiry. But Keen waved to him that his original idea was out, and the Mick sat down puzzled.

"Is that clear, Keen?" demanded the voice. "Come on, now. We've got you tapped, and we have your girl. Is it a deal?"

"I don't know what the deuce you're talking about. You must be one of those society drunks on a binge."

"Yeah? Well, call up your Miss Colony girl—and see if we're on a binge. Here's the story, Keen. You stay away from Little Mick . . . er . . . from up there around Newfoundland, and we'll return your girl."

"Miss Colony is not 'my girl', as you so nicely put it."

"No? Well, maybe you don't mind, then, if she comes back carved up a little. That pretty nose of hers wouldn't take a good punch and stay that way, you know, Keen. Ever see a jane who went through a windshield, Keen?"

Keen was white now. He remembered the man had called himself Whiteface. What could that mean? "You win," Keen finally said limply. "What's the pay-off?"

"Just that. You stay right where you are. Anyhow if we see you anywhere up that way, we'll shoot the motor out of that pretty black bus of yours. Get it?"

"What about the girl? Where is she?"

"She's with us. And she stays with us safe from harm as long as you keep your nose out of the picture."

"Who's this guy, Little Mick, Whiteface?" asked Keen, staring at the atlas in front of him. "Do I know him?"

"Little Mick? Oh, him. No, you don't know him. He's one of our boys. Used to be in the Northwest Mounted—until he got his woman instead of his man, Keen."



Keen was scribbling fast on a pad of paper. He now handed it across the table to the Mick, who read it slowly and painfully. Then Barney gave Keen a quick glance of interrogation, but Keen frowned and waved him off. So the Irishman shuffled away still reading the amazing order.

"You heard what I said to Lang, didn't you?" Keen cracked into the phone mouthpiece as a stall.

"Sure. Anyone could put that guy off. He don't even know you can fly, or that you own the Black Bullet."

"You're on a bum steer, yourself," Keen added to draw the man out.

"Yeah? Well, if we spot you anywhere within one hundred miles of Newfoundland within the next three weeks, you'll get yours. What's more, the girl'll get a beauty treatment with a broken bottle, and—"

"—And life will again proceed along its own sweet tempo, eh, Whiteface?" Keen taunted.

"That's all, Keen," the voice barked, and there was a click somewhere along the line.

RUNNING to the head of the stairs which ran down to the cellar, Keen called to the Mick to make certain he had understood the written order: "And make it fast, Barney. We've got to be out of here quick. Green and brown remember. Proper markings, too. You have the colors all ready to daub on, haven't you?"

There was an indistinct grunt from somewhere below, also the whine of a small air pump. Keen hurried back to the telephone and called a number in New York City.

In a few minutes he received an answering, "Hello!"

"Is Miss Colony there?" he inquired.

"Miss Colony? No, she left yesterday for the Laurentians—on a skiing trip. This is Miss Colony's maid."

"Oh, yes. This is Mr. Keen, Margaret. Have you heard from her since?"

"Mr. Keen? Oh, I'm so glad. You see, I saw her off at Grand Central. I've been wondering about it ever since, though. There was the strangest man there. He made himself acquainted with Miss Colony, and I didn't like it a bit."

"Didn't she know him, Margaret?"

"No. Never saw him before. He was the most hateful person I have ever seen. He had a face that—"

"A white face?" demanded Keen, interrupting.

"Yes! That's it! The most frightening thing it was. Really white—like some disfiguration."

"Possibly as the result of an acid burn. Did you get his name?"

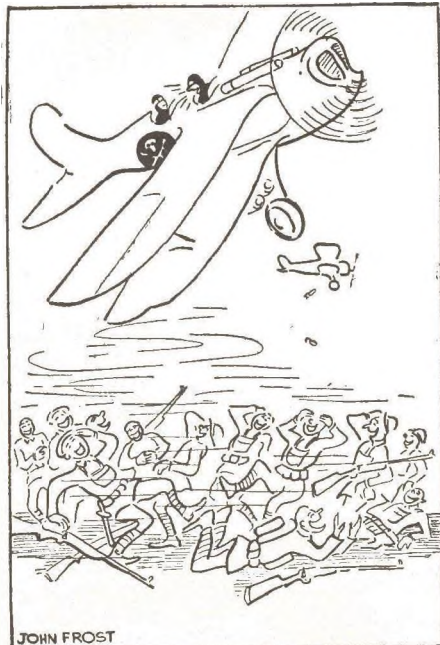
(Continued on page 32)



WISECRACK-UPS



Taxi in on this runway and pick up a plane load of laughs! In this department, we present a collection of jokes, cartoons, and humorous verse. For all original jokes which we can use here, FLYING ACES will pay \$1. Contributions cannot be returned. Address all letters to WISECRACK-UPS.



Pilot: "Are you SURE we're spreading the right kind of gas?"

CAUSE FOR WORRY

1st Instructor (in mid-air): You're really handling the ship extremely well, student!

2nd Instructor: B-b-but I thought you were the student!

1st Instructor: Ye gods! What can be happening to our two students up in the other plane in that other joke?

S-S-S-SH!

First spy (in low tone): Look! I've got the plans for Crash Carringer's Hale Hellion!

Second spy: Fine! Were they hard to get?

First spy: Naw! I just wrote a good letter to the R.H.P.D. about some of my Airmail Pals.

Dumb Dora wonders what cross winds are angry about.

IN STYLE!

Mrs. O'Swish: Why, Mrs. McNutt! What a chic hat you've got! It must be a new Paris creation.

Mrs. McNutt (in a whisper): Don't tell anybody, dear, but it's one of Junior's model airplanes—with a few ribbons I added, of course.

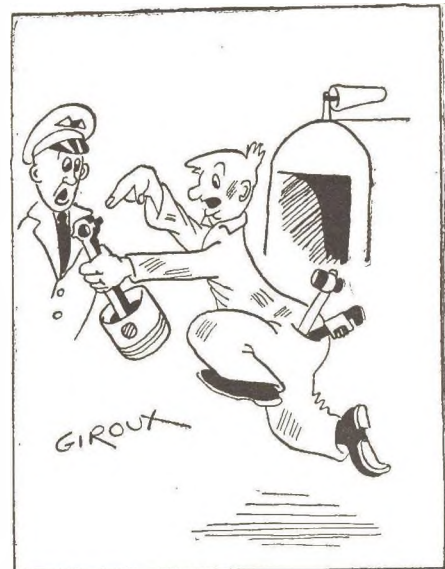
BARBARIOUSLY BLOTCHED

An old dowager had been staring a long time at one of the Army's camouflaged planes, and now she turned upon the guard who stood beside it and gave him a very dirty look. Whereupon the guard, remembering his orders against spies, approached her.

"Just what is it, lady?" he inquired.

"Well," she answered, "I've made up my mind to report you to the Commandant. Such a nice airplane!" she went on, indicating the daubed-up fighting job. "You should be ashamed of yourself for not protecting it from the impudent vandals who sneaked in and disfigured it with that horrible paint!"

Slogan for greaseballs servicing the latest model propellers: "Always be kind to our full-feathered friends."



Mechanic: "Jumping Jehosophat! Was that Trip 5 that just left?"

ROUTINE

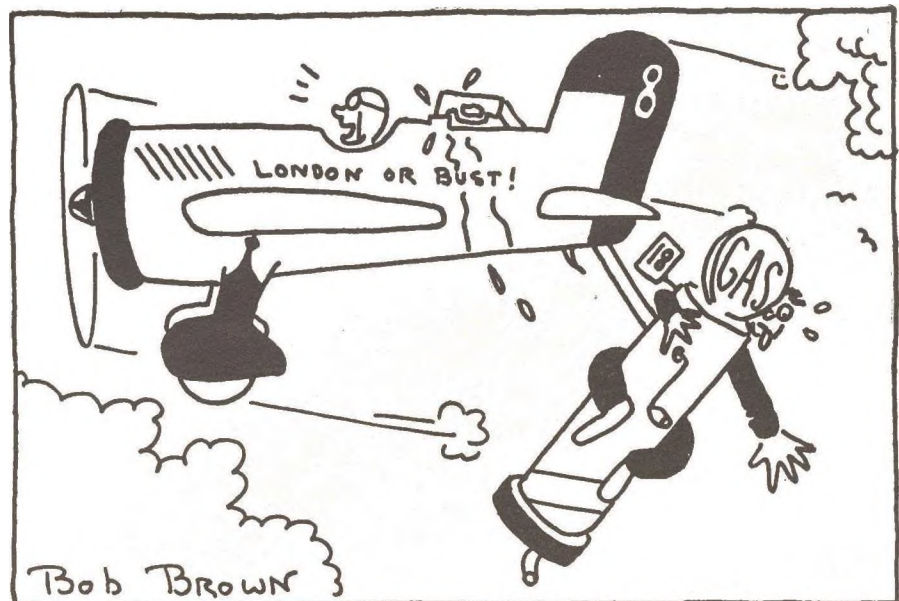
Inquisitive Bystander: I say, what's that steam-shovel doing out there on the airport?

Mechanic: Oh, that's nothing, Mister. They're just making the usual search for the new test pilot who was trying out that XQ4P-1 job this morning.

FOREIGN LANGUAGE

Airport attendant: You must be very fond of aviation, Sir. You come here twice a week.

Visitor (disgusted): I'll have you know I don't give a whoop about it. But how else can a man understand what his children are saying?



Absent-minded flyer: "I wonder now—did I remember to pay the man for that gas?"

On the Light Plane Tarmac

✱ ✱ ✱

NON-CAA MAN DESERVES BREAK
NO GOVERNMENT effort to widen the scope of American aviation has ever received such a fanfare of publicity as the Civil Aeronautic Authority's current pilot training program. It has even provided the plot and background for a motion picture called *20,000 Men a Year*, a title which was based on the original estimate, which since the launching of that movie has been cut to 11,000 men per annum.

Yes, the CAA program has been always good for an article in any magazine, and newspaper syndicate feature writers have been pounding it out continually. Indeed, newcomers to this country must get the impression that five out of every ten lads and lassies, from the rockbound coast of the state of the stein song to the sunny valleys in the vicinity of the Rose Bowl are taking flying lessons!

But let's review this business of making flyers on a mass production scale.—

During this 1939-1940 year the Government is spending approximately \$4,000,000 to train some 11,000 pilots. This comes to an average of \$363 a head.

Those who went through last year and got their private tickets are probably right back in their college classes today, again busy with the higher-education brand of reading, writing, and arithmetic. Ten to one, these sky grads wish they could now start all over again out at the airport on the Government's free list—but instead, further air time must now be financed at their own personal expense, and it comes pretty stiff on the old pocket-book.

True, a few of last year's aero grads—I believe it was fifteen from six of the original thirteen colleges which started out with the plan—have been given an extra 35 hours apiece of advanced instruction. And some others got some gliding and soaring training gratis. All of which is admirable.

But those few lucky fellows comprise just a drop in the bucket. And when by next June some 11,000 new airmen will be sporting wings, what of their aeronautical future? Granted, they may be simply left "on their own." But if they aren't we hope jus-

Non-CAA Man Deserves Break

That War Angle

Bob Gets Two For Two

tice is done for *all* ticket holders in event of further Government training.

Here's what we're driving at: There has lately been talk from certain sources of promoting further Government grants to offer already-graduated college flyers practice time and advanced training wholesale. And here, in our argument for justice, we must ask, "What of the *non-CAA* skymen?" We mean those fellows who couldn't take advantage of the CAA program, as presently constituted,

because they'd already had some air time—the chaps who were initially told that the Government's money was only for the training of *new* flyers.

Anyway, when it comes to offering opportunities to already-soloed flyers, we say it will only be fair if non-CAA, as well as CAA airmen, get the same break. In fact, the non-CAA men are generally more deserving because they spent their own dough to get where they are and didn't dip into public funds.

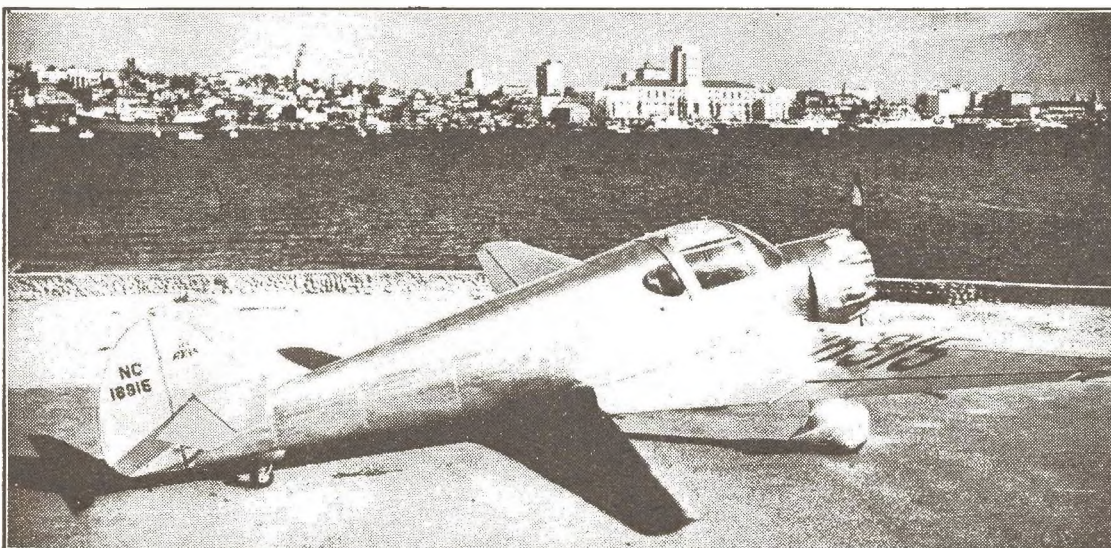
THAT WAR ANGLE

TO MAKE the country more air-minded, to buck up the small plane business, and to assist small airport operators generally—that's the three-part first purpose of the CAA training program. The second avowed purpose is explained in the fact that a civilian pool is thus being formed from which flyers may be drawn in event America goes to war.

On this civilian pool proposition, we understand that very few of the CAA-ers are appreciative of the fact that they might be drawn into military aviation. And there have been some collegians who skipped trying to get signed up for the training because of this military possibility. These particular fellows we're referring to here are quite willing, of course, to accept Uncle Sam's assistance to help them become dashing helmet-and-goggle sky-goers—but they don't want this golden opportunity to automatically put their John Hancock on a file card against a future U.S. war emergency.

The thing is, you see, that the United States is the greatest anti-war country in the world. Almost no one in this nation wants to be mixed

up in anything that even smells remotely of a war. And you can't much blame them. Yet, the general run of the people of the fighting European nations didn't want to go to war, either. But when they had to go—they had to



Set against the striking background of San Diego Bay and the sky-line of the city, we here see Ryan's three-place S-C metal cabin plane. Powered with a 145-h.p. Warner engine, this neat private airster cruises at 135 m.p.h. and has a top speed of 150 m.p.h. A sliding hatch of Plexiglas which offers fine vision is one of its features.

go. From the viewpoint of those of us who believe in preparedness, it is not pleasant to learn that when the European war broke out in September there was a great falling off in registrations of college men for the CAA training. This certainly reflects a very rabbit-like attitude when you consider the fact that no automatic and official pilot reservoir is bound up in the CAA scheme. All the CAA says is that America will have more man-power with flying ability as a result of its training and that that will prove a good thing if we get into a war.

Any man—or woman, either, for that matter—who accepts practically free flight training from the Government with no intention of granting his services in whatever duty he is best fitted for when an emergency comes, has no right, as we see it, to such a fine opportunity as that comprising the CAA program.

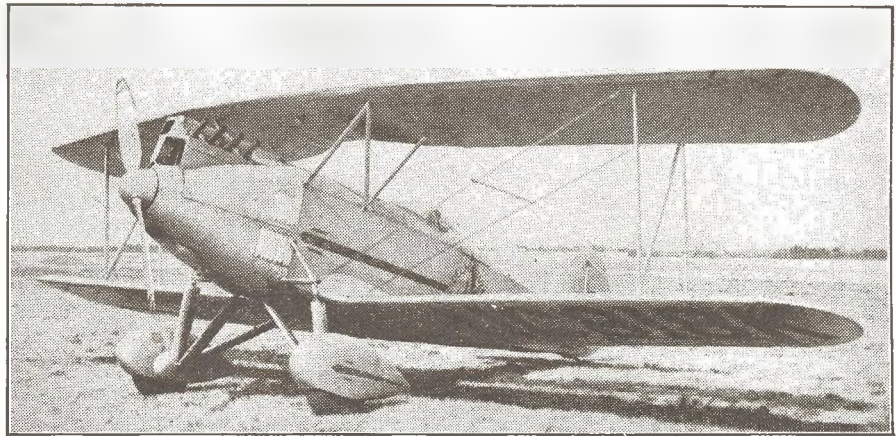
Anyhow, herein lies one of the reasons why we are so disgusted with the fact that only 6½ percent of the CAA's 11,000 pilots will come from the non-college ranks. That 6½ percent amounts to only some 700 non-high-education flyers. Yet these are the fellows who are most enthusiastic and who generally would welcome an opportunity which might lead to the flying services. A scad of these men would jump at the chance. The opportunities of most non-college men have always been decidedly less than those of their university-going brethren. And so, non-college lads are more appreciative of opportunities.

West Point, Annapolis, and Randolph Field are not open portals for the poor high school graduates. Hence, if the air-minded non-college youths recognize any chance at all of getting into the flying services through the CAA, they're generally pleased at the prospect.

Think this over: It is obvious that the minute America gets into a war we shall all become numbers in a vast draft system. After a fashion, we are all cataloged already down at Washington. And the unprepared, do-nothing guys, whether they're college men or not, will be quickly put in uniform and given rank-and-file duties.

Perhaps the lads who are uncomfortable about the prospect of the CAA preparing them for a possible future call into military aviation will enjoy fighting in the trenches much better. And we say that they can have the trenches, and welcome.

Those who have taken Government



Oh, so you prefer a biplane? Well, this is the Great Lakes Sport trainer which has caught many an airman's fancy. Mounting an 85-h.p. Cirrus motor, it has plenty of "go" to it. We'd say that this single-placer is an ideal machine for the fly-alone cloud-hopper. Note the rakish sweepback of the upper wing.

flight training will quickly get orders—and we mean orders—to report to some nearby Registration Office. Their log books will be scanned and checked against their CAA report. After that it will be simply a matter of learning to fly in formation at 240 m.p.h.

And so, the ex-college boys will get their commissions right away. And the non-college men who get on the sky list will have to work their way up through the non-com ranks and probably will fight as sergeant-pilots. A sergeant-pilot, remember, comes cheaper and can be ordered about in a broader sense of the phrase.

Of course, getting down to brass tacks, we must admit it won't matter much from a war standpoint whether you are a pilot "by an act of Congress" or whether you go out and buy your own time. They'll have your record just the same, so you might as well prepare yourself for it.

And why not? After all, someone has to do the aerial fighting. Someone will have to spot for the Fleet. Someone will have to bomb the enemy. And since the Army Air Corps experts figure it will take from two to three and a half years to train 25,000 good military pilots, it is quite obvious they will do it the easiest way and grab those who have already been a few feet off the ground.

BOB GETS TWO FOR TWO

SPEND two and get two more! That's what Bob Schmitt of Great Neck, Long Island, did. And his interesting letter, printed below, will give you the drift of the idea. We enjoyed his account of his flying experience, and we're sure you will, too—

Light Plane Editor:

I recently had my first taste of flying a real plane, and maybe my story of how it came about will interest the F.A. gang.

On a dark Friday afternoon a short time ago, I went to Roosevelt Field, planning to buy some materials for a primary glider a friend and myself are now busy constructing. But the offices happened to be closed that day for their annual inventory, so I couldn't do any glider-part purchasing with the two dollars I had with me.


Well, it didn't take me long to make a decision. Darned if I wouldn't use those two bucks for a flight—even though there was a rather low ceiling and poor visibility that day. Thereupon, I checked with a pilot and got his Okay for a hop in a Fleet—one

(Continued on page 72)



They tell us that the light plane world is now going strong for this Dart job. A popular tourist model featuring side-by-side seating, it is driven by a 90-h.p. engine. Nice for the fellow who's graduating from the 40 and 50-h.p. class.

Youth A I R M O V E M E N T News



Here's our bright clearing house of info regarding the CAA pilot training program and kindred subjects. Brief, newsy bits—of interest to casual fans as well as actual candidates—will be our specialty each month in these columns.

9,350—Not 11,000

We've been telling you that "some 11,000" new flyers would be trained via the CAA plan through "some 400" colleges during the 1939-1940 year. But now we're able to give you the exact figures: Studes under instruction total 9,350—quite a bit short of the 11,000, even with the 700 non-collegians added in. And schools total 432.

CAA Advanced Training

That rumored advanced instruction for last year's CAA pioneers has now come to pass, we learn. Ninety of the 1938-1939 "vets" have been selected to enjoy an extra 146 hours of classes, plus 50 more hours of flight training on somewhat larger aircraft. All of which again proves that "them who has, gets." The fellow who learned to fly on his own hard-earned money isn't getting any such advanced-training break.

Big-City Lads "Out"

A flock of non-college citizens—guys and gals between 18 and 25—are now taking CAA ground courses in 70 different communities. The ten who make the highest grades in each location (on a basis of nine males and one female) will win CAA flight courses, making 700 non-collegians in all. And here comes our usual beef: New York, Chicago, Detroit, Philadelphia, and Boston are *not* on the list. "Most metropolitan communities," says the CAA in a sad attempt to explain this, "are taken care of in the college courses, and, frankly, it is very difficult in communities like New York to find flying fields adequate and convenient for this kind of instruction." Sure, the college men "are taken care of" in the metropolitan centers—but how about the poor non-college lads? And as for places like New York City not having flying facilities for a mere ten extra sky students—well, you don't need a

college education to recognize the absurdity of that statement.

Whatchamacallit Field!

Maybe they'll really have a definite name for New York City's new airport by the time you read this. But at present it's "North Beach Airport" by birth, "New York Municipal Airport No. 2" to the Mayor's office, "LaGuardia Field" to the City Board of Estimates, the "Eastern Co-Terminal" to the CAA, the "Grand Central Terminal" to the airlines, and, as a TWA release points out, "The World's Greatest Airport" to the press!

Kodak As You Fly

Another thing which you can do in America, but which you can't do in most other countries because of military bans—is take photos from airlines planes. William Sumits, TWA cameraman, even gives you tips on how to do it. "Shoot at around 1/100 of a second," says he, "using a light filter and panchromatic film. And if you're over such spectacular areas as the Grand Canyon, a light yellow filter is advisable for cloud effects and to cut possible haze."

A Midget Maybe?

Switching to the lighter side, we'd like somebody to tell us just what one-half of a flyer might be. Anyhow, the CAA reports that 95 per cent of last year's 330 college studes got their tickets. And our arithmetic has it that 95 per cent of 330 flyers equals 313½ flyers.

Another Contest

Now comes the Shell Oil Company with a \$15,000 fund to provide scholarships and awards to CAA student flyers, their colleges, and their instructors. The Institute of the Aeronautical Sciences, RCA Building, New York City, is administering the program. On the basis of their air

course grades, seven flyers will be chosen from each of the seven CAA regions. These 49 will compete for the \$1,000, \$750, and \$500 air scholarships. Trophies will go to the college and flight school which chalk up the best CAA training record, and \$50 awards will be given to the flight instructors who train the seven regional top-notch studes.

Sikorskian Theory

Autogiro or helicopter type aircraft will bring the next phase of man's conquest of the air, says Famed Designer Igor I. Sikorsky, who believes this brand of sky-goer will greatly boom private flying through its ability to take off and land in small spaces. Meanwhile, Lieut. Victor Haugen, Air Corps Autogiro Training School grad, is pursuing special studies along this line at N.Y.U.'s Guggenheim School of Aeronautics. Another scholar at work on the problem is Samuel Sherwin. Perhaps these two chaps will bear out the Sikorskian theory by digging up something hot.

NYA Field Marking

In co-operation with the CAA, the National Youth Administration has launched a nation-wide campaign to augment the marking and identification of airports. Range, boundary, and corner markers, also wind socks, are being made by youths in NYA workshops, and other NYA lads will assist with the installations. The national program is being founded on the recent success of the plan in a few key states.

That Flight-Steward Job

Nineteen more fellows have just been Okay'd for flight-steward positions with Eastern Air Lines. Further information: Eastern now has 77 such attendants, half of them are high school grads and most of the rest are college men, they range from 25 to 35 years of age, they must be between 5'7" and 5'10" in height and should weigh 130 to 160 lb., they get from \$100 to \$125 per month, and if a passenger insists on tipping them despite the no-tip rule, the money goes to the Salvation Army. What's the chance of becoming a flight-steward? Not so good — because only Eastern has 'em, few vacancies crop up, and 3,500 applications are already on file.

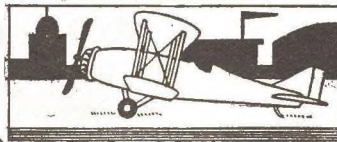
Slipstream Briefs

So great has been the demand by aero factories for trained workers that the Ryan School reports exhaustion of its list of recommended graduates. Meantime, United Aircraft, for one, estimates it will add 4,000 new employees this year for its Stratford and East Hartford, Conn., plants. . . . Abroad, the war has served to give air-minded women a break. They ferry aircraft for France, fight in the sky for Russia, and labor as aero mechanics for Britain. But Hitler has ordered the Nazi women to tend the

(Continued on page 63)

HAPPY LANDINGS

BY ARCH WHITEHOUSE



Johnny Get Your—Bomb! . . . Ort's Aero Offerings

MAYBE I'm a sucker for a kid story. Nevertheless, the news note that came over my radio set the other day still gets my vote.

It was about 13-year-old John Clough, a student at the Rydal Junior School in Colwyn Bay, Wales. The thing is that this young chap has invented an aerial bomb which has actually received the consideration of the British Air Ministry's Supply Minister. Naturally, the details of the device have been withheld. But we do know that one test section of the Supply Ministry has already passed the working model. And if the weapon is ever produced in quantity and used against Britain's enemies, it may become an important factor in the war.

Young Clough is a comparatively unimportant soul at Rydal. He is not particularly interested in football, cricket, or other sports. He just likes to tinker and dream a bit. He has built and operated model railroad engines. He makes his own track and cars. In other words, he is not unlike hundreds of American lads who would sooner get a monkey wrench for a birthday present than a new tennis racket.

Young Clough, so the story goes, caught a chill last summer and had to stay in bed. While there, he concentrated on the nubbin of an idea which had come to him during his school vacation; for his bed, as he figured it, was a good place to lie back and ponder.

At any rate, the scheme took form, and later young Clough left his sick room full of enthusiasm for his idea. He first made a couple of rough drawings, and then two other Rydal lads became interested—just as school pals will.

Young Clough took over the foremanship of the proposition, and next the three labored over a working set of drawings. Then, A. Knowles, a school official—probably one of the Mr. Chips type—looked into the case, wondering what was keeping these

young fellows so occupied.

They explained it all to Mr. Knowles, who forthwith took the drawings and with his own pocket money posted them off to London.

Meanwhile, Mr. Knowles forgot about it, and young Clough went to work on something else. Something less terrifying, perhaps. Something about a new engine coupling, or a trick way to string a box-kite.

Anyway, Johnny Clough likewise forgot all about the aerial bomb—and was he surprised one day a short time ago to learn that his bomb was being considered for use by the Royal Air Force! That they might be made and dropped on the pocket battleships of "Old Nasty," as the British call Hitler!

Mr. Knowles modestly admitted that young Clough was something of a mechanical genius. The boy's father, a woolen dealer in Yorkshire, when questioned about this affair, said he knew little about it. He added, moreover, that he expected nothing



of it, because thousands of ideas are checked by the War Office and Air Ministry every year, and of these thousands not one in umpty-eleven make the grade.

EVEN SO, you can't get around the fact that this Clough Chap may have something there. Yes, it may prove to be a great gadget.

And his case brings to my mind the hundreds of letters I get every year from FLYING ACES readers who have evolved schemes they think will make aero equipment rev better. Some of these "brain children" are fantastic, of course. But many appear to have value. And some are really startling in their prophetic conception of inventions which doubtlessly will come.

What can I do for these lads? I am not an expert on such matters.

I know how they feel, though—for I once tried to give the U.S. Navy an idea for a new type of small, fast aircraft carrier, and the letter I received in response was a lot less than encouraging.

We get hundred of letters and drawings describing and depicting new devices from readers every year. We shall get a lot more, too. But I would like to take this opportunity to advise any reader who has any such inventions or ideas to first protect himself by getting the advice of a good lawyer, if he can. Of course, I shall always be glad to give my humble opinion in hopes that some day I may run across a new bomb, a new engine, a new wing, or a new machine gun which holds promise of playing a big part in the commercial or military future of aviation. I might be able to give some good advice—encouragement, anyhow. But I still suggest that you first protect yourself by consulting a lawyer when you figure you have something really good.

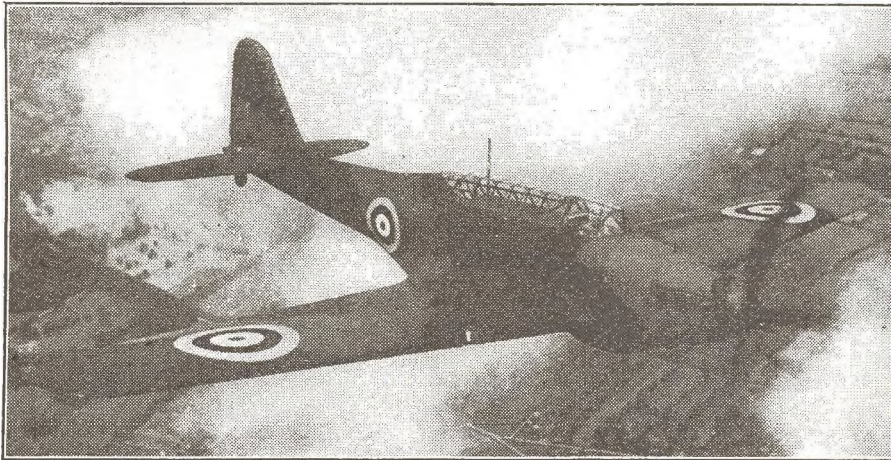
Young Clough was fortunate in having an interested school official to protect his idea and to send the plans for the bomb to the right department. It might have fallen into enemy hands.

Finally, I want to say this: If you have a really good idea—use your brains on it. Outline it carefully. Work hard on it. Then when you are sure it is right, go to it and annoy every guy in Washington until you get a flat and decided negative turn-down. Even then you might keep at it—if you've won any support at all.

If you have a truly exceptional idea—particularly one of military value—it is your duty to work on it at least to the point where the Technical Division of the Army Air Corps (Wright Field, Dayton, Ohio) can say whether it has any material value or not. Don't quit because a couple of

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Modern Planes Album



FAIREY BATTLE

FAIREY BATTLE
THIS machine has come nearer to revolutionizing the air-war business than anything yet found in action abroad. The Battle is set down as a two-seat day bomber, but it also appears capable of taking to the air as a three-seat day-and-night long-range reconnaissance machine. Many of these planes have already taken part in the numerous British raids on German naval and air bases.

In general, this job is a generous-

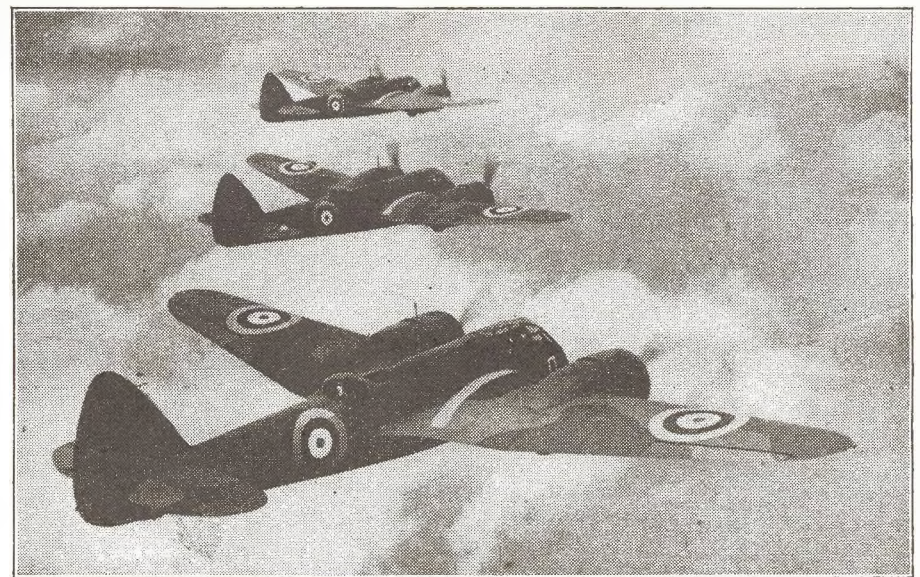
sized low-wing monoplane fighter especially designed to be adaptable for other duties. It has a top speed of 257 m.p.h. at its best operating height (15,000 ft.) and it can be thrown about the sky like a fighter. The strange feature about this plane, however, is the comparatively light armament. According to the manufacturer's details, it carries but one gun in the starboard wing and one on the aft Fairey mounting for the gunner-bomber.

BRISTOL BLENHEIM
WHILE the British are particularly proud of their Spitfires and Hurricanes, they also have plenty of plaudits plus for their Bristol Blenheims, and to some extent we'd say they are justified in their pride of these craft. The Blenheims are considered the most efficient and undoubtedly the fastest medium-type bombers now seeing war action.

Many of them have been used on the leaflet raids over Germany. Many more have carried out bomb raids on Nazi strongholds behind the line. And two squadrons of them have been included on the new "security patrols" with the Vickers Wellington outfits.

The Blenheim is not what might be called a "good-looking" machine, but it certainly has the speed. It can do 285 top at 15,000 ft. with full load. At present, we find this plane being produced with several different noses, and the ships are listed as "long" and "short-nosed" Blenheims. Several "shadow factories" are now turning out Blenheim parts to facilitate the Bristol plant's production.

The Blenheim is powered with two Bristol Mercury radials, each rated at 840 h.p. on the take-off. They carry three-bladed controllable-pitch propellers.



BRISTOL BLENHEIMS

Two fuel tanks in the center section carry 140 Imperial gallons of fuel (roughly 168 U.S. gallons). The undercarriage retracts into the engine nacelles, and bombs are carried in a cell under the center-section.

The pilot has but one gun, while the gunner, who's accommodated in a metal Bristol retractable, hydraulically-operated gun turret, has either one or two Vickers-K guns. The crew

It seems strange that such a plane should be sent out so lightly armed, and it is quite possible that some feature of the armament has been kept secret. We have studied detailed drawings of the machine, however, and while the equipment inside the body is particularly complete for all sorts of work, we still can find no evidence of extra gun mountings or even space for such weapons.

The interior of this ship is very complete. The pilot has a roomy cockpit and one set of bomb releases on his right side. The gunner-bomber has a camera, radio set, Fairey gun-mounting, chart table, and a swivel chair as well as a special prone position bombing cockpit.

The latter is set into the floor in line with the main spars of the wings. There he has his bomb sight, his set of bomb releases, and a complete instrument panel. He is expected to do all the recognition signalling, take care of communications, and fight.

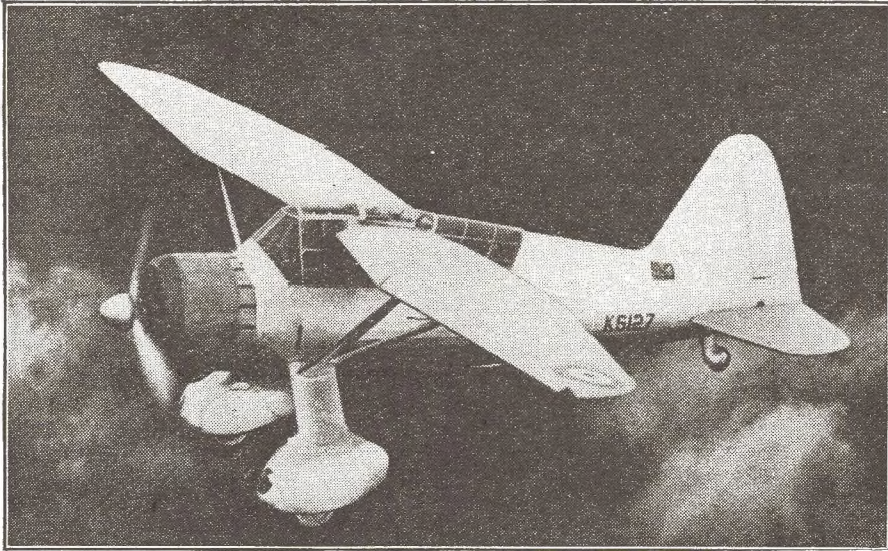
The undercarriage of the plane folds away in flight, the bombs are carried in covered recesses in the wings, and the ship mounts a special supercharged Rolls-Royce "Merlin" engine rated at well over 1,000 h.p.

consists generally of a pilot, a bomber-aviator, and a gunner who is also the radio-operator. All this, of course, gives us an idea what the training program for those other than pilots must mount up to. As things stand now, the program must list but one pilot to every three or four gunners, observers, bombers, and radio men.

The Blenheim has ample equipment for day and night flying.

FOUR FORMIDABLE BRITISH SKY FIGHTERS

This month we aim the eye of our scrapbook camera at England's Battle, Blenheim, Lysander, and Spitfire.



WESTLAND LYSANDER

WESTLAND LYSANDER
WITH all their speed and with all their gun-power, the R.A.F. still needs the good old observation plane, and the British turned out a pretty good one when they completed the Westland Lysander.

If, and when, heavy action really starts on the Western Front—where men charge across open ground and where artillery hammers away all day

with drum fire to blast out trenches—the observation planes will go into action again. As a matter of fact, they already have seen some service; for they've carried out the duties of fighting Nazi reconnaissance planes. At this job, they've chalked up numerous aerial successes, too.

Yes, the Lysander is a worthy piece of equipment. Listed as an Army-Cooperation job, it uses the 840-h.p.

Bristol Mercury and carries a two-man crew—pilot and observer-gunner. In plan, it is a high-wing monoplane, which is the type most suited for observation work, since it provides the best form of downward view. It is equipped for day and night flying, has an elaborate system of radio and visual signalling equipment, and is well armed to take care of itself.

The fairing over the wheels and legs of the fixed undercarriage carries a gun on each side. These are fired by the pilot from his control stick. In addition, the observer has a movable gun aft on a retracting Fairey mounting. Ammunition for the front guns is fed down through chutes set in the undercarriage legs. Light fragmentation or smoke bombs can be carried on auxiliary stub wings bolted to the sides of the wheel housings. The cockpit can be heated in cold weather or cooled in hot summers.

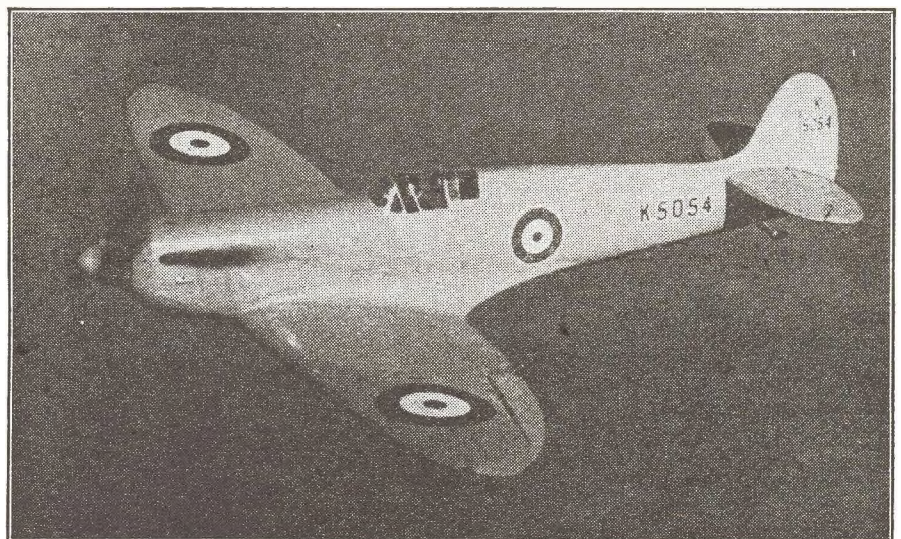
The motor is covered with a special N.A.C.A. cowling, which is equipped with cooling gills. Top speed of the plane is 229 m.p.h. at 10,000 feet, but its best operating velocity is 150 m.p.h. It is at the speed of 150-per that the observer does his shell-spotting and picture taking.

SUPERMARINE SPITFIRE

YES, BRITISH fighting planes today hold an understandable fascination for American "air might" students, thus many persons on this side of the water use names of Royal Air Force craft with the same glibness as they comment on American equipment. But at the same time the American's frequent misunderstandings about the R.A.F. planes is often amazing.

Take the Supermarine Spitfire for instance. Americans give photos of it a glance and assume that it is what they like to term an "interceptor." This is followed by discussions about the fact that some of the early models used wooden propellers. But regardless of the prop, the machine is considered to be a very light, cheaply constructed job. However, it is not supposed to carry much equipment, because of its high speed of 365 m.p.h.

Actually, the Spitfire is an all-metal, low-wing biplane weighing 5,750 lbs. fully loaded for active service. In comparison under the same military conditions, the Seversky P-35 weighs 5,602 lbs. and the Curtiss Hawk-75 tips the scales at 5,305 lbs. From these figures, then, we see that the Spitfire is hardly a light machine.



SUPERMARINE SPITFIRE

It is really a medium-range plane carrying 85 Imperial gallons of fuel (roughly 102 U. S. gallons) as compared to 120 U. S. gallons as carried by the Hawk. More than one thousand Spitfires have at this writing been turned out of the Morris Motors plant in Birmingham and many more have been ordered.

There are eight machine guns in the Spitfire—four set in each wing—and the designers spaced these m.g.'s

wide to get as great a blanket of fire as possible. These guns, manufactured in Great Britain under license, are of a type especially suitable for wing-installation and the peculiar requirements for such a mounting.

Other equipment includes two-way radio, a 1,000-h.p.-plus Rolls-Royce engine, complete oxygen equipment, and a Glycol cooling system.

The Spitfire is still considered the world's fastest active service plane.

Death Hurtles North

(Continued from page 24)

"No. He just came up and said something quietly to Miss Colony, then her face went white, too. She was frightened. The man talked out of one side of his mouth, kept his hands in his pockets, and didn't raise his hat."

"He was no gentleman, eh?"

"No, Mr. Keen. Miss Colony sent me off hurriedly then, and the man took charge of her bags."

"Did you see them get on the train?"

"No. They were standing there when I left."

"Then you don't actually know whether she went skiing or not?"

"I don't. For she sent me off at once. I would have told somebody about it, too, but the rest of the family is away. Just the servants here now."

"All right, Margaret. Don't worry. I'll see what I can do. If any one asks you, Miss Colony is in the Laurentians skiing. You understand? You just sit tight there, as if nothing had happened, will you?"

"Yes, Mr. Keen. I'll—I'll do my best."

"Good night, then, Margaret," concluded Keen. Then he hung up and paced the floor two or three turns.

"That guy had a gun on her—in his pocket. Or he told her something that scared the life out of her. She might have gone on the Canadian train, or they might have switched her to another—heading anywhere."

But his fears subsided somewhat when he glanced down at the atlas.

"You made one mistake, Whiteface," he muttered to himself. "That Little Mick business. You were smart in thinking up that line about the ex-Mountie, but you really meant Petite Miquelon, one of the small islands still belonging to France off the southern tip of Newfoundland. Even my poor French tells me 'Petite' means little."

He picked up the telephone and asked for Western Union. In a few minutes he had sent a message to an old French trapper who had a general store on the Island of St. Pierre, another of the island group.

K EEN HURRIED downstairs to the cellar where Barney was masked behind a grotesque helmet and using a paint sprayer. He was coloring up the twin-engined Black Bullet plane with hurried daubs of green lacquer. On the sides he had pasted circular cocardes of the British Empire. Colored strips had been pasted up and down the rudders, too, and other red, white, and blue cocardes had been cemented to the wings.

"That will be enough green. Try the brown now."

The Mick grunted from behind his mask, changed the paint cylinder, and went to work again. Keen chipped in his bit by daubing yellow circles around the cocardes, making the

markings authentic for night-flying machines.

In half an hour the camouflage was complete, and Barney had cleaned out the spraying mechanism and was putting the stuff away.

"What now, Boss?" the Mick asked dumbly.

"A little trip up to see Marcel Duplesse. We might get in some hunting, too."

"Duplesse? Up in Canada at this time of the year?"

"Why not? Remember that St. Pierre rum, Barney. You know—a big fire, crocks of rum, and big Marcel laughing."

"I don't have to do no huntin', Boss? With good rum around?"

"Well, you might do just a little gun-bearing for your keep," Keen said.

"But there *will* be the rum?"

"You know Marcel, Barney!"

"Yeah, but what about all this Limey marking stuff? We ain't gonna go to no war, are we?"

"Hardly. We haven't got tanks to fly the Atlantic in this bus, have we?"

"You done some funny things in your day, Boss," mooned the Mick.

"No war, Barney. We're simply going to find Miss Colony. I have an idea she is in a little trouble."

At that, Barney went to work with a will. He scampered all over the machine checking guns, fuel tanks, ammunition, and controls, while Keen told him in as few words as possible what had happened during the past hour.

"But ain't this risky, going off after her when the white-mugged guy said what he'd do?"

"It is, and it isn't. You see, Barney, from what he said, I gather he believes we still have the *old* Bullet. He spoke of shooting our engine out. He doesn't know we have this two-engined job."

"But if he finds out, he'll scrape the gal down with a broken bottle, won't he?"

"If he finds out, yes. We have to take a chance on that, but I don't believe he'll find out."

"I don't like it, Boss. I'd hate to see that gal get cut up."

"Now don't go soft on me, Barney. That's just a threat. These birds seldom go through with it. They don't have the heart."

"A guy who has been fixed like that himself would," Barney argued. "He'd figure if *he* got a packet with acid or something, why shouldn't someone else get slashed about?"

Keen was silent at that. He knew there was much in what the Mick said. This Whiteface guy might be slightly hipped on the slashing idea. He most certainly had it in mind. Keen found himself ramming his fingernails into the palms of his hand, but he had to make a decision quickly.

"Let's go! We've got to risk it."

They hurried back upstairs and

climbed into their flying kits. They armed themselves with pistols from the gun case on the wall. Two small traveling bags were always ready upstairs, and they were back downstairs within ten minutes prepared for a night flight of at least 1,100 miles.

The Mick stared at the strange machine, glanced around the hidden hangar again, and rubbed his chin.

"I'll bet a buck we don't get back to this joint in a hurry," he mooned.

"A bottle of O'Doul's Dew we're back within a week!" snapped Keen.

"No! I'll bet anything within reason—but not a bottle of O'Doul's. That's asking too much. I might lose!"

They banded back and forth to cover their real feelings while they got the two engines started. The homely Mick was sincerely afraid for Miss Colony. Keen, afraid too, was now toying with an idea that Whiteface might be a confederate of Drury Lang. There was something queer about the tie-up. Lang had taunted him about Miss Colony and then within a few minutes Whiteface had contacted him, also talking about the girl.

"But," he argued with himself, "her maid *saw* the guy. There must be a Whiteface, and the fact that he called Petite Miquelon, Little Mick, indicates that he knows something about the area." Yet Keen still couldn't be certain, and the only way was to take a gamble.

They doused the lights in the hangar and the Mick pressed the switch which started the motor actuating the secret door. Slowly a slit of night light opened in front of the Bullet. As the motor whined the slit became an upright oblong, then gradually the two great hidden doors opened wide and provided egress to the yard. Keen had the mufflers cut in on the two Allison engines, and the folding wing craft now crunched up the ramp and into the darkness of the rear lawn. Barney pressed another switch, the motor whined again, and the doors slowly closed. They went back into place to form an innocent-looking rock garden against the foundations of the house.

Then the wings were unfolded and locked into position. Keen, his face now covered with a scarlet mask, tested the controls, nodded. Then the homely Irishman climbed up on the wing root, slipped through the narrow door of the control nacelle, and took his place aft.

Keen got the signal that all was clear, gave the engines the gun, and rolled the Black Bullet down past a heavy arbor and into the water. As she floated gently, he drew up the front wheel of the tricycle landing gear and steadied her against the incoming rollers. And after a final glance, he gave the two engines all they'd take and the Black Bullet streamed away, bounced off a roller, and took to the air.

Keen nosed her down a trifle until he was certain of the engines, then

(Continued on page 63)

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.

R. Bohne, Lawrence, Mass.:—So you find fault with our new Kerry Keen plane, eh? Well, the fact that the aerial is fastened to the top of the rudder instead of the fin really makes no difference, since the attachment is made right on the pivoting hinge line. There is room for argument, too, concerning your statement that the pontoons are too small. But we surely do appreciate your interest. Your idea for a single-seater for Keen is very good, but you had better watch out for Barney. You can't leave him out of it like that you know. Yes, we received your miniature plane and it was very well done. Note to other readers: Bohne, lives at 316 Jackson St., Lawrence, Mass., wants to swap pictures and photos with other fans.

Edward Sweeney, Girardville, Pa.: The Bell Airacuda has been purchased by the U. S. Army Air Corps—at least an order for thirteen has been awarded. But at this writing we know of no contract for the Bell single-seat fighter. I do not believe the Seversky "Super-Clipper" has advanced beyond the drawing board stage.

Bob Elliott, New Zealand:—We will publish an article on the British Empire air forces one of these months. We have been collecting the material for some time. Yes, we know how the New Zealand air force is advancing. The Gloster Grebe is an old fighter type, first designed for aircraft carrier work. It was fitted with an early form of the Bristol radial. The Vickers Venom was designed as a multi-gun interceptor, but I believe there was trouble at high altitudes with the special engine they installed. The Lockheed-Hudson is a bomber-fighter designed from the Lockheed 14. It's now being used in two British air squadrons as a long-distance night bomber.

Mark Pennachio, Belmont, Mass.:—The present figures on the air strength of the various European powers are of course hushed up now, so we have no way of computing true present-day air strength of the nations. But as for your query, I believe that Italy is still stronger in

numbers, though the French are better trained. This is, you must remember, a personal opinion only. There are many Fiat fighters. But the new Fiat G-50 is said to do 290 m.p.h. It looks much like the Seversky.

Robert Schmitt, Buffalo, Y. Y.:—The figures I offered on the details of the .50 caliber bullet were taken from the official hand-book of the Colt Patent Arms Company and should be authentic. I do not recall that I said the charge was cordite. I do not know for certain what the charge is.

Herbert Jones, New Zealand:—Since you do not tell us what sort of a gas model you have been given, we cannot give you any help on the specifications for the plane. You should have received a set of plans with the model so that you could work from those. It seems to us that you had better play around with a sketch and then work up from that. Most gas models made in this country have wing-spans ranging up to six feet in monoplane form. That should give you some idea what to work from. An over-all length of about 52 inches is also fairly orthodox.

Bernard Mastel, South Dakota:—The Spad had ailerons on both wings. We know of no cheap gas motor such as you suggest. You had better stick to rubber until you can

finance a standard gas engine. Your best chance of getting into aviation is through the ranks of the Army Air Corps.

Daniel Choy, Hongkong, China:—As for the making of pontoons for model planes, most floats we have seen are made of balsa formers covered with thin balsa or wing fabric carefully doped and varnished. You must experiment to get the correct pontoon specifications. We believe that while you may have to walk a long way to get your supplies out there, you will be better off and much safer buying straight dope rather than attempting to gather the materials to make your own. There is a telescopic-wing plane now under test in France. That idea is not new. It has been tried out several times, but until they can get an operating mechanism that is not too heavy, they will never gain much in the way of speed or fuel economy.

Bob Goulet, Los Angeles, Calif.:—Handley-Page slots are devices set into the leading edges of wings to prevent stalling. They increase the lift at the curve of the wing by opening when the plane reaches a stalling point. I understand that several more Boeing B-15's are to be built for the U. S. Air Corps. I know nothing about Howard Hughes attempting a non-stop flight around the world in a Stratoliner.

George E. Johnson, San Jose, Calif.:—The straight-barred cross is still the official insignia of the German Air Force. The Swastika is the national insignia and is used on commercial planes as well as war planes. Poland used to have P.Z.L. fighters and observation planes, Lublin bombers, and several other types purchased from France. Brazil has seven aviation regiments comprising some 100 planes in her military air force. They use many types exported from Britain, and France, and the United States.

Gordon A. Reeves, Niagara Falls, N. Y.:—If your impression of German planes and machine guns is based on the catalog of the Henschel HE.126, you're a little out of date,

And Now We'll Ask You a Few

- 1—What was the *Kensington Court*?
- 2—To whom is the Distinguished Flying Medal awarded?
- 3—What has happened to our Army's Air Corps Attack squadrons?
- 4—Are there any Lockheed Hudson bombers at the front with the British?
- 5—What former war Ace is now the head of the Royal Canadian Air Force?
- 6—What is Britain's latest torpedo-bomber plane?
- 7—Are there any Sergeant-Pilots in the U. S. Air Services?
- 8—How long would it take the United States to train 25,000 fighting pilots?
- 9—What is Finland's air strength?
- 10—How many planes did Germany lose in the Polish invasion?

(Answers on page 67)

fellow. We've studied considerable on the subject of German machine guns and still question whether they are equal to the best that Britain and the United States can produce. The value of Janes *All the World's Aircraft* volumes printed prior to 1926 is a big question now. The new war has made conditions change, hence they are probably not worth what they were before. Sorry, but I wouldn't be interested in the book you offer since I can only use ultra-modern information today. The old World War is past and done.

Robert Steinlicht, Aberdeen, Idaho:—I am quite certain that you will not be able to get blue prints so that you can make yourself a Link trainer. You can hardly expect a firm to spend a million dollars in

developing a device and then give away the blueprints. I know of no firm that would sell such spare parts or any such plans. Sorry.

Edward F. Hughes, Fall River, Mass.:—I know of no special apprentice plan at the Pratt & Whitney plant at Hartford. But you might write to their Personnel Manager and get it straight.

Frank McGinn, Victoria, Australia:—The drawing you sent me of the bomber with the retracting wings for high-speed diving, is very interesting, but unfortunately it's impractical. In the first place, all manufacturers are having to put flaps on their dive-bombers to slow up the dive so that the crews can stand the pressure and so that they

can obtain greater accuracy. Secondly, we question whether any mechanism would be strong enough to bring the wings back to a normal position after such a dive. In theory all these things sound grand—but we have to go deeper than that.

Max O'Starr, Newark, Calif.:—Your letter is one of the most unusual I have ever received. In the first place, I have no record of a No. 82 Camel squadron in France. There is a No. 82 Squadron today—but it's a bomber squadron. Next, I never heard of couriers flying yellow Camels. Then, there is no record of any Lieutenant Stover being shot down and killed by Baron von Richthofen, and I have no record of any such officer being credited with
(Continued on page 68)

The Airmail Pals

WE'RE off with a bang on the infant year of 1940, lads. The old annum of '39 is now in the dead past, but ye ol' Right Honorable Pal Distributor is sure that you fellows who received 1939 correspondents through this department will not be forgetting to keep in postal touch with 'em in the new year. And with that reassuring thought in mind, the R.H.P.D. now sits down behind his gold-encrusted typewriter (oh, yeah?) to pound off another line of hangar talk about the doings of you scribblers—

Over in this side of the tarmac we have a letter from Roy Bennett, of England, who says:

"Thanks a million, R.H.P.D., for hooking me up with Dwight Evans, of Plainfield, N. J. We've exchanged a slew of letters, and I think it's very interesting to hear from someone in America.

"You have a very fine magazine," he continues, "and I am very sorry whenever I am unable to obtain a copy. However, if I can not always get the book, I hope that you will send plenty of real planes over instead. We've still got a lot to say to old Hitler, and the more ships we have to say it with the better!"

That's a mighty fine letter, Roy. We're neutral over here, but we can appreciate your patriotic spirit. Glad you like your pal so much, too, and we hope that you'll exchange plenty more letters with Dwight and make it a lasting, top-notch friendship.

The prize-winning note of the month—the one that told best of interesting doings of fellow ink-slingers—was penned by Joe Franklin, of Atlanta, Ga. Joe says:

"I've now been corresponding with Ben Spiro for about three years, and I honestly believe that he's the best pal ever. Ben lives in New York City and he told me all about the World's

Fair they had up his way. What's more, he sent me a whole slew of photos taken in the Aviation Building. Boy, that must have been a swell exhibit!

"Next summer I'm going to find out for myself what it's like, though. For Ben invited me to come up and spend a few weeks with him. I'm going to drive up with my father—who is a salesman—and he's going to drop me off and pick me up on his next trip. In that way, I'll not only be able to see the Fair first-hand but will also be able to see my pal. And, R.H.P.D., if it hadn't been for your column I'd still be a stick-in-the-mud. Yes, I think your section is a corking idea."

THAT'S pretty dog-gonned swell, Joe. You'll have a hot-shot time, we're sure. And for that letter we're putting a swell set of 3-views into the mail for you—Crash Carringer's Hale Hellion, Kerry Keen's old Black Bullet, and the Westland Pterodactyl V. Your Black Bullet plan is autographed by Arch Whitehouse, too!

Would the rest of you missive makers like to win yourself those 3-views? Well, if you would, then just sit down and tell the R.H.P.D. what you've done by mail that you'd like to let us all in on. You might not think of anything at first, but keep trying. And when you finish your letter, address it to R.H.P.D. Letter Contest, c/o FLYING ACES, 67 West 44 St., New York City.

Oh, oh! There's that dern bottom of the page creeping up again. Looks like we gotta be plenty fast and say—S'long, pals.

—THE R.H.P.D.

HOW TO GET AN AIRMAIL PAL

FIRST, write the best possible letter you know how. Use your best pen-and-ink handwriting or a typewriter. In your letter, introduce yourself fully—for this is the letter we'll forward to the pal we'll pick out for you. Tell your age, your interests in aviation, your other hobbies, and any additional items that might interest a new friend.

Then on a separate sheet tell the Right Honorable Pal Distributor what kind of an Airmail Pal you want. Send your letters to Airmail Pals, FLYING ACES, 67 West 44th St., New York, N. Y. Be sure to enclose a stamped, self-addressed return envelope, plus five cents in stamps or coin for each pal requested (our fee for the R.H.P.D.'s "Kitty"). We'll try to supply you with a pal in line with your specifications, although we cannot guarantee to fill the bill exactly every time.

Your new pal's letter will be sent to you, and yours to him—after which you will correspond direct.

Do not ask for "lists" of pals. We cannot supply them.

Regarding foreign pen pals please note that because of the present European war we cannot supply foreign pen pals in all cases. However, we will fill as many requests as possible, then when the supply runs short we will substitute domestic pen pals.

If you are an American resident and want an overseas pen pal, do not write a pen pal letter. Instead, send us a short note telling in a general way what kind of a chap you are and what kind of a pal you seek. Enclose a stamped, self-addressed return envelope and five cents for each pal called for. A foreign writer's letter will be sent to you, then you may correspond with him direct.

If you live outside of the United States and want an American pen pal, write a complete letter as described in the first paragraph of this box, and send it without the return envelope but with an International Reply Coupon worth five cents. Get the coupon from your local postoffice. Your letter will be forwarded to an American correspondent, after which you need only wait for his reply.

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	Capt. Eddie Rickenbacker
Al Williams	Colonel W. A. Bishop
Col. Scaroni	Major G. A. Vaughn, Jr.
Major von Schleich	Willy Coppens
Lieut.-Col. Pinsard	General Balbo
G. M. Bellanca	Walter H. Beech
Capt. B. Sergievsky	Frankie Thomas
John K. Northrop	Dwane L. Wallace
Colonel Roscoe Turner	Josef Veltjens
Charles W. A. Scott	Maj. A. P. de Seversky
Richard C. DuPont	Donald W. Douglas
Maj. A. W. Stevens	Major C. C. Moseley
Capt. O. A. Anderson	Clarence D. Chamberlin
Major Fred Lord	Mrs. Charles S. Bayliss
	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). [30]

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.

Special Service!

This Aviator's Positive Identification Bracelet



Registration and Bracelet Only 25c!

A valuable identification service for F.A.C. members is now offered with our World War type aviator's bracelet. Every one now issued will bear a serial number—which is the key to your confidential identification record on file at GHQ. In emergencies where prompt identification is needed, this number may be sent to GHQ, and identification facts will then be furnished. When ordering, send your name, address, occupation and full physical description—age, height, weight, color of eyes, hair and complexion, etc., together with name and address of nearest kin. Overseas readers may receive bracelets and be registered for 2/- in coins or Int. Money Order for same amount.

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, and 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.)

March 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 [30]
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

It's been two long years since the handsome FLYING ACES Medal of Honor with Valor Bar was awarded. But at last G.H.Q. has received word of a Clubster who performed a deed great enough to warrant this honor. And we give you full dope on him right here in the first few paragraphs. But that's not all by a long shot, for we've corralled a whole batch of peppy news here for you.

✱ ✱ ✱

By Clint Randall

National Adjutant, Flying Aces Club

IN DECEMBER, 1937, the FLYING ACES Medal of Honor with Valor bar was awarded to Jimmy Hunter, of Raleigh, N. C. Well, Jimmy has been the only F.A.C. to be recognized with this outstanding decoration. But now—a little more than two years later—we are again presenting the handsome Medal of Honor with Valor Bar to a Clubster!

We honor John Dancy, of Fort Erie North, Ontario, Canada, for his heroic deed of saving a younger chap from drowning last summer. Fort Erie North is a tourist town, and the lad who was rescued was a visitor who "flew the scene" of his accident before his name was discovered. However, we have received verification of the rescue in letters from two eyewitnesses. Penned by George Hudd and Carl Hanes, these letters were the same in content, so we will quote only Hanes'. He says:

"While I was swimming some distance from the raft, just out from the pump house at our bathing beach, I saw several small boys in an old leaky boat. They were busily bailing out water in an attempt to keep it afloat.

"Then several of the larger boys jumped into the boat when it came up to the raft. This was too much for the craft, and it sank rapidly. Well, two of the small boys could not swim—so John Dancy immediately dived off the raft, grabbed one of

them who was thrashing about in a pretty bad way, and swam to shore with him.

"The other lad had not been in such danger for he got right aboard the raft without any trouble."

That's the complete story, F.A.C.'s. And, John, we're glad that you were on hand when that boat went under. Congrats on being Number Two on



Here, fellows, is John Dancy, of Port Erie North, Ontario, Canada, who has just been awarded the FLYING ACES Medal of Honor with Valor bar. A mighty nice pooch he's got, too, huh?

our special honor roll of valorous Clubsters. Jimmy Hunter, our other Valor Bar man, also saved a boy from drowning.

IN THE January issue we printed a photograph of three of the miniatures that were sent in by the Clubsters who have been vying for the "Tiniest Model" title. Well, Bill Poythress' $\frac{3}{8}$ " span North American NA-16-2 was the smallest at that date. But now we've got a whole batch of small ships on hand, and the title has changed hands. Here's the way the fleet runs to date:

Terry Sonley

(she's the British Miss who started it all) $2\frac{1}{2}$ " Topsy S; M. O. McKinney, of Atlanta, Ga., $\frac{3}{4}$ " Folkerts' Special; Henry Lunardi, of Philadelphia, $\frac{5}{8}$ " original; Russell Bohne, of Lawrence, Mass., $\frac{1}{2}$ " Seversky P-35; Sonny Ekstedt, of St. Louis, Ill., $\frac{1}{2}$ " original; Thomas Hall, of Youngstown, Ohio, $7/16$ " Turner-Laird; Morton Finkelstein, of Brooklyn, $7/16$ " original; Bill Poythress, of Brooklyn, $\frac{3}{8}$ " North American NA-16-2; Leonard Smith, of Brooklyn, $5/16$ " Payen Flechair; Robert Gross, of New York City, $\frac{3}{4}$ " Turner-Laird; Chester Lind, address unknown, $\frac{1}{4}$ " original; Jack Hill, of New York City, $\frac{1}{4}$ " original; Lawrence Eighner, of Watseka, Ill., $3/16$ " original; and Graham Harvey, of Seattle, $3/16$ " Flea.

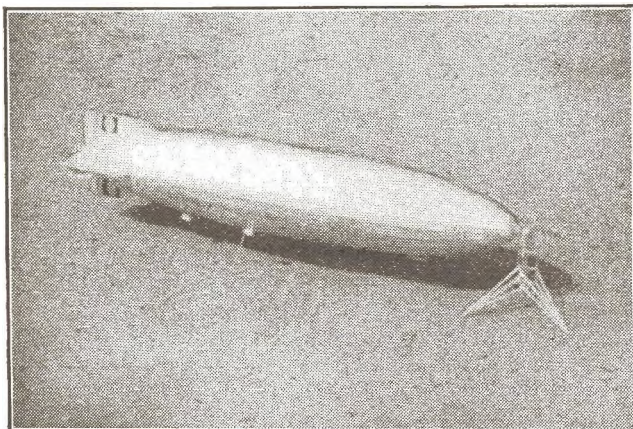
In addition, we've received two models from Billy Durham, of Little Rock, Ark., which measure $\frac{1}{2}$ " and $3/16$ ", respectively, and three from Morton Karp, of Brooklyn, which are $\frac{1}{2}$ ", $\frac{3}{8}$ ", and $\frac{1}{4}$ " spanners.

All told, that's nineteen miniature craft! And the smallest ones of the lot were built by Graham Harvey, Lawrence Eighner, and Billy Durham. Yes, they're the record co-holders now, each boasting a microscopic $3/16$ " job. But maybe next month we'll have one that's just a handful of super-nothingness!

Attention, foto fiends: Eugene Sommerich, of 6551 Hoffman Ave., St. Louis, Mo., would like all F.A.C. camera clickers to get in touch with him right away. He's planning to organize a photo exchange club. Clubsters with 116 or 616 cameras are preferred, but others will also be acceptable. Send a list of your aero negs to Gene pronto, along with a stamped, self-addressed envelope for reply.

LEO J. BURNETT, of Camden, N. J., recently gave a corking talk on aviation at his high school, and it was so much to the point and contained so much pertinent information that we quote a part of it here:

"The United States must have the largest air force in the world to hold in check any ideas a foreign power may have of invading us. At present, our Air Corps has the fastest and most



Left: George Swigle, of Bristol, Conn., wins the F.A. Distinguished Service Medal this trip as our Master Model Builder of the Month. This is the craft that brought him the award—the Zeppelin "Hindenburg" built from plans in the December, 1937, issue.

modern bombers. And, experimentally, we are years ahead of the rest of the civilized countries, but unfortunately most of our advanced data is on paper and not in the air. . . .

"... The United States must build an air force second to none. We must have great air strength concentrated at all the strategic points of the continent and have adequate reserve power to close intermediate gaps when necessary. And our cities must be equipped with the most modern and effective anti-aircraft batteries."

Leo then went on to comment about the individual aero companies that sell their products abroad. "Unfortunately," he said, "if war comes we may find ourselves being bombed by planes that were built within these shores."

You lads can see from the portion of the talk we have presented that Leo knows his subject. But on top of being an avid aviation fan, he's also good at his studies. For recently he was awarded a Guggenheim scholarship and will learn aeronautical engineering at New York University. Not luck—but plain hard work does it!

Personal to N. D. Aldridge, Johannesburg, South Africa: Sorry, fellow, but Clint has no recollection of receiving that letter you mentioned. However, we'll be glad to answer those questions—whatever they may be—if you'll ship them to us again. It might be, you know, that your envelope carried insufficient postage and therefore was not delivered.

Clifton Lewis, who may be addressed at Box 5477, State College Station, Raleigh, N. C., would like all lads in Raleigh who are interested in forming a FLYING ACES Club to get in touch with him. Clif, by the way, is an old time F.A. fan and a member in good standing of the Escadrille. What's more, he has applied for CAA training. Results of his examination have not come through yet, but Clint knows that all of the Club members will be pulling for him. Here's luck, Clif!

While we're on the CAA topic, you fellows might like to know that Major Fred Lord, whose article, "Talk About Screwed Students—!" appeared in the February FLYING ACES, is now a CAA instructor. He's located at Hadley Field, New Brunswick, N. J., and he's putting the Rutgers studs through their paces.

Holiday cards are still coming in for Clint and the rest of the gang here at G.H.Q. We've received quite a few, which we hereby gratefully acknowledge. Yes, thanks a million,

Right: The World War S.E.5 is gone, but it will never be forgotten. Clubster Bill Dukes, of San Antonio, Texas, is the talented lad who turned out this pen and ink sketch of the old-time favorite.

fellows. But if we leave you out this trip it's only because we haven't had time to check through all the cards yet. At any rate, an added list will be published next month. Now, then, the first ones came from:

Dave Hauschild, of Minneapolis, Minn.; Evelyn Smith, of Flushing, N. Y.; Ord Sea Anderson, of H.M.S. *Leander* at New Zealand; Dorothy Gens, of Cleveland, Ohio; John Bouchie, of Detroit, Mich.; Ken Jones, of Mineola, N. Y.; Herb Miles, of Camden, N. J.; Marion Rathbun, of Aurora, Ill.; Ernest Davis, of Ann Arbor, Mich.; Frank Watkins, of Scranton, Pa.; Jim Maloney, of Milwaukee, Wis.; John Brown, of Elkton, Md.; Joe Sanders, of Washington, D. C.; Betty Overdorff, of Blairsville, Pa.; and Gordon P. S. Smith, of New Plymouth, New Zealand.

Joe Navratil, of Rochester, N. Y., is one of the most industrious members that we've ever had on our Club roster. Just listen for the next two paragraphs and you'll agree with Clint:

"Ever since I became a member of the F.A.C.," says Joe, "I have done my best to spread knowledge of aviation throughout my district. So far, I have given a course in aviation to twelve of my friends. At our meet-

ings, held twice a week, I told my friends the names and uses of various parts of a ship, how to recognize types of planes, and other things along that line.

"I am glad to say that every member of the group passed the exam that was given on completion of the course—passed with flying colors! And now, three of those boys are instructing others who are interested in aviation."

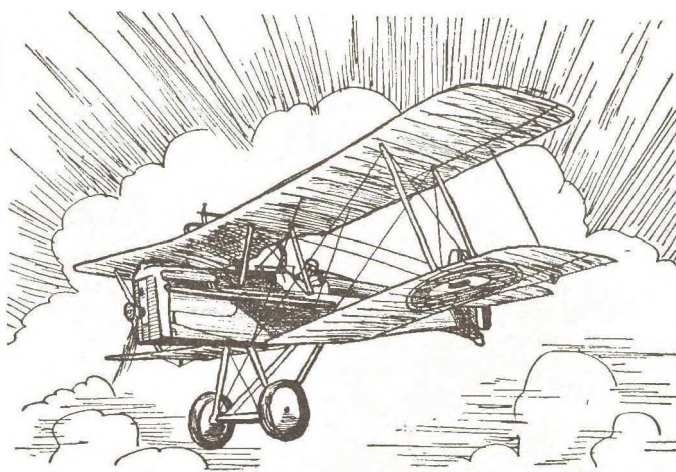
Now that you've read Joe's letter, boys, wouldn't you say Clint was smack in the groove when he called Joe industrious? And to you, Joe, there's a good chance of having a swell F.A.C. award tossed your way if you continue the same line of flight.

Frank Stinson, of Waco, Texas (Stinson of Waco! There's a real aviation combination for you!) writes to say that he's been collecting photo clippings from FLYING ACES for about the last four years. He's now got over a thousand shots in his album, along with informative dope. That sounds like a record of some sort to us. Yes, we'd say that this member has the right idea.

GEORGE SWINGLE, of Bristol, Conn., is the lucky lad who copped first honors in our special Distinguished Service Medal Contest this trip. His swell *Hindenburg* Zeppelin model appears on the first page of the Club News here. George built his craft from plans appearing in the December, 1937, FLYING ACES. Congrats on winning that medal, George!

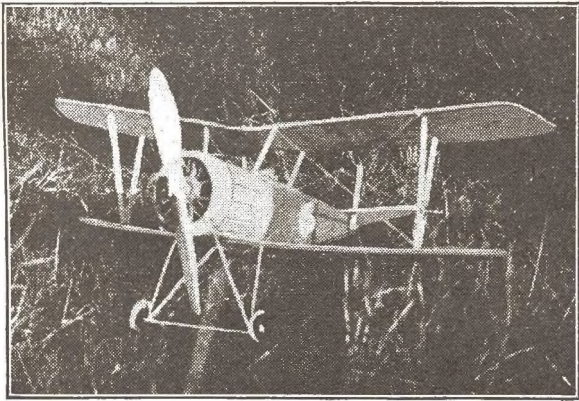
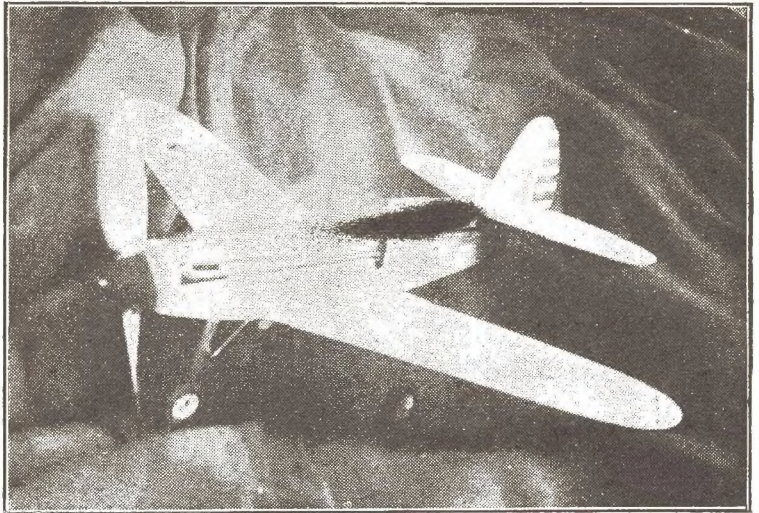
A whole batch of you fellows have asked about shipping us photos for use on these pages, and at times negatives were mailed to Clint without prints to accompany them. Sorry, boys, but these are not much use to us. We'd like to have just the photos themselves. So in the future if you think you've got something interesting, just send us a good, clear positive pic and keep the negs for your own files. Okay?

We just received a letter from
(Continued on page 69)



A short time ago Clint asked Lewis Barton, of Clifton, Texas, for a shot of himself to run on the Club page. Well, Lewis came through with this swell portrait instead of the usual snap. Our Veteran member is wearing his Legion uniform in this pic, along with his bars of rank.

Right: Joe Bloss, of Lima, Ohio, built this striking Bell XP-39 replica from plans appearing in the January F.A. Joe says that his ship turns in corking flights and is one of the best stick jobs he's ever built.

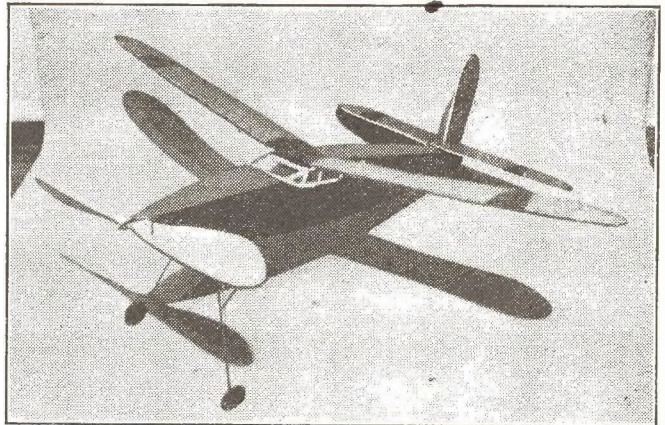


Bill Frobisher, of Guildford, Surrey, England, sent us this detailed shot of his Nieuport scout. Bill says that the craft is equipped with movable controls and a completely built up scale Le Rhone rotary engine. But even with all those extras, the job has turned in some really remarkable flights. And, you know, they're hard to get with an exact replica. Incidentally, Bill's now in the R.A.F.

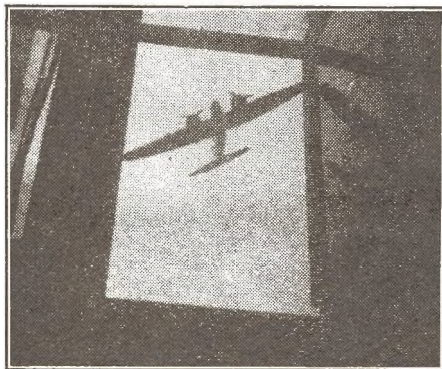
With the Model Builders



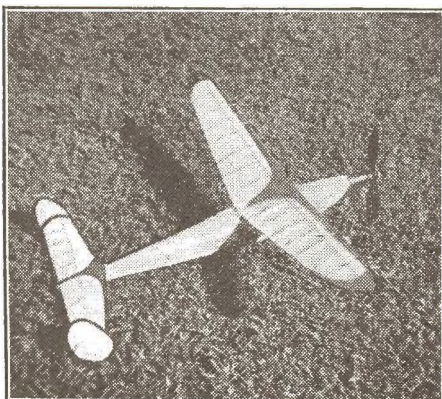
Left: Frank Ehling, of Jersey City, N. J., proudly displays his Bantam-powered, self-designed, Class "A" model. Frank is one of the most active builders in the East and spends a great deal of his time at both local and distant contests.



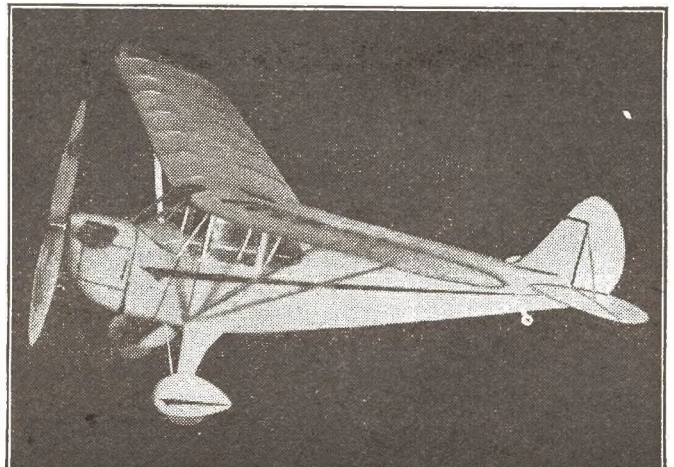
Here we see an original 26"-spanner built by Dan Williams, of Gadsden, Tenn. The ship carries a 12" prop and 12 strands of $\frac{1}{8}$ " flat rubber. Usual flying time is about one minute, but some hops have been much longer. Dan has designed 13 models, including this one, and had just about run out of names for his buggies. However, he finally dubbed this one "The Tachina."



Left: No, this is not a real ship — it's Eric Cameron's Douglas DC-3 solid scale arranged with appropriate settings. Eric, who lives in Trois Rivieres, Canada, specializes in realistic scenes such as this. Swell photography, what?



Left: Sporting exceptionally clean lines, "Mister Pegleg Ike" sits on the deadline taking a sun bath. Bill Bouldin, of East Orange, N. J., says she flies nicely in all types of weather, too. And we believe it!



Right: Built from plans in our October F.A., Jimmy Harper's Cub Coupe looks as sweet as Claude D. McCullough's original job. Jim, who lives in Tuscaloosa, Ala., prizes this job as tops among his best.

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.

NAA "Cracks Down"

ACCORDING to a ruling of the NAA Contest Board, all participants in NAA-sanctioned meets *must* be members of the NAA Model Division. In connection with this, the Model Division says:

"We have received reliable information that some contest directors have been competing in their own meets; that gas events have been conducted with little or no regard to the 20-sec. engine runs; that special field rules have been adopted which were in direct violation to general NAA competition rules.

"As a result of this, the NAA Model Division is compiling a Contest Procedure set-up which will be available the same time as the 1940 rules are out. Any contest director not following this general procedure 'will be associated no longer' with the NAA. The time has come to protect the model builder who drives great distances and makes lengthy preparations to compete in contests.

"The few promoters and contest directors who have been working under NAA sanction and disregarding the regulations set up by the Contest Board of the NAA must cease shoving the lads around or they can continue such practices 'on their own.'"

D.C. Club Organized

FRANK NELSON, president of the newly formed Capital Aeroneers Club of Washington, D. C., invites correspondence from other model organizations throughout the country. Meetings are held the first and third Mondays each month at the Southeastern Branch Library. All D.C. modelers wishing further info are urged to contact the group at 416 12th St., S.E.

1940 Nationals to Chicago!

CHICAGO will be the scene of the 1940 Nationals, according to an announcement by an NAA official at the recent Annual Fall Meeting of the Academy of Model Aeronautics. The statement was as follows:

"... The 1940 National Championship Model Airplane Contest will be held in Chicago under the sponsorship of the *Chicago Times* and Chicago Park District. The contest probably will be conducted during the first

week of July as in other years.

"It is anticipated that the competition will be conducted with the full cooperation of the National Exchange Clubs who have done so much in the past to further model aeronautic advancement in the United States. Complete details will be available far enough in advance to permit everyone to make arrangements for participation in the 1940 Meet, which promises to be bigger and better than ever."

F.A.C.'s Tops at St. Marys

IN THE First Annual City Championship Exhibition-Scale Model Contest held recently in St. Marys, Pa., members of the local FLYING ACES Squadron copped every major award. Jimmy Auman placed first and fifth; Wally Bickmire took second, fourth, and sixth; Charlie Lion copped third and eighth; and Alan Wygant was awarded seventh.

25,000 See Two

THE Chicago Park District Model Airplane Association recently contested two meets. A total of 25,000 spectators witnessed these tourneys, in which 694 contestants participated. Results follow:

First Meet—Gas vs. Rubber—Open: First, Alvin Anderson, 4 min., 6.1 sec.; second, Harry Kuhn, 3 min., 1.1 sec.; third, Ralph Muchow, 2 min., 27.6 sec. Jr.-Sr.: First, Joe Limosani, 2 min., 39.3 sec.; second, Charles Eves, 2 min., 10.3 sec.; third, Carl Canfield, 2 min., 2 sec.; fourth, Howard Kuhn, 1 min., 52.8 sec.; fifth, Arthur Beckington, 1 min., 48.2 sec.

Second Meet—Gas, Open: First, Steve Sedlek, 3 min., 59 sec.; second, Harry Kuhn, 3 min., 11.1 sec.; third, George Covington, 2 min., 55.7 sec.

Senior: First, Howard Kuhn, 3 min., 6 sec.; second, Walter Beland, 2 min., 7 sec.; third, Carl Canfield, 2 min., 6 sec. Junior: First, William Repening, 1 min., 19.3 sec.; second, Mark Drelup, 35.8 sec.; third, William Johnson, 20.4 sec.

Rubber, Open: First, Joe Matulis, 5 min., 22 sec.; second, Walter March, 1 min., 10.7 sec.; third, Wilfried Brumm, 52 sec. Senior: First, Mark Heller, 2 min., 6.3 sec.; second, Wallace Simmers, 1 min., 57.1 sec.; third, Ed Lidgard, 1 min., 52.2 sec. Junior: First, James Broderick, 1 min., 13.1 sec.; second, Henry Schwartz, 1 min., 2.4 sec.; third, Dick Hartley, 53.3 sec.

Glider, Open: First, Robert Clark, 1 min., 32.5 sec.; second, Walter March, 1 min., 22.3 sec.; third, Theodore Decock, 1 min., 21.7 sec. Senior: First, Alex Ligas, 1 min., 5.9 sec.; second, Bob DeBatty, 1 min., 2.3 sec.; third, Milton Huguelet, 59.2 sec. Junior: First, Frank Brilando, 30.9 sec.; second, Lawrence Iverson, 24.6 sec.; third, Otto Curth, 23 sec.

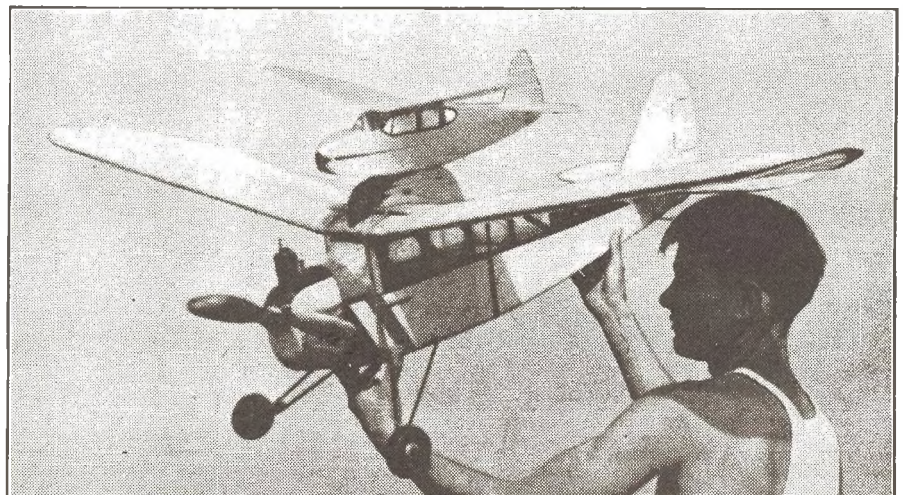
Wescott Wins Trophy

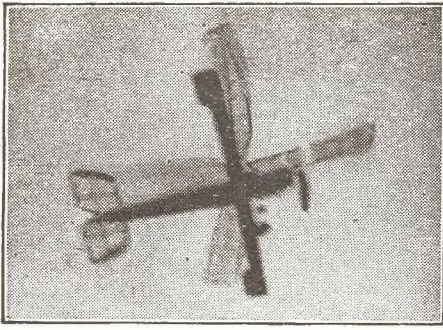
WHITMAN WESCOTT, of Riverside, Conn., took top honors in the Southern Connecticut First Annual Gas Model Contest and was awarded a trophy for turning in the longest flight of the day—2 min., 32 sec. About 68 models were entered in the meet, which drew more than 1,000 spectators. Al Lewis, director of the NAA Model Division, presented awards to the winners. Results follow:

Class "C": First, Whitman Wescott, Riverside, Conn., 1 min., 29 sec.; second, John Taubl, Noroton Heights, Conn., 1 min., 23.3 sec.; third, Robert Campbell, Stamford, Conn., 1 min.,

(Continued on page 52)

Right: Here's Bill Beck, of the Quaker City Club, with his novel pick-a-back combination. While the parent gas job is in flight, the small glider is released. Later, the soarer drops its wing and is landed by a parachute. Quite a tricky arrangement, we'd say. (Photo by Jobson.)





The "Windmill Plane"

Just about the only successful, utterly different airplane that's been produced at this stage of the game is the autogiro. And the father of this famous type was the late Juan de la Cierva. In recent years it's been a usual thing to see these ships floating serenely through the skies. But have you ever wondered how and why they were developed—or have you ever wanted to build a model of one. This month Hank Struck not only gives you a set of plans for the first of these revolutionary planes but also answers the hows and whys.



After years of struggle to realize the dream of flight, the success of the common, tractor-type airplane was so overwhelming that most of the world's aeronautical research was devoted to its further development of it in its original form. But still there were some men who experimented in the belief that there were other and possibly better means of mechanical flight than the fixed wing driven through the air. Juan de la Cierva was one of these men.

THE FIRST ambition young Juan de la Cierva knew was also destined to be his only one. In 1910, at the age of 15, he and two other boys built several gliders, with only data from the incomplete aeronautical books of the time to guide them. True enough, the flimsy contraptions suffered many crackups and seldom rose over five feet—but they flew! And Cierva knew that aviation *must* be his career.

The three boys became acquainted with Jean Mauvais, a French pilot, who kept an ancient biplane at the

Cuatro Vientos airport in Madrid. One day he made a demonstration flight at a race track. As he attempted to land, the crowd swarmed out and his plane was wrecked. Cierva and his friends immediately offered to rebuild the debris into a new airplane.

Everything then went smoothly until they needed a seasoned piece of wood for a new propeller. And this problem was finally solved when Cierva bought an old barroom counter. Thus, this craft did not require the formality of having a bottle of wine smashed on its prop when it was christened the "Red Crab"!

M. Mauvais allowed himself to be persuaded to test the machine. Much to his amazement—and relief—the "Red Crab" flew well, and bore out the confidence of its builders. After that, the "Red Crab" did much flying and carried many passengers, until at last it threatened to fall apart because the glue got sticky whenever it rained! Such was the history of the

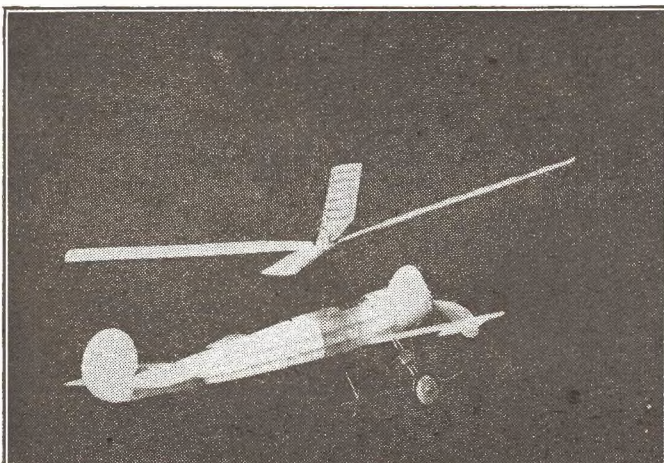
first airplane built in Spain.

In 1912 Cierva enrolled in the Civil Engineering School in Madrid, as there was no regular aeronautical course available. Here he studied for six years, supplementing his regular work by digesting all the aviation literature he could obtain. And just before his graduation he secured the backing of several friends to design and build a huge bomber for the Spanish Army airplane competitions. There was little chance of large orders in this class, but Cierva was anxious to make a practical start in his chosen career.

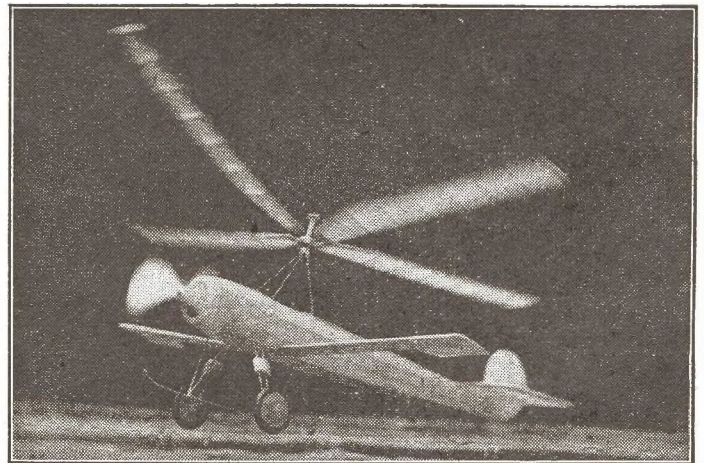
The machine was a biplane with a span of eighty feet and powered by three 180 h.p. Hispano-Suiza engines. An experienced army flyer, Captain Rios, was chosen as pilot. The ship flew beautifully—in fact, so well that Captain Rios became a bit overconfident. He made a turn so close to the ground that when he miscalculated a bit, he lost flying speed and crashed. Fortunately, however, he was unhurt—but the \$32,000 ship was a total wreck. The pilot undoubtedly would have been able to pull out easily if he only had been a couple of hundred feet

By Henry Struck

Author of "Here's the Douglas Globe Girdler," etc.



A mighty neat miniature! From this three-quarter rear shot of Juan de la Cierva's 1924 autogiro replica we can see why Hank Struck thinks so highly of his model. And it'll be a cinch for you to make yours just as good, too. Just study Hank's easy instructions, flip these pages to the plans, then start work!



Above we see the model's rotors starting to "role" as the prop revs up. In just a few seconds now she'll gather speed and fly right off this page—anyhow, that's what she seems ready to do. And see that skid between the wheels? That means you'll be saved many a prop, because the skid makes it impossible for the craft to nose over.

HERE'S NO. 14 OF OUR "TRAIL BLAZERS OF THE AIR"

higher. And so, contemplating the wreckage of his ship, Cierva felt that no such slight error of judgment should cause the destruction of an apparently first-class piece of machinery if flying was ever to be perfectly safe.

JUAN de la Cierva set out to find an arrangement of wings that never lost that precious flying speed needed to keep a ship in the air. And after months of careful study of the fundamentals of flight, he felt ready to test his theories.

Accordingly, Cierva secured a number of old airplane fuselages and engines. On these he mounted his queer looking rotors, kept in motion by the airstream alone—like a windmill. First he tried two sets, one above the other and rotating in opposite directions, then a three bladed set whose angle of incidence was variable by a cam system, and next a five bladed set with auxiliary ailerons. But all of these exhibited the same fault. As soon as the machine began to move, the excess lift of the advancing blade and the gyroscopic action of the rotor itself combined to topple the machine on its side.

At this time Cierva returned to model building. He built many craft, only one of which flew properly. This was a little rubber-powered job whose rotor blades were made of thin rattan or reed. And try as he might, Cierva could find no essential difference between it and its brothers. Suddenly then, while attending the opera one evening, he realized where the difference lay—the little model's rotor blades were flexible. They adjusted themselves to every variation of air speed!

Cierva applied this discovery to his fourth full scale ship. And when tested, the machine taxied steadily with no tendency to turn over. Finally, on January 9, 1923 at Getafe Airdrome in Madrid, Lieut. Alejandro Gomez Spencer opened the throttle wide—and the strange craft lifted from the ground and flew smoothly across the field.

The first and only entirely new type of heavier-than-air-craft since the Wright brothers made their first flight at Kitty Hawk was a success. Through his vision and determina-

tion, Juan de la Cierva had created a machine that could never stall or spin and whose wings never lost flying speed. From then on, the autogiro—as its inventor named it to describe its principle of self rotation—developed rapidly. The modern "giro" can leap almost 100-feet straight into the air, cruise a 100-m. p. h., land at nil

Europe to demonstrate its practical value. The three-view plans are scaled $\frac{1}{4}$ " to 1' and half the size of the finished model which is to the usual scale of $\frac{1}{2}$ " to 1'. The layout page shows the essential parts full size for the flying scale model.

Frame Construction

BESIDES making possible an exceedingly light and durable fuselage, the construction employed also eliminates the need for many tiny pieces. Cut the fuselage sides, top, and bottom from $\frac{1}{32}$ " sheet balsa, tracing the patterns given on the layout page to get the proper shape. Cement the sections together to form a box-like structure, using pins to hold it true while drying. Cut the formers from $\frac{1}{32}$ " sheet balsa. However, to avoid splitting these small pieces, do not cut out the stringer notches until the formers have been cemented in place. Cut the notches out when the glue is dry, and insert the stringers of $\frac{1}{32}$ " by $\frac{1}{16}$ " very hard balsa.

Carve the nose-cowl roughly to shape from a $1\frac{3}{4}$ " by $1\frac{5}{8}$ " sq. block of soft balsa. Hollow out a tunnel for the rubber motor to pass through and then cement the block to the front of the body. Finish shaping the cowl with knife and sandpaper, taking care

to blend its lines smoothly into those of the fuselage.

Build-up the nose-block in a ring, carved from $\frac{1}{4}$ " sheet balsa, and cement it to a $\frac{1}{32}$ " sheet balsa disc. Cut a plug of $\frac{1}{8}$ " sheet to fit the tunnel snugly, and glue it to the rear of the nose-block. A 2" length of $\frac{1}{4}$ " diameter balsa dowel, wrapped with

(Continued on page 79)

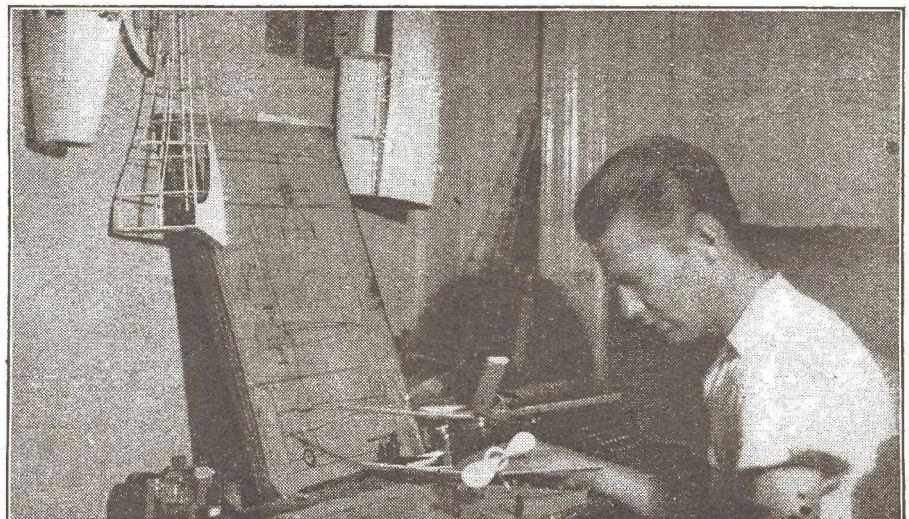
BILL OF MATERIALS

(All wood is medium balsa)

Three strips $\frac{1}{32}$ " by $\frac{1}{16}$ " by 18" for fuselage stringers;
Two strips $\frac{3}{32}$ " sq. by 18" for rotor leading edges;
Two strips $\frac{1}{16}$ " by $\frac{3}{16}$ " by 18" for rotor trailing edges;
Two sheets $\frac{1}{32}$ " by 2" by 18" for ribs, formers, and fuselage;
One strip $\frac{1}{16}$ " sq by 18" for tail frame;
One strip $\frac{1}{16}$ " by $\frac{1}{8}$ " by 18" for tail frame;
One sheet $\frac{1}{8}$ " by 1" by 18" for auxiliary aileron spar;
One block $1\frac{3}{4}$ " by $\frac{5}{8}$ " sq. for cowl block;
One block $\frac{3}{4}$ " by $1\frac{1}{4}$ " by $4\frac{1}{2}$ " for propeller;
One strip $\frac{1}{4}$ " by 15" bamboo for landing gear and pylon struts;
One length of .016 piano wire for rotor hinger, length of .028 wire for landing gear and hooks, scraps of $\frac{1}{4}$ " sheet balsa, $\frac{1}{2}$ " sheet red tissue, pair $1\frac{1}{8}$ " wheels, copper washers, small bushings, dope, cement, scrap aluminum, three feet $\frac{1}{8}$ " flat rubber, and the usual model making tools.

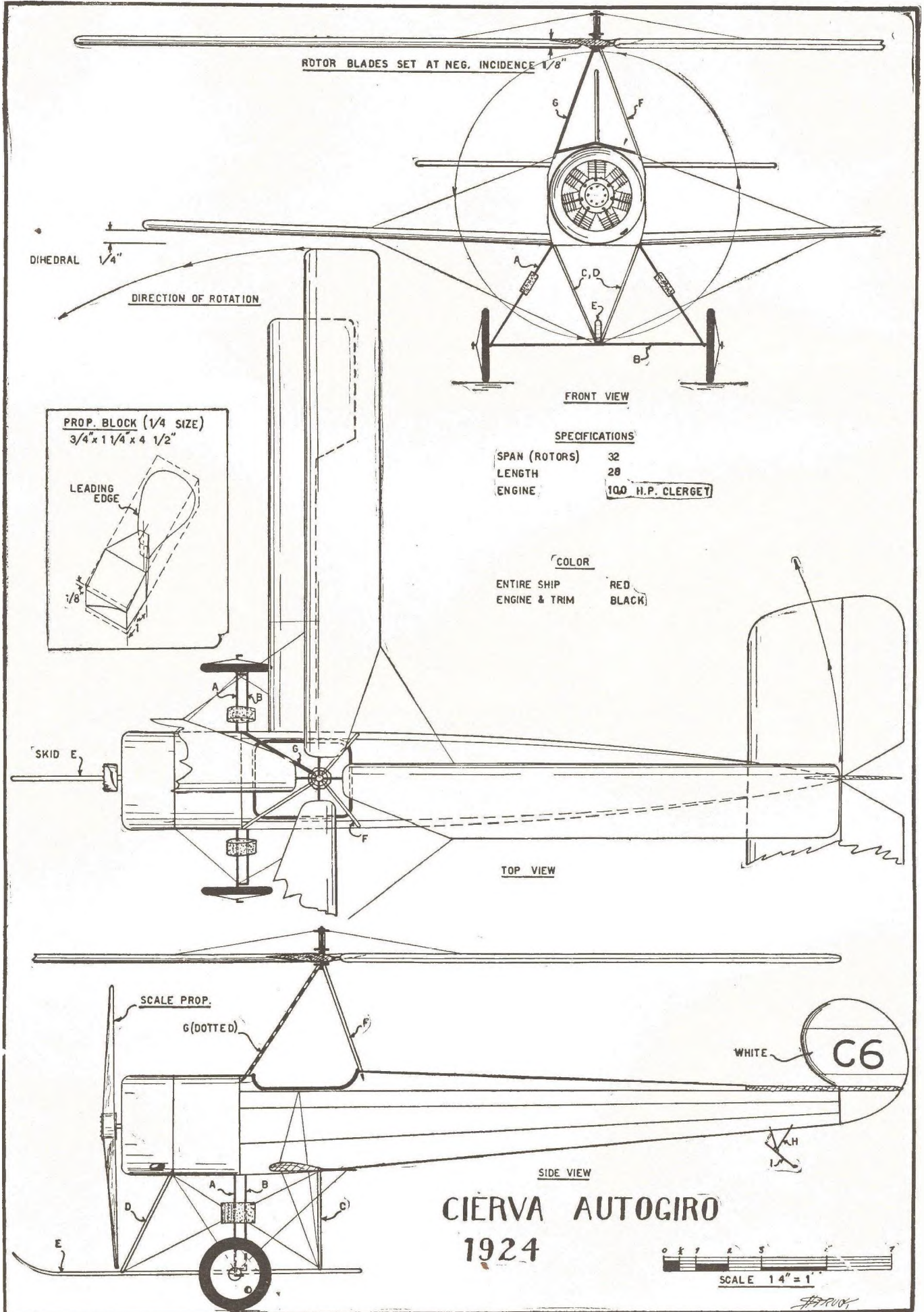
m. p. h. fold it rotors back, and roll along the highway like an automobile. Unfortunately, though the flying windmill does not enjoy the popularity it deserves, perhaps because the criterion of air performance still seems to be speed—and the autogiro is only safe!

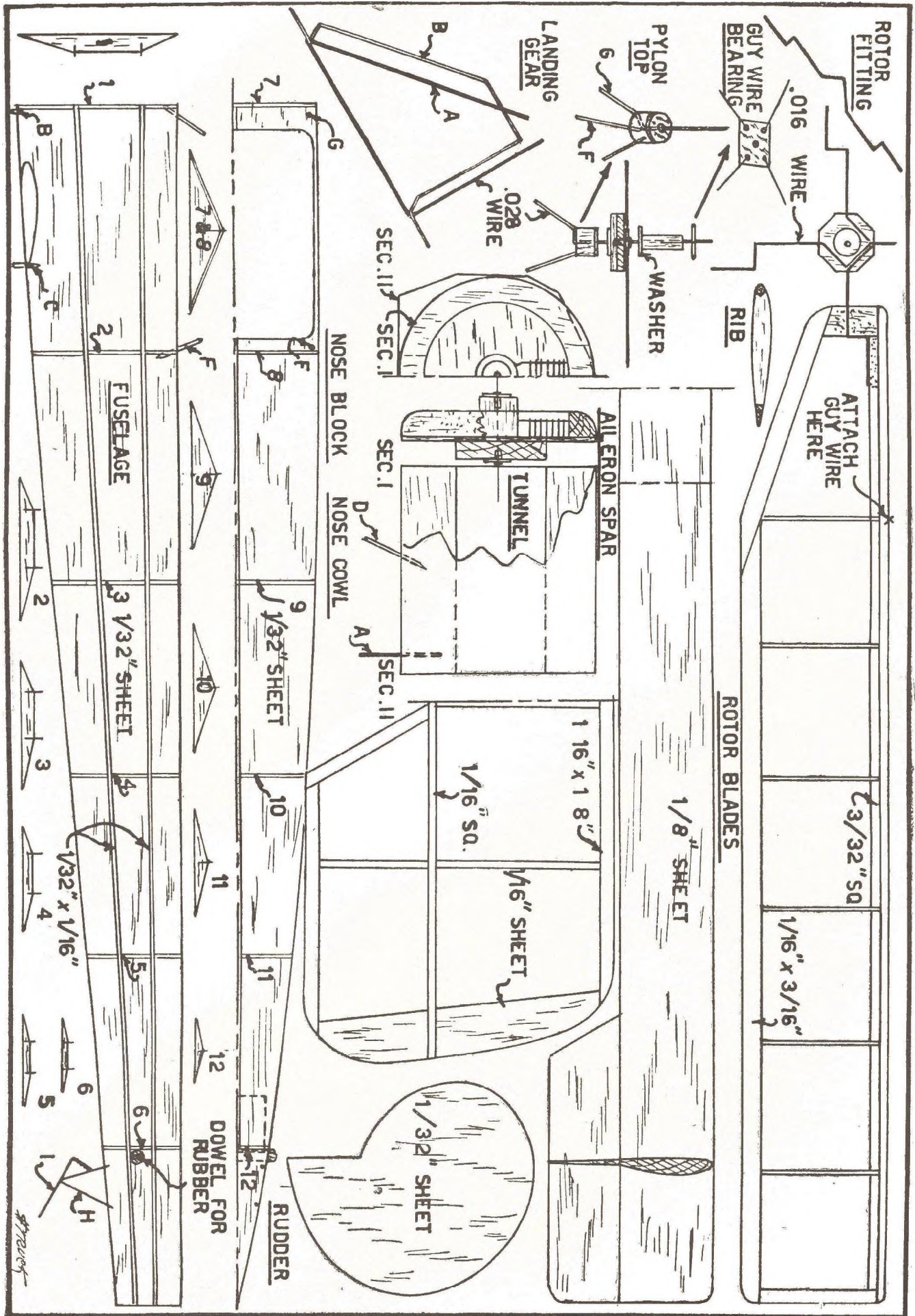
Our model is a replica of Cierva's sixth effort which was flown all over



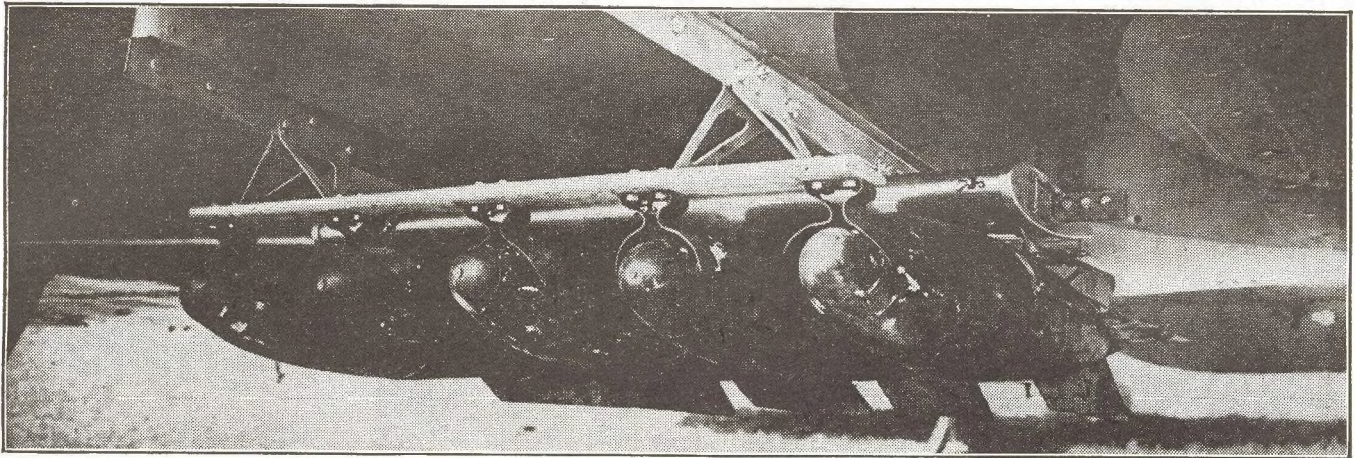
Right: Hank Truck gives his model a last inspection. In front of Hank, still tacked on the drawing board, is the plan that's on the following page. And to his right is the little portable typewriter that he uses to tell you all about his ships. Neat looking den Hank's got we'd say!

JUAN DE LA CIERVA'S "WINDMILL PLANE"—Plate 1





Pictures of Army Air Corps bomb racks are seldom seen, but here we have a shot showing a loaded rack beneath the wing of a warplane. (U. S. Army Signal Corps photo).



Scale Bombs

AND THE LOWDOWN ON HOW TO MAKE 'EM

By Colin K. Cameron

Drawings by Eugene Irasek

WHILE model airplane fans for years have been carving out and gluing together scale jobs of bombing planes, it's only lately that we've been able to persuade the "powers that be" to turn loose enough facts to enable us to make miniatures of the "eggs" carried by these huge ships.

Bombs have long been a sort of taboo subject. While the newspapers and magazines have been full of reports about bombing raids, very little has ever been said about the bombs themselves. And as a matter of fact, perhaps it's just as well—airplane

bombs aren't playthings by a long shot! In fact, it's a good idea to stay away from loaded ones.

Many items of war have some peacetime value. We all know the commercial value of airplanes. We know that even guns are used for shooting lifelines out to disabled or sinking ships. We know that military tanks have their counterpart in powerful tractors for construction or farming activities. And we can all think of many uses for countless other war-type implements. But bombs? They're just plain bombs—nothing else but!

However, since so many readers of *FLYING ACES* have written in for information concerning bombs and instructions for building scale models of actual Army projectiles, this article comes to you as a runner-up to Nick Limber's "A Model A-A Gun" and Al Orthof's "War-time Machine Guns."

In the so-called war that's now raging (?) in Europe,

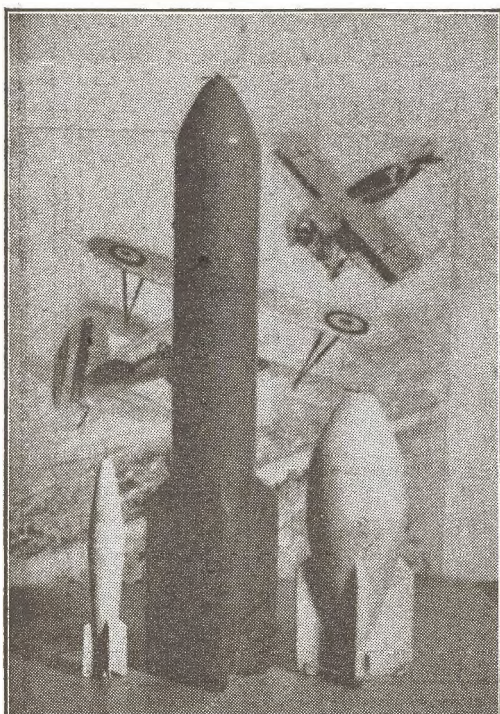
nothing much has at this writing been done in the way of bombing. In fact, nothing much has been done in *any* way! But, believe me, fellows, bombs and bombing are no fun. And very few people know that any better than this writer, who as a kid in England during the First Big Scrap saw and experienced the horror that comes when those sinister cylinders scream down through the blackness of night and explode with an ear-shattering roar—provided you've got an ear left.

But you modelers aren't interested in what happened to the writer in the last war. Instead, you've got a room or a club house that you want to decorate. Right? Okay, then let's keep our throttle advanced and see what this bomb business is all about.

ON DECEMBER 17, 1903, a couple of guys named Wilbur and Orville Wright slid their "aeroplane" down a greased runway at Kitty Hawk, North Carolina, and made the first successful power-flight in history. Well, believe it or not, that was the beginning. For not very long after that first hop, pilots who wanted to show how hot-shot they were dropped bombs over indicated targets. They proved that they could put 'em just where they wanted 'em! And the bombs that they used were—paper sacks of flour, oranges, and even whitewashed rocks!

But it wasn't long before their simple demonstrations gave way to military experiments, and in Tripoli even before the World War the Italian

Left: This is what we'd call a really effective pic—three of the author's model bombs in front of an original drawing from one of the Phil Strange stories! The "egg" on the left is a 100-lb. Demolition Mark 1, painted white to denote "practice." Center: A 2,000-lb. Demolition Mark 1, painted red to indicate "empty," but ready for loading. And Right: A 1,100-lb. Demolition Mark 3, colored yellow to show T.N.T. loading.



troops used a crude form of aerial bomb against soldiers on the ground. The First World War saw considerable development in the gentle art of bombing, but even then bombs were generally limited, at the start, to about 100 pounds in weight. It was our own American Expeditionary Force that drew up the first designs for thousand-pounders. Now the Army's Ordnance Department supplies bombs running up to more than a ton apiece for standard service use, and they have even built two-ton "eggs" for experimental purposes!

AND NOW that we've skimmed through the general details, we're ready to start work on the actual construction of scale models of typical airplane bombs as used by our Army today. We have picked out three demolition bombs as representative of the three chief outlines—the 2,000-lb. Mark 1, cylindrical type; the 1,100-lb. Mark 3, streamlined case; and the "baby" 100-lb. Mark 1, super-streamliner.

"Mark," by the way, refers to the type of bomb. Instead of calling a projectile the "Smith" or the "Jones" job, the Army uses a numerical "Mark." The higher the number the later the design.

Our drawings show the bomb outlines, dimensions, and the like, in full detail. Other projectiles can be scaled and plotted from the accompanying official photographs. It will be noticed in the drawings that construction is generally the same for each bomb. Each has a body, a tail assembly, suspension lugs, and propeller for the tail or nose fuze (or both).

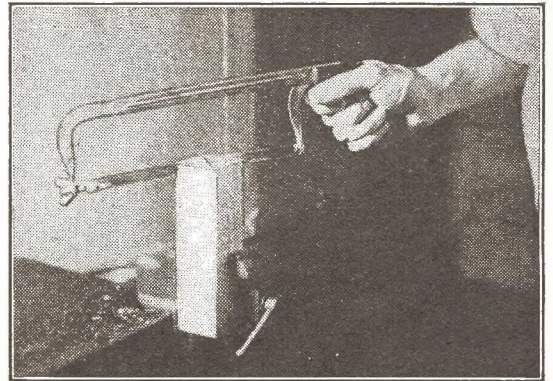
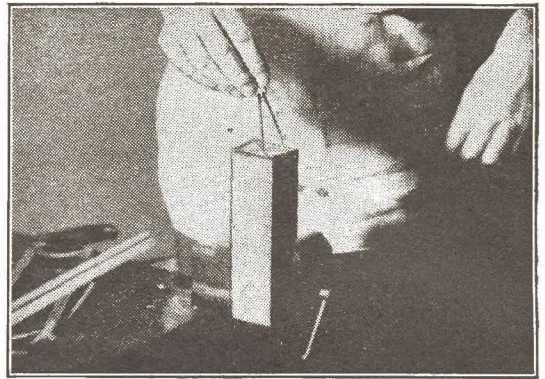
The drawings are made to the scale of one-half inch to the foot. Larger or smaller scales can easily be figured from these, of course. For straight display purposes, we recommend models of one or even two inches to the foot—that is, either twice or four times the dimensions given. For display with scale model bombers, however, we suggest reduction to the same scale as the ships.

Extreme care must be exercised in selecting the wood for the bomb bodies. And except where noted, balsa of medium hardness is used. Secure stock with perfectly straight grain and no hard or irregular streaks. Dimensions will be according to the selected scale.

For the tail surfaces, use a sheet of good grade medium stock if the scale is one-half inch or greater. If less, use light pasteboard or even bond paper. Fine wire is utilized to make

the suspension lugs (used for hanging the projectiles in exterior racks on the plane) and light sheet aluminum will serve for the arming vanes or propellers for the fuzes. Black thread or fine wire will simulate fin braces.

Here we have a series of photos illustrating the construction steps for making scale bombs. Top: Find center of block by ruling diagonal lines, cutting deeply with soft pencil. Then inscribe circle of bomb's maximum diameter with compass. Second shot: Saw slots for tail vanes, before shaping bomb, to assure accurate centering. Third: Trim block roughly to desired size and outline, allowing some margin for final shaping and smoothing. Fourth: Wrap cardboard around the bomb-to-be, just aft of the tip to protect the sides, and sand the nose. Final photo: Marking "rivets" at the tail vanes.



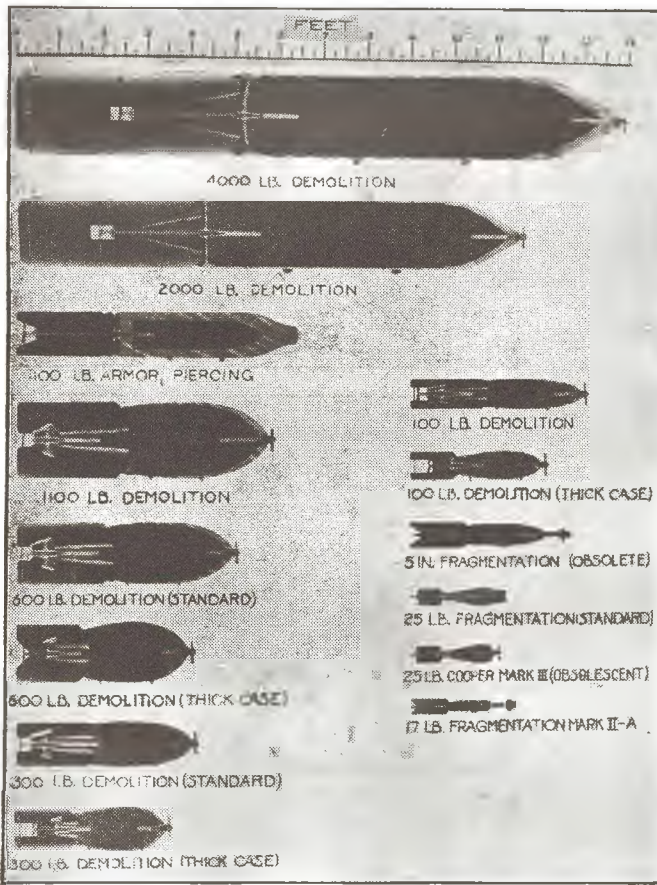
the suspension lugs (used for hanging the projectiles in exterior racks on the plane) and light sheet aluminum will serve for the arming vanes or propellers for the fuzes. Black thread or fine wire will simulate fin braces.

IN SHAPING a bomb body select a wood block of the required size, check it for squareness, and find the exact center of each end by ruling lines diagonally across from corner to corner (see small photo No. 1). Inscribe these lines somewhat deeply, since even the best modeler is apt to find his wood wearing away as he works, and these lines are needed throughout for accurate proportioning. With a compass or dividers, now outline on the ends of the block the maximum diameter of the proposed projectile.

On the cylindrical cases, such as the 2,000-lb. Demolition Bomb Mark 1, the diameter, of course, is the same except for the nose and tail. On the streamlined types, the diameter varies.

Now cut the diagonal slots into which the tail assemblies will later be inserted (refer to small photo No. 2). For models made to a scale of less than one-half inch, postpone making this slot until ready to install the tail unit. If the slots are made now, however, plug them with scraps of sheet stock, held in place with a single drop of cement, to prevent the edges from wearing during the sanding process.

The first rough trimming to shape should be done with a sharp knife or razor blade. Beware of splitting the grain, and observe the woodsman's old law about trimming away from the body (see small photo No. 3). Whittle the block



Left: We reprint this photo from our January issue to show the comparative cross-sections of U.S. bombs. They range from 4,000-pounders to 17-footers to 2-footers. (U.S. Air Corps photo.)

against the plans while you work. Since the bombs are perfectly round, the cross-section is the same throughout.

The tail fins are easily cut in accordance with the plans. When working to a one-inch scale, one-eighth inch sheet balsa will be used. This is somewhat heavy in proportion to the

real bombs but makes a much better base for the model projectile. After shaping the fins, smooth them down for their final finish, and round off the corners. Assemble with a few drops of model cement and fit them into the slots previously cut on the bomb body (it will be seen now that the chief reason for cutting these slots so early in the game was to insure absolute squareness, which is difficult to obtain when the ends have been trimmed and rounded). Where paper tail fins are used (see Fig. 3 for fin for the baby 100-pounder bomb) cut the slots with the point of a knife and remove a tiny, wedge-shaped sliver.

In the streamlined bombs the arming vane props can be installed after the tail fins have been fitted in place. In the cylindrical 2,000-lb. Mark 1 demo bomb, and bombs similar to this, the tail prop should be inserted into Fin "A" (see Fig. 6) before assembling the tail unit.

Tack a strip of smooth sandpaper to your workbench (see small photo No. 4) and work the nose to shape on this. (Be careful not to get your nose too close to the grindstone, however!) Use the same method for shaping the tail.

Where rivets are used in assembling the heavier types of service bombs they can be simulated in the models with pencil-pricked strips of paper, glued along the seams as indicated in small photo No. 5. See also Fig. 12 of the drawings for riveting details. Any surplus cement should

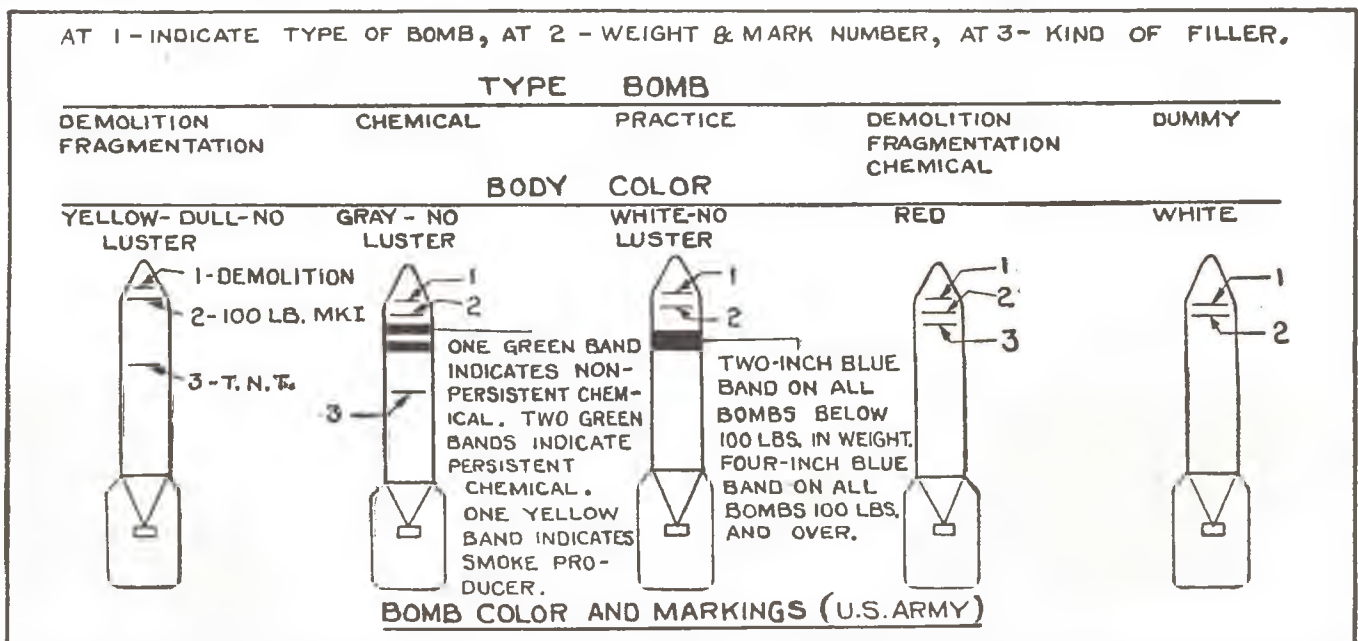
down to just short of maximum diameter.

Now the procedure may change, depending upon whether the project is a streamlined or a cylindrical bomb. On the latter, shave fairly close to the line, then measure from the nose a proportionate distance to the shoulder point. At this point, encircle the cylinder with a strip of tough cardboard to protect the sides and to serve as a guide for rounding off the nose.

in the palm, close the hand around the wood and work the wood in and out, turning it constantly. This will cause some sanding to be across instead of with the grain. Since an extra margin is allowed for final smoothing, however, this is permissible. A piece of adhesive tape applied between the thumb and first finger will prevent sanding blisters, by the way.

Check the streamlined outline

(Continued on page 80)



This chart will come in handy when you're set to color your scale "eggs." For the various hues and combinations given here will enable you to stack your model tarmac ammo dump with truly realistic bombs—everything from practice projectiles to the big 4,000-pounders that the giant bombers tote.

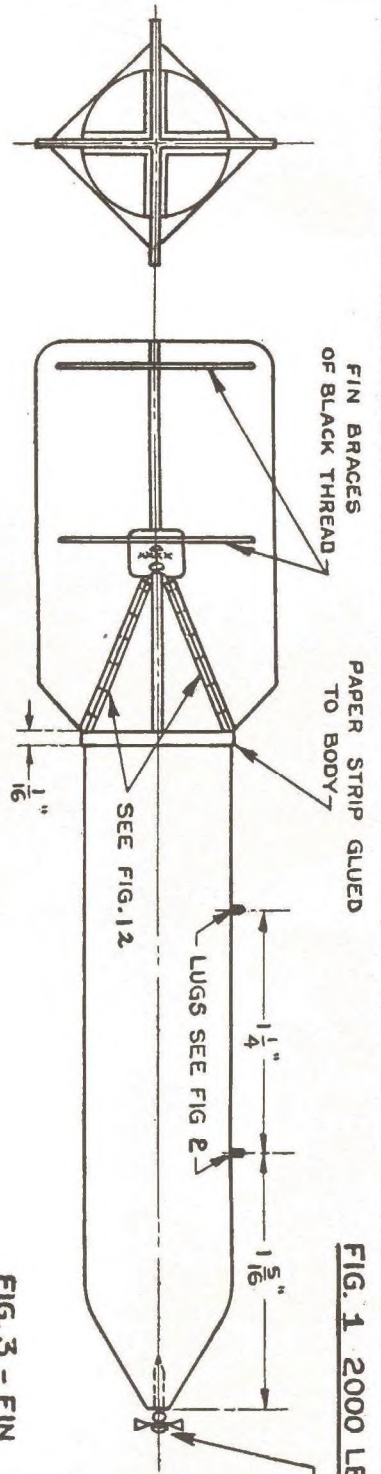
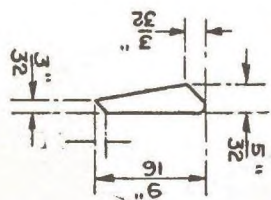


FIG. 1 2000 LB. DEMOLITION BOMB MK. I

AFTER ASSEMBLY OF BODY AND FINS ASSEMBLE TAIL AND NOSE FUZE PROPELLER ON SMALL MODELERS' PINS, TOGETHER WITH SMALL BEADS FOR BEARINGS, AND PRESS INTO BODY OF BOMB.

FIG. 2 - SUSPENSION LUGS
FINE WIRE BENT TO THIS APPROXIMATE SHAPE AND PRESSED INTO THE WOOD.

FIG. 3 - FIN
CUT FROM THIN CARDBOARD.



SUSPENSION LUGS

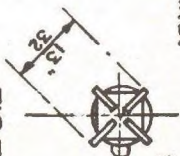


FIG. 7 100 LB.

DEMOLITION BOMB MK. I
PRICK HOLE IN END OF FIN AND STRING WITH BLACK THREAD FOR FIN BRACES.

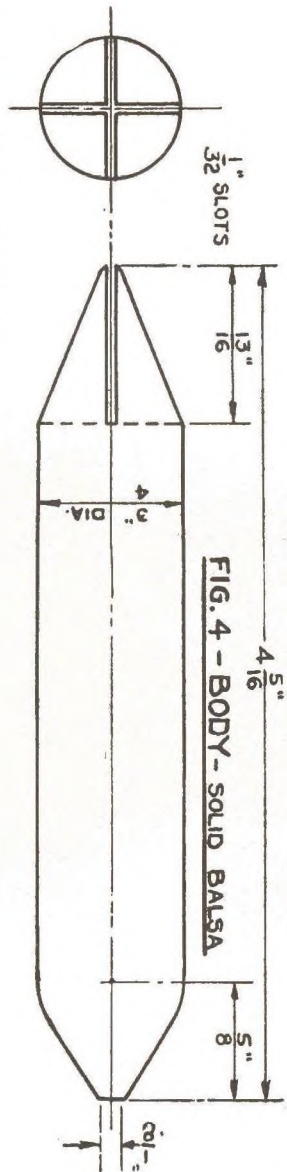


FIG. 4 - BODY - SOLID BALSAM

FIG. 6 - FINS
SHEET BALSAM, ONE EACH REQ'D.

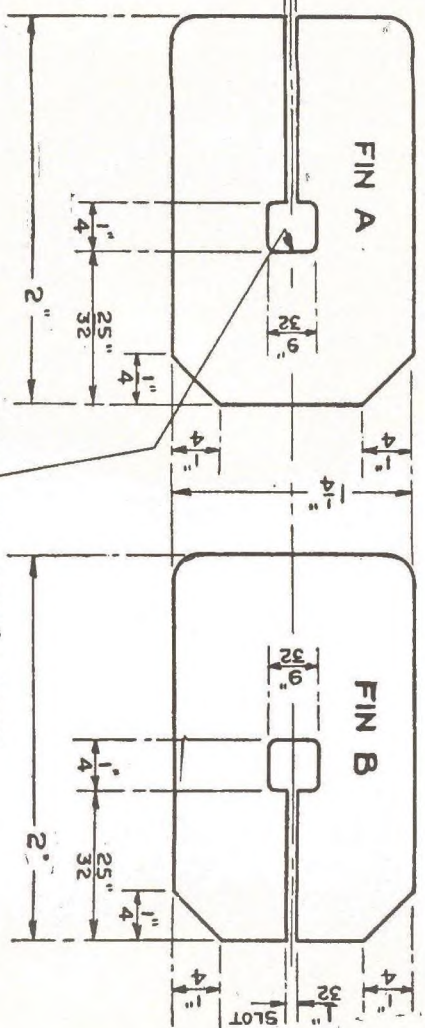
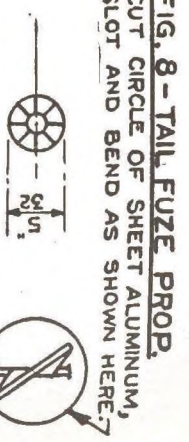
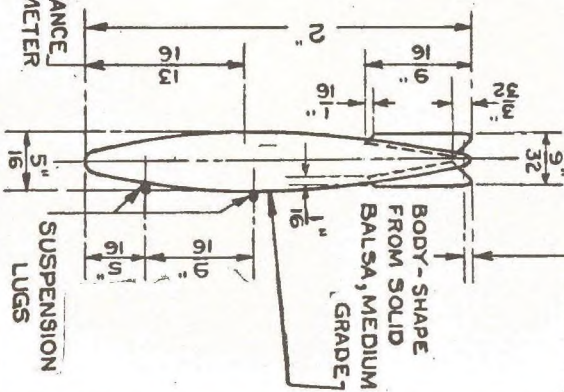


FIG. 8 - TAIL FUZE PROP.
CUT CIRCLE OF SHEET ALUMINUM, SLOT AND BEND AS SHOWN HERE.



TAKE CARE NOT TO SLIT TO THE CENTER OF THE CIRCLE OR PROP. WILL BREAK WHEN BENDING. TWO REQUIRED AS THIS IS USED ON 1,100 LB. BOMB.



SCALE BOMBS—AND HOW TO MAKE 'EM—Plate 2

FIG. 9 - 1,100 LB. DEMOLITION BOMB MK. III

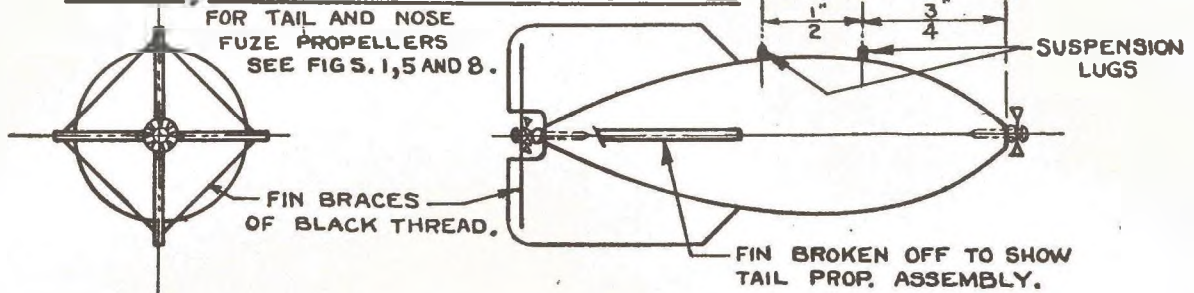


FIG. 10 - BODY - SOLID BALSA

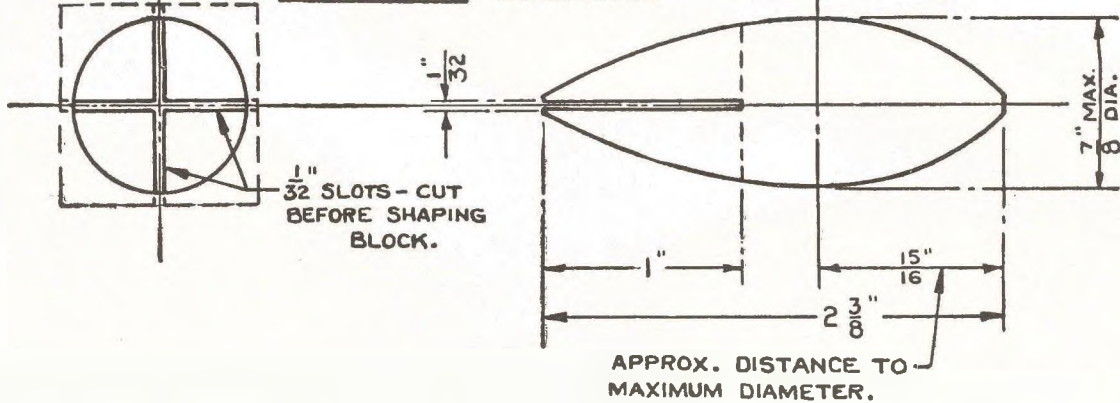


FIG. 11 - FINS

1/32" SHEET BALSA.

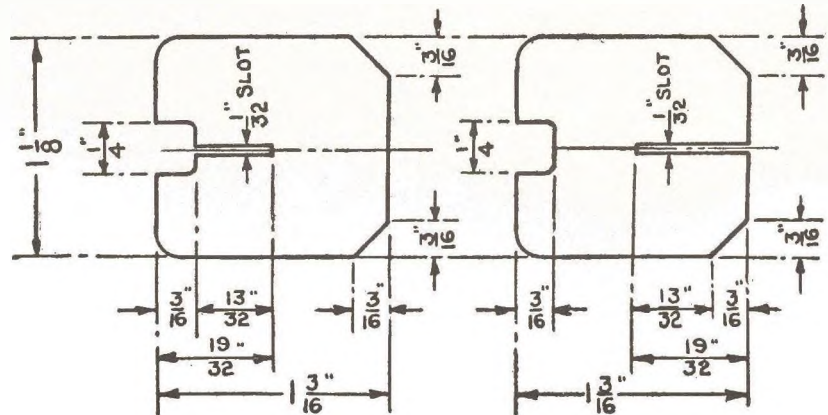
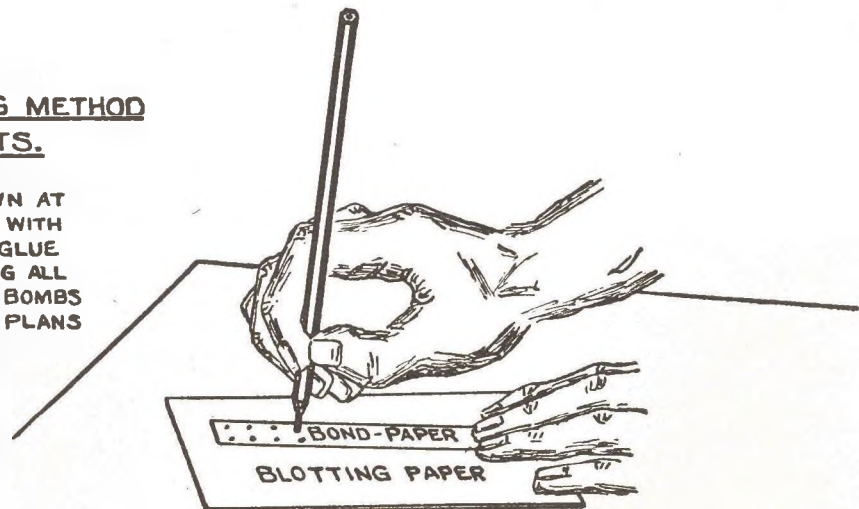


FIG. 12 - VIEW SHOWING METHOD OF SIMULATING RIVETS.

MAKE STRIPS SUCH AS SHOWN AT RIGHT, THEN FOLD IN HALF WITH THE PENCIL DOTS INSIDE. GLUE THESE PAPER ANGLES ALONG ALL SEAMS AND JUNCTIONS ON BOMBS WHERE PHOTOGRAPHS OR PLANS SHOW RIVETS.



Here's an Automatic

Gas Model Tank

Power vs. the ground means destruction-plus—if you get what we mean. And so it is that modelers often look sadly at their crashed crates and wonder if there isn't SOME way to make an engine cut out when the ship is out of control. Yes, fellows, there IS a way. All you've got to do is follow Steve Zavodny's easy instructions.

THE OLD adage, "Into every life some rain must fall," can be aptly applied to the life of a gas model, with the one possible exception that it is the power job itself that does the falling instead of the rain.

In spite of every precaution a modeler may take to adjust his craft perfectly, almost every builder has experienced that feeling of despair which comes after one runs perhaps a quarter of a mile with fingers crossed to find his ship damaged beyond immediate repair.

Of course, a properly designed shock absorbing landing gear generally takes care of all normal landings where the wheels make contact with the earth first. However, it is in those landings in which the spinning prop strikes the ground that most damage occurs. Such set-downs usually result in bent motor shafts and broken propellers. These are expensive items to replace, so every model builder should take care lest it happen too often.

Anyhow, the fuel supply system described in this article is designed so that when the ship assumes a dangerous position in flight—such as a headlong dive or a steep sideslip—the supply of gas to the engine is broken. This naturally stops the engine, almost invariably before the ship strikes the ground, thereby greatly diminishing the chances of severe damage occurring in a crack-up. A fuel supply system of this type can be easily adapted to practically any gas model.

AS WILL be observed in the accompanying drawing, Fig. 7, that the tank is cylindrical in shape. The bottom of the tank is shaped similar to an inverted oblique cone, with the perpendicular side facing the rear of the model. The gas supply tube runs down to the apex of the cone with barely enough clearance to allow fuel to be drawn into it without difficulty.

The theory of this fuel supply system is illustrated in Figs. 1

By Steve Zavodny

to 5. Fig. 1 shows the approximate position of the engine, tank, and fuel level in the normal flight attitude of a gas model. In this position the engine continues to run until the last drop of fuel is exhausted. Some builders find that their models frequently land with a considerable quantity of fuel remaining in the tank. Very often they attribute this to "Motor Trouble," when in reality it is the fault of a poorly designed gas tank. However, the modelers who adapt this fuel supply system to their models will find that the engine will *consistently* consume the entire supply of fuel in normal flights.

There are a number of factors which can put a ship into a very steep climb immediately after the take-off, as shown in Fig. 2. This is a very critical position, for should the engine quit suddenly the ship would immediately stall and fall to earth before it could recover from the resultant dive. It can readily be seen that a steady supply of fuel to the engine is absolutely necessary to safeguard the model from such an untimely engine failure. A steady flow of fuel is assured in this flight position with this type of gas tank, even in climbs up to vertical.

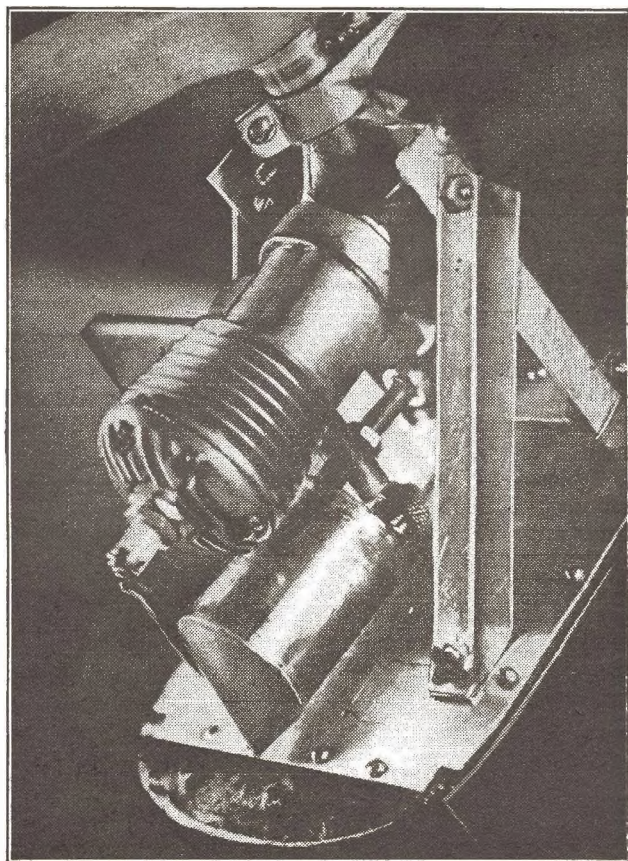
WHEN a gas model goes into a prolonged steep dive as shown in Fig. 4, most every

builder utters a silent prayer for fear that a crash is inevitable. While this type of crackup is not a common occurrence, it need happen but once to put the craft out of commission.

When such a dive occurs, the velocity of the ship is greatly diminished if the engine quits in mid-air. Then, should the threatened crash materialize, it is with much abated apprehension that the modeler waits to perceive the extent of the damage.

This damage, if any, usually will be only a gentle reminder of what might have happened if the ship had struck the ground with the motor running at full throttle. Sometimes the ship will escape without a scratch, and this, every gas job fan will agree, is a very desired characteristic in a gas model.

When a gas model equipped with the fuel supply system described here



Right: In this shot we see the automatic fuel tank mounted on the author's Gwinn-powered craft. The full-page drawing on the second following page shows how the gas container operates at this critical angle.

exceeds certain safe limits in a dive, the engine will automatically stop. It is a simple theory that governs this. The bottom of the tank is shaped so that in a dive the gas runs *away* from the fuel line, which breaks the flow of fuel to the engine. The angle of the bottom of the tank is such that with a given amount of fuel the engine will run only while the nose of the ship is pointed in a predetermined angle to the horizontal.

Fig. 5 shows a view of the tank in a position wherein one wing of the airplane is much lower than the other. This type of flying makes model builders very nervous, for if the wing dips too far enough lift will be lost to allow the ship to sideslip severely, possibly right down to the earth, with consequent dire results. The inclination of the tank bottom brings about the same function as the fore-and-aft arrangement, and it likewise stops the motor when the sideslip becomes critical.

In banking on a turn, however, where no altitude is lost, centrifugal force holds the fuel at the bottom of the tank and at the mouth of the fuel line, which allows the engine to continue running. If the ship assumes any of these perilous positions but momentarily, then recovers and resumes normal flight, the engine will not cease running, for there is enough fuel in the line to last the few seconds till a recovery is effected.

The tank shown in Fig. 7 will hold over $\frac{3}{4}$ of an ounce of fuel. This is enough for about 15 to 20 minutes of flying, much longer than is ordinarily needed. While the tank has been successfully used in the author's gas model, with a Gwinn engine, it can be altered to suit different installations. Also, with slight alterations, the tank can be used with either upright or inverted engines.

The following materials will be needed to make the tank:

1 piece of 4" by 4 $\frac{1}{2}$ " steel or brass shim stock, .003" thick; 1 piece gas line, approximately 3" long; and 1 tank spout and cap.

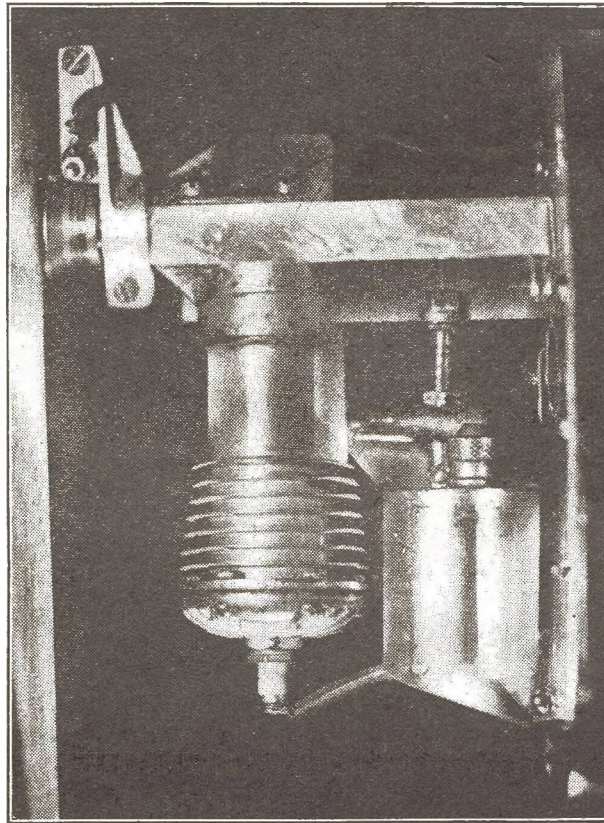
Any machinist or mechanic can tell you where to obtain the shim stock. This material is very light and thin, therefore it is easy to work with. The gas spout and cap can be salvaged from your old tank.

To Make the Tank

FIRST, cut out a rectangular piece of shim stock, 1 $\frac{3}{8}$ " by 3 $\frac{5}{8}$ ", for the body. Wrap this around a cylindrical

form 1 $\frac{1}{8}$ " in diameter, and hold in place with a rubber band. Then solder the overlapping portion. Be sure to slip a piece of paper between the shim stock and form to prevent solder from sticking to the form. "Tin" all surfaces to be soldered.

The next step is to cut out a piece of shim stock, 1-3/16" in diameter, for the tank cover. Determine the spot where the fuel line will emerge and punch a hole at that point, using an ordinary paper punch. Make a hole for the gas spout, which is then soldered in place. The cover is now ready to solder to the tank body. Pean the edges of the cover down to fit the body closely. With the body still on the form to retain its round shape, solder the cover in place. The par-



Mounted against the firewall (with engine inverted) the tank is easily accessible at all times. And Steve Zavodny tells you in these pages all about his system, too—how it will make your gasliner a better, and safer, flyer.

tially assembled tank may then be removed from the form.

Fig. 8 is a full pattern for the conical tank bottom, which is made of shim stock. Solder together the overlapping edges, making sure it forms a circle at the base of the cone where it is attached to the tank body. A jig must now be made to hold the body in its correct shape while soldering the bottom in place. This jig is simply a thin piece of wood with a 1 $\frac{1}{8}$ " round hole in it. Slip it over the body close to the edge where the bottom is attached. Solder the bottom in place and test for leaks. When there are no more leaks present, break the jig and remove it from the fin-

ished tank.

To complete the whole works, provide means of holding the tank in the ship, and solder the gas line in position. Be sure to allow enough clearance between the fuel line and tank bottom to allow gas to be drawn in freely. Incidentally, if steel shim stock is used, the tank should be protected with a light coat of oil, inside and out, to prevent the fuel from corroding the metal.

THE ANGLE of the dive in which the engine will quit naturally depends somewhat upon the amount of fuel in the tank. However, it will function most efficiently when there is about 4 eye-droppers or less of fuel in the tank. This is just about the amount that is normally allotted for the great majority of flights. This allotment of fuel will cause the motor to quit when the dive exceeds a 45° angle. In a sideslip, the engine will conk when the ship is inclined beyond 60°. These figures are approximate.

If it is necessary to carry more fuel, all that you have to do is increase the diameter of the tank. This will allow a larger amount of gas to flow away from the line sooner than if the tank diameter were small. The angle of the bottom, of course, must be held constant. The diameter probably will be restricted due to structural space limitations, but in many cases it may be increased to a point where the tank can hold approximately $\frac{1}{2}$ an ounce without impaired efficiency.

Many models may make contact with the earth in a fairly steep dive without running a great risk of damage, due to the location and length of the landing gear. For this type of craft, the tank bottom should be more inclined, as this will allow the dive to become steep-

er before the engine quits. On the other hand, for jobs that have a short landing gear, located a considerable distance back from the propeller, the engine should conk in a much shallower dive. This will necessitate a flatter tank bottom.

The sideslip characteristics can also be controlled. To increase the sideslip angle in which the motor will continue to run without affecting the dive characteristics, the tank body should form an angle with horizontal along the edge where it joins the bottom. The degree and direction of this angle will depend upon whatever reasons are present for changing the set-

(Continued on page 70)

Various Flight Positions Showing Fuel Level In Gas Tank

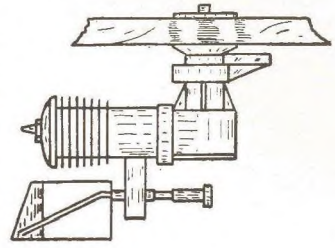


FIG. 1 LEVEL FLIGHT

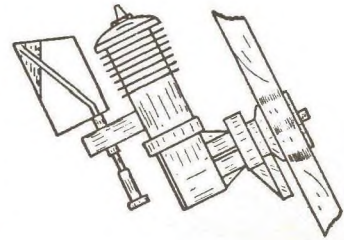


FIG. 2 STEEP CLIMB

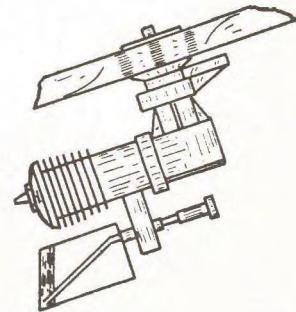


FIG. 3 GENTLE DIVE

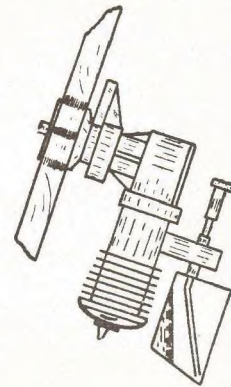


FIG. 4 STEEP DIVE



FIG. 5 SIDESLIP

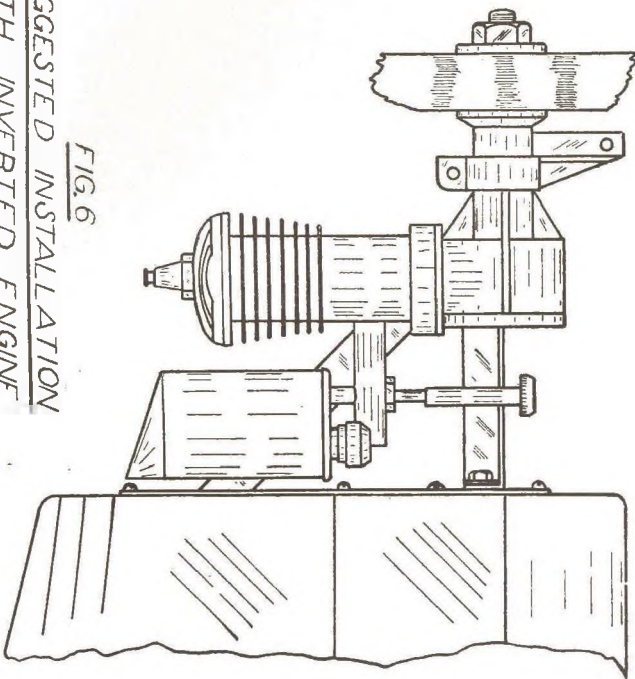


FIG. 6
SUGGESTED INSTALLATION
WITH INVERTED ENGINE

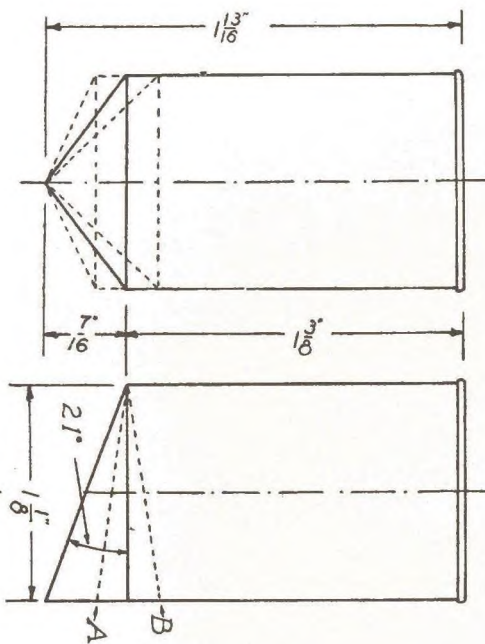
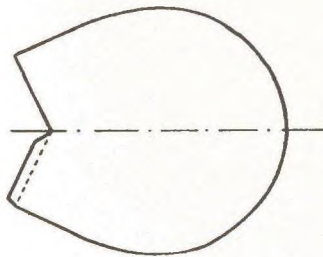


FIG. 7 TANK DETAILS



FIG. 8 PATTERN FOR
CONICAL TANK BOTTOM



News of the Modelers

(Continued from page 39)

23 sec.; fourth, Whitman Wescott, Riverside, 1 min., 21 sec.

Class "A" and "B": First, William Gillette, Noroton Heights, 40 sec.; second, Phillip Klienert, Noroton Heights, 30 sec.; third, Harvey Blackman, New York City, 28 sec.; fourth, John Ogilvie, New York City, 26 sec.

New Rules Announced

RECENTLY, the NAA published a set of new rules governing models competing in NAA sanctioned meets. In some cases the regulations remain the same as those of last year, so here we will present only the changes:

Cabin Models—Contestants must present to meet officials a full size drawing of the maximum cross-section of the fuselage for each different cabin ship; drawings are to be made on paper ruled into half-inch squares. **Flying Scale**—Full-size outline drawings of model (that is, same size as craft) should be presented to judges to assist in checking accuracy of entries. **Design of Ships**—There are no restrictions. However, the models must be so constructed that they drop no parts in flight or during take-off.

Pushing or guiding a craft shall constitute a delayed flight, except in the case of gas jobs when R.O.G. rules have been waived. Scoring time for indoor models shall be the longest of three official flights; except in the case of indoor gliders, where scoring time shall be the longest of nine official flights. Scoring time for outdoor models shall be the average elapsed time of three official flights; except in the case of outdoor hand-launched gliders, where scoring time shall be the average elapsed time of the three longest of nine official

flights.

In computing average time in seconds, the second numeral to the right of the decimal shall be dropped; results shall be carried to the nearest mathematical tenth.

Gas Jobs—All internal combustion models must weigh at least 80 oz. for every cubic inch of motor(s) displacement. Gas models must R.O.G. unassisted, except where conditions prevent. In such instances, Contest Directors may permit hand-launching with the understanding that such flights will not be eligible for record purposes.

Gas job classifications are as follows: Class "A"—Models using engines having up to and including .20 cubic inch displacement. Class "B"—Ships using engines of more than .20 cubic inch displacement, up to and including .30 cubic inch displacement. Class "C"—Craft using engines of more than .30 cubic inch displacement, up to and including 1.25 cubic inch displacement. Combined Class—Jobs using engines up to and including 1.25 cubic inch displacement.

The NAA will recognize national gas model records only in Class "A," "B," and "C." A record performance established in Combined Class will be accepted in whichever of the three classes it fits, providing it exceeds that class record by at least 2%.

Smooth take-off facilities are to be provided by the Contest Directors. Horizontal raised runways are permitted, providing they are not more than six inches off the ground.

All rules and class-determining classifications not mentioned above remain the same as in 1939. Those wishing to obtain the complete rule

list may address National Aeronautic Association, 1909 Massachusetts Ave., Washington, D. C.

J.A.L.'s Vie for Records

DIRECTOR GUNNAR MUNNICK, of the Boston Jordan-Marsh Junior Aviation League, recently sent NAA headquarters 21 applications for new indoor and outdoor national records.

A list of winners in a late indoor competition held in the Irvington St. Armory, which has an effective flying ceiling of about 35 feet, follow:

Stick, H.L.: First, Gordon Cain, 10 min., 35 sec.; second, Douglas Hanon, 8 min., 14 sec.; third, Harry Lerman, 7 min., 42 sec.; fourth, Robert Abrahamson, 7 min.; fifth, Henry Gerrin, 5 min., 36 sec.

Fuselage, R.O.G.: First, Ralph Brown, 9 min., 55 sec.; second, Robert Abrahamson, 7 min., 2 sec.; third, Irving Sherman, 6 min., 13 sec.; fourth, Henry Gerrin, 6 min., 8 sec.; fifth, Harry Lerman, 5 min., 2 sec.

NAA Checks Up

A NUMBER of NAA-chartered model clubs have been informed that it is necessary for them to send to National Headquarters a listing of their active members holding NAA model flyers licenses, as well as the name and address of their sponsor.

The reason for this request lies in the fact that in many instances clubs change secretaries, addresses, or they just plain "fold up" without notifying Headquarters. Meanwhile the Washington records become sadly out of date.

"Down Under" Doings

IN New Zealand, on October 23, the Hawera Model Aero Club, New Plymouth Model Flying Club, New Plymouth Model Aeroplane Club, Stratford Model Flying Club, and Eltham Model Aero Club participated in the Texaco Gas Job Contest at Hawera.

The tourney was hotly contested by the boys, and the final results were: First, M. Kibby, 1 min., 18.6 sec.; second, A. J. Robinson, 57.6 sec.; third, Dave Howlett, 54 sec.; fourth, B. Lane, 52.4 sec.; third, 40.2 sec. All flights were made on 30 sec. motor runs.

New NAA Contest Kits

ACCORDING to the NAA, a charge will be made for the special kits which are sent out with each sanction for contests issued to Contest Directors. The new ruling will probably become effective in January. The practice of sanctioning contests at no charge will be continued; but the kits containing helpful material for running a meet will be optional, with the minimum charge fixed at \$1.00 for the small-size kit.

The new kits are expected to contain armbands for field police, officials, contestants, guests, assistants, etc.; special forms for tabulating re-

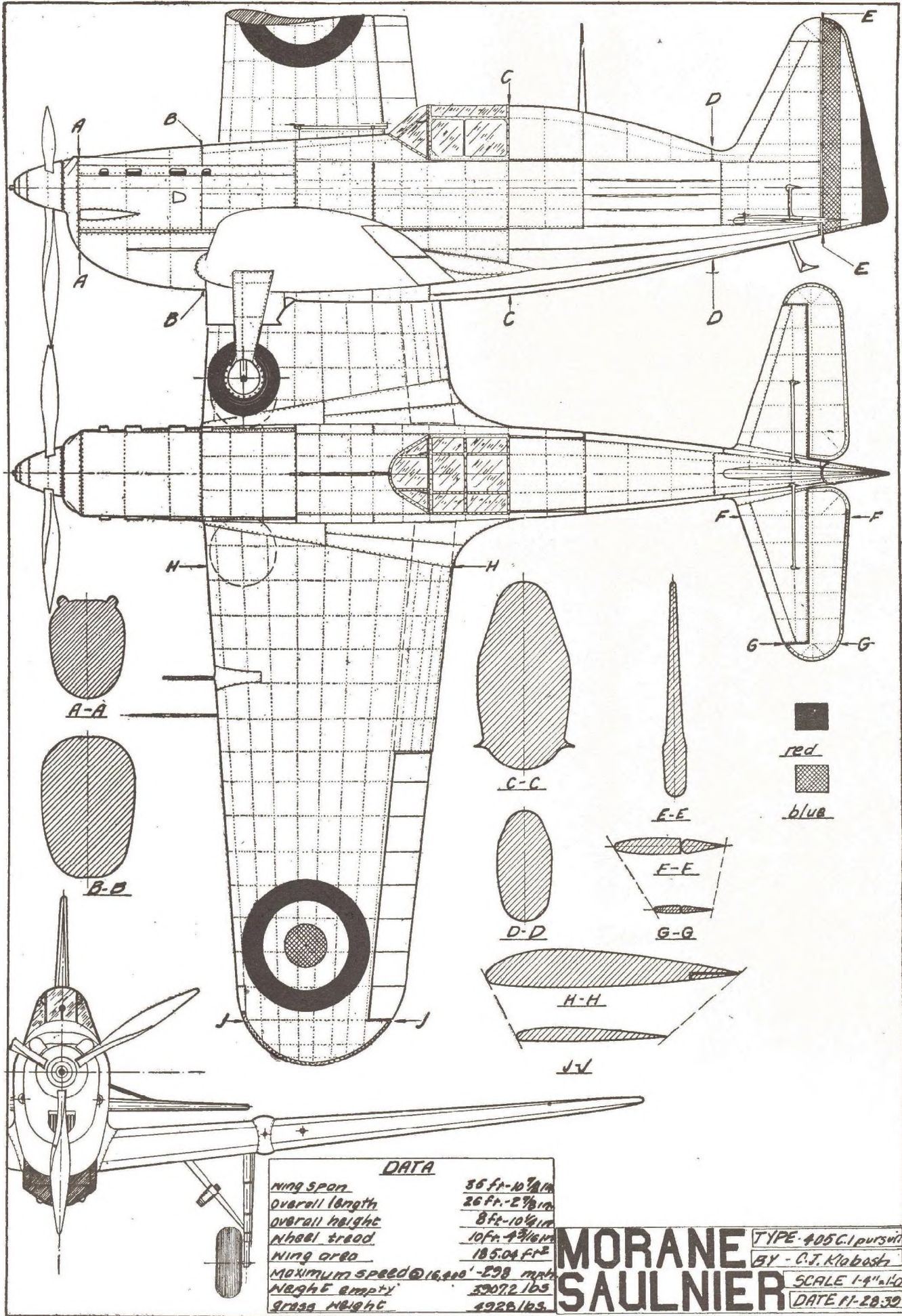
(Continued on page 54)

1940 N.A.A. POWER LOADING CHART

NAME OF MOTOR	DISPLACEMENT	CLASS	MINIMUM WEIGHT	WING AREA
BELMONT	.525 CU. IN.	C	42.00 OUNCES	451 SQ. INCHES & UP
BROWN JUNIOR	.600 CU. IN.	C	48.00 OUNCES	451 SQ. INCHES & UP
CYCLONE (NEW)	.650 CU. IN.	C	52.40 OUNCES	451 SQ. INCHES & UP
CYCLONE (OLD)	.357 CU. IN.	C	28.56 OUNCES	451 SQ. INCHES & UP
DENNYMITE	.570 CU. IN.	C	45.60 OUNCES	451 SQ. INCHES & UP
FORSTER B	.989 CU. IN.	C	79.12 OUNCES	451 SQ. INCHES & UP
G-9	.562 CU. IN.	C	44.96 OUNCES	451 SQ. INCHES & UP
G.H.O.	.518 CU. IN.	C	41.44 OUNCES	451 SQ. INCHES & UP
GWINN AERO	.450 CU. IN.	C	36.00 OUNCES	451 SQ. INCHES & UP
HURLEMAN	.488 CU. IN.	C	39.04 OUNCES	451 SQ. INCHES & UP
JAMES '60"	.600 CU. IN.	C	48.00 OUNCES	451 SQ. INCHES & UP
OHLSOON "GOLD SEAL"	.562 CU. IN.	C	44.96 OUNCES	451 SQ. INCHES & UP
HERKIMER O.K.	.616 CU. IN.	C	49.20 OUNCES	451 SQ. INCHES & UP
SYNCRD ACE	.562 CU. IN.	C	44.96 OUNCES	451 SQ. INCHES & UP
HI-SPEED	.275 CU. IN.	B	22.00 OUNCES	226 TO 450 SQ. IN.
M & M (OLD)	.246 CU. IN.	B	19.68 OUNCES	226 TO 450 SQ. IN.
M & M VALVE PISTON	.292 CU. IN.	B	23.36 OUNCES	226 TO 450 SQ. IN.
OHLSOON 23	.230 CU. IN.	B	18.40 OUNCES	226 TO 450 SQ. IN.
RANGER	.295 CU. IN.	B	23.60 OUNCES	226 TO 450 SQ. IN.
TORPEDO	.300 CU. IN.	B	24.00 OUNCES	226 TO 450 SQ. IN.
ATOM	.097 CU. IN.	A	7.76 OUNCES	0 TO 225 SQ. IN.
BANTAM 39	.165 CU. IN.	A	13.20 OUNCES	0 TO 225 SQ. IN.
BRAT	.155 CU. IN.	A	12.40 OUNCES	0 TO 225 SQ. IN.
ELF	.138 CU. IN.	A	11.04 OUNCES	0 TO 225 SQ. IN.
GNAT	.156 CU. IN.	A	12.48 OUNCES	0 TO 225 SQ. IN.
HUSKY	.190 CU. IN.	A	15.20 OUNCES	0 TO 225 SQ. IN.
KAYDET	.163 CU. IN.	A	13.04 OUNCES	0 TO 225 SQ. IN.
MADEWELL & WASP	.146 CU. IN.	A	11.68 OUNCES	0 TO 225 SQ. IN.
PEE WEE	.138 CU. IN.	A	11.04 OUNCES	0 TO 225 SQ. IN.
SYNCRD 'BEE'	.122 CU. IN.	A	9.76 OUNCES	0 TO 225 SQ. IN.
TROJAN	.190 CU. IN.	A	15.20 OUNCES	0 TO 225 SQ. IN.
MIGHTY MIDGET	.450 CU. IN.	C	36.00 OUNCES	451 SQ. INCHES & UP

Left: Larry Eisinger prepared this swell chart so your fellows won't have to worry your gray matter too much when trying to figure your 1940 gas job characteristics. However, if the engine you use is not listed here, you may figure the minimum weight of your model by multiplying the powerplant displacement by 80. Under the new rules, wing area for Class "A" ships will be up to 225 sq. in.; Class "B", from 226 to 450 sq. in.; Class "C", 451 sq. in. and up.

FRANCE'S FIGHTER—THE MORANE-SAULNIER 450C.1



DATA	
Wing span	35 ft. 10 3/4 in.
Overall length	26 ft. 2 7/8 in.
Overall height	8 ft. 10 1/2 in.
Wheel tread	10 ft. 4 3/4 in.
Wing area	185.04 sq. ft.
Maximum speed @ 16,000'	238 mph.
Weight empty	3,072 lbs.
Gross weight	4,926 lbs.

MORANE SAULNIER TYPE-450C.1 pursuit
 BY - C.J. Klobasz
 SCALE 1-4"=1'-0"
 DATE 11-28-30

Logging the Motor Market

By The Engineer

Three "O. K." Engines

THE "Standard," "Special," and "Deluxe," model engines of the "O.K." series are fundamentally the same, but there are slight differences in each. Therefore, we will not only list descriptions of these power plants but will also mention their differences.

The "Standard" model is exactly the same as the "Deluxe," with the exception that the crankshaft is not constructed in one piece. The "Deluxe" type is equipped with straight head fins on the cylinder, a one piece hardened crankshaft, and an exhaust manifold. The plant is mounted on a completely wired test skid.

Each "Special" motor has a cylinder with cooling fins of the radial type. Its crankshaft is built-up and all wearing parts are hardened. This engine is not furnished with an ex-

haust manifold, though one may be separately purchased. It is not mounted on test skids.

The "Special's" cylinders are constructed in one piece and are of a newly developed design. Crankcases are made of aluminum silicon alloy with replaceable main bearing. The connecting rods are of one piece, drop-forged from alloy steel, heat treated, and fully lapped. The crankshaft is heat treated and carefully balanced.

Specifications for "Special": bore and stroke, .900" by 31/32"; displacement, .616 cu. in.; horsepower, 1/5 plus; r.p.m., 1200 to 10,000; weight bare, 7³/₄ ounces.

Timing cams are built integral in the "Deluxe" models. The timer is an aluminum bracket-type, with steel and fibre point construction. This unit, incidentally, is guaranteed to operate long periods without adjustments. The breaker arm is removable without the use of tools. And the gas

tank is constructed in one piece and is easily removable for cleaning. The 1940 models, by the way, are fitted with a new micrometer needle valve.

The "M. & M." Motor MANUFACTURERS of this powerful little .292 "M. & M." Class "B" engine claim that the "piston-valve" type is the first major improvement on two cycle engines in the past sixty years.

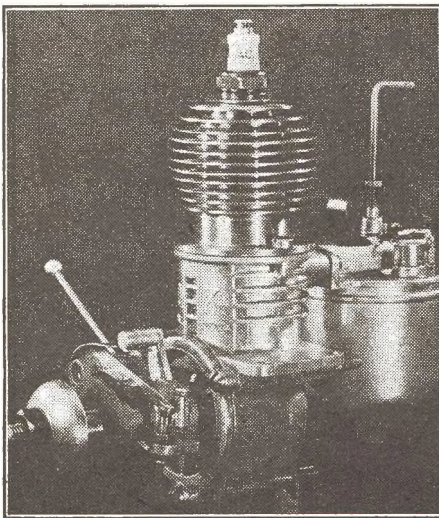
The piston and cylinder are made symmetrical so that the piston will rotate around the inside of the cylinder. This makes for uniform wear and an even surface to assure good compression.

A circumferential intake port through the center of the piston head allows complete scavenging of combustion through a circumferential exhaust. Note in the photograph that there is a complete absence of any surplus metal on the side of the cylinder. This is said to make it possible for the cylinder to expand uniformly. The company reports that the "M. & M." will develop exceptional power for its size and weight.

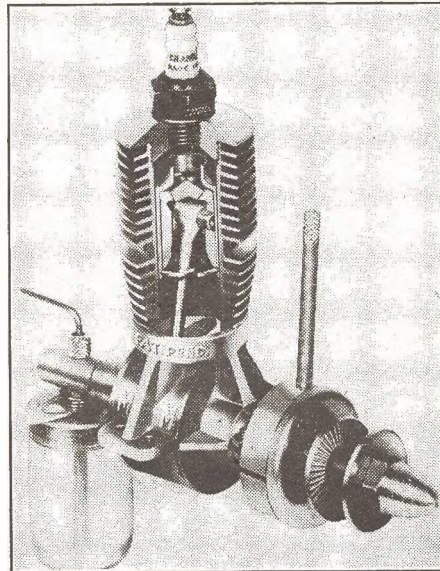
The little plant comes equipped with a visible gas tank which may be easily taken apart for cleaning. It is filled through a convenient opening in the cap.

The carburetor is of a special needle tube design which allows fine adjustment. The points are fully enclosed and are said to be so designed that any oil that might work through the main bearing will not come into the contact case. The engine functions either upright or inverted. The carburetor can easily be taken apart for cleaning or checking.

Specifications: displacement, .292 cu. in.; bore, 23/32"; stroke, 32/32"; weight bare, 4¹/₂ oz.



Above: Here's a three-quarter front shot of the "O.K. Special." Right: A cut-away view of the "M & M." motor.



News of the Modelers

(Continued from page 52)

sults and scoring flights, and flight-time slips.

If you have any suggestions as to what should go into these kits, the NAA would like to hear from you. The address is 1909 Massachusetts Avenue, Washington, D. C.

Decals for NAA

ONE of the late bits of news to come from NAA headquarters is that NAA wing emblem decalcomanias are now available to members. Decals—to get rid of the "mania"—are those colorful transfer devices that can be stuck on most any sur-

face.

These emblems have a "wing spread" of 6¹/₂ inches and are printed in five colors. They are of the same design as the wing lapel pins which are given with NAA memberships. The transfers sell for 10c apiece in quantities of less than 50, and for 5c apiece in lots of 50 or more.

Calling All Parkersburgers!

ALL fellows in Parkersburg, W. Va., who are interested in joining a model club are urged to contact Raymond C. Emerick, 211 Fourth Street. The organization was begun

only recently, but it already has a membership of 40.

Zaic Book Offered by NAA

WITH new or re-newed NAA Model Division memberships (\$1.00 Rubber or Gas License) it is now possible to obtain the "National Model Airplane Meet in Pictures"—a photo annual by Frank Zaic and Walter Farynk—for an extra 25c. Both membership and book sell regularly for \$1.00 each.

The pictorial story is a record of not only the '39 Nationals but also the '39 Wakefield Competitions. It contains the inside story in pictures and words of the two most famous events in Aeromodelling, together with a

(Continued on page 68)

What Do You Say?

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.

TWO LAUD THE "HI-CLIMBER!"

Model Editor, FLYING ACES:

I built your "Hi-Climber" from Earl Stahl's plans in the August, 1939, FLYING ACES, and it's sure a beautiful flyer. That fellow Tom Laine, who wrote in the December issue that he didn't like it, probably needed a little down thrust for the prop of his ship, as mine did. On calm evenings without thermals, my "Hi-Climber" makes 45 second flights on 325 hand-turns. Let's have more flyers from Earl!

CLARENCE MATHERS
Plainfield, Ill.

Model Editor, FLYING ACES:

I built the "Hi-Climber" and am very pleased with the flights it has turned in for me. The best time I've made to date is 11 minutes—and out of sight. Maybe that modeler, Tom Laine, never heard of down thrust, because if you can get a good glide (as he says he did) you can always get a good flight with a ship. I think Tom should make one more try at it—using some down thrust this time.

CHESTER OSPALSKI
Gary, Ind.

SOARER WAS TOO GOOD!

Model Editor, FLYING ACES:

In the August issue you had plans for the "Classy Class C Glider," by Elbert Weathers. I constructed the ship in about a week, working only in spare time. After getting the soarer properly balanced, I launched her with a 100 ft. tow-line. And on the

fifth flight, the ship left for parts unknown!

I have never built a model from plans in a magazine before, but I'll build plenty more in the future! I never saw a ship as swell as the "Classy Class C."

I'm now starting work on a sister ship to my ill-fated soarer, and I'll tell you how she makes out after I send her out in a few hops. But I hope she's not quite as good as the first one—for this time I don't want to lose her!

H. L. McCULLOHR, JR.
Eufaula, Ala.

A "DESPERATE" CASE

Model Editor, FLYING ACES:

I'm one of those guys who can't get a model to fly, and I'm getting mighty desperate. I've often read in "What do You Say?" about fellows who tell what swell flyers they have built from F.A. plans. One of the most popular, it seems, was Harlan Riedesel's "Moth." So how's about some fellow modeler lettin' loose with the plans for it to save a suicide?

GRAHAM ACKERLEY
202 West 79 St.
New York City

"TOUGHIE" TAKES THIRD

Model Editor, FLYING ACES:

I built Alan Orthof's "Toughie Gas Job" (August, 1938, F.A.) and entered it last Spring in a contest sponsored by the Y.M.C.A. and *The Grand Forks Herald*. Twenty-one other modelers were in the meet, but with about a twenty-five mile an hour wind blowing the day wasn't very suitable for flying.

Many of the other ships washed out. But I let mine go—and in about a half minute it was up around two-thousand feet! It was out of sight in four and a half minutes, then eventually we found it five miles from the airport.

"Toughie" had passed from North Dakota over the Red River and into Minnesota, and had finally come to rest in a tree over-hanging the Red Lake River. The wing was broken in two, but nevertheless I'd copped third prize!

FLOYD CASSELMAN
McIntosh, Minn.

Workbench Tips

HOW TO ADJUST YOUR MODELS
THE USUAL trouble encountered by the majority of model airplane builders is not in structural difficulties but rather in adjusting. It is claimed by experts that most models if adjusted correctly will fly for anywhere from one to three minutes!

A good flight depends mainly on two factors—climb and glide. Since real time (three minutes and up) lies in the glide, you should first get your model to glide flat. To obtain this result, move the wing backward or forward until your ship performs satisfactorily. Remember, if your model glides well, you can always get it to climb with a few minor adjustments of the thrust line.

With the wings set in a position where your best glide will result, wind up the model one-fourth of maximum, then launch. If she stalls, correct with a small amount of down-thrust—which is another method of putting position incidence on the stabilizer and wing. If the craft dives, do the opposite.

The ship should at all times circle to the right—or against the torque—with power on. And it should then glide to the left with power off in about 50 ft. circles. To obtain this performance, give the model some right thrust by offsetting the line of thrust to the right. The correct amount of each setting cannot be given outright but should be arrived at by experimentation.

—GUSTAVE REINHOLD, JR.

ALL REVVED UP

for the

Next Great FLYING ACES



FACT—"Is the Russian Eagle a Dodo?" A dramatic article by Arch Whitehouse which pierces the dark curtain of mystery that has long masked Stalin's air force. Packed with illustrations!

"The Rocket's No Racket!" says Nick Limber. Chock-full of graphic drawings, this striking feature reveals the inside story of "projectile aeronautics."

FICTION—"Ark Royal Riddle"—starring Dick Knight in another smashing New World War Aero yarn.

Crash Carringer flies his Hale Hellion into a startling Turkish intrigue.
Plus the latest mad-cap adventure of Lieutenant Phineas Pinkham.

MODEL BUILDING—A special for experimenters—Roger F. Parkhill's "Mystery Tailless" military model.

Herb Weiss' 5-foot, high-wing "Virginia Champ" gas job.
And Al Orthof's spiffy winter sky-hopper—"The Snowbird Stick."

In April FLYING ACES

On Sale February 27th (Canada One Week Later)

Secret Flight Sixteen

(Continued from page 10)

rasped the man with the scar. "Heintz, watch that devil while I get the other one in here."

The driver reached around and snatched at Trent's arm. Trent coolly climbed in, hands half lifted. The girl shrank back, but she kept the gun pointed at his middle. As Mortimer Crabb tumbled in on one of the kick-seats, the man with the scar savagely banged the door.

"Go ahead! Quick, before some one drives in here."

Gears clashed, and the sedan lurched forward. Trent looked at the scarred man.

"It's going to be a bit chilly out there in your underwear. No, not you, *Fraulein*," he added as the girl gasped, "I was referring to a little incident our friend Kleinert may remember."

"You'll pay for that smart trick, you *Teufel*," grated the man with the scar. "Elsa, watch the other man. I'll guard Trent, he's likely to trick you."

"Trick a beautiful young lady like our little Elsa?" said Trent. "You do me an injustice."

"*Stille!*" rasped Kleinert. He thrust his face close to Trent's. "Now, where is it?"

"If you're referring to your breath, even you shouldn't have any trouble locating it," returned Trent.

Kleinert's disfigured cheek twitched furiously. "You know what I mean! Where have you hidden it?" "It's in the Douglas we flew here," said Trent. His eyes flicked for a split-second to Mortimer Crabb's gloom-ridden countenance.

"You lie!" snarled Kleinert. "A mechanic in my pay searched it thoroughly. You brought it into the city and left it somewhere."

Trent sighed. "Very well, it's in a lock-box at the railroad station. I have the key here in my—"

"Keep your hands up," snapped Kleinert. "I'll find it."

He reached out toward Trent's coat pocket, keeping the gun almost against the American's breast. Trent's gaze shifted sidewise. The driver had slowed as they neared a street. Trent's lifted right hand moved down with a sudden jerk, halted in mid-air as Kleinert's eyes swerved toward it.

"Get it up!" rasped the *Gestapo* man.

Trent obeyed—and simultaneously his unnoticed left hand threw the toggle-switch of the dome light. In a flash, the interior of the sedan was brightly illuminated.

CHAPTER II

THE STOLEN BOX

KLEINERT started violently as the light went on. In the same moment a woman on the nearby sidewalk gave a scream at the sight of the German's gun against Trent's ribs.

"Turn that light off!" snarled Kleinert. "Heintz, get into that other alley! Faster, you fool!"

Trent threw the light off as ordered. In the swift darkness that followed, as the car plunged into the alley across the street, his lowered right hand went unseen. The door-handle gave under his surreptitious fingers, and the door flew wide open. Kleinert lunged half off his seat in expectation of Trent's attempt to dive from the car.

Trent threw himself sidewise, off the kick-seat, and Kleinert sprawled over the projecting edge. A shot roared from his gun, ricocheted from the opened door, as his trigger finger spasmodically contracted. Then before he could twist around for another shot, a swift boot from Trent's foot sent him headlong into the alley.

"Heintz—help me!" *Fraulein* Elsa cried desperately. Trent whirled in time to see Mortimer Crabb wrench the gun from the girl's hand. Heintz slammed on the brakes, spun around, clawing for his automatic. Mortimer Crabb's long arm lifted, came down like a piston. There was a thud, and the butt of the gun hit the driver's head. He slumped down in the seat, and the car angled toward the side of a building. Trent vaulted over, stopped the machine.

"Watch out, Mort—Elsa's giving you the slip!" he said suddenly. Crabb made a quick grab, but too late. The girl was out and running wildly into the darkness of the alley before he could reach the door.

"Too bad," said Trent. "I'd been looking forward to a glamorous evening once we got rid of Kleinert and Heintz." Then sitting calmly on the unconscious driver, he put the sedan in gear and sent it rolling ahead.

"Is that big ruffian clear out?" Crabb said uneasily.

Trent laughed. "If he isn't, he's giving a fine imitation. That was good teamwork, Mort."

"I didn't mean to hit him that hard," Crabb said, sepulchral. He peered over at the hulking Nazi. "Oh, heavens, I'm afraid I've killed him."

"It would take a sledge-hammer to crack that skull," said Trent. "He's the bruiser I broke a chair on last night."

Trent quickly angled into the traffic at the next street, zigzagged two or three times to be sure they were not followed, then pulled into another alley and stopped. A search of the German's pockets revealed nothing of interest.

"Give me a hand with him, Mort," said Trent. "Then take those straps off the spare tires in the fender well."

In another minute Heintz was bound hand and foot. Trent looked around, rolled a trash-barrel behind the car, then took out a pencil and a scrap of paper. A few moments later Heintz was doubled up and wedged halfway into the barrel, with a note

pinned on his chest.

"What's that for?" said Crabb, suspiciously eyeing the Dutch words.

"Just a little note for the police to deliver him personally to Burgomaster Voorst—with my compliments."

"The burgomaster won't like it," Crabb said gloomily. "Let's get out of this town while we're still able."

"And leave a lovely little mystery like this behind us?" said Trent. "No, Mort, we can't let Fate down."

"You're not taking this car?" demanded Crabb.

"Certainly. Why walk when we can ride? Kleinert wouldn't risk using a stolen car."

"I'll bet ten dollars we're back in jail before midnight," Crabb said pessimistically.

"Taken," Trent said. He started the car.

"Why didn't you tell me there was something else to this business?" the inventor said dourly. "What was Kleinert after?"

"I haven't the least idea. That lock-box story was just to get him to search me, so I could reach the light switch. But in case you've forgotten, it's only about seven miles to the German border, and there's bound to be a lot of shenanigans in any border town with a war going on."

"Or any town where you are," said Crabb tartly.

WHEN they reached the Hotel les Bains, Trent drove around on the side street and parked.

"Leave Elsa's gun in here," he told Crabb. "It might be a trifle embarrassing if we were picked up on a concealed weapons charge."

"You don't think the police found out about our stopping here under fake names?" Crabb said morosely.

"No, or Voorst would have mentioned it." Trent led the way into the bar, ordered a dry Martini. "Better break that long abstinence, Mort, and have a cocktail. Life will take on a new glow. Who knows, you might even loosen those facial muscles and find a smile lurking in there, unsuspected all these years."

"You know I don't drink," said Crabb sadly. "Besides, remember my weak stomach. With all I've gone through since I met you, my ulcers have probably come back."

Trent finished his cocktail, glanced at a short, bearded man who had just ordered a vermouth. As they went out the man gulped down his drink and followed.

"We seem to be popular tonight," Trent said in a careless aside to Crabb. "I've an odd feeling I've seen that chap before—but without that foliage on his chin."

"He looks like a Bolshevik to me," muttered Crabb. "You can stay here, if you want to, and get killed sticking your nose into other people's business. I'm going home, even if I have to cable that fathead stepbrother of

mine for money and a passport."

Trent laughed. When they stepped off the elevator at the fourth floor, he handed their room key to Crabb.

"Go ahead. I'll be there in a minute."

"Now what?" Crabb said suspiciously.

"Just an idea about our bearded friend. I'll be back."

The inventor ambled down hall, with a walk like a tired camel plodding across the sands. Trent drew back into a side corridor and waited. In a few moments the bearded man emerged from the service stairs, furtively went toward the room Crabb had entered. Trent tiptoed after him, caught up just as the bearded man stooped to peep through the keyhole.

Breathing hard, the stranger reached toward his hip, and his lifted coat-tail revealed a pistol. Trent's fingers closed on it a fraction of a second before the other man's. The bearded man spun around with an oath.

"I hope you don't mind," said Trent, genially. "I left my artillery downstairs."

"You—you traitor!" said the other man hoarsely. "You won't get away with this, Trent!"

Mortimer Crabb suddenly opened the door, and his long face dropped as he saw the tableau on the doorstep.

"Here we go again," he groaned. "What is it this time?"

"Just an old friend, come to pay a visit," said Trent. He reached out, and the stranger's beard came away in his hand, disclosing an angry, bulldog face. "An atrocious bit of sagebrush, my dear Colonel. Next time try the little costumers on Brevoort Street. Not that I blame you for trying to conceal that visage. It must be a daily shock to look at it in the mirror."

"Silence, you insolent scoundrel!" said the other man furiously. He wheeled to Mortimer Crabb. "Where is it? What have you done with it?"

"Don't look at me," Crabb said gloomily. "I'm just an innocent bystander. I don't even know what you're talking about."

Trent pushed the colonel into the room, closed the door.

"Just for the record, Mort, this un-bearded gentleman happens to be Colonel Leffingwell Potter, our Army G-2 attache at Paris. We once had a trifling difficulty, and I regret to say the colonel lacks a sense of humor."

"Well, you can count me out, whatever's up," said Crabb. "I just phoned the desk. That clerk who speaks English said he'd call the airport and have the ship out and ready to go. I'm going to get a pilot and cross over to—"

"So that's it!" broke in Colonel Potter, harshly. "You traitors are going to sell it over in Germany! Trent, you'll pay for this! G-2 will hound you to the ends of the earth! I'll see to it!"

Trent shook his head admiringly.

"I'll bet you were the toughest

cadet at West Point, Colonel. Now suppose you calm down and explain—"

"Ah!" said Potter, with a sharply indrawn breath. He sprang across the room, pounced on a leather-covered box with a lock and handle. With a frenzied leap, he whirled into the bathroom with the box in his hand. The door banged shut.

"Come back here with that!" Mortimer Crabb said with sudden indignation. He hammered against the locked door. Trent stepped to the window, saw Colonel Potter climbing from the bathroom onto the fire-escape landing.

"Come on, Mort!" he said quickly, and turned to the hall door.

"But he's got my lightning position-calculator," protested the inventor.

"We'll get it back—I think he's mistaken it for something else," said Trent. "We'll catch him down below."

CRABB followed sourly, and they went out to the service stairs. Trent went down two at a time, almost knocked over a startled chef as he plunged into the kitchen on the first floor. With Crabb at his heels, and the Dutch cook howling profane comments on the two Americans, he ran out onto the delivery platform at the rear. Colonel Potter had just reached the ground, with the box tucked under one arm. As he glimpsed Trent he sped, puffing, for the side street.

Trent was gaining on him when a hatless figure stepped abruptly from back of a tree and swung viciously at the colonel. Potter went down, and his assailant snatched up the box, whirled toward the curb. Headlights flashed on, and Trent recognized Kleinert. The Gestapo man was bruised, his coat torn. Before Trent could reach the curb, the Nazi agent sprang into the car and it swept past.



He saw that it was the black sedan, and he recognized Elsa bent over the wheel.

"There goes my calculator!" mourned Mortimer Crabb.

"Follow me!" said Trent. He dashed to the delivery platform, jumped into the front seat of a light truck parked there. The motor roared to life.

"Stop—thieves!" bawled the Dutch chef, as Trent sent the truck charging out into the street.

"Now you've done it," Crabb said unhappily. "He's got our descriptions, and we'll probably get ten years for stealing this thing."

"Hang on," said Trent. He sent the truck around a corner on two wheels, grazed a tram-car. The sedan was racing through the evening traffic,

scattering frightened pedestrians. Trent bore down on the horn, shoved the throttle to the floor. A policeman fiercely blew his whistle. Trent dodged around him, missed a bus by less than a foot. The sedan turned again, away from the downtown section, began to outdistance them. Trent was looking feverishly for another, faster machine to commandeer, when the spies' car swung into the airport road. He followed, and three minutes later braked the truck to turn in through the airport entrance.

Above the rumble of idling motors he heard a shot, then the emergency siren blared furiously. A Dutch airport attendant was struggling to his feet, holding his side. And beyond him a Douglas DC-3 was pivoting away from the line.

"Eric, they've stolen our ship!" moaned Crabb.

Trent looked swiftly to one side, as a Dutch Air Service mechanic ran toward a ship. It was a Koolhoven escort fighter, an F.K. 52 two-seater biplane, and lined up next to it was another escort fighter and three Koolhoven F.K. 58's, single-seater monoplanes, used on border patrol.

The 840 horse-power Bristol Mercury engine of the first escort fighter thundered as its mechanic pulled the prop through. More mechanics were tumbling from an emergency barracks near the airport office, and Trent saw a pilot coming on the run, fastening his helmet.

"Quick, get into that rear pit!" he told Mortimer Crabb.

"Steal a ship?" ejaculated Crabb. "You must be insane!"

Trent grinned. "Maybe. See you later, Mort!"

He raced to the side of the two-seater, jerked the chocks and was into the front pit before the open-mouthed mechanic could stop him. The Dutchman sprang back to block the wheels. Mortimer Crabb suddenly appeared, snaked out a long arm and jerked the mechanic back onto the seat of his pants. The next second Crabb was tumbling into the rear cockpit.

"Good boy, Mort!" Trent was chuckling as he opened the throttle. An automatic rifle flamed, off to the right, and Plexiglas flew from the bulge of the enclosure above Mortimer Crabb's head.

"I knew it!" groaned the inventor. "I'll be killed."

Trent kicked the ship around, and the rifle burst swerved away. A hangar loomed up, directly in their path.

"Look out, you idiot!" bawled Crabb. "We'll hit it!"

Trent backsticked at the last second, and the Koolhoven shot up at a dizzy angle, wheels barely missing the roof. He nosed down swiftly to keep from stalling, dived under the wires of the airport radio antennae. Directly below, pilots and mechanics were falling all over each other getting out of the way. Trent laughed, zoomed after the fleeing DC-3. Moonlight shining through breaks in the clouds caught the dural wings of the

Douglas as it banked toward the German border.

TRENT flung a quick look at the Koolhoven's upper wing. There were two fixed machine-guns in the leading edge, outside the prop arc. He pulled the remote-control charging lever, set the hydraulic gear, and rapped out a warming-up burst. Crabb pounded frantically against Trent's shoulder.

"Stop, you crazy loon! That's my ship—and besides, the girl's in there."

"Relax, Mort," Trent tossed back, "I'm not going to shoot the ship down."

He triggered a blast close to the DC-3's right wing. The big ship twisted hurriedly to the left. He shifted the Koolhoven's nose, sprayed a burst near the other wing, then started to edge in closer. But a stream of tracers from below sent him into a swift chandelle. An F.K. 58 was lancing up on their tail with all the fury its 1080-h.p. Hisso radial would give it. Trent made a lightning estimate, suddenly reversed. The Dutch fighter streaked after them, its four guns blazing. Trent hurtled across in front of the DC-3, twisted into a vertical bank. The single seater's tracers smoked across the path of the Douglas, and the big ship whipped back toward the airport to escape being hit. Trent grinned, flipped a salute toward the Dutch pilot.

"Thanks, *Mynheer*. Now another like that—"

Br-r-r-t-t-t-t-t! Above the roar of the Bristol Mercury, a faint, ominous pounding became audible. The next second a gray German Messerschmitt fighter plunged out of the night. At terrific speed, it charged in at the F.K. 58. Like shadows abruptly come to life, two more gray Messerschmitts whirled into sight. One went after the Dutch single-seater, and the other raced in at the F.K. 52.

A furious blast flamed out at the escort fighter—and on into empty space. Wings screaming, the Koolhoven stood on its tail as Trent savagely jerked the stick. The ship flashed over the top and down in a headlong dive. A gray blur showed beneath, as the first Messerschmitt came rocketing back for another strafe of the Dutch pilot.

"Say your prayers, Fritz!" Trent shouted. His fingers closed on the stick-trigger, and the wing-guns thrashed into action. Two fiery streaks shot in front of the Messerschmitt's nose, raked the Nazi fighter from prop to tail. A puff of flame swirled back from the Messerschmitt's cowl, was fanned instantly into a roaring inferno. The Nazi ship rolled over, went down like a meteor, smoke pluming far behind it.

The Dutch pilot stared across the flame-lit sky at Trent, pointed helplessly to his motor as his ship nosed down. The two Messerschmitt pilots plunged in fiercely at the escort fighter, ignoring the crippled single-seater. A jagged hole appeared in the

madapolam fabric of Trent's right upper wing. He jerked the throttle, and the faster Nazi ship overshot.

A sudden clattering roar came from the Koolhoven's rear cockpit. Trent cast a surprised look back. One eye closed, Mortimer Crabb stood hunched behind the spouting tourelle-gun. His lips were moving furiously, and his gloomy face was a picture of wrathful determination.

Trent gave a laugh of pure delight. "Mort, you old war-horse—I knew you had it in you!"

"You tend to your end—I'll handle mine!" roared Crabb.

The two Messerschmitts whirled around behind the slower ship, came in at converging angles. Trent feinted a hasty dive, yanked the stick back and banked tightly. The fighter on the right skidded sharply to avoid collision. Crabb's long hands swung the rear-pit gun, and the tracers swept over the Messerschmitt's tilted left wing. A zigzag crack ran through the wing as Crabb's bullets gouged it, then the outer section broke off. The Messerschmitt went into a crazy spin, and the remaining Nazi fighter fled before Trent's guns could range it.

Crabb let go the gun, stared incredulously over the side.

"What have I done?" he groaned.

"Unless my eyes deceive me, you've shot the pants off of one of the swastika boys," said Trent. "Don't let it worry you. He'll probably bail out."

"This is terrible," mourned Crabb. "I never shot at anybody before in my life."

"A neat job, for a beginner," said Trent. "Keep your eyes open. You may have to pick off a few more before we're through."

"You mean you're going on, after all *this*?" Crabb said in a hollow voice.

"Why not?" said Trent. "It's a beautiful night—and anyway, we're already across the border."

CHAPTER III

MYSTERY CHATEAU

THE TWO-SEATER droned eastward, while Trent searched the vague shadows. The DC-3 had turned toward the border after first being driven back, and he had managed to note its general course during the brief fight. After a few moments he caught the gleam of moonlight on dural wings and banked to follow. Mortimer Crabb was fumbling around in the rear seat.

"What's the trouble, Mort?" said Trent. "Drop your chewing gum in the excitement?"

"I was looking for a parachute," Crabb said gloomily. "I don't suppose there's any chance of persuading you to land me in Holland before you commit suicide?"

"We'd better let things cool off at Arnheim," said Trent. "Surely you aren't giving up a hundred thousand dollar ship without a battle? To say nothing of the calculator."

"The ship's insured," Crabb said morosely. "One week with you and I had the policy changed to cover everything but an act of God. And my life's worth more than that calculator."

"Somebody doesn't seem to think so," observed Trent. "Hello, our friends appear to be landing!"

He closed the throttle, held the Koolhoven just above stalling speed as he nosed down. Two or three miles eastward a light showed momentarily on the ground, flashed out a signal. Trent quickly switched off the motor. A moment later a searchlight flickered up, probed around the sky. He ruddered away, and the beam slanted across the border, picked up two or three Dutch fighters circling near Arnheim.

The DC-3's landing lights went on, and as the ship banked Trent saw a chateau half-hidden in trees, and a cleared area stretching nearby. Then the DC-3 leveled off, and the lights went out. A second later the searchlight went dark.

"Don't tell me you're fool enough to land down there," Crabb said unhappily.

"Just a little reconnoitering," replied Trent. "We can take off if things get too warm."

"We'll probably crack up, landing," Crabb said in a pessimistic voice.

"Why, Mort, you wound me to the heart," chuckled Trent. "This is child's play. You should have been with me one night in Ethiopia. It was raining so hard I had to use a periscope, and I landed smack against the wall of a native chief's harem. He thought I was trying to kidnap his favorite wife, and I had quite a time."

"It'll be a brick wall this time, and we'll be standing in front of it, blindfolded," the inventor predicted dimly.

"They go in for the axe in Germany," laughed Trent. "Well, brace yourself. Here we go!"

"Take it easy, Eric," pleaded Crabb. "You know my weak stomach. That fight back there almost finished me."

Trent slid the enclosure open, leaned out, brought the two-seater down at bare flying speed. He skimmed over a dark spot where a tree dimly loomed, set the ship down in a pancake stall. It rolled less than a hundred feet.

"Dumb luck," mumbled Crabb.

"The point is, we're here," said Trent. "While we're waiting to make sure nobody heard us, we might check up a point or two. How many people have seen that lightning calculator of yours since we flew the Atlantic?"

"Nobody but that squint-eyed Frenchman you tried to sell it to," growled the inventor. "I'd have stored it with the other things in Paris—if we hadn't left so suddenly after that row with the gendarmes."

"Count out Squint-Eye," said Trent. "His interest didn't go higher than five hundred francs."

"Wait," broke in Crabb suddenly, "There *was* a fellow who acted peculiar when the customs man at Amster-

dam made me open up the case. I thought he was just some nosey foreigner."

"Ah!" said Trent. "And that night I got the phone call—which I'm pretty sure was from dear little Elsa. Light begins to dawn. Your nosey chap was a Nazi spy. He tipped off Kleinert. Kleinert had Elsa phone me, knowing my romantic soul would bring me trekking along to see what was up. He arranged that trap at the Rathskeller. Object—to get that box. But why? I'm not belittling your brain-child, but the Nazis would hardly go to such lengths for an aviation gadget. And there's Colonel Potter, too. Mort, it's obvious there's a case of mistaken identity somewhere."

"So what?" said Crabb in a gloomy voice.

"So we do a little quiet checking up—around that chateau over there." And Trent climbed out, after setting switch and throttle for a hasty start. The inventor followed, groaning.

"If my stomach felt less wobbly, I'd start this ship and head back for Holland. I'd probably break my neck trying to land, but that's better than getting my head chopped off."

"I still have Colonel Potter's pistol, in case we find the going rough," said Trent. "Keep close behind me."

THEY MADE their way carefully along the edge of the woods, listening now and then for outposts. They were within two hundred yards of the chateau—in front of which the DC-3 and the third Messerschmitt fighter were visible in the wan moonlight—when they heard an approaching car. Trent pushed Crabb back of a tree as two slits of light appeared. The slits were from headlights almost covered with black tape. A sentry with a rifle hurried to intercept the car. Trent and Crabb drew farther behind the trees as the machine stopped.

"Halt. Wer da?" barked the sentry.

"I am *Leutnant-Oberst* Brahnner," said a cold voice. "Examine these credentials—quickly!"

The sentry focussed a faint bluish light on the German's papers. "*Gestapo!*" he muttered, and jerked to rigid attention.

"Herr Kleinert has landed?" said Brahnner.

"Ja, *Herr Oberst*. In the big plane. But two of the fighters were shot down by Dutch."

"Unfortunate," said the Gestapo officer. "Now listen closely. You will return to the chateau without mentioning our arrival. As soon as you can get Major Wiessen's attention quietly, or find him alone, tell him a Lieutenant - Colonel Brahnner, of Army Gestapo Section, is here and to come at once. Be sure *Herr Kleinert* does not overhear or see you, even if it takes you some little time."

"Ja, *Herr Oberst*." The sentry clicked his heels, spun around. Trent peered around a tree, saw another man in the front seat beside the Gestapo officer.

"Why not arrest Kleinert at once?"

said Brahnner's companion. "It's clear that he's trying to steal the money given him for this mission, since I myself secured the stolen American bomb-sight."

"All except the part your *verdammte* Spaniard held out on you," Brahnner said in a curt voice. "But we will go into that later and pay him the agreed amount, if necessary, to obtain the missing piece. The question of the moment is what Kleinert is up to. His code, evidently sent just after he crossed the border, said he had the bomb-sight and had paid the full amount. He must have something he intends to pass off as the stolen device—unless the Spaniard tricked you."

"Impossible!" said the other man. "I myself made the contact in Amsterdam. The bomb-sight was intact,



then. This Pedro Rodrigo agreed to let me fly him to the chateau for final settlement. He must have hidden the missing part somewhere in Amsterdam during the few minutes when we were separated. I opened the case before we took off, but the sight is complicated, and I did not notice any difference then."

"Well, *Herr Lemler*, we shall soon know. You left your bomb-sight and the Spaniard in this man Wiessen's care. I checked Wiessen's record and he seems to be all right. Now we will see what Kleinert has to match against your evidence. Whichever of you is . . . er . . . mistaken, the Gestapo will handle accordingly."

There was a heavy silence. Trent warily stepped back, put his lips to Crabb's ear.

"Fate's dealt us a royal flush. Come on!"

Crabb clutched wild at his arm, but Trent was already tiptoeing toward the rear of the car. Brahnner sat at the wheel, fingers drumming restlessly on the spokes. Trent stole closer, his gun covered with his hand to prevent any gleam in the moonlight. Brahnner jerked around suddenly. In a twinkling, Trent had the pistol against the Gestapo man's head.

"Not a sound, *Herr Oberst*, if you please. And as for you, *Herr Lemler*, my companion has you covered on the other side."

"Who are you?" snarled Brahnner. "The identity's unimportant," said Trent. "Climb out, both of you—and I'll take that gun, if you don't mind."

BRAHNNER cursed under his breath, lifted the hand he had tried to thrust inside his uniform tunic. Lemler, a smaller, stockier man, was dressed in civilian clothes. He had raised his hands, but as he saw that

Crabb was unarmed he ducked suddenly to one side. Trent stuck out his foot, and Lemler sprawled headlong. With an oath, the young Nazi sprang up—and ran squarely into one of Crabb's piston-like fists. There was a thud as he hit the side of the car, and he slumped to the ground with a moan.

"Excellent, Mort," Trent said softly. "Truss him up with his belt, and gag him before he gets his wind back."

"You *Teufel*, you'll die for this!" fumed Brahnner.

"What an unpleasant future you depict," said Trent. "Now let me look in the crystal. I see a beautiful bump on the top of that square head of yours—if you aren't out of that uniform in ten seconds!"

Hastily, the Gestapo officer started to disrobe. Trent cast a swift look toward the chateau, loosened his tie and shirt while covering the German. By the time Brahnner was out of his tunic and uniform slacks, Trent was also nearly undressed, and Mortimer Crabb had finished with Lemler.

"Cover our long-flanneled Adonis here," said Trent, "while I make a quick change. His outfit isn't exactly a smart fit for me, but I can't be particular."

"Eric, you're stark, raving crazy!" groaned Crabb. "Kleinert will know you—you won't have a chance."

"There's no time to give you the details," said Trent, "but it seems that our friend Kleinert isn't exactly in good repute. We'll play along and see where we land."

"We?" said Crabb in a horrified voice. "But I don't know a word of German."

"I'll take care of that. Take our guest's shirt and belt and tie, and see if you can make him snug alongside his little pal."

In another minute Brahnner was securely bound and gagged. Trent finished buttoning the *Oberst's* tunic, swung the cape over his shoulders, and put on Brahnner's cap. He and Crabb carried the two Germans back under the trees, placed them well apart. Trent was tightening Brahnner's gag when he heard a door open, and light briefly shone from the side of the chateau.

"Get into the car!" he whispered to Crabb. "I'll tell them your name's Muller. No matter what anybody says to you, don't answer. Just repeat what I say when I look at you and say '*Nein*,' or '*Ja*.'"

"Oh, Lord!" Crabb said despairingly. "A time like this—and you start giving lessons in German."

Trent snatched up his coat, transferred its contents to one of his tunic pockets, tossed the coat into the shadows. He was pacing impatiently up and down beside the car when the sentry approached with a bulky Nazi in field-gray uniform.

"That's all, sentry," Trent said sharply in German, to keep the man from getting too close. "I'll speak with Major Wiessen alone."

The sentry about-faced, strode

back to the chateau. The major halted nervously, staring at Trent through the faint moonlight.

"My credentials," snapped Trent. He brought out Brahnner's *Gestapo* identifications, switched on the shielded headlights. As Wiessen stepped close to the slit of light nearest him, Trent saw that the major's pudgy face was a trifle pale. He followed up the man's evident fear of the secret police.

"Major Wiessen, there is a traitor here!" he said sternly.

Wissen started, almost dropped the credentials. "B-but I don't understand, *Herr Oberst*."

"I refer to *Herr Kleinert*," said Trent, and Wiessen let out a sigh of relief. "There is a matter of two American bomb-sights, instead of one. What do you know about this?"

"Only what has just occurred, *Herr Oberst*," Wiessen said shakily. "I thought it was odd—the agent named Lemler landed here—"

"I know all that," Trent said crisply. "He thought he had tricked the Spaniard—but it seems the reverse. You have the man and the bomb-sight?"

"Yes. But Kleinert insists the other sight is false, that he has the right one. He was very much upset when he heard about the second one. He was for shooting the Spaniard who claims he stole the other bomb-sight—"

"We'll see about that," cut in Trent. He jerked his head toward Mortimer Crabb. "This is *Herr Muller*, one of the *Gestapo's* undercover men. Muller, I think we are safe in assuming Major Wiessen is innocent, *ja*?"

"*Ja*," said Crabb, in a rusty voice.

"Thank you, *Herr Muller*," Wiessen said hastily. He wiped his forehead. "I swear, *Herr Oberst*, I knew nothing—"

"We will go inside," interrupted Trent. "Get two armed men—but not that sentry I sent after you. He acted suspicious, and I intend to check up on him later."

"If you will wait at the side entrance. I shall be there in a few seconds," said Wiessen. He hurried around to the front of the chateau. Mortimer Crabb gave a hollow groan.

"Eric, for the love of Heaven, let's run for it while we've still got our heads."

"And miss the look on Kleinert's face when he sees us?" said Trent. "I'd never forgive myself. Just remember '*nein*' and '*ja*'—and keep this gun of Brahnner's handy."

Major Wiessen quickly reappeared, followed by two husky Nazis. At Trent's gesture, Wiessen cautiously opened the side door.

CHAPTER IV

SECRET FLIGHT SIXTEEN

JUST beyond the portal, a lighted central room could be seen. Kleinert's voice came savagely from somewhere in the room.

"Never mind what *Fraulein Elsa* says. Keep her locked in that room,

and bring that lying Spaniard in here."

Trent pushed by the two Nazi soldiers, motioned for them to follow. As he reached the entrance to the room, he saw Kleinert and a small group of Germans, some in uniform, some in civilian clothes. The spy was glaring at a lieutenant.

"And don't forget, I'm the senior *Gestapo* agent here."

The young *Leutnant* mumbled something, then got to his feet quickly as he saw Trent's uniformed figure and the men behind him. The rest of the group jumped up, and Kleinert looked around hastily. A look of utter amazement came into his eyes as he saw Trent and Crabb. For a moment he stood paralyzed, the blood receding from his bruised face.

A faint, mocking gleam came into Trent's eyes, then he coolly lifted his pistol.

"*Herr Kleinert*, in the name of the German *Reichsfuehrer*, I arrest you for high treason!"

The two Nazi soldiers sprang forward and seized the astounded agent. Kleinert lunged away from them frantically and faced Wiessen.

"Have you gone crazy?" he screamed. "Wiessen, I tell you these men have tricked you! Let me go, you fools!"

"Keep him quiet," Trent said calmly. "If he starts yelling again, give him a touch of the bayonet."

"Wiessen, listen to me!" Kleinert cried wildly. "I—I" He broke off with a howl as one of the soldiers gave him a smart jab between the shoulder-blades. Trent looked around at the staring Germans.

"I am sorry, gentlemen, but it will be necessary for you to remain here while I conduct a brief investigation. Major Wiessen, have the Spaniard brought in here."

"Yes, *Herr Oberst*," Wiessen gestured to one of the men, and in a few seconds the Nazi returned with the prisoner. Rodrigo was a slight, sallow-



faced man, with a crafty face just now a trifle sullen. He glared at Kleinert, then as he saw the Nazis holding the *Gestapo* agent he looked relieved.

"I brought the bomb-sight he claims is the right one, *Herr Oberst*," said the German who had gone for Rodrigo. He opened a leather-covered case similar to the one containing Crabb's position calculator. Trent hid his real feelings behind a satisfied look as he saw the inscription, "*Mark V, Model XII, U. S. Army Air Corps Bomb Sight*."

"Have no fear, my colonel," Rodrigo said in broken German. "It is the famous American bomb sight—twice as accurate as any other in the world. I regret it is not all here. To protect myself, I removed the curved

linkage-bar on which the speed-altitude equation ratio is determined. Without that mathematical equation, the sight is useless."

"Where is it? And what is the price?" Trent said coldly.

"It is safe in Amsterdam," Rodrigo said with a smirk. "When I am safe there, also, I will deliver it to anyone you designate—when I have been paid the agreed sum of five hundred thousand marks."

"Search *Herr Kleinert*," Trent ordered Wiessen. "He was given the money to negotiate this deal."

"I find only a few hundred guilders," reported Wiessen, after searching the fuming secret agent. "He told me, *Herr Oberst*, that he had paid the entire amount for this other bomb-sight."

Trent looked at Mortimer Crabb. The inventor was tightly gripping Brahnner's automatic and swallowing convulsively.

"Muller and I have other ideas on that, *ja*?" said Trent.

"*Ja*," Crabb said in a hollow tone. Trent saw two or three of the Nazis look curiously at the gloomy-faced inventor.

"*Herr Muller* was once an official executioner," he said, with a chuckle. "He has used the axe on so many necks his Adam's-apple bobs up and down like a condemned man's whenever an execution is in the offing."

Wissen glanced at Kleinert, shivered. Trent beckoned to the major.

"Question *Fraulein Elsa* privately. Ask her about the five hundred thousand marks."

As Wiessen disappeared, Trent turned to one of the Nazi lieutenants. "Have the motors of the American plane started. *Herr Muller* and I will be flown to Berlin with the prisoner."

The *Leutnant* hurried out. Trent glanced at Kleinert's sweating face. "You see, *mein Freund*, it is unwise to try to trick one's superiors."

Kleinert's mouth opened, but a prick from a bayonet kept him in agonized silence. Trent closed the bomb-sight case, was securing the cover of Crabb's lightning calculator when Wiessen returned.

"She says Kleinert went to see one of our resident-agents named Schule at 93 Ten Eyck Street, in Arnheim," the major reported. "She thinks he must have left the money there on some pretext, probably intending to return and claim it secretly. I am convinced she is innocent."

"Nevertheless, hold her until I send you word from Berlin," said Trent. "We are taking Kleinert—"

THE FRONT DOOR of the chateau opened suddenly, and a Nazi *Unter-offizier* burst in through the entry-hall.

"Your pardon, Major!" he said breathlessly to Wiessen. "But one of the men just found a Dutch plane, a Koolhoven two-seater, down near the end of the clearing!"

Trent broke in before Wiessen could answer. "Probably the pilots were forced down. Start a search—"

they'll be making for the border."

"But, *Herr Oberst*, the soldier says the plane was undamaged," exclaimed the *Unter-offizier*. He wheeled before Trent could stop him, and a sentry hurried in from the hall. Trent swore under his breath.

It was the man who had talked with Brahnner.

"Ja, the plane was not—" the sentry broke off, jerked his rifle up with a startled exclamation. "Major Wiessen, this is not the man who sent me to get you!"

"I told you they'd tricked you!" Kleinert burst out fiercely. "Seize them, you idiots! They're spies!"

A look of horrified understanding dawned on Wiessen's face.

"Arrest them!" he flung at the *Unter-offizier* and the sentry. "*Herr Kleinert*, I was not to blame—I had no way of knowing—"

"I'll attend to you later!" rasped Kleinert. There was a new, frightened look in his eyes, and Trent knew he had guessed at least part of the truth about the real Brahnner's visit. "Take all but these four of the guard detail and start searching across the field for those Dutch pilots. This lying swine was right on one point—they're undoubtedly trying to reach the border."

Wiessen barked an order, and all but the four enlisted men dashed out. The major turned back at the door, uncertainly.

"There is something I don't understand. If the real *Gestapo* men were intercepted by these two, then they must be—"

"I'll do the thinking here!" snarled Kleinert. "You've botched everything. I was trying to trick Rodrigo—Lemler and I were working together, with Schule. Now I'll have to take Rodrigo and recover that missing part. If you've caused me to fail, your head will be the penalty."

"Play your hunch, Wiessen!" Trent now said swiftly. "You'll find the—"

Kleinert whirled, struck him furiously.

"Do as you're told!" he shouted at Wiessen. The major hastily went out. Kleinert spun around, struck Trent another savage blow, as two men held him helpless.

"You damned coward!" grated Mortimer Crabb.

"Never mind, Mort," Trent interrupted. Blood was trickling from his lips, but his smile mocked Kleinert. "There's a lot of rat in him; it has to come out some way."

"You'll stop smiling before I'm through with you!" raged Kleinert. He snatched the pistol one Nazi had taken from Trent, then looked tensely at the clock as the engines of the DC-3 rumbled into life.

"Get *Fraulein Elsa*," he flung at one of the two Nazis who had guarded him. "And you—tie that Spaniard's hands behind him. Quick, before I even the score for that bayonet work!"

The two men sprang to obey. Kleinert swung the pistol toward Mortimer Crabb. The inventor glared

back with a gloomy defiance.

"All right, get it over with, you butcher."

"Quick and easy, *hein?*" snarled Kleinert. "You will see."

He put his gun under his coat, un-snapped the bayonet from the sentry's rifle, and stepped toward Trent. Crabb closed his eyes, and the *Unter-offizier* shivered. But *Fraulein Elsa's* appearance at the doorway halted Kleinert's half-raised hand.

The girl had cringed back before Kleinert's murderous glare.

"Take her out and put her in the big ship," the spy said thickly. "If she tries to scream, choke her. Stand guard over her until I get there."

There was dread in Elsa's eyes, but she offered no resistance as she was led out. Kleinert jerked his head at the man guarding the Spaniard.

"Take him to the side entrance. I'll be there in a second."

HE HURRIEDLY opened a large **I** drawer in a flat-topped desk, laid the bayonet down while he stuffed two or three papers into his pocket. The two remaining Nazis exchanged uneasy glances, but their guns did not swerve away from the prisoners.

"The complete double-cross, eh, Kleinert?" said Trent. "Too bad it's wasted. Unfortunately, Pedro *doesn't* have the linkage bar."

Kleinert wheeled furiously. "No smart trick will save you now, *Herr Trent!*"

"I'm aware of that," Trent said coolly. "But I'll have the last laugh, even when you finish me off. Pedro sold that linkage bar to the Soviet—plus the full plans for the rest of the bomb-sight. He tried to collect twice by selling the other part to Germany. So your little scheme to get paid double will blow right up in your face."

"I had no such scheme," retorted Kleinert, with a darting look at the two Nazis. "As for Rodrigo, you're bluffing."

"Am I?" said Trent. "Ask him why he met Sergius Kivosilov in the Hotel Metropole, Rotterdam, three nights ago."

"Get that Spaniard back in here!" Kleinert rasped at the *Unter-offizier*. He drew the gun he had holstered, flipped it toward Trent. "Get over here. If you're lying, you won't live two seconds."

Trent stepped beside the desk. For a fraction of a second his eyes rested on the bayonet lying there. Kleinert saw the look.

"Raise your hands!" he snarled.

Trent's hands started up, then with incredible swiftness he caught the edge of the desk and hurled himself down behind it. A shot blazed through the collar of his cape. The next second the desk went crashing onto its side, hurling Kleinert off his feet. The bayonet clattered to the floor. Trent snatched it up by the tip of the blade.

As he whirled, Crabb's guard frantically leveled his rifle. There was a swish, a flash of steel, and the German's right arm thudded against the

wall, with the bayonet through his sleeve. Mortimer Crabb dived after the fallen rifle. Kleinert jumped around one corner of the desk, but before he could fire the front door of the chateau was flung violently open. Brahnner and Lemler, still half-clad, burst into the hall, with Major Wiessen and a Nazi pilot at their heels.

"Stop that man Kleinert!" cried Brahnner. "He is a member of Secret Flight Sixteen!"

A panic-stricken look flashed into Kleinert's face. Two shots roared from his gun, and both Brahnner and Lemler toppled to the floor. Kleinert then jumped up, snatched the bomb-sight case, and ran madly for the side entrance. Trent had jerked Mortimer Crabb down back of the desk as the front door flew open. As Wiessen dashed back outside with the pilot behind him, Trent sprang to his feet.

Just as he and Crabb emerged from the front doorway there was a crash of pistol shots at the side of the chateau. Trent ran for the DC-3, Crabb close behind. They were within fifty feet of some boxes which had been lined up to serve as a gangway when a Nazi with a light machine gun appeared near the tail of the ship.

Trent leaped in just as the man took aim. He flung himself at the German, feet first, like a runner sliding for a base. Raising one foot, he slammed his heel against the man's knee-cap. With a scream, the gunner went over backward. Trent snatched up the machine gun, dashed for the ship.

Fraulein Elsa suddenly appeared in the cabin doorway, struggling with the Nazi assigned to guard her. As the German saw Trent and the gun, he released the girl, jumped frenziedly to the ground, and fled.

Trent leaped up to the cabin, thrust the gun to Crabb as the inventor scrambled in, with his position-calculator jammed under one arm. Elsa made a desperate attempt to get past Trent, but he hastily closed the door.

"Sorry, *Fraulein*—there's no time for that. Mort, knock out a window and blast a few shots to keep them away till we're off."

He raced to the cockpit, threw himself down at the controls. The motors revved up thunderously, and the DC-3 began to roll. Tracers sparkled out from one side, ricocheted like fantastic fireworks as they hit the side of the ship. Trent rammed the throttles full on.

A car was speeding along the side of the clearing, with guns blazing at it from back at the chateau. He saw the machine whirl up beside the Koolhoven and stop. Somewhere near the chateau, a searchlight went on, and he saw mechanics starting the lone Messerschmitt as the beam angled past it toward the Koolhoven.

Trent retracted the landing-gear, banked steeply toward the Dutch border. The searchlight flashed across his wings. He looked back into the cabin, saw Elsa huddled at a window, staring toward the Nazi base. Morti-

mer Crabb's angular figure was hunched over the machine gun, with the barrel projecting through a broken window. The searchlight shifted abruptly. Trent switched on the radio, hurriedly tried several wave-lengths. A harsh German voice grated into his earphones.

"*Leutnant Schneider — not the American ship! Force down the two-seater!*"

Somewhere back in the vague moonlight, tracers flamed across the sky.

"Goodbye, Mr. Kleinert," said Trent. A minute passed, and he could see the lights of Arnheim begin to take shape. But suddenly Crabb gave a shout of alarm.

"Eric! Look out—there's a ship on our tail!"

TRACERS SMOKED and blazed past the left wing as Trent swerved. He shoved the controls forward, dived the big Douglas across the border. The tracers came again, angling in from the right. He heard Crabb's machine-gun chatter fiercely. Jerking off the headphones, he leveled out at five hundred feet, then ran back into the cabin.

"Take the controls, Mort! Keep S-ing her, but head for Arnheim!"

"It's no use," moaned Crabb. "He's got us—he dodges before I can nail him."

"Never mind, take the controls," cried Trent. He seized the machine gun. A burst from the Koolhoven's guns tore through the top of the cabin as Crabb loped forward to the cockpit. Trent hastily drew the girl to one side.

"Roll under the lounge, *Fraulein*. We can't risk that pretty head of yours."

The Douglas went into a shaky turn, and the Koolhoven shot by. Trent crashed the gun-barrel through two more windows. As the two-seater darted in again, he sent a lightning burst through a starboard window, then leaped across to the other side with the rifle. The Koolhoven came whirling in on the left, with a swift change of direction. Trent crouched, without firing, as the first burst flamed toward the tail. Coolly, he aimed the weapon between the spurring wing-guns of the two-seater. Shattering glass and bits of dural were flying from the rear of the cabin as he pressed the trigger.

As his burst hit the Koolhoven's nose pitched down, and its guns abruptly went dark. With its prop shot off, the two-seater went into a hasty turn. Trent dropped his gun and ran forward. Kleinert was now floundering the Koolhoven in a vain attempt to stretch his glide back to the border. Trent laughed as he saw the spy desperately turn to cross the Rhine.

"I'll give you ten to one, Mort, he doesn't make it. Oh, oh—there he goes!"

The two-seater fell off from a sudden stall, struck the river with a splash. Lights from steamers and

from a pier angled across the water and focussed on the wreck.

"Take this wheel before we do the same thing," said Crabb hoarsely. "If we keep her wide open, maybe we can get to Belgium before they catch us."

"There's a little unfinished business," said Trent. "Let's see—we can't risk the airport. Go back and tell little Elsa to get in a seat and fasten her belt. She's under the lounge."

Crabb groaned, climbed down. Trent throttled the motors, lowered the landing-gear, and put the Douglas into a fast forward slip. The plane howled across the center of Arnheim, leveled out near the steeple of the Groot Kerk of St. Eusibius, and settled, flaps down, into a long municipal garden beyond the church. With



a crashing of trellises, the DC-3 charged to the end of the garden, where Trent braked it to a stop with one prop almost nicking a small fountain. The American cut off the motors and hurried aft, discarding the German cap.

"Mort, you stay with the ship. When the police come, tell them you've a message for Burgomaster Voorst. But don't tell him a thing—except that I'll be there inside of an hour."

"You lunatic — we're in deep enough now," Crabb said unhappily. "If we make a clean breast—"

"Don't tell him a thing!" Trent picked up the calculator-case, turned to the girl. "Come, *Fraulein*, we'll have to hurry."

The girl stared, then, followed him to the door. He jumped to the ground, caught her as she swung down. He grasped her arm, and they ran across the disheveled garden to the nearest street. When they stopped, in semi-gloom in the middle of a block, startled Arnheimers were already scurrying toward the stranded DC-3. The girl looked up into Trent's face.

"What are you going to do with me?" she whispered.

Trent sighed. "Much as I hate it, *Fraulein*, I'm afraid I must say goodbye to you. I'd looked forward to a pleasant evening with you in a cozy cocktail bar or somewhere out in the moonlight—"

"You mean you're letting me escape?" she said, incredulously. "You won't turn me over to the Dutch police?"

Trent laughed. "Frankly, I don't approve of their jails. And besides, this isn't my war—now that Germany's lost the American bomb-sight. But if I were you, I'd go into some other more innocent business. Bullets might mar your really-pretty face."

"You—you're very kind," she said huskily. "I won't forget you."

Trent bent over, whispered in her

ear: "*Auf Wiedersehen*, little Elsa . . . perhaps some day we'll meet again."

Then he turned and walked swiftly away toward the shrouding gloom of the old Groot Kerk.

* * * *

THE CLOCK on the wall of the burgomaster's office showed five minutes to eleven. Mortimer Crabb sat gloomily silent before the burgomaster's desk, as he had sat for almost an hour. Back of him stood Voorst's office sergeant, and pacing savagely back and forth nearby was Colonel Leffingwell Potter of G-2. Burgomaster Voorst wiped his plump, perspiring face for the hundredth time, glowered at Crabb.

"*Mynheer*, I give you one last chance. It is obvious that your friend—" Voorst stopped abruptly to answer the phone. After a moment he hung up, muttering a Dutch oath under his breath.

"Send out an alarm for a missing ambulance," he told the sergeant. "The men in that wrecked plane were brought ashore nearly drowned, and some one called an ambulance. But nothing's been seen of it since it drove away from the river. Now, *Mynheer* Crabb, you'd better tell what you know. It's obvious Trent has deserted you."

"Always mistrust the obvious, my dear Burgomaster," said an amiable voice. Voorst leaped to his feet in blank amazement. There in the anteroom doorway stood Eric Trent, a neat Van Dyke beard on his chin, his dark eyes twinkling behind gold-rimmed glasses. He wore a Dutch military overcoat, and a general's gilt-braided cap.

"Oh, Lord!" groaned Mortimer Crabb.

"You contemptible traitor!" shouted Colonel Potter. "What have you—"

"Keep still!" howled Voorst. "Sergeant, add impersonation of a Dutch officer to the other charges."

"This reception really overwhelms me," said Trent. "But don't forget the dangers of false arrest, *Mynheer* Burgomaster."

"We've got you this time," snapped Voorst. "You're charged with espionage, assault, theft of a truck, violating five traffic rules, refusing to halt at police order, theft of a military plane, and murderous assault of the unidentified man you left with that insolent note."

"Quite a list," said Trent. "But you'd better add breaking and entering of the costumer's shop on Breevoort Street. I didn't have time to phone the proprietor."

Voorst plumped back into his chair, speechless. Trent laughed.

"Naturally I've a good explanation. It goes back to Colonel Potter and his stolen bomb-sight. Never mind glaring, Colonel. Anyway, a chap named Pedro Rodrigo is your man. He made a deal with a Nazi, but another agent mistook one of Crabb's inventions for the bomb-sight.

You people evidently found the Germans were shadowing us, and

came to the same conclusion. You stole Crabb's avigation plotting device, and a spy named Kleinert who's an agent for an insidious independent spy group called Secret Flight Sixteen, snatched it thinking it was the bomb-sight. We chased him to the airport, borrowed a plane to try to recover our stolen ship, and after a trifling misadventure across the border recovered the Douglas and returned. We had to shoot down that Koolhoven in self-defense. The chap in the trash-barrel was Heintz, one of the spies. A little third-degree will probably loosen his tongue."

Potter sneered. "You're slipping, Trent. A child could think up a better lie."

"Take them both below," ordered the burgomaster. "We'll finish this investigation when they're safely behind bars."

Mortimer Crabb looked gloomily at Trent as the group entered the elevator. Trent grinned. "Don't worry, Mort. I expected this."

"When they emerged near the detention cells, a homely little corporal looked eagerly at Trent. "Now, *Mynheer*?" he exclaimed.

"Now," said Trent, and the corporal sprang to rear-courtyard door.

"What the devil?" spluttered Voorst and Potter in unison, both of whom had decided to put Trent safely in a cell.

"Just a little surprise," Trent said nonchalantly.

THE CORPORAL flung open the door and an ambulance was revealed. At Trent's nod, the driver and an interne swung the doors open. Strapped to the stretchers inside were the shaken-up Kleinert and Rodrigo, eyes glaring, their lips taped shut.

"Colonel Potter, there's a box that may interest you," said Trent. The Army man seized a dripping leather case and lifted the cover.

"The bomb-sight!" he cried. Then his jaw dropped. "But the ratio-bar—it's gone."

"Rodrigo told me where he hid it, after a bit of persuasion," Trent said pleasantly. "If you let him off lightly, he'll also tell you."

"Thank the Lord!" said Potter. "Trent, I misjudged you terribly. If there's anything—"

"You might tell the Burgomaster I've done him a service," chuckled Trent. "It looks bad to have German agents with a stolen American bomb-sight operating on Dutch soil, while the police persecute patriotic Americans who try to recover it."

Voorst managed a ghastly smile. "A—a slight misunderstanding, *Mynheer* Trent. Forget the charges."

"Thanks," said Trent. "Sorry about your gardens. I'll be glad to pay for the damage after we haul the ship out. But you might get that costumer out of bed for me—I've a German tunic under here, and it might become embarrassing. Also, you can explain about these various borrowed items."

"Of course," Voorst said hastily.

He looked down at the prisoners. "There was another spy—a girl, was there not?"

"Yes, brown-haired, black eyes, a bit on the scrawny side," said Trent. "Had a mole on her nose."

He grinned down at Kleinert, gave him a mock salute. "Come on, Mort. Good-night, gentlemen—it's been a pleasant evening."

With the astonished ambulance men staring after him, he removed the Van Dyke beard and glasses, sauntered out to the street. As Crabb caught up with him, Trent took out a wallet, handed him a huge roll of bills. The inventor's jaw dropped.

"I dropped in at *Herr Schule's*," said Trent. "Brahmner's *Gestapo* card did the trick. He thought I was car-

rying on for Kleinert."

"You stole that spy-money?" Crabb said hoarsely.

"I simply sold your calculator for you," said Trent. "And it's probably an excellent device—for peacetime commercial flying. Anyhow, was it my fault if Schule took it for the bomb-sight in the dark? By now he's half-way to the border with it. By the way, you owe me ten dollars—for we're not in jail."

Mortimer Crabb looked at the roll of bills, and something almost like a smile came into his mournful face. Then he gazed up at the clock in the Groot Kerk steeple and shook his head pessimistically.

"We've still three minutes to land in jail. I might collect even yet."

Youth Air Movement News

(Continued from page 28)

home fires. . . . The cables of Britain's balloon barrage have already killed six men, four in a naval plane and two in a civil job. But no enemy airmen have yet been trapped in the wires. . . . Discovery of a paint to make airplanes invisible beyond 100 feet is claimed by Max Gardner, a South Carolina chemist, according to the Spartanburg *Herald-Journal*. Gardner says he tried it successfully, so War Department officials are looking into the matter. . . . The NYA wishes to correct the impression that it trains aero mechanics. Actually, it is pointed out, the lads simply get basic workshop experience which, with the addition of further training, may lead them to such employment. . . . At this writing, eight months

have passed without a single fatality on a domestic airline. But we still think passenger planes should carry some type of "life savers of the air."

. . . Piper Aircraft made a total of 231 Cubs in the month of October, which is a new mass production record. The firm's August turn-out of 215 was the best previous mark. . . . A full-size airplane (non-flying) made out of more than 5,000 hand-made cigars was recently exhibited at the Ninth Annual Cigar Show held in Tampa, Fla. Which, we suppose, is also some kind of a record. . . . And finally the Air Safety Board tells us that the cause of most sky accidents is still Old Man Stall-And-Spin. So if you're taking training, don't ever let him catch you napping.

Death Hurtles North

(Continued from page 32)

he hoiked her clear of the swinging beam of Montauk Light. The pontoons now eased into their wells and the Black Bullet picked up speed as the young ballistics expert opened the cut-outs of the mufflers.

"I only *hope* that guy thinks we still have the *old* Bullet," he muttered.

THEY RAMMED ON, mile after mile, finally picking up Nantucket. They maintained a north-easterly course, listening in meanwhile for weather reports. As things stood now, they appeared lucky; for the weather would probably hold out all the way. Still, since no Eastern Canada weather data were available owing to the war ban on reports, they would have to take a chance on what was farther ahead.

Just north of Cape Cod they ran into trouble.

All the way up, Barney had been growling about flying a plane carrying British markings. He felt safer with one carrying none at all, as they had done on previous adventures. But this shock came quickly. A blade of silver flashed up from somewhere below. Two ear-splitting shots rang out

and slapped yellow yolks against the night sky. Then another light came up and parried and fenced with the first.

BR-R-R-ROOM! BR-R-ONG!

"You know what that means, don't you?" the Mick grumbled, as he picked himself up after the first hoik and twist.

"Sure. They want us to go down, write our name in a book, turn our pockets inside out, and take a bath before they ship us to Leavenworth. Nice chaps, those Coast Defense men!"

BR-R-R-ONG!

The sword blades of light picked them up again, brought out more details of their markings and camouflage. And shrapnel whanged across their course. Keen had to fight the ship to bounce right side up off the concussion barrage.

"Here's the Coast Guard, too!" wailed the Mick.

Keen had seen a big Hall flying boat cut toward them from the darkness of the north. From its front turret came a slashing burst of fire. It was purposely aimed well ahead as a warning signal.

"They're flashing a lamp, too," the Mick yelled. "They want us to go down."

"Tell 'em we're too busy. We have a date to go hunting. Tell 'em anything," Keen said.

The Bullet was now put through a mad series of maneuvers. Keen threw the two-engined fighter all over the sky. The big Hall patrol boat continued to try to intercept them. It had gone to work with every gun aboard.

Barney ripped out his 50-caliber Browning and started to draw a bead. But Keen quickly ordered him to lay off.

"I know, Boss—but these guys are shooting at us!"

"They have every right to. And you can't shoot Americans down! Shut up and hide behind an ammo box."

Keen gave the Bullet all she had and they eventually raced into the clear. But the searchlights still hung onto their last blaze of candlepower. The Ack-Ack guns still horsed and spat, too. Service gunners, delighted to get a shot at something, splashed all they could ram into the breach. But somehow Keen evaded them by sideslipping, stalling, and finally plummeting into a mad dive which served to elude the sword blades.

Then he eased out at about 1,500 and took in a deep breath.

"You all right?" he yelled back at the Mick.

"No."

"No? Well, what's up?"

"Everything. My feelings are hurt most. I could have scared the deuce out of those guys and chased them home. They might have been decorated, too. But you hold me off—and what's more we're still flying a truck with Limey markings on it. I'll get even with you by singing."

"Not *that!*" yelled Keen holding up his hands. But a discordant warbling came from aft regardless—

*Bold Robert Emmet,
The darlin' of Erin.
Bold Robert Emmet,
Who died with a smile.
Farewell companions,
Both loyal and daring,
As an hero I've lived
And an hero I'll die!*

The Mick bawled the old ballad against the bellow of the engines until tears came to his eyes. Keen still had his hands clapped to his ears. "Don't you know anything more cheerful?" he yelled.

"Sure there's some more," announced the Mick throwing his head back—

*Hung, drawn, and quartered;
That was my sentence.
But I will soon show them
No coward am I.*

"Beautiful!" cracked Keen, turning around to reach for a convenient hammer. "I'll bet your Granny McShane taught you that."

"Sure, an' that she did. And I shudder to think of what she would say if she could see me now aboard a *British* plane—fightin' for England!"

"You're not. We're only trying to save a few American pilots who are being treacherously murdered by a flock of professional gangsters. We're out to save Pebbles, too."

"Ah, ye'll bring up her name just to soft-soap me. An' I tell yer I'd niver come if it wasn't for her," the Mick growled.

Keen wanted to add that that was exactly the reason he was there, but instead he startled the Mick by completing the old Irish ballad—

*My crime was the love of
The land I was born in,
But I'll lay down my life for
My old Emerald Isle!*

"Ye know *Robert Emmet*, too, Boss?" husked the Mick coming forward.

"Sure. My old nurse used to sing it to me. She was English. Came from Yorkshire," he added with a sly smile.

The Mick threw his arms up and covered his head.

"Ye can't trust the English—for anything," he moaned.

"She had to sing *something* to put me to sleep," argued the man up front, grinning at his own reflection in the Kollsman barometer.

A last wailing cry went up from the aft cockpit, then the Mick snuggled down to his own misery.

THE HOURS went on and the miles were eaten up by the whirling teeth of the steel props. They passed over Nova Scotia, raced on for Cabot Strait. Glace Bay swept beneath them, and Keen now took another look over the machine, checked his fuel, and prepared for the long over-water hop of 175 miles to the island of St. Pierre.

There, he knew, they would find an island of about ten square miles which had been a possession of France since 1814. The population, made up of fishermen who haunted the Grand Banks, was negligible. There were a few small schools, a cable station, and a couple of clusters of fishing shacks.

It was in one of these small villages that Marcel Duplessé held forth and accommodated hunting and fishing parties. He had a rambling home built from the timbers of beached vessels. The rooms were equipped with stateroom furniture, shipboard dressers, and the like—all in all very compact and convenient from a masculine point of view. His house lay about four miles from the chief settlement of St. Pierre.

There was nearly an hour to think and plan before reaching the island. Keen pondered on the situation as he brought the Black Bullet up to 8,000 feet for the over-water hop. He was certain, of course, that Whiteface and his gang had a hide-out at Petite Miquelon, which was another small island of the group and which

lay less than ten miles from St. Pierre.

What Whiteface and his devils had there, he had no idea. But it was obvious that if they were shooting down these Lockheeds, they must be using well-armed fighters, possibly high-speed machines carrying hidden guns of extraordinary caliber. To carry out such a plot also required a suitable field or base. They would require supplies and ground service.

Also, if they had Miss Colony a prisoner there, it was most likely that they had a fairly elaborate layout, and Keen suddenly came to the conclusion that they must be faking something to get away with it. Just what they were posing as, he could not know. But he decided to find out as soon as possible.

Instead of heading straight for St. Pierre, he cut northwest for a time to bring himself out on the same course the Lockheeds might take on their way to St. Johns.

He now roused the Mick and told him his plan.

"Okay, but if we see anything this time, no matter what markings it has, I'm gonner take a crack at it," O'Dare muttered belligerently.

"You may have to."

They had hardly said the words when Keen caught the glint of aircraft riding lights. These lights were off to the west and riding high. He tipped Barney off to keep an eye on them, then turned to get below and behind—to follow them in.

"What are they?" the Mick asked.

"Something pretty big—might be Lockheeds. Anything can happen now."

Sure enough, the lights finally turned out to be port and starboard "burners" of three Lockheed Hudson bombers. The Black Bullet had been riding dark, and it was simple for Keen to bring it around unseen behind the bombers and follow them toward the French islands.

"Keep your eyes open," Keen warned Barney.

But there was no need for this tip-off. The Mick had sighted trouble right away.

There was a flash of flame, the dull thud of an explosion, and the splintered blast of a heavy impact—on one of the hurtling Hudsons!

"What hit that guy!" Keen yelled, giving the Black Bullet the gun and zooming upstairs.

"Something heavy! Holy Moses, but that bird got it quick!"

"The right sort of ammunition in the right place does it. Incendiary ammo, I'd say."

"But who done it?"

"Those guys up there beyond. Can't you see them?"

The ill-fated Lockheed came down in a wailing spin. It spluttered bunches of sparks and jagged flame. A curling plume of black, spark-tinged smoke marked its path. There was now another dull roar, and one of its wings ripped away. More flame, more sparks—then a final belch of sheet fire as a fractured wing tank

exploded.

"Wow!" snorted Keen, wrenching at his gun gear. "That's a deuce of a thing!"

"There they are! Three of 'em right above the other Lockheeds!" the Mick yelled, now having spotted the attackers. "Small biplanes—fast devils, too! Single-scatters, ain't they?"

"Looks like it. Let's go!"

WITH everything full-out, the Black Bullet was soon in the middle of the mad mêlée. Two Lockheeds were trying to hold off three small high-speed biplanes. Equipped for ocean flying and not for fighting, the bombers were taking a terrible beating when the Black Bullet slammed into the picture.

Keen first let drive with his 25 mm. cannon, and he flamed one of the bikes on the first burst. The little ship whipped up like a harpooned shark. Then it spluttered flame from its cowling and threw its big radial motor away.

Barney let out a war cry, opened up with his Brownings, and let another attacker have a burst full in the direction of the cockpit.

The little fighter was fast, though, and somehow cleared.

"You're losing your touch," taunted Keen over his shoulder.

"Who wouldn't! I haven't been allowed to shoot at anything for weeks. A guy does lose his touch," argued the Mick trying again.

The little fighter now turned savagely on the Black Bullet, and Keen had to swing away, had to get out of range of its guns.

Barney snapped a new burst across the fighter's nose, made it turn hard. Keen then whipped around and flicked off a fusillade at the second fighter now whanging at the two remaining Lockheeds. His fire spanged into the tail assembly of the single-seater and it flipped hard over on its back, wriggled and twisted, then finally wrenched around into a nose dive and began a wild crazy spin.

"Take it easy on that last guy," cried Keen. "I want to get him alive—if possible."

"Why don't you get some rubber bullets?" the Mick growled.

"Don't argue. I have an idea."

The Black Bullet slashed around, swept up and under the two Lockheeds, and hurled itself full into the path of the remaining fighter. The little biplane zoomed up to clear—but overdid it and fell off into a spin. It then swept into a sloppy dive and nosed down steeper as Keen sent the Black Bullet after it.

"That looks like one of those new Gregor FDB-1 fighters," the Mick observed as they followed the fighter. "You know—that new job some Canadian airman brought out a short time ago."

"Sure. But I didn't know they had made that many of them," said Keen sending another blast of m.g. fire at the single-seater. "Besides, how did these guys get them?"

But further talk was now out, since they were hot after the last Gregor, and Keen drove it headlong toward the shore-line of Hermitage Bay. The Mick sensed what he was up to and wondered where all this would end.

The fighter tried its best to get away, but the two-engined Bullet was too speedy for it. Keen racked the black amphibian dead behind the Gregor, forced it to turn inland and cut for an opening behind a fringe of wind-blown trees.

"Be ready to take over. I'm going to nail that guy," said Keen with decision. He rapped another burst at the Gregor and it went down steeper.

The fighter twisted and turned, but Keen let Barney use his persuader on him. The Mick's bullets brought the culprit pilot around and he wagged his wings.

"The guy's quit. He's going down," said the Mick. "What now?"

"Make sure he does. There he goes—toward that open stretch. Now, here's the idea: I'll go down and see what happened. If that guy lands her Okay, I'm taking that plane over and you can follow me in the Bullet. Get it?"

"Follow you where?"

"I don't know for sure yet. I've got to find out first."

"I can see this is going to wind up as a lovely evening," the Mick said quietly, rubbing his chin.

Keen ignored the remark and went to work on the Gregor again. The pilot once more wagged his wings and started to swing wide for a landing. Keen watched the man closely, realized now that he fully intended to get down as quickly and as safely as he could. The fighter dipped over some trees, went into a glide with her flaps down, and fish-tailed across a barren stretch of wasteland. It bounced once and bumped hard, but somehow it managed to hold on.

Keen lowered his wheeled pontoons and followed. The Mick stood up, brought his guns around on the right side, and watched the Gregor pilot wrench his hatchway back and start to climb out. Barney bobbed him back in again with a short but high burst which had authority.

The Black Bullet came in slowly. Keen realized he was taking a long chance on this, but it had to be done. The Black Bullet dabbed at the field once, bounced slightly, then Keen held her down and she rumbled along and passed the standing Gregor with a few yards to spare.

Keen ripped the Bullet around hard by fanning her rudders and keeping one wheel locked.

"Take over and follow me," he called to Barney. "If I take off, keep near me. But don't land again until I tip you off. I'm going to find this guy Whiteface!"

THE CHANGE was made quickly, and Keen slipped out of the cockpit, ran along the wing root, and dropped off to the ground. He ducked under the hollow outriggers and drew a gun from his coverall. Then he hur-

ried across to the Gregor, which was still ticking over. The pilot was sitting with his arms outside the cockpit to show that he had surrendered.

"Get 'em up, and get out," ordered Keen, flourishing the gun.

The man did as he was told, but moved slowly.

"You hurt—or just scared?" demanded Keen.

"Neither," the man said sullenly as he dropped to the frozen ground. "But say—don't tell me you're the Griffon?" he burst out as he saw the scarlet mask.

"Whiteface tip you off about me?" demanded Keen.

"Yeah. Said he'd fixed you and that we would not have to worry."

"When did he say that?"

"Tonight—when he got in."

"Did he come alone?"

"Not Whiteface. He never travels alone."

"No. I can understand that. I mean, did he have anyone *else* with him?"

"He had the girl you're worrying about—and if I were you, Mister, I'd play safe. That guy Whiteface works fast. If he knew you were here, she wouldn't last ten minutes."

"Don't worry. I'll let him know I'm here—in due course. You're not wounded?"

"No."

"Your ship Okay? You could fly it anywhere?"

"Sure. I was taking no chances on trying to beat you. You got too much stuff on that boiler of yours, Mister. I could fly this baby plenty far—if you want me to."

"No. I'll fly it. You can do the walking from now on. You're about twenty miles from Burgeo. You can make that in a few hours if you hurry. But in the meantime, I'm taking your bus and I'm going to make a call on Mister Whiteface. He's at Petite Miquelon, isn't he?"

"Hey, wait a minute, Griffon! You can't do that. The minute he spots you, that dame won't be worth a dime. He'll cut her to ribbons. I seen what he did to one jane who got gay."

"Let me worry about that. Whiteface doesn't know I'm here—and it will be all the greater shock when he finds out. By the way," the Griffon interrogated, "where do you guys get these boilers?"

"I don't know. Whiteface pulls some strings somewhere."

"Who's paying him?"

"Who do you think?"

"A power hostile to the Allies, I suppose."

"If you guess again, you'll be wrong."

"I get it," nodded the Griffon. "Well, this is where you check out and start walking. Anything you need?"

"No, I guess not. But say—Whiteface said you'd be in a single-engined bus if you came. How come this two-engine job?"

"All thugs make mistakes. This is one Whiteface made. He somehow muffed the fact that I had changed my plane. How that happened, I have

no idea—but it just goes to show you."

"I hope *you* aren't making a mistake, Griffon," the man said under his breath sarcastically.

"I'm no thug. The other thugs may think so—but I simply out-thug the thugs. Well, shove off! And I hope your feet hold out," said the Griffon with finality. "Where's the layout of Whiteface and his brood, by the way?"

"That's for you to find out, Griffon."

"And I'll find out, all right, never fear!"

The man started to walk away while Keen climbed up into the little Gregor. He was satisfied it was in fair condition after questioning the man. The fellow said he was willing to fly it anywhere. He wouldn't make such a statement unless the bus was in pretty good shape and had a reasonable amount of fuel.

The young ballistics expert dropped into the cockpit, fingered under the dim instrument-board light for the throttle, checked the fuel gauges, and sensed that the gun gear was typical British Vickers stuff and therefore simple to operate.

He released the foot brakes, tested the flap-gear, and was satisfied that he could fly the job.

The former pilot stood off a few paces and watched with pained interest—probably hoping that the Griffon would break his neck.

Keen ran the engine up to check the throttle, then rolled the fighter up closer to the Black Bullet. The Mick still covered the former pilot from an open window of the Bullet's control nacelle.

"Follow me to Petite Miquelon, Barney. I am going down into this Whiteface guy's place and try to get Pebbles out. You stay upstairs until you get a signal to come down—and when you come, come stripped for action. We may have some activity."

"Okay, Boss. But what about this other guy?"

"He's going to do a heel-and-toe it back to Burgeo. Don't worry about him. There isn't a telephone box for miles, and I question whether these guys have a connection anyway. They probably rely on radio."

"Maybe he tipped them off with his own set, Boss."

"It's an idea—except that he doesn't have one on this bus."

"Okay, Boss. Best of luck!"

AWAY LEAPED the Black Bullet. Then Keen shot the Gregor off and headed out on the eighty mile run across Hermitage Bay to Petite Miquelon. Barney followed at some distance in the Bullet.

Keen took plenty of time to check the little fighter, but his skill and instinct soon mastered its characteristics. He flew it, after the first ten minutes, as though he had been flying it for months.

Eventually they approached the island, which was of squarish shape, and the Mick drew farther away and

let Keen go it alone.

In ten minutes, Keen was circling carefully over the area and looking for a signal which would indicate the landing ground. He waited and watched as he moved along the shoreline, skipping the small fishing villages with their rows of net-drying sheds and hurtling across sparse areas which might be farms in warmer seasons. Already the dawn was beginning to break and he could see details of the ground more clearly.

Then he caught a signal! It came up from the ground—a small searchlight of some kind set in the corner of a wooded thicket. Keen now wobbled the machine as though he were having difficulty. The light spat out again.

"That thing is in the woods there. They probably use that long open space for landings. Yes, there are some buildings hidden away in there."

He circled again, now deciding on a trick.

The Gregor appeared to wobble through a series of crazy, hopeless maneuvers. It dipped, stalled, made a bad attempt to swing into position for a landing. It then roared away, blipped on and off, and finally started steeply again for the ground.

Keen could now see a number of men running out from the sheltered buildings. He laughed to himself and pulled out of his dive.

"I'll give them all plenty of time to get into the clear," he muttered, watching the ground below as he sent the Gregor through another series of crazy evolutions.

The fighter slapped around again through a new series of crazy antics. It appeared to be flown by a man who was either the rankest amateur or a pilot who had been severely wounded. The men below accepted the latter theory.

The Gregor now wobbled and pitched into a position where it could make another attempt to get in. It seemed to halt, however, in mid-air about fifty feet above the area being used as a runway. Then it suddenly whipped up once more with motor full on—and disappeared momentarily from the view of the men on the ground, for it had abruptly dashed behind a prominent knoll.

They sighted it again a few moments later—saw it go into a mad zoom, a slithering side-slip. Saw the Gregor, with a final roar of its engine, slash itself to pieces in a battering dive into the merciless maze of the forest!

A few seconds later, a faint glitter of flame trickled up from the wreckage. Now came a dull puff and flame which enveloped the machine, fast blackening it into an ebon skeleton of dural and metal. The fuselage folded with the heat, imprisoning a tangle of bucket seat, instrument-board, controls, and cable conduits in its warped cockpit.

The group of shouting men soon broke through the heavy underbrush and scrambled around the thicket toward the tangle of dural tubing.

Dressed in heavy woolens, felt boots, and parkas, they fought like maniacs to halt the spread of the fire, obeying the orders of a man dressed in expensive ski clothing.

He was a strange, ghostly figure. His face was as white as the driven snow. His eyes blazed with excitement as he stared up at the burning plane which still remained tangled in the lower branches of a sturdy evergreen. The pine needles now caught fire and added to the frantic blaze.

"You take over, Borglum," he now husked to a man who stood near trying to throw a rope over the burning wreckage. "Who was it, I say?"

"That was Binney—Young Binney. That was the ship he took out, anyway."

"He must have been hit badly," said Whiteface. "You do what you can and try to keep the fire from spreading."

He strode off, making his way through the underbrush toward the dull gray buildings. Then the man called Borglum rallied the nondescript men about him and they finally got a rope over the wreckage.

The man known as Whiteface looked back once, then ambled on. He reached the open space outside the buildings, waited a minute, and listened. His keen ears caught the indistinct rasp of motors somewhere in the sky. He stood still, drew the face frame of his parka back, listened again.

For several minutes he stood there, face up-bent. Behind him, the glow of the burning Gregor was subsiding. His eyes blazed even more fiercely as he contemplated the possibilities of what those engines in the sky meant. Then with deliberate strides he hurried toward the spacious log building which stood out as a monument of luxury among the other structures. He went up the steps, crossed the wide verandah, shoved the heavy-planked door open.

INSIDE, a great log fire burned in a gigantic fireplace. Massive andirons supported the blazing timbers. Slamming the door behind him, he reached out, took a heavy poker, and rammed it full into the blaze, where he left it resting on the wrought iron fender.

"Devil take you, Griffon! I told you what I would do if you ever started up here. I'll fix her, you fool! Thought you'd get away with this, eh, Griffon?"

He took a long swig of a brandy, gulped hard, and took another. His face went even whiter under the strain of his frenzied hate.

The door now swung and the man named Borglum came in. His face was white, too, but streaked with smoke and grime.

"Whiteface!" he said in a voice that was faint. "Whiteface! *There's no one in that ship!*"

"No one in it?"

"No—no one in it! How do you figure that?"

The man called Whiteface steadied

himself with another swig from the bottle.

"We looked all around the crash," went on Borglum. "No corpse anywhere. But there was certainly a guy in it when it went across the landing strip—for I saw him."

"Sure, there was. And there's another guy up there, Borglum. Hear that plane? That's the Griffon, Borglum! He shot our men down. He dared to come up here in spite of what I told him. Yes, that's the Griffon up there, and I'm going to decorate his dame—just to cap it off, Borglum. Come on, you can hold her. I'll fix her!"

But Borglum backed away toward the door. "Not me, Whiteface. You ain't gonner pull that trick again with me doing the holding. I ain't gonner be in on no carving party. I don't do that sort of work any more."

"No?"

Whiteface walked calmly toward the fireplace with the brandy bottle in his hand. He swung the bottle by the neck and smashed it to smithereens. He inspected the jagged edges of what was left in his hand and turned to Borglum.

"Look, Whiteface," Borglum pleaded. "Let's get out of here. We're through now, anyhow. Our other guys ain't coming back. We did the show and stopped as many as we could. Maybe they got guns on now. That agent who's paying us will know we're licked, and maybe now we can work on another gag for him. Let's get out of here, I say."

"Stop sniveling! I'll decide what we do around here, Borglum. We get so much for every one we stop, don't we? And there'll be more of them."

"Sure, Whiteface . . . but—"

"We stay here! You and Matson can go and get more fighters. You can pull the same gag that you're taking delivery for the Canadian Government. We got away with it once."

"Okay on that, Whiteface—but not the girl. Not that, Whiteface," Borglum pleaded again.

"So you're going soft on me, eh? All right. You sit here," ordered Whiteface. "I'll do the job without you!"

"But she ain't got nothing to do with all this. She's swell. She's too good looking to get that," Borglum argued. "She ain't done nothing."

"You're right. She's too blamed good looking, Borglum. I'll fix that!" And Whiteface went back to the fireplace, picked up the red hot poker, and started for a doorway at the far end of the room.

More men came in from the outside. They halted, stared at Whiteface as he approached the room bearing his flaming poker and his broken bottle. They were hushed into silence by the horror of the scene.

They had come in to confirm the report that no trace of a body had been found in the wrecked machine. But the spectacle of Whiteface preparing to carry out his threat was too much for them. Three backed out of the doorway so that they would

not have to listen to the screams that would come. Three more stood their ground, morbidly curious.

Borglum glanced at them, then slumped into a big chair near the fire. He leaned forward, put his hands over his ears.

WHITFACE halted at the door, almost as though for a cheap theatrical effect. Then he tucked the broken bottle under his arm, twisted the knob, and kicked the door open. He went inside and kicked the heavy door shut behind him.

The girl sat in a deep chair. She was tired. But the gleam of the red-hot poker brought a new light to her eyes. She sat stiffly fascinated, her ankles bound together with rawhide

Answers

TO QUESTIONS ON PAGE 33

- 1—The *Kensington Court* was a British grain ship which was torpedoed in the Atlantic, then had its full crew saved by two Short Sunderland flying boats.
- 2—The Distinguished Flying Medal—Britain's decoration reserved for non-commissioned airmen and usually awarded for bravery—is the officers' award.
- 3—All Army Air Corps Attack squadrons have been turned into medium or light bomber squadrons. They will use the new Douglas B-23 bombers.
- 4—There are only a few Lockheed Hudsons in England, itself, so far. These are being used for Coastal reconnaissance and for training pilots.
- 5—Col. William Avery Bishop, V.C., is now in charge of the Royal Canadian Air Force.
- 6—The new Blackburn Roc is the latest British torpedo-bomber.
- 7—At present, a few of our Air Corps sergeants hold pilot rating. Most of them, though, have the job of training Flight Cadets. In the Navy, however, there are many non-coms doing service piloting.
- 8—According to military experts, it would take from two to three and one-half years to train 25,000 fighting pilots in the United States.
- 9—Finland has six Air Groups, three being naval groups. Many of her best planes are British Blenheims and Bristol Bulldogs. All told, she has about 100 first-line aircraft.
- 10—It is believed that Germany lost between 200 and 300 planes in the Polish campaign. Most of these were shot down by anti-aircraft fire.

things cut from a pair of snowshoes. She could only stare wild-eyed at that glowing poker, and it took every ounce of her courage to stifle the low scream that was on her lips.

"What do—you want?" she demanded, her face pale.

Whiteface moved like a flash and was before her, the hot poker raised threateningly. He managed to appear cool, but there were telltale blue lines about his lips revealing his emotion. His hair, disheveled by the parka hood, had fallen down over his eyelashes in two forked dribbles.

His upper lip curled contemptuously. "So he *did* come?" he snarled at her. "He did come, after all."

"Where is he?" the girl demanded.

She was more beautiful than ever now, her face bright in the flush of fear. She was drawing back from the threat of the poker.

"He came?—the Griffon came?" she gasped. "But—"

Then her eyes blazed with fright again. The realization of what it all meant swept over her in a flood of terror. "But you wouldn't . . . you—"

"Wouldn't I? Well, this broken bottle will do the trick. Plus a brand with the poker for good measure."

He was leering toward her now, staring wildly into her blue eyes.

"You coward!" she breathed.

"I am not a coward!" he screamed. "It takes nerve to do this." And the hand with the broken bottle reached out toward her face—to jerk back again as there came the low hiss of a gun fitted with a maxim silencer!

Whiteface let out a scream, gaped at his wrist, which was beginning to bleed. He stared as if trying to figure out what had happened. He saw that he had dropped the bottle—but now in the heat of his rage he lunged toward the girl with the poker.

Another hiss—and he fell forward on the floor with a small blue hole in his forehead. The poker had fallen, well short of its mark. The girl, even so, could not repress a scream.

Outside in the other room, Borglum sat up and listened. The other men listened, too, and winced. They hated to think what that girl would look like when she stumbled out of there.

THE BATTERED WINDOW came up with a crash and a figure in a red mask and a black coverall threw a long leg over the sill. He barricaded the door, then grabbed the still-hot poker, placed its tip on the thongs that bound the girl's ankles. They smoked and parted, and her legs were free.

"Pebbles," he whispered. "For heaven's sake pull yourself together. We've got to get out of here! Where are your things?"

"Ski cap and jacket in the closet," she whispered unsteadily. "I'm ready, I guess."

He reached in and took out Miss Colony's cap and jacket. Then he calmly put the poker to the rest of the things hanging there. They caught fire immediately and he closed the door gently.

Next he went about the room firing everything that would ignite, then he helped the girl on with her jacket.

"Just a little fireman's helper, aren't you?" the girl said quietly as she tucked her curls under her cap. "Was that you giving the Forestry Patrol something to do out there?"

"I had something to do with it. Come on now—out of the window."

The room was in flames now and there were batterings on the door. The man and the girl slipped out of the window quietly.

Overhead, a plane swished low and the Griffon took out a two-color flashlight and flicked the red light twice and the green one once. He then

grabbed the arm of the girl, steered her around a small building. They sensed that there was a hue and cry going up.

Keen signalled upstairs again, then ran along the edge of the runway dragging the girl after him. Shots rang out from somewhere, and in the dim morning light, the glow of the burning lodge threw a mad glare at the leaden sky. More shots rang out, then from over the trees swept the Black Bullet. Its guns raged and rasped as it came in and poured a long wailing burst into a group of men that started to run from the lodge. The burst scattered them. Two rolled over. Another dropped to his knees and crawled away. The rest headed for the trees and fired back with pistols.

The Griffon and the girl huddled in the shadows and watched the Black Bullet come in. The Mick handled her beautifully, let her roll up with just enough inertia to reach them and ground loop easily to come around again for the take-off.

They climbed up and Barney moved back to the rear pit. Miss Colony dropped on a small locker and hid her face in her arms. The Griffon took over, gave the Allison the gun, and raced down the field again.

"Don't hit that chunky guy," Keen yelled back at the Mick.

"No, don't hit him. It's Borglum.

He wanted to save me," the girl sobbed, her feelings finally getting the better of her.

"What the devil! They're all a lot of bums anyway," the Mick grunted. "They wouldn't be in a racket like this if they weren't. You got that Whiteface guy, didn't you?"

"Sure. And now we're off for Marcel's down at St. Pierre. We'll rest up for a few hours down there and get back home again tonight. But Pebbles—exactly what happened?"

"There's nothing much to it. That Whiteface chap met me at Grand Central, covered me with a gun, and just took me out to a car. We went to Newark, hopped in a Grumman amphibian, and flew up here—a kidnaping party just to keep you from coming up and stopping their game. But I don't understand how *you* knew about it," went on the girl when she had fully regained her composure.

"He called me up and told me," said Keen. "He said he'd make a cannibal beauty out of you if I attempted to stop his game of shooting down British Lockheeds. He was getting so much a shoot—and I suppose business was too good to risk having me step in and muddle it. Anyhow, I got hold of that Gregor—and bailed out in a chute just when the plane went out of the sight of those devils. They're probably still looking for the body. I lost the chute in a tree, I'll

grant—but I did get to the window in time with my old Maxim-fitted gun."

"It was grand!" the girl said. "I thought I was through. That devil was just about to carve up your little sweetheart."

"Sweetheart?" gagged the Mick.

"Sweetheart?" gasped Keen. "Look here—if you think I came up here just to save you—well, you've got another think coming. We were losing too many good American pilots on that show, you see. Pilots we couldn't afford to lose. Besides," he added lamely. "We needed a rest—which is what we'll get at St. Pierre if we can scrub these British markings off quick enough."

"Sorry," said the girl, pouting a trifle. "Sorry, I misunderstood."

"Don't take any notice of that guy, Pebbles," steamed the Mick. "I'll take you for a sweetheart myself if he keeps being a heel."

"Thanks, Barney. I'll buy you a crock of rum for that."

"And what do I get?" demanded Keen. "I was in this, too, remember."

"You will be carefully left alone. You are not to be contaminated by women—sweetheart," she added slyly.

"Remind me to take you to a good movie when we get back," said Keen over his shoulder—"something thrilling, you know."

News of the Modelers

(Continued from page 54)

technical analysis of the craft entered. The book is comprised of 44 large 8½ by 10-inch pages filled with professional photographs. Also, plans and valuable technical advice are given.

Happy Birthday, L.M.A.C.!

THE Linden, N. J., Model Aircraft Club celebrated its fourth anniversary during the month of December. Here's the club's complete roster: Bernard Aurand, Charles Boehm, Frank Conway, Silveo Colletti, Carl Frank, Elmer Granitzki, John Cross, Richard Hanby, Bill Hauser, Russell

Hilts, Edward Gross, Donald Huff, Ralph Mann, Fran McElwee, Roy Messinger, Harold Sauer, Hampden Smith, Andy Moshor, Fred Gross, Harold Kauffmann, Henry Misiur, Jack Sellers, Alex Shukis, Richard Devlin, Robert Fleidner, Jack Cryer, Ray Lada, Mary Walker, and Phyllis Hilts.

Engine Books Published

TEN booklets concerning model gas engine theory and practice were published recently by Arthur A. Winston, of 1500 East 48 St., Brooklyn. These, according to Winston, should

be of extreme interest to model gas engine operators who wish to become better acquainted with their hobby.

The booklets are brief and non-technical, serving the purpose of acquainting gas engine users with the fundamentals of design, method of operation, and the like.

The pamphlets sell for 15c each, or ten for \$1.00, postpaid. They cover the following subjects: Theory, ignition, lubrication, metallurgy, piston and cylinder finishing, mathematics, experiments, accessories and tools, and a list of "Dont's." A dictionary of terms is also included.

All Questions Answered

(Continued from page 34)

three enemy planes. But as I have stated before, such records are very flimsy at best. Sorry, but I do not have the wing construction details of the Sopwith Dolphin you desire. All British war-time planes were painted the same. The body and upper sides of the wings were what we know today as olive-drab, while the undersides of the wings were either light blue or of natural fabric color, all this in spite of the pictures you may have seen where British war planes were gaudied all up with camouflage. I never saw one British

plane camouflaged in any manner while I was in France.

Albert Alves, Fall River, Mass.:—

I have never heard that two years of ground school training at any U. S. Air Service school would be accepted as two years of university training to enter Randolph Field as a Flight Cadet. It is quite possible, however, that several candidates for both Randolph Field and for Air Service commissions have been selected from such schools, but they are undoubtedly exceptional cases and

in all probability these men had some university training. These questions can only be properly answered by officials of the U. S. Air Service, whom you should consult by correspondence.

Lawrence Joseph, Chicago, Ill.:—

I have no idea where you can get "full-sized" plans of war-time and pre-war planes today. I question whether any of the firms that built them would have handy—after all these years. If the plans which have appeared in FLYING ACES of war-

time planes are not suitable for you, I have no idea where you can get them in the size you desire.

Jessie Campbell Navin, Millinton, N. J.:—I have no knowledge of any school that accepts students to learn parachute jumping. Better forget the idea. There are more parachute jumpers now than we know what to do with.

Herbert Boehm, Glen Ridge, N. J.:—We have relayed your model request to our Model Editor.

Donald Trunick, Los Angeles, Calif.:—The wing of the Sopwith Camel was absolutely flat. It had no dihedral or anhedral. The Ago firm was a World War aviation concern which built a military biplane in 1917. I believe the name has often

been misspelled as "Argo."

Ted Skowron, Niagara Falls, N. Y.:—As for the two jokes you sent in being "as good as some of those in F.A." you're quite right. For one of 'em was used by us two years ago. We're sending you a buck for the other.

Harold Conery, Moline, Ill.:—As Kay Kyser would say, "Your right, we're wrong!" Clarence Chamberlin's birthplace was Denison, Iowa—not Dennison, Ohio.

Robert G. Kuss, Syracuse, N. Y.:—Check with the nearest recruiting office on your question of army and navy physical examinations. There you'll quickly get the full information that you're after.

—BY ARCH WHITEHOUSE

Attack at Dawn

(Continued from page 13)

for an eye! I see that my rear-seat gunner already has his weapon ready and awaits the worst. It will be a tough fight.

Our squadron takes up a defensive formation, a "Vee of Vees" to concentrate our power. The enemy pursuits are diving at us, and we make a sharp turn to get out of their line of fire. They roar by, then immediately form for another pass. Suddenly, off to one side, I see an explosion on the ground, and flames and dense black smoke follow! My heart jumps and I feel slightly sick. I try to get a better view, but we are fast leaving the vicinity.

* * * *

BACK at our base once more we are gathered in the Major's office for a critique of the action. The report comes in—and we learn that we have received credit for 80 percent ground casualties on our attack. Tactically, a decidedly successful mission.

But our spirits are very low—for actually we are all friends. This battle was just a game. The chemicals were harmless dyes, the ammunition was all blanks, the "hostile" pursuit planes

were piloted by our own fellow flyers, and the "80 percent ground casualties" were all imaginary.

But that explosion I saw was *not* imaginary. It was a real crash.

We would have felt better if it had been a real war, but that ill-fated "enemy" pursuit flyer was our comrade. One instant he had been living, flying exultantly—the next, his body lay amid broken wings and a mass of twisted junk!

Editor's note—Yes, in peace time as well as in war, American sky fighters have been killed in action. They have died in their cockpits while "fighting" those rigorous aero sham battles which must be waged in times of peace to groom our military air-men against the all-too-threatening day when our country once more will be plunged into a real conflict. And through publishing the graphic, true air drama so poignantly and sincerely told here by Lieutenant Paul, FLYING ACES hopes it has contributed some measure of honor to the memory of those courageous flyers who have so unselfishly given their lives for the cause of American preparedness.

Flying Aces Club News

(Continued from page 37)

Charles Penington, of Cleveland, Ohio, which we think you fellows would like to hear about. Penington, who has applied for membership in the FLYING ACES Club, boasts the following record:

Five years service in Marine Corps—from 1898 to 1903—during which time he saw action in the Spanish American War, Guam, the Philippines, and China . . . from 1907 to

1908 a member of the U.S. Army Signal Corps and one of the ten men in the first Balloon Corps . . . stationed in Alaska during part of 1908 . . . then back to the Army in 1917 to become a member of the famous 96th Aero Squadron from August 11, 1917, until the end of the war.

Some history, huh, lads? We know that a lot of you Clubsters would like to meet Penington, and we're very

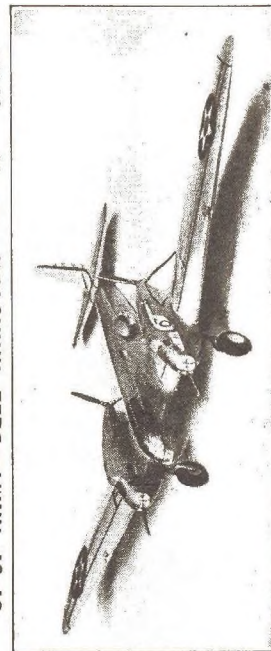
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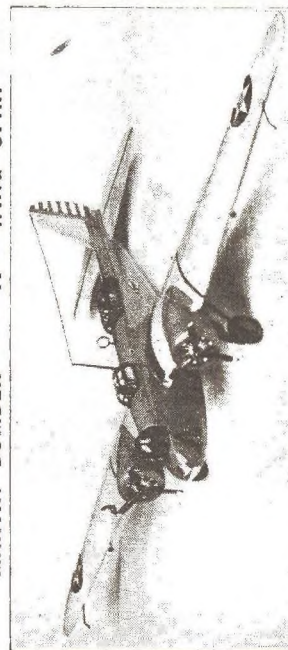
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AIRCRAFT

Dept. F-3, 4024 Elston Avenue, Chicago, Illinois

happy to have him on our roster.

Many of you F.A. Pilots have sent letters to Clint that read something like this: "I would like to know if it's necessary to send in all five coupons for new members at the same time when trying for my Ace's Star."

Yes, Peelots, you must. You see, if you send in just one or two at a time and stretch the entire process over a number of months, then our files would be thrown completely out of order. After all, when a club has such a huge number of members as we have it's no easy job to make individual listings like that and keep 'em straight. Sorry.

Now we have news that a couple of New York Clubsters—who have just become Pilots and formed their own Flight—are going to head for California and the Ryan School next March. John Bahley intends to take the Master Pilot's course, and Henry Masten will try for his pilot and ra-

dio license.

More power to you, fellows! And don't forget the ol' F.A.C. when you're hurtling through the sky. Most of all, don't forget to steer clear of those wrong-end-to stunts that Major Fred Lord tells you about in last month's article, "Talk About Screw Students—!"

More news now: That dashing, swashbuckling, he-man Errol Flynn is now an Honorary Member of the FLYING ACES CLUB! And Mr. Flynn is a worthy addition to our Club, too; for besides being one of Hollywood's foremost actors he is also a licensed pilot and flies his own plane. Frank Westerberg, of Attleboro, Mass., is the Clubster who did the fine work of signing up Mr. Flynn.

And for you fellows who haven't as yet entered our contest, here's all you have to do—

Mail us photos of the models you've built from F.A. plans. And if your

picture proves you to be the top-notch modeler of the month, we'll send you a handsome Distinguished Service Medal as your award. Just address your letters to Clint Randall, D.S.M. Contest, c/o FLYING ACES, 67 West 44 St., New York, N. Y.

We will not be able to return any of the photos submitted, and the decision of the judges—Wing Commander Herb Powell, Model Editor Dave Cooke, and National Adjutant Clint Randall—will be final. The picture of the winning model will appear on the Club page in each issue. And, of course, only FLYING ACES CLUB members will be allowed to participate.

That's all there is to it, lads. Just build a model, making it the best you possibly can, ship a good, detailed photo of it to Clint—and then wait and see if you're named our Master Model Builder of the Month and D.S.M. winner.

And so—Happy Landings!

Here's an Automatic Gas Model Tank

(Continued from page 50)

up. Inclining downward will lessen the sideslip angle (see "A," Fig. 7) and inclining upward will steepen the sideslip (see "B," Fig. 7). This will change the lateral angle of the tank bottom without affecting the fore-and-aft angle.

All of these factors naturally depend on the design of the ship itself and the builder's conception as to what constitutes a dangerous dive or sideslip. In departing from the plans, the modeler should be careful to keep the fuel line length within reasonable limits. If it is made too long, it will present the engine with the difficulty

of lifting the fuel too great a distance to the needle valve. The engine will start easily with normal priming if the line is kept within reasonable limits.

The prop should be adjusted to come to a stop in a horizontal position. This can be done by running the engine for a few seconds and then cutting the switch. Then, without turning the shaft, loosen the propeller and turn it to a horizontal position and secure it again. If the model lands on its nose with the propeller in this position, the force of the contact will be distributed over the en-

tire length of the blades and the hub. If the propeller were not adjusted to stop horizontally, in a bad landing the force of contact on one blade could easily cause it to break or split.

Model builders will find it a welcome relief to be able to hop their gas jobs while enjoying this much easier frame of mind. This, of course, will lead to many more pleasant hours of flying the craft for sport, and, perhaps most important, more successful contests due to a greater number of completed flights with a ship that is able to survive many extra hops before a bad landing ends its flying.

Is Our Air Force Ready For War?

(Continued from page 7)

scale they also painted in a lot of details which didn't come to pass.

Instead of what they expected, they got balloon barges and leaflet raids . . . slow fighters were knocking their "terrible" Messerschmitts and Heinkels out of the skies . . . gunners aboard bombers and multi-seat fighters were becoming Aces long before the pilots . . . air-cannon were a startling success aboard the slower, "obsolete" French machines . . . and anti-aircraft guns were actually scoring direct hits. The aero astrologers hadn't bargained on all this.

Germany *did* raid Polish cities *en masse* in the early days of the war, and Hitler scored what might be termed a military success. But *Der Fuehrer* lost 200 war planes doing it. What success he had came because of lightning attacks made without bothering to declare war. Earlier sabotage and espionage paved the way.

So the Polish airmen and troops were unable to fight because they were really overcome before they could get into action. The same thing almost went for Finland when the Russian machine sputtered into action. How-

ever, weather conditions enabled the Finns to "break it up" in time to prevent a steam-roller defeat in the first few days.

I bring out these points prior to further comment on our Army and Navy air services for a particular reason. In the first place, we must consider all these modern factors when we try to analyze the strength of a possible enemy air power. We must forget 1914-18 and consider -1940. We must concentrate on the question of whom we might have to fight and the temperament of that nation. We must realize the fact that in defending ourselves against a totalitarian country we must be prepared to face a military team which despises the theories of democracy and fights accordingly. Secret police back-stabbing and undeclared wars are threatening samples of the dictator type of attack.

The American Air Service today is numerically strong, the personnel is well trained, and there are enough good factories in this country to provide the necessary equipment. The point to consider now is whether all

these forces can be meshed to beat off a menacing enemy with the maximum of efficiency. Can our Navy really stop any sea raid on this country? Can our Navy airmen spot enemy surface vessels in time. Or shall we have to agree that we can only harass the attackers and that there's a good chance of them making an actual landing somewhere along those 21,000 miles of coastline? After a strong enemy force has established itself on our coast the civil population would have to be moved back to give our Army a chance to stop the invasion.

I am not one of those people who pooh-poohs the theory that this country can be invaded. Any power that has the essential attacking equipment and properly trained and properly led mechanical organization could do it. Whether such a power could maintain a hold after such a nery landing is quite another matter. But even that point can't be ignored.

Our Air Forces, of course, would be expected to stop any such move. Our warships would be called upon to stop surface vessels, transports,

and communications. They could—if the Navy Air Force keeps what the experts like to call command of the air. But by that we mean the naval flying men must first spot the approach of the enemy. They must destroy its air arm and leave the way open for the battleships and cruisers to sink the enemy surface armada.

If our Navy airmen fail, we shall have to hope that our fighting vessels can halt the surface craft of the enemy. They might. But we can't forget the fact that the enemy's air arm conceivably could get through and bomb our cities. Once that point has been reached, we are in a real war and we'll know all about it. We now only *think* we know all about it because we have seen some European and Oriental news reels and Sunday rotogravure pictures.

The bombers of the U.S. Army Air Corps are believed to be among the best in the world. There is no actual way of knowing how good they are until they are sent on a bombing mission. The Boeing Flying Fortresses are considered the cream of the crop by those who write the publicity, but certain authorities now feel that they may really be too big for active service conditions. And others believe that they are not efficiently armed. There have been some questions raised as to the efficiency of their gun turrets and whether they can offer arcs of fire suitable for modern active service air fighting. Most certainly it is time some of our planes were fitted with better turrets and heavier guns.

The school of thought which believes the Flying Fortresses to be too large are, of course, the patrons of the present medium-bomber school who are enthusiastic over the success of such jobs as the British Bristol Blenheim. Today, then, a lot of publicity is being turned on the smaller Douglas bombers. They are comparatively simple to fly, service, and man. We understand also that the new Douglas B-23 has been selected to replace all machines in our Attack squadrons.

THIS LATTER statement may come as something of a shock. It most certainly did to us. But the truth is that no less than twelve Attack squadrons are to be re-formed into light-bomber outfits and equipped with this new Douglas. The first we noticed about this came in a short paragraph in an Air Corps statement made last June. A contract, it said, had been let for a number of "new attack-bombers of the Douglas type" which were to be used by Attack squadrons. It also explained that the Air Corps, by taking advantage of the lessons learned in Spain and China, had found it possible to combine in a single plane all the good features of the Attack plane and the light bomber. At that time, however, no mention was made of the discarding of all the Attack types.

Later we discovered that members of the 73rd Attack Squadron were

getting special training in avigation, administration, and law. And the mechanics were being instructed in the details of the Douglas B-18 bomber. These men were being primed to instruct the personnel of the 17th Attack Group—which led us to believe that Douglas bombers of some kind were really going to replace the ordinary A-17 Attack ships.

Then a short time ago, a noted newspaper writer stated in a New York paper that *all* attack squadrons were to be re-equipped as light-bomber squadrons and that they would be provided with new Douglas bombers for their work.

When we got busy and tracked this all down it turned out that the Third Attack Group has been renamed the Third Light Bombardment Group, the Seventeenth had become the Seventeenth Medium Bombardment Group, and the Fourth Attack Group stationed at Langley Field was suddenly disbanded. It was later admitted that Attack aviation was really out—that it was murder to expect men to go down low and take the beating modern anti-aircraft can hand out. That wasn't said in so many words, of course, but one could read between the lines and get the significance.

It was explained in this news article, by the way, that the new Douglas would carry only demolition bombs—not fragmentation bombs. For American aviators, it was pointed out, did not plan to attack innocent women and children but would only fly against troop concentrations, ammunition depots, reserve artillery, and military strongholds. So this prize example of writing infers that fragmentation bombs are expressly for women and children. Well, we've always understood they were carried to attack troops on the march—not women and children. You certainly learn some strange things in the newspapers!

It is obvious, at any rate, that the Attack ship has been eliminated as an instrument of war. Hence, all the glory we credited to the Attack plane seems to have now resolved itself into so much emptiness. In other words, the authorities have discovered that in actual warfare today, the Attack plane wouldn't stand up.

Twelve complete Attack squadrons have been given the gate as far as their Attack equipment is concerned. Now becoming light or medium bomber squadrons, they will no longer power-dive on their targets or spray moving troops with bullets. Instead, they'll play safe and fly at higher altitudes, depending on the new U.S. bomb sight, by which, as rumor has it, they will be able to "drop a bomb in a pickle barrel with no trouble at all."

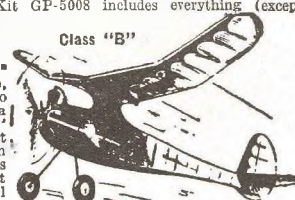
This is the latest "aero purge" we have been handed, as far as the Army Air Corps is concerned. Years ago it was the super 300-m.p.h. fighters which later had trouble doing 235, next the Seversky fighters which had some form of wing trouble, then the

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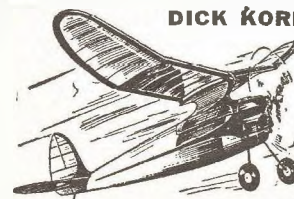
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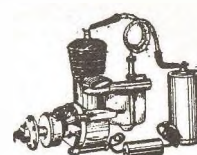


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DEALERS—JOBBERs—Write for new set-up.
CLEVELAND MODEL & SUPPLY CO., INC.
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two-engined Attack plane which couldn't keep their engines in the bearers. We've heard, too, that our pursuit planes were recently left out of certain war games because it was "too dangerous" to fly at night. Consider also the long list of crashes because of retractable landing gears that wouldn't come down. Meanwhile, nothing seems to have been done about armoring cockpits and turrets. No real effort has been made to provide heavier caliber weapons, either, as far as we know.

According to John H. Jouett, president of the Aeronautical Chamber of Commerce, American aero factories have been speeded up and tooled for a production capacity of 1,250 planes a month. And if this is true, we can have no complaint on production. But most certainly it would be a shame to build machines for twelve more squadrons—and then have to scrap them all because of lessons being learned in someone else's wars. We hope they proceed speedily—but carefully as far as the designs are concerned.

If our Attack squadrons—which were essentially an American institution as far as modern military aircraft is concerned—have turned out to be obvious failures before they were ever tried out in a war, what about our Pursuits, our Observations, and our heavy Bombardment squadrons? Are they suitable for the work? Let us ask a specific question: What ever became of the Curtiss interceptor

plane which was suddenly withdrawn from the export market because it was "too good for sale abroad?"

That was months ago, and at this writing we have heard nothing of any new interceptor squadrons being formed.

Also, what happened to the great Lockheed two-engined fighter? Where are the squadrons of Bell Airacuda fighters we were to see ramming through the skies? Where are all the air-cannon that were being perfected by the Navy Ordnance Department? Why was the Lockheed bomber bought up in quantity lots by the British and virtually ignored by the United States? Why, exactly, was it that a Douglas bomber designed to French specifications was suddenly called a light-bomber and set aside for American Attack squadrons?

We sit back proud of the fact the American Curtiss Hawks have so splendidly proven themselves in France against the fast German fighters—but we haven't yet got one of that type in our own U.S. Army Air Force!

WE CERTAINLY need have no qualms as to the courage and skill of the American pilots, observers and gunners. They have had what is probably the finest training in the world. This country has always been mechanically inclined. And we should have no trouble in training ground staffs. What's more, there surely is plenty of money for experimentation

and research.

But certainly we can be forgiven if at times we wonder a bit at Uncle Sam's strange trend in selection of equipment.

If war comes quickly it will be too late for leisurely experimentation. Our gallant pilots and observers will have to take and use what is at hand. A bomb sight finer than any in the world will not be enough—if our bombers turn out to be incapable of reaching the vicinity of their targets. Our speedy fighters may approach their assailants with plenty of time to spare—but if they are out-gunned when they get there it will take many sacrifices to score consistently.

I may be taking too much for granted—but I only know what I can find out plus what is given out. I sincerely hope I *am* wrong in many of my conclusions.

To me, there seems many pertinent questions which should be answered if we are to sleep soundly at night, secure in the knowledge that enemy raiders can be repulsed. One bomb dropped in the right place in a large city can cause a lot of death and destruction.

It is not enough to say that so many new planes have been ordered. We know the money is to be had and we know American manufacturers can turn the craft out. But we want to see the ships actually flying in real squadrons before we can truly feel that they're ready for our national defense.

On the Light Plane Tarmac

(Continued from page 27)

powered with a 125-h.p. Warner Scarab. On being assured that I had enough knowledge to take a shot at trying to fly the job myself, he explained what I was to do.

At 10,000 feet he would turn the controls over to me. And you can bet that I was excited at this prospect of guiding the plane; for not everyone at the age of 16 can get an opportunity to fly a ship on an ordinary hop. How did I feel? Well, I was surer of myself than I thought I would be, because reading many books and magazines like good old FLYING ACES had helped me learn many things about aircraft and flying. One thing I was going to remember was not to over-control. And I was going to try to be as relaxed as possible.

I think keeping those two things in mind are as helpful as anything else.

At 1,000 feet, as instructed, I gently but firmly took hold of the stick and put my feet on the rudder pedals. And I quickly came to the conclusion that a Fleet, unlike a lighter plane, has to be flown every second. So I really concentrated on the instructor's signals on how I was to handle the plane.

On this twenty-minute flight I had the controls about ten minutes; the rest of the time the pilot banked low over Mineola and then climbed into some thick "soup" at about 2,000 feet. Finally, he slipped in over the hangars on the return glide, and when he came to halt on the line, I realized those twenty minutes were the short-

est I've ever experienced.

Discussing the flight, the pilot complimented me on the way I had handled the ship, all of which made me feel pretty good. So if I get two dollars for this letter, I'll be taking another hop. Yes sir!

BOB SCHMIDT,
Great Neck, L.I., N.Y.

Well, just as we told you readers, Bob spent two bucks for two—because this letter of his to F.A. gets him two more "iron men" to apply against further sky training. Yours was a nice letter, Bob, so congrats! Your check is being put in the mail.

And now let's hear some aero experiences from the rest of you readers.

Take It Or Leaflet

(Continued from page 18)

fore I poke you one!"

"Tsk! tsk!" Phineas said and walked away. "What a temper!"

The Boonetown Merlin went to his hut and cut his light fixture loose. He took it out to "A" Flight's hangar and handed it to Flight Sergeant Casey. "Hook this up to my Hisso and see that I have some light in my Spad's office."

"Wha-a-a-a?" Casey gulped. "May-

be—er—I know where you can git a bridge lamp, Lieutenant, an'—"

"Don't git fresh," Phineas bristled, and he walked out of the hangar.

WE now have to move fast with this story, dispensing with unnecessary details. Anyhow, just thirty-six hours later, Phineas dropped his handbills over Germany. But while he sped back toward Bar-le-Duc, the

wind took a change and whisked a flock of the taunting leaflets across the border into the land of tulips, dikes, cheese, windmills, and Holland gin.

A native of the Netherlands picked one up and gave it an indignant gander. In due time, several of the handbills were brought to the attention of none other than Queen Wilhelmina. Then the Quai D'Orsay in

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Paree heard from The Hague. And Downing Street was not slighted either. Neither was Pennsylvania Avenue in Washington, D. C. Old Ned was to pay!

The Allied diplomats went dippy trying to soothe the hot Netherland noggins. Wilhelmina and her bigwigs were burning. Suckers for the Kaiser were they? Who would lay who among the tulips? Oh, yeah? Well, they, the Hollanders would open up the River Scheldt to Wilhelm. Then Kaiser Bill could use Antwerp for a pigboat lair. Potsdam could bring in planes, too. Anyway, the Netherlands were getting sick of the Allied blockade. She was still needed about those penalties imposed upon the Dutch by the English due to the Dutch making concessions to Potsdam. Holland's pantry was getting bare. Mother Hubbard's cupboard was loaded to the eaves with fodder in comparison.

"Dumb Dutchmen, yah?" Wilhelmina soon told the world that she was getting tired of having her commerce tied up like traffic in London on Saturday night. The Allies could go fish! She would show them where to get off!

Chaumont was turned into a booby-hatch. Allied Charlie Chans went on the prod. They intended to find the fresh buzzard who printed his own propaganda without knowing a German was a German and a Dutchman was a Hollander, then tossed it down on neutral countries without the nod from the front office.

In quick time, Major Rufus Garrity proved to them that he had them licked as a Sherlock. He sent for Phineas Pinkham and accused him right to his face.

"Oh, you've pulled a corker this time, you lame-brained primate!" The Old Man roared. "You'll spend the rest of your natural in a klink. You've gone and made Holland swing over to the Kaiser. Only a miracle can


stop it. 'Dumb Dutchmen!' You'll 'lay 'em among the tulips!' Don't try to alibi or I will pull a leg off you and beat out your brains with it. You are under arrest—!"

"No bail, huh?" Phineas gulped. "I—er—you know it was the Krauts I was insultin' just as well as I do. Why, I just accidentally forgot they called Hollanders Dutchmen, too. I—er—show me where it is a crime to run a printin' press. Show me!"

Instead, the C.O. showed Phineas to his hut and ordered him to stay right there until the A.E.F.'s D.A. sent over a couple of harness bulls for him. Lieutenant Phineas Pinkham thereupon sat down and thought up a quick exit before the M.P.'s arrived. "I will pack my war bag an' be ready," the Iowan said lugubriously. "Oh-h-h-h-h-h, the breaks I git!"


Phineas took the pick of his collection of novelties from his trunk and dropped them into a small canvas sack. He knew he'd have to work faster than Major Garrity. The old turtle, being in a conniption fit, possibly would not spread the word of the Pinkham outrage throughout the drome for awhile. Phineas now slipped out and sauntered over to "A" Flight's hangar as if nothing had happened to ruffle his hectic existence. He said to Casey: "Well, you would think I was the only officer in this outfit. I got to go out an' look for von Ratz's hideout. You got that light hooked up? Well, git that bus of mine out. Veet! Trays veet! Don't just stand there."

Just five minutes later, Major Garrity tore out of the Frog farmhouse and saw spots dancing in front of his eyes. Purple dots, red dots, green dots, and black dots. Phineas' polka-dotted Spad was racing across the real estate and it reminded the Old Man of a necktie his brother-in-law had once given him for Christmas. "You come back he-e-e-ere!"




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Garrity roared. "Who-o g-give him that pla-a-a-ane? He is under arrest, that crackpot! I will dust somebody off for this—! By-y-y-y-y-y-cr-r-r-ripes! I'll—"

The Old Man stamped around until the Spad was out of sight. He almost frothed at the mouth. Eventually, the R.O. and the Adjutant came out and led him back to headquarters.

Phineas had no definite plan in mind. He would have to make up things as he went along. He flew northwest, giving the Hisso its head. He flew until the gas gave out, but he did not make the channel. Instead, he came down with a dead stick, nearly kissing a high wire fence—and landed in a part of Europe that looked very unfamiliar.

No sooner had he set down when six men in uniform climbed up to his office. They talked like Krauts, but Phineas was not convinced. Krauts never wore such funny looking monkey suits. Then Phineas saw a couple of windmills, one big one being on the other side of the wire fence. Then light began to dawn in his brain.

"Holland, yah? Who is Hans Brinker here?"

One of the Dutch doughs could talk U.S. He told Phineas he once lived in America and owned a farm in Pennsylvania. He remarked that the Boonetown patriot had just missed being cremated by a Belgian hare's whisker. "The wire is between us an' Germany the barrier, *und idt ist* filled yet with electricity. By *der* prison camp you come quiet, yah?"

"Well, it was a close squeak, huh? Phineas grinned, wiping beads of brine from his pan. "Goin' to lock me up until after the *guerre!* Well, come to think of it I didn't come by accident, as I wanted to tell you tulip trainers what a big mistake has been made, an'—er—you see I forgot you are called dumb Dutchmen, too—I mean the kind of Dutchmen you are—er—awright, show me to the klink! What is the name of this hick town?"

"It is Nodtwurthadaam."

"You are tellin' me, Haw-w-w-w-w! But what is that old ruin on the other side of that juice-filled fence, huh?" Phineas asked.

"By Charlemagne it put up was. That is Germany over dere. Zumspiel the dorp is."

THE HOLLAND SOLDIERS marched Phineas until they came to a little cluster of buildings. They tossed him into a small stone house and locked him in. The Boonetown pilot was thankful that they had not frisked him. He took a look around and studied the contents of the place. One object caught his eye and made his brain rev. It was a big old inner-tube and Phineas guessed that it had come out of a truck tire.

"H-m-m," Phineas mumbled, "If a bum had to escape through barbed wire that was pepped up with volts he could use a little of that rubber. But the thing is to git out of here first. It might be nice to stay here an' plant tulip bulbs for the rest of

the *guerre*, but not for me. I—let's think now. Er—well I—have an idea."

The practical joker of the Ninth Pursuit Squadron now took a knife out of his pocket, then picked up the heavy inner-tube and cut four sections out of it. Two of them were about a foot long, the others were twice that length. He hid them on his person.

Next Phineas took some make-up out of his war bag. He spread some lead colored cream on his face. He took off his Sam Browne belt, got up on a wooden stool, and hooked the belt over a big spike that jutted out from the wall of his calaboose. "Yeah, it will work," he grinned. He then got down from the stool, picked up a small wooden mallet, and waited.

Toward dusk he looked out and saw a Dutchman coming with some victuals. Phineas quickly hopped up on the stool, then kicked it out from under him. The door opened and a Hollander peered in, let out a yell, and dropped the chow. Next, he mustered enough courage to get up on the wooden stool and see if the prisoner was still alive. "His face so dark ist! *Der* leather strap his neck around yedt. *Och—!*"

KERWHOP! Phineas' mallet had descended, and now the Boonetowner lost no time in evacuating the place. He barged out of the klink and headed for the wired border. Dutch soldiers took pot shots at him and gave chase. But Phineas had not been the 220-yard champion sprinter of Boonetown High for nothing. He kept going. Finally, he got close to a small forest, then the ground under his feet suddenly gave way. He went down through a lot of dry grass and slid into—a tunnel!

He did not move a muscle for several minutes. Then the darkness got thinner and Phineas felt a draft. "Huh, it really is a tunnel, for sure!"

Lieutenant Pinkham started crawling through the commissary of Mother Earth. He heard voices and his scalp lifted and snapped back into place again. A light abruptly appeared almost in front of his face and then he saw two startled visages not a foot from his own. Those faces did not belong to gnomes.

"Uh—er—who is it?" Phineas wanted to know. "The Count of Monte Chris—why, you squareheads! Tunnelin' under Holland, huh?"

"*Ach Otto!* An *Amerikaner, ja!* Sh-h-h-h-h, *mein freund!* We are escaping from *der* var. I speak it English—*und—*"

"Awright—but no tricks. Now, what is the idea? This is the funniest place I ever met you Heinies."

The first Jerry dough talked fast: "Look vunce. Here *ist* a tunnel that was built in *der* first year of *der* var, *mein freund.* I am in *der* army *und der* chenerals are trying to make up *der* minds if dey go by Belgium or Holland to get to France, *ja!* Efen den I *und* Otto here are sick of *der* var. We get odder *freunds* and start *der* tunnel by secret. Budt when we just gedt finished yet we go back *und*

tell some more *freunds* an' *der* Cherman army mofes away *mit* us along! Budt now ve come back vunce more *und* me *und* Otto findt *der* tunnel—"

"Well, I'm a ring-tailed baboon," Phineas said. "But how did you get back from Alice Lorraine to—?"

"With some big Junkers we come. Dey come to talk *mit der* Dutchies on *der* odder side off *der* vence. *Ach!* Such a shock off elegtricity in *der* vires now. But *der* tunnel—"

"A pow-wow, hine?" Phineas gulped. "Wilhemina's Hare Obusts, ya? I—er—got to get there *und—* what is *der* matter *mit der* face of Otto? He looks like—"

"He vas wounded by Metz. *Der* bandage on *der* faze makes him nodt talk. He—"

Phineas saw the light. He said in a hurry, "Awright, Otto. Off *mit* your duds, as I am goin' to be you. Take off that bandage, too, as you can use your shirt instead. You are goin' to Holland and won't need them cootie clothes. Haw-w-w-w-w-w-w! This is the first time I ever got a Kraut's suit without a fight. Awright, now—hurry it up or I will git rough *mit* you an' push you back to Germany."

The Kraut who could talk told Otto to peel off his Potsdam haberdashery. While Otto got to work, the other Dutchman gave Phineas a lot of the lowdown on what was to take place in the old castle. As soon as the negotiations between The Hague and Potsdam were completed, a signal would be flashed from the top of the windmill near the ruin. Two light flashes meant that von Ratz and his Gothas were to continue on into Holland to establish a base. The Gothas were due over Zumspiel at eight sharp, and von Ratz would be on the lookout for the nod from his superiors. Everything was to run like clock-work. And if the signal was right, von Ratz and his flyers would land and establish a base in Holland.

"What do you think of that?" Phineas sniffed. "Well, it is a risky job, but a Pinkham—er—what is that you been carryin', you two bums?"

"Wire, *ja!* We wast *mit der* zignal corps *und* forgot to throw it away yedt. Quick Otto, giff idt *der* clothes!"

The sartorial swap was made. Phineas thanked the deserting Heinies and crawled on through the tunnel. It seemed as if it had no end. But Phineas ultimately tasted sweet air and he heard the confused babble of voices. He came out into the clear in Germany, finding himself in a wooded copse. He slung his war bag over his shoulder and came out into the light of a fire. There was a field kitchen set up near one end of the old castle. Six coal-scuttle helmeted Jerry doughs surrounded it and they were concocting some kind of mess. Phineas sauntered toward the kitchen and waved a flipper to a Heinie. His buck teeth and receding chin were hidden by the bandages he had bor-

rowed from the wounded Otto.

"They are dumb awright," Phineas told himself. "Uh—he is yellin' at me to do somethin', that Jerry top-kick. I—er—wonder what he is sayin'. I wish I knew Kraut gibberish better. Well, I'll just give 'em the ol' Barrymore stuff."

The Heinie non-com got impatient. Apparently he thought that the bandages on Otto's head were interfering with his hearing, too, so he lapsed into pantomime. He pointed at a dish of slumgullion, then toward the castle. Phineas nodded and grinned under his bandages. He was being assigned to flunkey duty.

IN A ROOM of the old ruin where Charlemagne had once parked his famous frame, agents of Potsdam and representatives of Queen Wilhemina were trying to get together on a deal that would hand the Allies a hook to the whiskers. The toughest man to do business with, as far as the Kaiser was concerned, was one Peter van Edam. Ever since the start of the Big Fuss, Peter had been the thorn in the floating ribs of the Junkers who had sought to lure the dike builders into the Potsdam fold. Count Heinrich von Blintz, the Dale Carnegie of Wilhelmstrasse, was softening the Hollander up with *schnapps*, oily smiles, and the gift of a valuable cuckoo clock when the bogus waiter entered with a tray of questionable viands.

"*Mein freund*," von Blintz beamed as he presented Peter van Edam with the clock. "A token off my *freundship*, *ja!* Made by Frieberg in der Black Forest just for you. My own *gross-fader* he carve it so beautiful, *hein?*" "Och!" Peter van Edam exclaimed. "Och! Never was more made pretty a clock. Och, such a present fine! *Der schnapps*, yah? To *der Kaiser der toast* by me *und* you, Count!"

The high mucky-mucks of the Kaiser and Queen Wilhemina clinked their glasses. Just as they finished, the door in the clock opened and the little bird said, "Cuckoo-cuckoo-cuckoo-cuckoo-cuckoo-cuckoo!"

"Six bells," Phineas muttered. "Still an hour before or so before—oh, that Kraut bum! If I can git a break somewhere. I—"

Peter van Edam assured Count von Blintz that the deal would go through all right. But first, said van Edam, he would like to go upstairs and rest for awhile. The journey had been a tiresome one. Just a short rest was what he wanted before he put his John Hancock on the sheet of skull-duggery.

Phineas could not understand this Teuton talk, but actions had spoken to him louder than words.

Ten minutes after the Hollander had gone upstairs, Phineas picked up a pot of alleged tea and put it on a tray. He looked at a big *Herr Oberst* and raised his eyelids. The Jerry brass hat approved of the Pinkham thoughtfulness. Phineas clumped up the stone stairs and came to a hall-

way. He saw a crack of light and he went down the corridor and pushed a door open.

The Hollander growled at Phineas, but the Boonetown miracle man acted his part with a vengeance. He placed the tray with the tea on it down on a rickety timber table, went over to the bed and turned the covers back for van Edam. His eyes wandered. He saw the cuckoo clock resting on the mantle near a burning candle. The walls of the old castle had been crumbling for years. There was a big hole in the wall right behind the mantle and Phineas could feel air circulating through it.

Lieutenant Pinkham never had plotted faster in his life. He bowed to the herald from The Hague and backed out of the room. He closed the door and slunk down the corridor. He tried another door and he opened it slowly. Rusty hinges creaked and Phineas almost swallowed his heart. But Peter van Edam had not let out a peep. The place was filled with squeaks anyway. The room in which Phineas now found himself was directly on the other side of the panel from the room occupied by van Edam. Phineas could see light coming through that hole in the wall, and the cuckoo clock was silhouetted against the uneven ring of illumination.

Pinkham skullduggery got into the saddle and went to town. The Boonetown miracle man took a big cannon cracker out of his war bag and sneaked up with it to the hole. Reaching through, he fixed the cracker to the works of the clock so that the fuse end dangled close to the candle flame. It wouldn't be long before the candle would burn down to it. Phineas now sat down and wrote a message, weighted it with a chunk of fallen masonry, and tossed it through the opening in the wall. Then he scrambled out of the room.

On the other side of the panel, Peter van Edam sat straight up in bed. He rolled his eyes around and looked at the folded piece of paper lying on the floor before the mantel. He arose, went over and picked it up. He read the message in English:

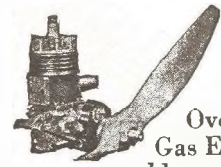
"Look out for Greeks or Krauts bearin' gifts. They are out to assassinate you. Keep your eyes peeled.
A PAL.

"Och! Such a business! Somebody makes it by a joke, yah. Bah!" The Hollander was tired and his brain assembly was a mite scattered, for his mind was still cluttered with details of the Potsdam deal. He looked over at the clock. He had a gun close at hand. "Bah!"

Phineas, on his way out, skidded back on his heels. From behind him came the explosion of the U.S. Fourth of July bomb. BO-O-O-O-M! Its echoes rolled all around the old ruin, and snooty Junkers hopped off their chairs with the agility of so many bullfrogs.

"Was ist? Ach!"

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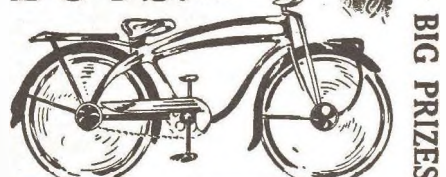
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IN HIS ROOM, Peter van Edam picked himself off the floor. The smell of burnt powder was in his bugle. He looked at the remains of the cuckoo clock that were strewn around him. The little wooden birdie, its eyes crossed, was right in his lap.

The Hollander roared like a stuck bull and got to his feet. Gripping his pistol, he went downstairs. He met Count von Blintz coming up, pushed him aside and went down into the old banquet hall to face open mouthed *Herr Obersts*.

"Zo? You try from my back behind to kill me! *Och! Der Amerikaners* with *der* warning they know something. Dot message from *der* airplane—yah! Suckers in tulips laid away—*och!* Dot pal a warning gives. Bummers! Snakes out of *der* grass yedt. Chentlemen, we go back by Holland so quick vunce! Oudt of my way, *Herr Oberst*, or it giffs a nose so flat—*och!*"

"*Hein?* Budt *Excellenz*. Listen vunce—!"

"Shut it *der* face. *Auf wiedersehn!* Bah! *Der* Queen dis time, bummers, she will know for sure. Come, van Ripple! Hurry *Mynheer* van Ketten. We go! *Der* Kaiser—bah!"

KERWHOP! Van Edam slugged a

Teuton who got in his way just to emphasize his point. Then he made his exit taking his henchmen along with him.

Phineas crouched behind a big chair and waited. The *Herr Obersts* finally rallied. Count von Blintz yowled, "Such *ein* business. *Der* tulips he talks about for *der* place to sleep in! He says *der* pal—er—listen vunce! Gedt *der* signaller *undt* gedt him oudt of *der* vindmill—hurry up yedt! Von Ratz must not landt over dere! Stir *der* stumps *dumkopfs*. Er—vhat *ist* idt on *der* floor *der* Hollander drops? Giff it to me, *ja!*"

The Kaiser's prize diplomaniac grabbed at the paper and spread it open. He had put in a year at Oxford learning the best English. He read the message Phineas had written, and his facial fabric became the color of an egg plant. "*Was ist?* On *der* top of *der* baper—on dis odder side!" What he saw on the reverse of the sheet was—

HEELE AND TOWE NOVELTY CO.
Lieut. Phineas Pinkham,
Ninth Pursuit Squadron.
Dear Sir:

We are sending you under separate cover three of our imitation cobras.

We trust you will find them satis . . .

PHINEAS got away in a hurry.

He ducked out of the castle, then walked as nonchalantly as the occasion would permit toward the wooded copse. Once within its protective screen, he put on the fast pedal. He ducked into the mouth of the tunnel and crawled faster than any snake had ever crawled. "H-huh—er—well, I have spilled them beans for the Krauts an' now if I can only fix von Ratz's sky wagons! If I can only git to my Spad, grab my light fixture, then git back an' pick up that wire the Heinies left. Boys! I got about an hour. Haw-w-w-w-w-w-w-w! I am glad I found that inner tube. What a *guerre!*"

Back in the old castle, *Herr Obersts* were precariously close to candidacy in a funny factory. Count von Blintz roared, "*Das Leutnant* Pingham *ist* somewhere! *Der* ledder giffs idt his name. Pick up all *der* lanterns *und* candles *und* lamps eferywhere. Findt Pingham, I say!"

The tunnel between Holland and Germany was no more than three hundred yards long. And the Spad that Phineas left behind was not more than fifty yards from the mouth of the tunnel on the other side of the charged wire. One Hollander guarded the Spad, but Phineas sneaked up on him and hit him with a pair of pliers. Then back into the tunnel went Phineas with his lighting fixture.

Half way through it, he picked up the big coil of wire. The toughest job was to come. Under cover of darkness which had now fallen he crept out of the wooded copse and crawled toward the charged spite fence that marked the boundary of two countries. Reaching it, he took the sections of inner-tubing from his person, pulled the longest strips over his feet. He shoved his hands through the shorter pieces of rubber, and then set to work.

Phineas had a hard time working the pliers with his make-shift rubber gloves, but desperation gave him a boost. The breaks were with him, too, but he did not know it. Back in the bat and rat ridden old castle, a *Herr Oberst* was giving orders that not a single light be shone until well after a certain hour.

"*Der* searching parties will hunt for *der verdammt* spy in *der* dark! *Der* planes dey must be near somvheres. Gedt *das* Pingham! *Der* bumper cannodt gedt through *der* vire *und* into Holland. Look in *der* voods first *und*—*donnervetter*, *das* van Edam! *Der* negxt time *ist* *der* var ve go through Holland mitout askin'. I hope I am in *das* var! *Himmel!* Findt *das* Ping—!"

Phineas hooked his wire in. He started toward the old windmill with the other end of the coil, letting the wire play out. Suddenly, six husky Jerry doughs loomed up in front of him. The ground under their feet was sodden from a recent pelting rain. There were pools of water all around.

Phineas was behind the proverbial

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eight-ball and he knew it. A Boche top-kick walked up closer and rammed a Luger toward him. "Was ist? All alone und mit—was ist idt you haff, hein? Some'ing tells me der dirty work—handen hoch!"

Phineas dropped his end of the wire. Sp-t-t-t-t-t-t-t-t cr-r-r-r-r-r-r-r-rackle. Blo-o-oey!

YE-E-E-E-E-E-EOW! ACH-H-H-H-H-H-H-H-II!

Six squareheads were kicked around as if a herd of invisible moose had plowed right into them. Bluish light illuminated the area for several moments before Phineas stooped and retrieved the wire.

"H-haw-w-w-w-w-w-w! They didn't know it was loaded. W-well, I got to hurry now, as even a dumb Kraut knows there is no lightning' withouta thunder storm. Boys, that was bare at the end, an' when it hit the ground puddles—"

Phineas now rushed operations. He mumbled a prayer when he got into the windmill. Yes, the wire was going to be long enough!

MEANWHILE, the Herr Oberst and the Count tried to order three Jerry doughs into going out and investigating the off-season hot-foot that had overtaken their comrades.

"Nein! A wire ist loose from der vance, und idt ist filled mit electricity. Maybe der vind kick it aroundt und in der dark idt vould—Nein! Better it giffs der busted ribs as der roast-ink yedt. Go aheadt und kick, Excel-lenzen, und hell mit."

"Ach! In fifteen minutes von Ratz und der Gothas coom flyngk over, Count von Blintz. If der vire giffs two flashes —Himmel. Der best Gotha Staffel in all Chermany. Gott strafe das van Edam!"

Phineas climbed to the topmost loft in the old mill. The ancient structure shook and creaked. He knocked a pair of bats off a perch and got to work. He had to splice his wire onto the light fixture he had taken from his hut. He had to do it with pieces of an inner tube on his flippers. He sweated as he worked the pliers.

Two Boche came close to six Jerries who were sprawled out on the ground. A couple of them moved and let out weak groans. "D-Donnervetter!" a fat dough gulped and crawled away. The bottoms of his boots were burned off and there was a long zig-zag rent in the seat of his pants. The Boche who watched him took it on the run toward the old ruin. Phineas was given another breather.

Not five miles away, seven Gothas with dancing skeletons painted on their flanks roared toward the Dutch border. In the control pit of the king ship sat the great von Ratz, his eagle eye peeled on the carpet below. The man beside him said, "Idt ist close now. I see der landmarks, Baron. Watch idt close for der two flashes. Der vatch says drei minutes to eight."

"Ja! Who ain't vatchin; dum-kopf? I haff eyes like der hawks! No

lightds und we turn back. Zo!" Phineas finally got his splicing job done after a fashion. He turned on the switch and the bulb in his left hand lighted up.

"Haw-w-w-w-w! Me an' Edison!" Phineas said. "Huh—I hear Gothas, too. They are sure punctual. Well, there they are. Awright, you Ratz!" The grim shapes slid along a sky path directly overhead and not more than six hundred feet in the air. Phineas switched his light on . . . then off . . . then on again.

"Gut!" von Ratz grinned. "See you in Holland, mein freund mit der signal. Giff idt der throttle, Rudolph!"

In the window of the old castle, Count von Blintz let out a blood curdling yell. "Comst here, Herr Oberst! Two lightds in der vindmill I saw yedt. Ach Himmel! Donnervetter und donner mit blitzkrieg! Von Ratz ist—coom back, Baron—A-a-a-a-ch! To der vindmill! Idt ist das Pingham! We gedt him. Idt giffs der slow death mit torture und—!"

Phineas looked down and saw the seven Teutons coming through the darkness. He ripped the light fixture off the end of the wire and made his way down a rickety wooden ladder. He got to the ground floor of the old mill and walked as proud as you please right outdoors. The clouds slid away from the pan of a very thin moon. The lunar glow shone on the puddles in the big millyard.

"Zo! Der spy! Shoot der bummer! Ein-drei—"

Phineas flung the wire into the puddle nearest him. SP-T-T-T-T-T-S-S-S-S-S! Juice from a Holland power plant hit the puddle and skidded into the one next to it. Generator juice travels faster than the eye can follow and in less than a second seven Heinies were being charged like so many jalopy batteries.

"Oof windersign!" Phineas yelped, and he started running. The pieces of innertube covering his shoes hampered him a little. He looked like a clown doing his stuff in a sawdust ring. He got to the copse in a hurry, slid head foremost into the tunnel, and went into his crawl stroke.

"Bum voyage, von Ratz," Phineas chuckled. "Wait until you find out! Seven Gothas outa the Big Scrap without firin' a slug or losin' a Spad. It is a world's record. Boys, the squareheads are still back there countin' the volts. Haw-w-w-w-w!"

Phineas, minus his rubber slippers, climbed out of the tunnel at the other end. Fifty yards away was the means of connecting himself with the Ninth Pursuit Squadron.

Near the Spad stood three Dutch troops and one of them—the fellow Phineas had conked—had his cap off because the igloo on his coco would not stand even the pressure of a lettuce leaf. The trio of tulip traders were staring up into the sky. "Och!" Phineas heard one say as he crept up from behind with a piece of tree limb big enough to knock over a milch cow. "German Gothas, Ichabod! A treaty by Potsdam with Wilhel-

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mina it comes already you think it could?"

"Och, yes! It gives instead of packing yet cheeses to bombs instead. Gretchen cries already I bet she is. Touched by the head she must be is Wilhemina to trust *dis* Kaiser, would think so?"

BOP! WHAMO-O-O! KER-THUD! went Pinkham's big limb.

"Among the tulips," Phineas said, throwing away his tree branch. "Did I say you would git laid among the tulips? Ock! Here is where I come in. Haw-w-w-w-w! H-Haw-w-awk-k-k! I fergot, as there is no gas in my Spad. Oh, what will—if that ain't a—say, what do I see over there? Petrol tins! Empty—why them Dutchies have gassed it up to fly it—I never saw such service. Tank you, Mineheers. I will never buy no cheese but Dutch cheeses when I git back to the U.S. Well, adoo!"

THREE NIGHTS after Phineas had run out from the Ninth Pursuit Squadron, big news hit Major Garrity's business office. The Hague had told the Kaiser to go take a jump in the Rhine, and a whole Staffel of Gothas commanded by von Ratz had been interned in Holland! But there was a mammoth mystery about it all. Even the Dutch masters could not figure out the reason for von Ratz setting seven Gothas down on the Dutch linoleum and walking into the arms of Dutch doughs. Yes, there was a dark gentleman in the fuel supply somewhere, they thought. But, no matter, the Allies did not have to worry about Wilhemina going strong

for Potsdam now.

"Don't understand it," the Old Man said as he walked slowly to a little graveyard a half mile from the drome. He joined a group of pilots there who were saying goodbye by proxy to Lieutenant Pinkham who had been given up as dead. Garrity took off his cap and looked at the cross that Sergeant Casey and the groundhogs had made. A tear trickled down the C.O.'s cheek when a chaplain started reading from the Good Book.

"He was a swell guy," Bump said. "I wish I had told him good-bye. Well—"

Garrity blew his nose.

"Ashes to ashes. Dust to—"

"Bomb sour, pals," a voice said.

The chaplain stopped his intonation and looked around wildly. Major Garrity jumped a foot off the ground. Into the little area of light walked a man wearing a French general's uniform. It was Phineas Pinkham! "Who you buryin'?" he wanted to know.

"Why—er—you!" Garrity gulped. "Er—you crackpot, take off that suit. You will get arrested for impersonatin' an—"

"It is a caution how much you love me when I am dead," Phineas grinned. "Like it is at home you have to die to git out of the doghouse and into the front room. That is a terrible bouquet you made for me. Haw-w-w! But I bet you won't never git bothered by von Ratz ag'in. An' I fixed it with the Dutchmen about them handbills, too. It was quite a shock to the Krauts all around, but you would

never believe what I did. Anyway, I took care of everything, then I flew to Laon with a Heinie dough's suit on an' I almost got shot. So I met a Frog general in a bar room—an' one thing—I mean, drink—led to another. Well?"

The Old Man simply sat on the edge of an open grave with his feet hanging down and his chin cupped in his hands. He looked a little unbalanced. Without a word he got up and staggered off.

It was not until almost two weeks later that Allied bigwigs were shown any kind of proof that Lieutenant Pinkham had thrown a monkey wrench into the threatened German-Holland pact. A state paper came out of the Dutch White House. The Queen was very displeased about the conduct of an Allied airman who had landed on Dutch soil near the border. The Yank had assaulted some members of her army and one of the Dutch doughs was still in a hospital with a concussion. The plane was a spotted plane and should easily identify the pilot.

Allied diplomats softened up Wilhemina. Chaumont secretly decorated the Ninth Pursuit and gave Phineas the highest honors available. Generals John J. Pershing and Billy Mitchell congratulated him personally.

"A queer fellow, isn't he?" General Pershing said as he rode away with the head of the U.S. Air Corps.

"Uh-er-look, General!" broke out the other. "In the bottom of the car! A snake! Driver, stop at once! Looks—like—a cobra! But they don't have them in Fr—stop this car!"

Happy Landings

(Continued from page 29)

dopey fellows laugh at you. Don't give up when you still have a logical belief in your idea. Don't take "No" from anyone but the top-notchers who know their business.

There's still plenty of room for improvement in aviation, and it may be you who has the key to a secret that will clear the runway for a bigger and better future, either for American commercial aviation or for the defense of our country.

ORT AERO OFFERINGS

THERE IS one day every year which is fast becoming as important to us as the date of publication of Jane's *All the World's Aircraft*. We mean the day when Karl Ort's big annual catalog of aero equipment, clothing, supplies, and gadgets comes to our desk. Yes, this bright booklet

may well be termed the Sears-Roebuck reference work of the sky industry.

Karl Ort—the fellow who ran a flock of unwanted OX-5 engines into a mail order business of mammoth proportions—has a catalog this year which no aviation enthusiast should miss. In the first place, it has a corking cover that will warm the cockles of your heart. Then inside it has grand illustrations of his wares. And even though you may not be able to afford a new Cub or a Seversky racer, you can go for a novelty aero desk set, a parachute-silk muffler, or an aviation coverall emblazoned with your model club insignia.

Ort really has a surprisingly broad line of paraphernalia for flyers. There are aero lamps, books, drinking glasses, lapel pins, pilots' cap orna-

ments, belt buckles, rings, pins, ash-trays, goggles, helmets, sextants, mufflers—and everything else you can think of.

Page after page it goes: Squadron insignia, wristlets, book-ends, flying and ground course pamphlets, rubber boats, life-belts, leather goods, avigation instruments, *ad infinitum*. Every item has its aeronautical touch, whether it be a piperack, tie-holder, radio set, or whatnot. Anyhow, if you're planning on getting either flying items or non-flying items with a flying twist, Karl Ort's catalog is a "must." You can get it by mailing a dime to Karl Ort, 730 Poplar St., York, Pa.

And when you get it, we know you won't lay it down until you've gone over it from cover to cover—and back again.

Sky-Capture of a U-Boat

(Continued from page 19)

was overturned when one of the seamen was injured and thus allowed his drag rope to slip. The lifeboat with its load whipped over and dumped the wretched seamen into the sea.

However, the 34 members of the crew were ultimately cared for either on rafts or by hanging to the side ropes of the first lifeboat. The U-boat shelled their ship until it went down, then submerged.

Eventually, British flying boats—Short Sunderlands—arrived in answer to the freighter's earlier SOS. One immediately landed near the drifting seamen and put out a small rubber dinghy. By this means the

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on Page 76 of this issue



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edges of 1/16" by 3/16" balsa. Insert the remaining ribs, and cut and rejoin the trailing edges to form the tapered roots of the blades.

The rotor hub is laminated of two octagonal sheets of 1/16" hard sheet balsa. Make a pair of special washers from thin sheet aluminum, drilling the holes with a piece of .028 piano wire. Cement one to each face of the hub to provide a smooth and true bearing. Form the rotor blade attachment fittings from .016 piano wire. Do not use heavier wire as the blades will become too rigid and the model will roll over on its side. Apply several coats of cement to anchor them, and attach the rotor blades with 1/8" negative incidence.

The propeller is limited in diameter in order to clear the rotor. Hence its broad "spoon" blade. Lay out the block, 3/4" by 1 1/4" by 4 1/2", as shown on the three-view plan. Carve the blank in the usual manner, except that the center is cut away at the front—instead of the back—to avoid scraping the prop against the nose-block. Sand the prop smooth, and balance. Pass a shaft, formed of .028 piano wire, through the nose-block and prop—imbedding the end in the hub.

A 3/4" length of 1/16" dowel, pushed through the fuselage but not cemented, takes the place of the usual rear hook. A small opening is cut in the bottom of the fuselage to facilitate hanging the rubber in place.

Covering and Assembly

SANDPAPER the framework to remove all bumps that may spoil the covering job. Then cover the entire ship with red tissue, using dope for adhesive. Spray the tissue lightly with water, and when dry apply a thin coat of clear dope.

Slip the rotor on the axle, using a piece of 1/8" diameter balsa to retain it. Cut the guy-wire bearing from

thin sheet aluminum and drill the necessary holes. Rig the rotor blades with thread to prevent them from striking the rudder or propeller. The other rigging is not required for flying, but may be added for detail. Mount the stabilizer and rudder on the rear of the fuselage.

Pull four strands of 1/8" flat brown rubber through the fuselage with a piece of string and fasten it to the rear dowel. Use six strands of 3/32" flat rubber if the model weighs much more than .7 ounce.

Flying the Model

THE finished ship should balance 1/2" behind the leading edge of the aileron spar. Add a bit of clay inside the nose if tail heavy, or in the rear if nose heavy. Glide the ship in the usual way. Incidentally, it is not necessary to spin the rotor, as it starts up quickly by itself. Make test flights with about 100 turns, adjusting the rudder to make the model circle to the right.

If the craft seems to be somewhat sluggish, or tends to "hang" or dive, bend the rotor axle forward or backward slightly to reduce or increase the incidence of the rotor. When stretched out and wound with a winder, 650 turns can be stored in the rubber. This "pulling out" system, you know, makes it possible for longer flights.

Like its big brother, your "giro" can never stall or spin and will always make "feather bed" landings. So there's no need to be afraid of flying her on full power—that is, if you first make absolutely sure that everything's in perfect working order.

That's all we've got to say about this model, lads. But we think it's only fitting that the first *revolutionary* design in aviation should have *rotating wings!* As Phineas would say—Haw-w-w-w-w!

Scale Bombs

(Continued from page 46)

be wiped off before it dries, since it is difficult to apply a good enamel or paint finish over this adhesive.

On real bombs, fin braces are installed to prevent vibration and consequent inaccuracy in finding the targets. On our models, fine wire or thread can be used. See Fig. 2 on the drawings for details of bending wire "suspension lugs." If one isn't too particular about detail, small wire brads may be driven into the wood until only their heads protrude.

Army bombs are painted specific colors for identification. And if you follow the official plan (see the accompanying chart) you can give your work not only brightness but also a real note of accuracy. A loaded (with T.N.T.) demolition bomb, for instance, is painted yellow overall, with stenciled lettering to denote its exact type and size. A chemical bomb is gray overall, with additional information indicated by variously colored bands, as shown on our chart of colors

and markings on page 46.

The usual routine for good paint work should be followed in finishing off model bombs. A strictly smooth surface must be obtained by careful sanding with the grain, then successively finer grades of sandpaper should be used until the wood is velvety to the touch.

At least two coats of paint, dope, or enamel should be applied. Sand as usual between coats and allow plenty of time for drying. Final details such as lettering, etc., may be added with a soft black pencil or drawing ink. I prefer the pencil due to the difficulty of making ink behave on the smooth rounded sides.

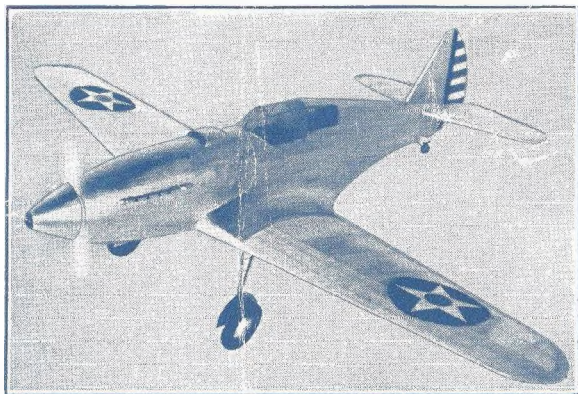
That's the whole story, lads. You're now ready to go out and lay your own "eggs." But since they're sorta fragile, mebbe you'd better be a little careful as to the tensile strength of the material that they drop on—or you'll have *scrambled eggs!* Anyhow, here's wishing you bomb voyage!

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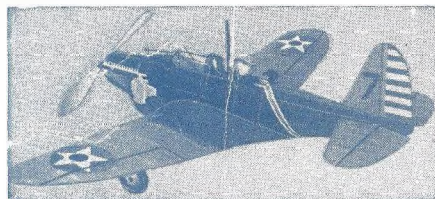
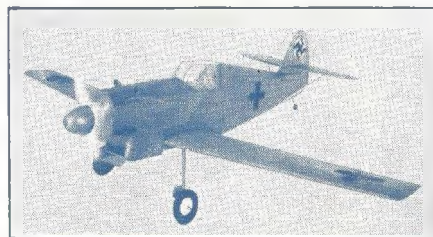
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