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MODEL  
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FACT

WHERE IS GERMANY'S SKY MENACE?

by

ARCH  
WHITEHOUSE



# FLYING ACES

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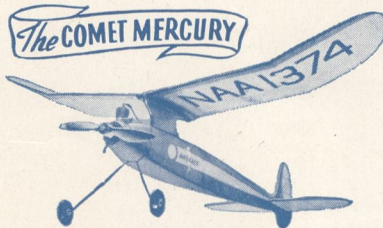
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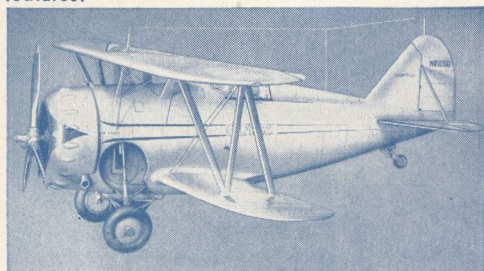


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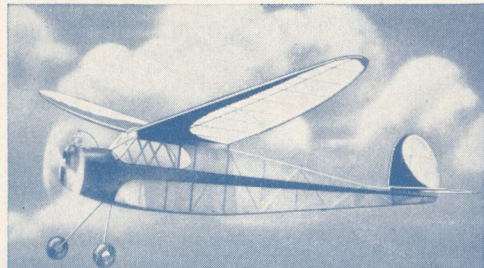
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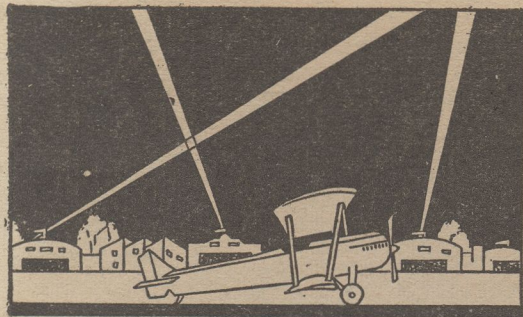
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FLYING ACES

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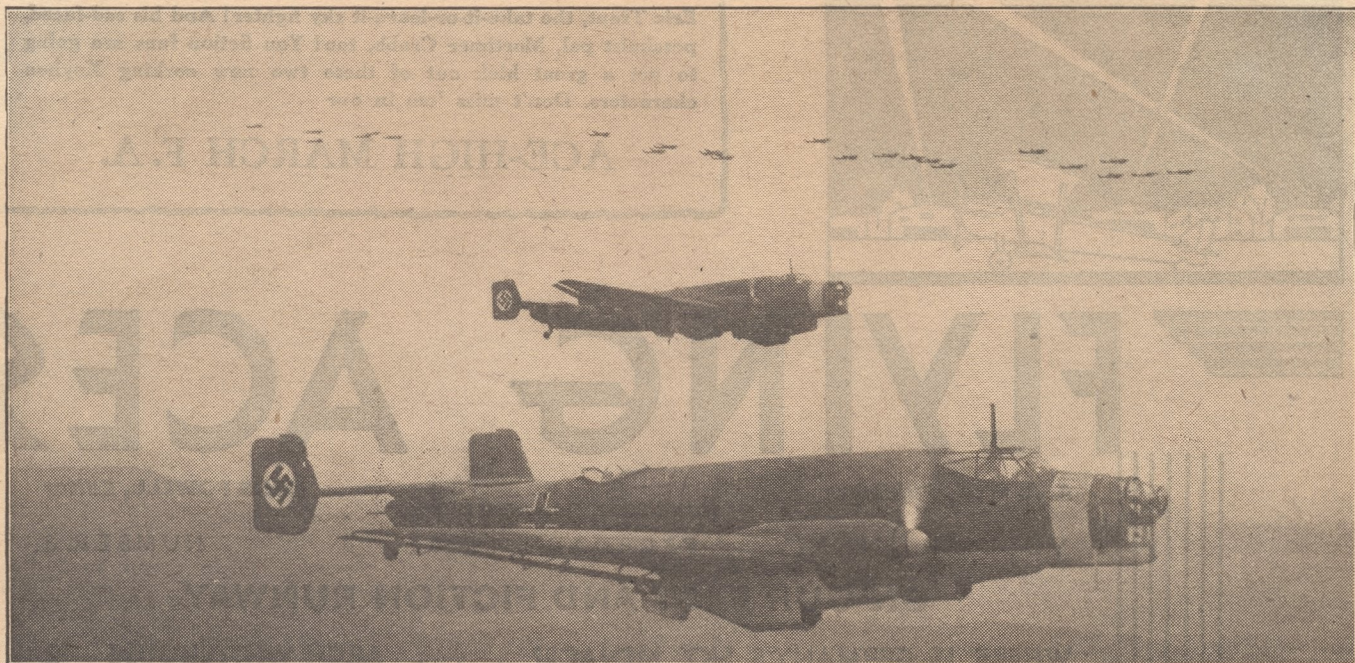
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Cover Painting by August Schomburg



These highly-vaunted Ju. 86K bombers do not represent a true military type—for they were actually evolved from a commercial transport design. And it's now said that the Germans themselves are putting the "obsolete" tag on them.



# Where Is Germany's Sky Menace?

★ ★ ★

**By Arch Whitehouse**

Author of "Warplanes Pack Punch!", "This Sky War—Is Different!", etc.

**J**UST before this new war began, our newspapers talked of little else but Germany's "terrifically powerful air force." At that time, the Nazi *Luftwaffe* was cloaked in a great veil of secrecy, and meanwhile those who professed to have been given a peek behind the scenes came back with startling statements concerning the numerical size and the quality of the German aero arm. We were told that Goering's flyers could take on the combined sky forces of the rest of the world and knock them off in Joe Louis style.

But so far none of the great threats have materialized. The Nazi bombing has been no better than we disbelievers expected. And their great fighters have been met and consistently peppered out of the clouds by the

French and the British. On the other hand, British bombers have flown unmolested over Germany night after night, whereas British defense squadrons have blocked off most every thrust the Germans have staged against important British naval and military bases.

As for the French, they've flown daily reconnaissance flights over the West Wall with little or no opposition.

At this writing, the Second World War has been in progress some twelve weeks. And with that much of it under the bridge, we are now finding out why the German Air Force has failed to come through according to

advance notices. First off, many German machines have been captured, giving French and British authorities a chance to study them first hand. And now I am going to present some of these facts and figures to give you a slant on why the Nazi cloudsters have not come up to those early exaggerated expectations.

There are many reasons, of course. Anti-aircraft fire has improved, methods of detection have improved, fighting formations and tactics have improved. But above all we cannot ignore what at this point looks like the real superiority of Allied equipment and fighting men.

As we just said, a considerable number of German planes have been taken that were not crashed badly enough to obliterate their so-called structural "secrets." In fact many were captured intact. Well, I have been fortunate enough to receive through official channels much of the detailed information which has been gathered as the result of these examinations of captured craft. I have seen many detailed draw-

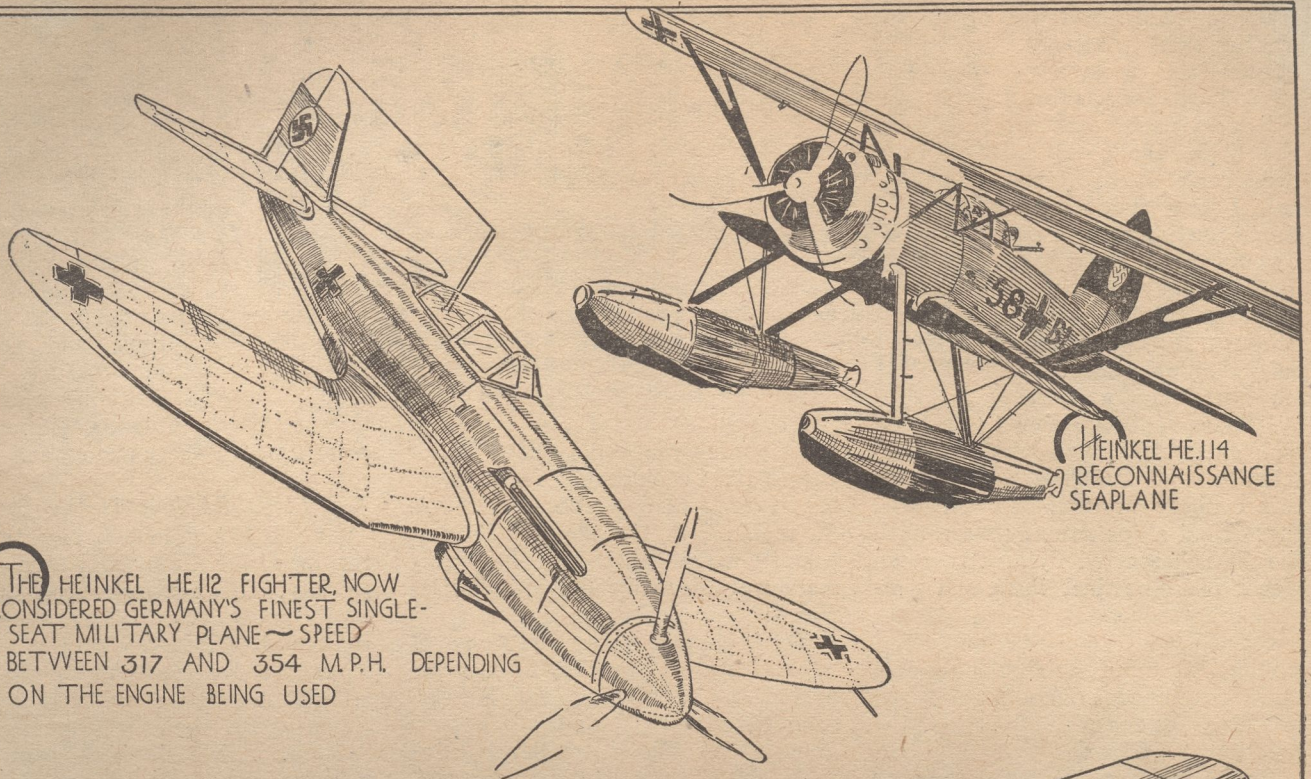
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**Aero pessimists have long frightened gullible news readers by telling them Hitler commanded a fearful sky-fighting horde—a force powerful enough to lick the whole world. But today the bottom has fallen out of that ballyhoo. And in this piercing and revealing article, Arch Whitehouse tells you why.**



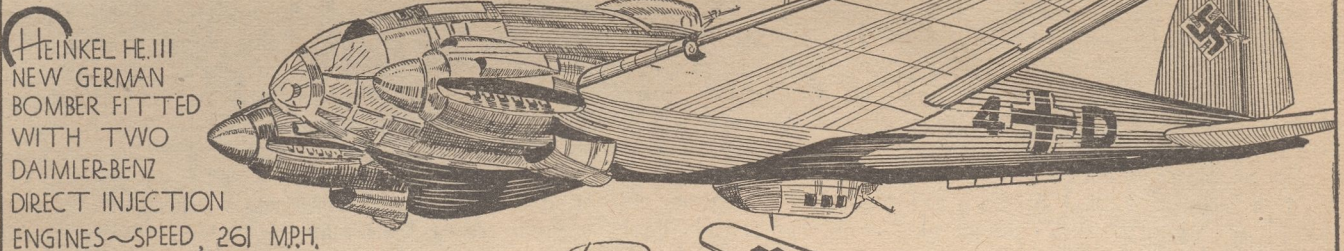
# SIX THEY REALLY HAVE

Through Allied Intelligence, neutral sources, and the study of captured planes, the true status of the German Air Force is finally being brought to light. These sketches by the author depict half a dozen Nazi fighting jobs that are no longer mysteries.

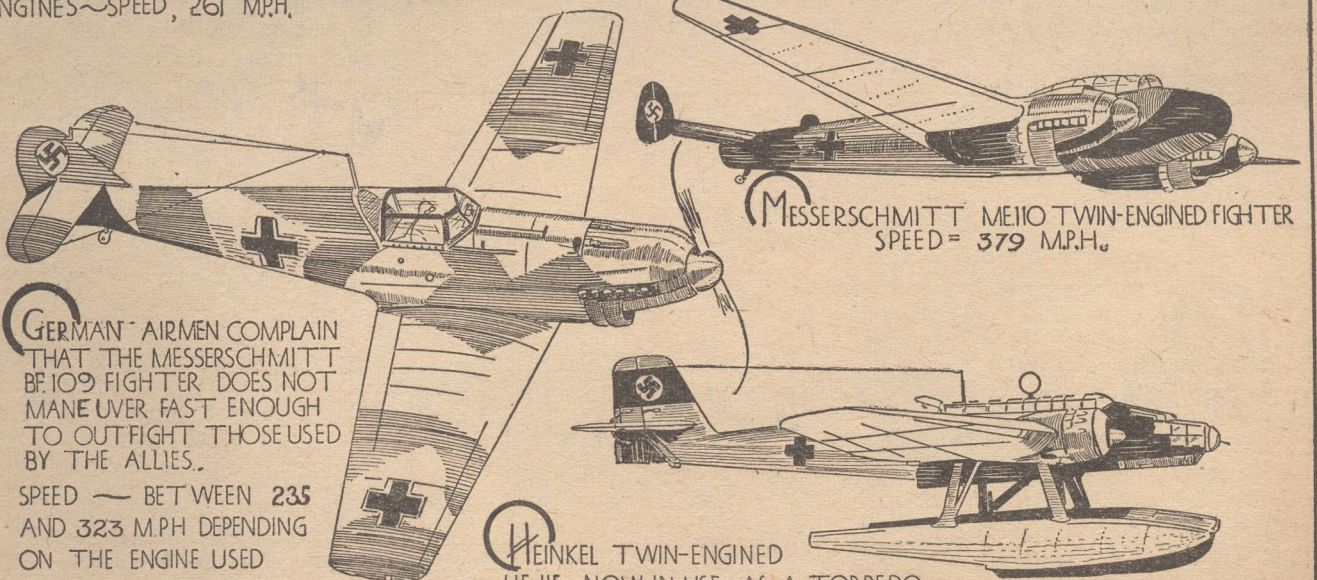


THE HEINKEL HE.112 FIGHTER, NOW CONSIDERED GERMANY'S FINEST SINGLE-SEAT MILITARY PLANE—SPEED BETWEEN 317 AND 354 M.P.H. DEPENDING ON THE ENGINE BEING USED

HEINKEL HE.114 RECONNAISSANCE SEAPLANE



HEINKEL HE.111 NEW GERMAN BOMBER FITTED WITH TWO DAIMLER-BENZ DIRECT INJECTION ENGINES—SPEED, 261 M.P.H.



MESSERSCHMITT ME.109 TWIN-ENGINE FIGHTER SPEED = 379 M.P.H.

GERMAN AIRMEN COMPLAIN THAT THE MESSERSCHMITT ME.109 FIGHTER DOES NOT MANEUVER FAST ENOUGH TO OUTFIGHT THOSE USED BY THE ALLIES.

SPEED — BETWEEN 235 AND 323 M.P.H. DEPENDING ON THE ENGINE USED

HEINKEL TWIN-ENGINE HE 115 NOW IN USE AS A TORPEDO-BOMBER. IT USES B.M.W. ENGINES. SPEED 215 M.P.H.

Art  
Whitehouse

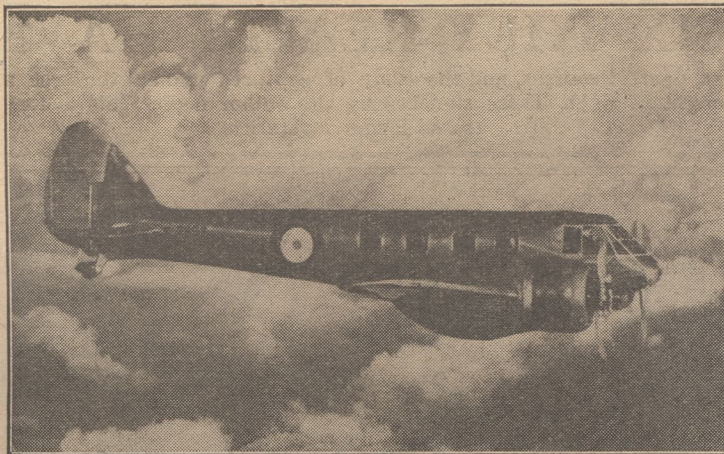


ings of structural features and photographs of the actual planes. What's more, I have been sent reliable performance figures on these planes. It is from this data that I am writing this article and drawing the accompanying full page illustration.

But let us take these planes in their order. First come the fighters, and I am making no startling statement when I point out that in the field of single-seat jobs Germany has been sadly let down. It was accepted quite early that the British Hurricane and the Spitfire can outmaneuver and outfight the vaunted Messerschmitts and Heinkels. But few in this country realized how unsuited those Nazi ships actually were until the French started flying American Hawk 75A's against them and winning every time.

One German airman is quoted as saying: "Our Messerschmitts handle like streamlined bricks as compared to those American fighters in the hands of the French."

Now here is a point I wish to bring up again: The Hawk 75A is nowhere near as fast as the Messerschmitt. The Curtiss firm states that the Hawk, as sold to France, has a top speed of 280 and cruises at 240. The standard Messerschmitt, as we have told you so many times before, has been over-rated as to speed because one specially-groomed model was supposed to have done 379 m.p.h., and then was later souped up into the 400-plus category. But the actual service types with the 950 Daimler-



It's the Britons who have what is termed "the fastest and most efficient medium bomber in the world." That's this Bristol Blenheim, many of which have been used on leaflet raids over Germany. Top speed is put at 285 m.p.h.

Benz engine really does little better than 310. Considerably faster than the Hawk, yes. However, that extra 30 m.p.h. hasn't made the Messerschmitt a real match for the highly maneuverable and well-armed Curtiss Hawk.

Yet even that 310-m.p.h. figure is hard to go by, for they're now reported to be turning out Messerschmitts with anything that will turn a prop over. Some are being fitted with the 670-h.p. Junkers "Jumo" 210-G.

The armament on the Messerschmitt appears to vary with nearly every plane captured. Almost all have had two fixed 0.311-in. machine guns under the engine cowlings. But there standardization seems to end. Fittings in the wings were set to take two 23-mm. air cannon, but with few exceptions, these mountings were not topped with guns. A Danish Madsen gun was found aboard one captured Messerschmitt.

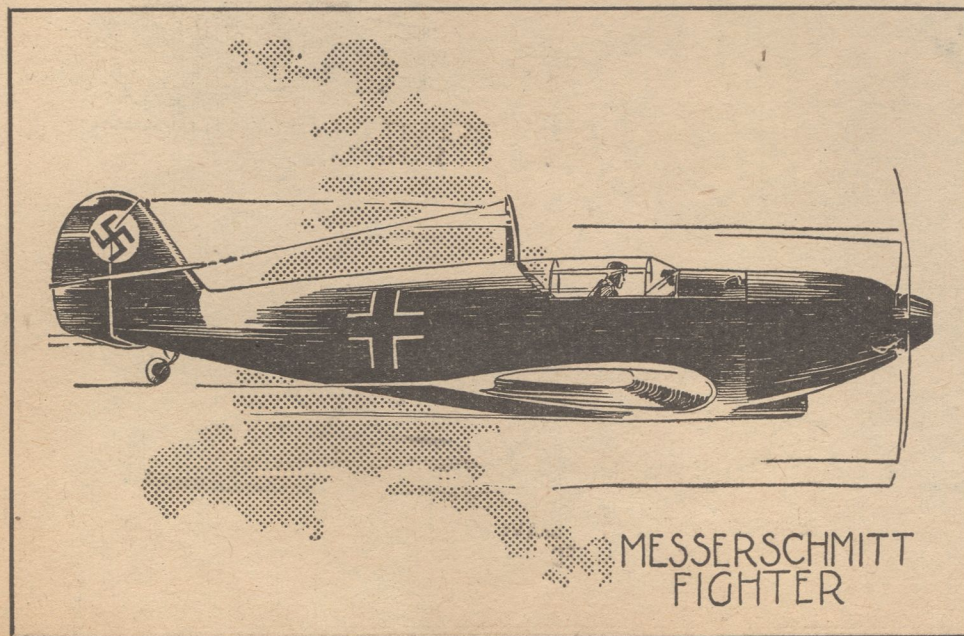
Experts have tried to discover why this machine is so slow in maneuvering qualities. Some point out that the plane was developed from an old Messerschmitt racing machine, thus contracting all the forward speed qualities but few of the aerobatic features desired in fighting machines. The ship might even be considered a makeshift if we judge from photographs of formations showing the planes with varied styles of props, and several types of engines, while still retaining many of the undeniable traces of

racers, which are n.g. in war.

**WE'D SAY** it is the Heinkel He.112 which will have to bear the brunt of Germany's single-seat activity. To all appearances, this is a very fine military fighter. Long ago, British authorities stated that it was a far better plane than the Messerschmitt and would prove a worthy opponent for the Hurricane and the Spitfire. This job is a cantilever monoplane with a gull-wing. The fuselage is metal monocoque in structure. It is powered with the 1,070 Daimler-Benz engine and has a top speed of 354 m.p.h. Lighter powered versions of this plane, presumably for training purposes, use the 650 Junkers "Jumo" engine and have a top speed of 267.

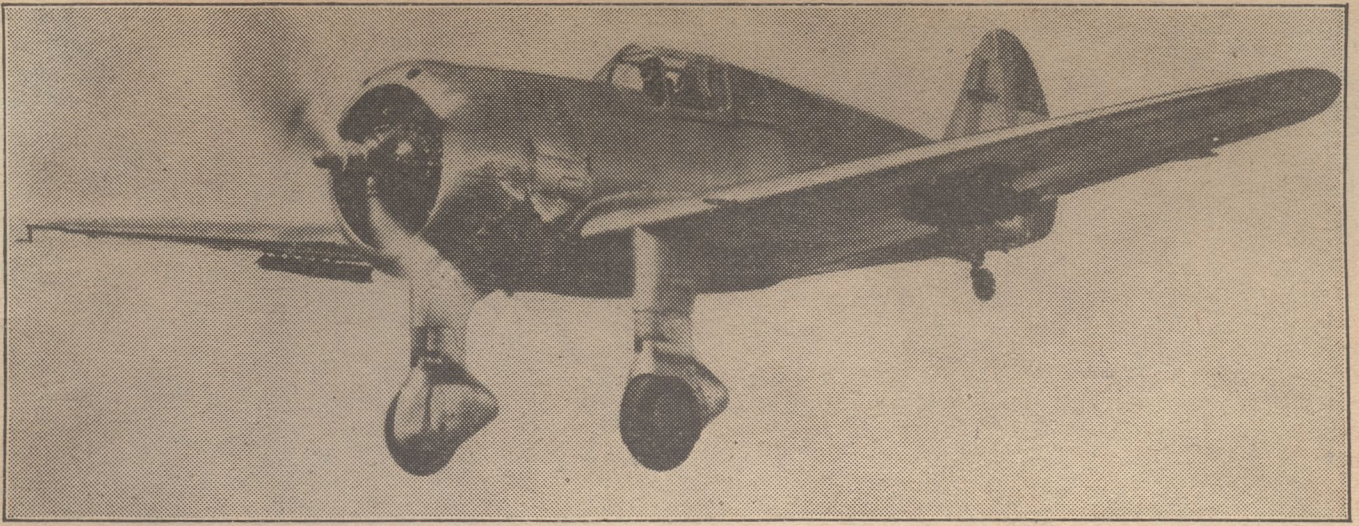
The so-called Heinkel record breaker—the 112-U—is said to have set up a speed mark of 463.95 m.p.h. But many outside Germany hesitate to even accept this bit of whizzing seriously since the photographs of the "trial" strangely showed two distinctly different Heinkels taking part in the event.

However, the Heinkel, because of its more adaptable speed and finer maneuverability, is certainly a far more useful piece of equipment than the Messerschmitt. It carries four guns, according to German reports. Here again, though, we find that while all carry two fixed rifle-caliber m.g.'s in the cowlings, the fittings for air-cannon in the wings are incom-



Left: Artist McWilliams' impression of the overly-renowned Messerschmitt fighter. Arch Whitehouse declares that it was developed from a racing job, with the result that speed was achieved at the sacrifice of much-needed fighting maneuverability





plete in the samples captured. They do carry four to six 22-lb. fragmentation bombs, though.

At present, the Heinkel and Messerschmitt appear to be Germany's chief fighters. But Germany, like other European powers, is seriously considering the larger multi-engined fighter, too. And already the Allied Intelligence has uncovered details of a new Messerschmitt two-engined fighter listed as the Me.110.

We have offered a drawing of this interesting machine. The engines are Daimler-Benz DB-601 types which can turn out 1,360-h.p. apiece. They give the Me.110 a top speed of 379 m.p.h. According to French officials, this plane carries two fixed "shell guns" (as air cannon are now being termed over there), and four movable machine guns.

If this plane is properly manned and piloted, it might become a great factor in Goering's air arm. It would, of course, be used for long distance escort work for bombers, and if necessary it could handle a few bombs itself. There are also reports that the Focke-Wulf firm has turned out a fighter with a pusher-type propeller, but details are lacking on this machine.

Now for dive-bombers, a class of especial importance in this war: Ever since its inception, the German Air Force has been particularly interested in dive-bombing. The Nazis appear to work on the theory that dive-bombing need not, of necessity, mean that the bomb is released while the plane is diving directly at its target. They figure they can be released as the plane is pulled out of its dive, and not necessarily while the plane is being aimed at the target, which is the generally accepted fashion. According to German officials, the bomb does not travel in a straight line after its release anyhow, and so they've evolved an entirely new theory to score hits.

Whether or not the United States

Air Service has decided there's anything to this new idea is not known.

In the German method, the planes are usually "corkscrewed" down on the ailerons—in order to confuse the defense's gunners. Then the final aiming dive is made at an angle of from 60 to 90 degrees and lastly the bomb is released at a height of from 1,000 to 3,000 feet. Don't argue with me about this, I'm only quoting German methods.

Another interesting point here is the matter of applying special flaps to slow up the dive, so that the pilot can make a more accurate attack, and of course to keep the wings from coming off. The advent of monoplane

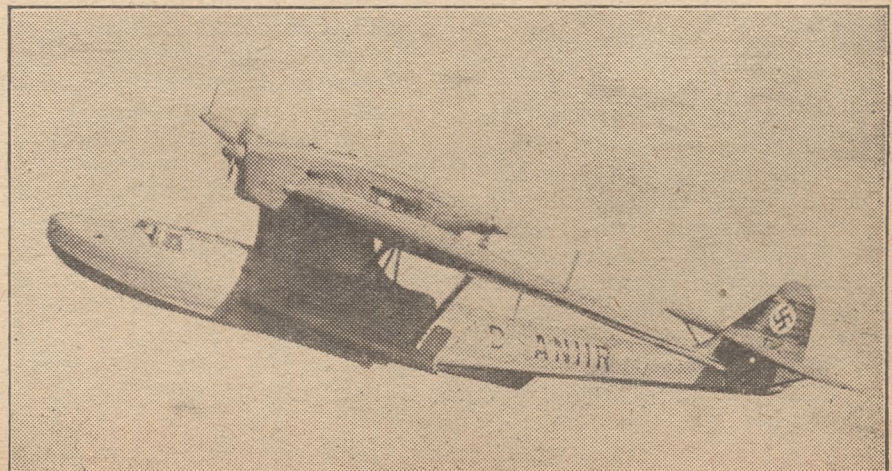
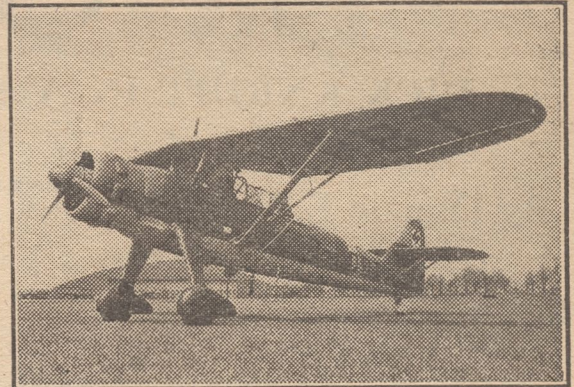
French pilots flying American-built Curtiss Hawk 75A's have won impressive victories over Goering's Messerschmitts. The 75A is the retractable-undercarriage version of the Hawk 75, shown above.

bombers has made this precaution imperative.

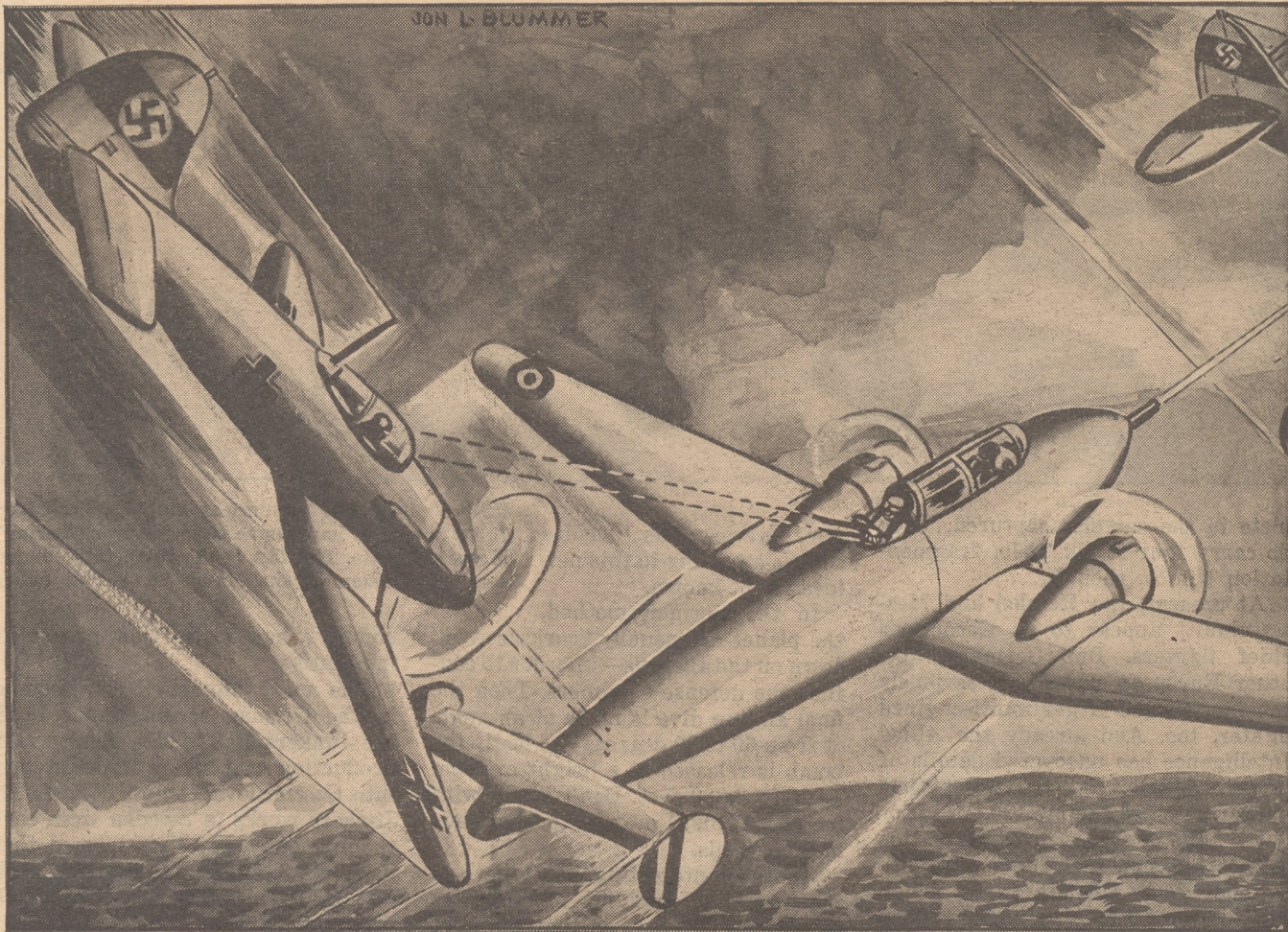
The most important dive-bomber in the German service is no doubt the Junkers Ju.87. This plane was in production long before Hitler stepped into Czechoslovakia and Poland. The Junkers works in Sweden were early turning out what they termed their K47, a two-seater fitted with a 600-h.p. B.M.W. engine which no doubt was the daddy of the present Ju.87. The 87 has the same type wing, the same undercarriage, and similar

(Continued on page 62)

Right: Last Spring, the Nazis slated this Henschel 126 fighter-bomber as an export model—but it's now ten to one all copies of it will be needed at home. It's a 225-m.p.h. two-placer. Below: Germany certainly hasn't shown the Allies any real boat-form overseas bombers. Dornier Do.18's of this type have been used for raids over Scapa Flow—the same planes that were used a few months ago to fly mail to Brazil.







# The Golden Strafe

DICK KNIGHT IN A SMASHING NEW-WAR MYSTERY

\*\*\*

By Donald E. Keyhoe

Author of "Death Flies the Maginot Line," "Falcons of the Flame," etc.

Illustrated by Jon L. Blummer

\*\*\*

## CHAPTER I

### THE SHINING PILOTS

IT WAS A QUEER sort of war when a gunner could go to sleep in the rear cockpit! Dick Knight looked over his shoulder and grinned at the chunky figure of Lothario Doyle, who was sprawled comfortably in the gunner's seat of the Potez 63; an unlighted cigar dangling from the corner of his mouth. Shifting hands on the stick, Knight picked up the interphone "mike" connected with Doyle's head-phones.

"Hey, Lothario—Nazis!" he shouted, simulated alarm in his voice.

Doyle's eyes popped open, and he made a wild grab for his guns. Then he saw Knight's amused face.

"A fine pal," he said aggrievedly. He picked up his cigar, glowered around the tip of his crooked nose at the taller man.

"Just in case you've forgotten," Knight said drily, "we're still in a French ship, even if we did get out of their air service. And I've a peculiar aversion to having my pants unnecessarily dusted with lead—it's almost a superstition."

"Aw, nuts!" growled Doyle. "There ain't any Nazis down this way. We ought to be to Dover by now."

Knight glanced ahead over the empty waters of the English Channel. The setting sun had emerged from heavy clouds to stream its red rays brightly across the sea.

"Can't tell, with that glare," he said. "But we should be in London by seven."

"And me with seven dames' telephone numbers right out of General

La Roche's little red book!" chortled Doyle.

"Lay off those numbers until we contact the Embassy," said Knight.

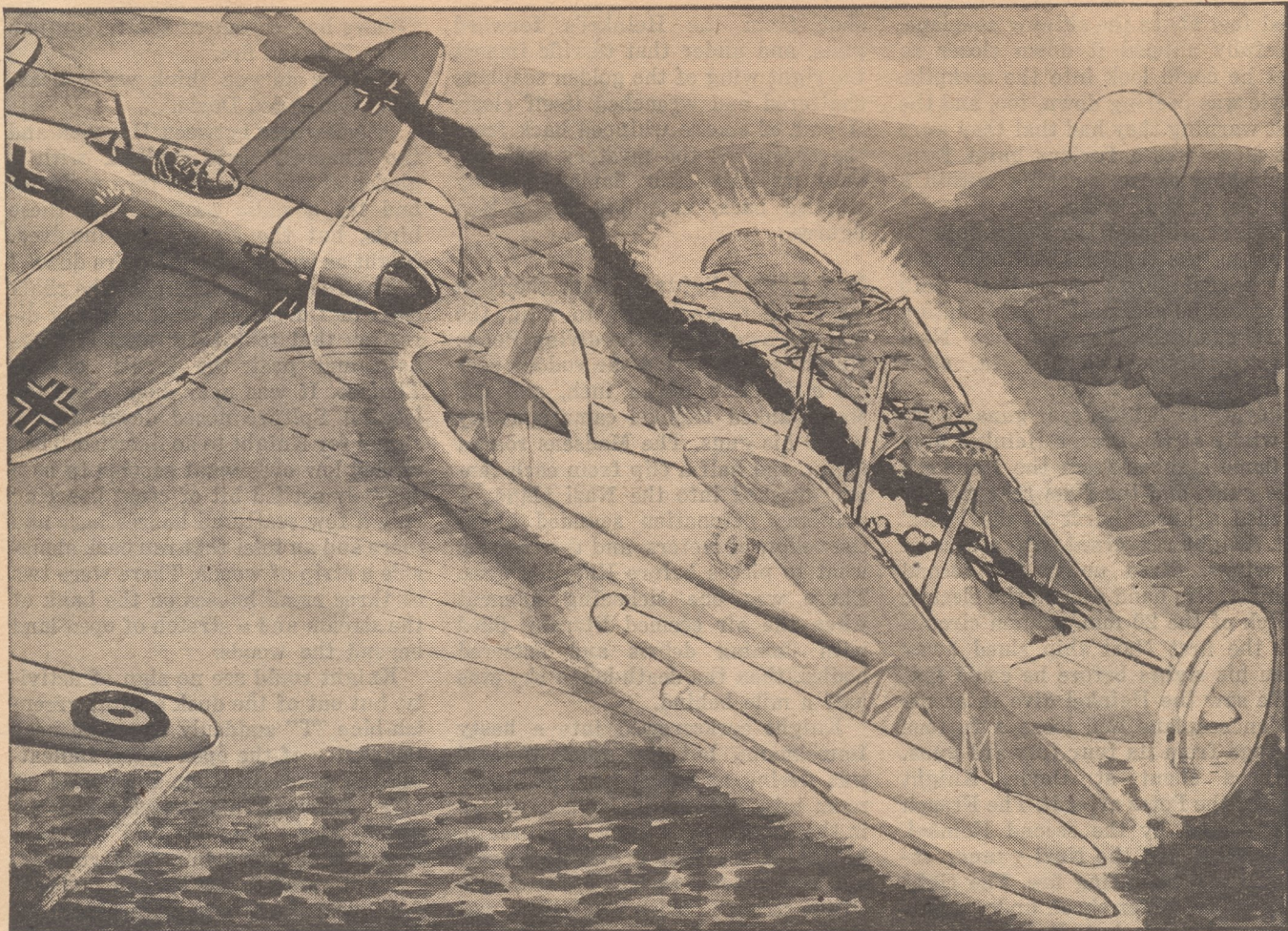
"I wish I'd socked that fat-head Rodman at the Paris Embassy. Because of him we're practically two guys without a country—and with a couple of bum passports, to boot."

"He certainly kept us from getting back on the secret Q-roster," admitted Knight. "It's a good thing General La Roche appreciated that little help on the Maginot Line fracas and winked at the Le Bourget Field chaps."

"What a man," said Doyle. "Gets us a ship, clears us for London—and tosses in three bottles of Napoleon brandy and seven telephone numbers. And I used to hate Frogs."

"Keep those bottles out of sight until I've explained things to the Limeys," warned Knight. "They'd probably think we were a couple of deserters doing a little smuggling on the side. We'd be plenty in dutch."





**Knight flung the Potez at the Nazi—but he was an instant too late. Four streaks of fire shot from the Heinkel's forward guns and shattered the right wing of the diving golden seaplane!**

"Don't worry—I'm not riskin' their grabbin' off th' brandy," smirked Doyle.

As Knight turned back to the controls something half a mile southward and just under the clouds caught his eye. It was gone before he could get a second glance.

"Keep your eyes open," he flung back at Doyle. "I just saw a ship duck into the clouds."

"Say, have you been hittin' one of those bottles?" demanded Doyle.

"It was a ship," Knight said positively. He gazed around the sky, but nothing broke the almost solid expanse of clouds. A few moments later, as he was straining his eyes to peer into the sun, Doyle let out a yelp.

"Look! Back there—*holy mackerel!*"

**K**NIGHT JERKED around, stared as he followed Doyle's pointing finger. Slanting out of the clouds, pointed diagonally across their trail, came a golden seaplane. From pontoon to wingtips, from rudder to the bright yellow blur of the prop, it looked like a creation in gold, sparkling and shimmering in the

ruddy rays of the late afternoon sun.

Knight banked sharply, slowed the Potez to the mysterious seaplane's speed, and cut in nearer. Then an odd tingling went down his spine.

The pilots were golden, too!

Like statues molded from the precious metal, both sat motionless in the flatly gliding ship. The golden pilot was leaning over the side of his cockpit, his helmeted head out in the slipstream from the brightly whirling prop. The gunner's enclosure was open, his single gun tilted up on the half-turned tourelle. His face—a dazzling gold—looked fixedly upward

---

**Twice that mysterious horror—the "Golden Death"—had struck seasoned R.A.F. pilots from the sky! And as that second shining victim floated through the blinding rays of the air base searchlight, he vented an agonized scream in grim warning to all who might dare to oppose that merciless terror. But Secret Agent Dick Knight could not turn back from the sinister trail of that veiled riddle—even when Fate ordered a post mortem on a dead man who still lived!**

into space, showing no sign of life.

"Good Lord!" Doyle burst out. "They can't be human—they're—they must be some sort of robot pilots in human form!"

"Robots!" Knight muttered to himself. A brief sense of relief took place of his first horror. Doyle was probably right. The thing was incredible, but that must be the answer. And yet, there was something terribly lifelike about those two golden figures . . .

"What th' devil could be the idea?" Doyle said tensely.

Knight shook his head, edged the Potez in closer. Though not a mark, not a symbol, broke the smooth gold of that weird seaplane he recognized the outlines of an English Fairey "Sea Fox," a light reconnaissance job adopted by the Fleet Air Arm two or three years back. But what could the British be doing with a golden plane—even if it was operating under radio-control like the "Queen Bee" seaplanes? And why those two golden figures . . . ?

The mystery plane was nosed down in a long, power glide. Once or twice its wings swayed slightly. Knight lifted the Potez a hun-



dred feet above the shining seaplane, carefully slipped it down closer so that he could look into the cockpits. Doyle was peering down, too, and the first warning they had that they were not alone was a furious burst from somewhere above, smoking within a few feet of their wing.

Knight whipped the Potez around, ramming the throttles full open, and the second burst curved off into space. As he slammed the ship into a swift chandelle he saw two Nazi bi-place Heinkels diving in, ebon crosses on their wings.

Doyle whirled the rear guns, blasted wildly at the nearer Heinkel. Jets of flame stabbed from the Heinkel's nose guns, and the Nazi rear gunner pitched a hasty burst at the Potez' tail. Knight renversed with a scream of wings, dived under the second Heinkel. His hand was on the electric switch of the 20 mm. cannon circuit, but the first Nazi ship slued away from his sights before he could fire.

He saw the Heinkel dive in at the golden seaplane and loose a furious barrage from its four forward guns. With a shout at Doyle, Knight hurtled the Potez after it. The French ship flashed by the second Heinkel, with Doyle and the Nazi gunner exchanging a blistering fire. The right wing of the Potez shook under a battering of lead, but Knight kicked away before it could do serious damage. With Doyle covering the tail, he charged down at the other Heinkel, which was now within two hundred feet of the golden seaplane.

The Nazi rear-gunner saw them coming and frantically swung his tourelle. Knight's fingers closed on the Madsen firing-buttons, and his two cannons roared simultaneously. But in that same split-second the Heinkel pilot swerved violently, and the deadly Madsen shells smoked harmlessly by. The Nazi pilot skidded to the left, and Knight had to zoom madly to avoid a head-on collision with the golden seaplane.

The cockpit enclosure trembled under a furious lashing, and Knight ducked as shattered fragments of Plexiglas flew in all directions. Then Doyle's guns clattered again, with a long, fierce roll, and that blast of tracers abruptly ceased. Knight flung a hasty look back and saw the Heinkel sheering out with the rear-gunner toppled over in his cockpit. Before the pilot could pull back from that swift overshooting, Knight had the Potez screeching headlong at the other Nazi ship.

But fast as he was, he was an instant too late. Four streaks of fire

shot from the Heinkel's forward guns, and under that terrific impact the right wing of the golden seaplane shattered and wrenched itself clear. A puff of smoke whipped back from the engine as the mystery ship fell onto its side, and flame suddenly whirled back, engulfing the golden figures.

WITH a lightning turn, the Nazi pilot now tried to fling the Heinkel away from the diving Potez. Knight's feet moved the rudder pedals a fraction of an inch, and the steep-banked Heinkel came squarely under his guns. The Madsens roared again, and half a clip from each cannon crashed into the Nazi plane. A grinding detonation sounded above the bellow of motors, and the Heinkel went to pieces before Knight's eyes. There was one sickening moment when the air seemed literally filled with flaming debris and battered bodies, then the death-laden sky was half a mile behind.

Knight corkscrewed into a hasty Immelmann, but the other Heinkel was fleeing at top speed. He saw it zoom into a steep climb, then vanish in the clouds. Drawing a long breath, he forced his taut nerves to loosen, and looked down at the sunlit waters. Of the strange golden plane there was now no trace. Evidently it had sunk as soon as it had struck. He looked back at Doyle, and saw that he was unhurt.

"If I'm as white as you are," he told Doyle through the inter-phone, "we'd pass as a couple of good ghosts."

"We came close to *bein'* ghosts, if you ask me," Doyle said shakily. He stared down at where the golden seaplane had disappeared. "Those Nazis sure were hot after that ship. I wonder what—"

He broke off as Knight started to climb—for three fighters had suddenly materialized against the last rays of the sun. They closed in at amazing speed. Knight was about to reach for the Madsen switch again when he recognized the ships as Supermarine Spitfires. The pilot of the leading Spitfire veered in, throttling his motor, while the others circled tightly overhead. With a peremptory signal, he motioned for Knight to change his course and fly parallel. The two other Spitfires dropped back on the French ship's tail.

"Might as well have stayed in France," Knight said, in disgust.

"We've hopped out of the frying pan right into the fire."

"Where do you think we're heading?" demanded Doyle.

"Somewhere between Harwich and the Thames," said Knight, with a glance at the map. "I'd take a chance and try a radio contact with these birds, but the story's too involved. Might as well wait until we're down."

The four ships sped past the chalk cliffs of Dover in a northeasterly direction that took them west of Margate and past the mouth of the Thames. It was near dusk when the leading Spitfire nosed down with a signal for Knight to do likewise. They circled low over what seemed to be a sparsely settled bit of coast boasting only a few scattered houses here and there and an inlet that ran back alongside a strip of woods. There were two or three small houses on the bank of the stream and a stretch of open land beyond the woods.

Knight could see no sign of activity, but out of the dusk a faint greenish-blue "T" suddenly appeared near the center of the open space, indicating the wind direction. He leveled off after lowering his wheels, and the Potez made contact and rumbled along an unpaved but solid runway.

As it came to a stop two hundred feet from the woods, several men in British air force uniform ran out and guided the ship to an opening between the trees.

Then he realized that camouflage nets were suspended between the branches and that a considerable number of Spitfires were scattered through the woods. Shielded lights revealed rows of fuel drums and several tents, beyond which he could dimly see four or five seaplanes of the Fairey Sea Fox type and two of the newer Lerwick flying-boats drawn up on a ramp beside the inlet. He knew then that the houses he had seen were in reality repair-shops and quarters for at least part of the air-base personnel.

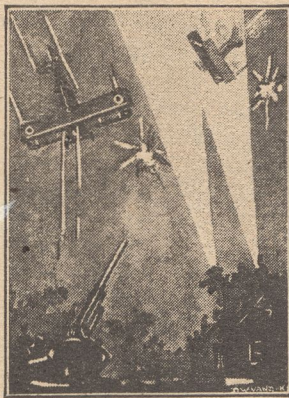
The three Spitfires landed in swift succession, and were soon under the nets with the Potez. Knight switched off the twin motors, and he and Doyle climbed out just as a portly English major appeared with the leader of the Spitfire trio. Two armed Tommies followed the major.

"No trace of any Nazis when we got there," the senior pilot was saying as they came into earshot. "But I found this Potez and brought it in."

"Quite right, Hetherton," said the major pompously. "We've had no advices from the French as to their operating this far over. But I'll soon get the story out of these two."

He halted before Knight, cleared his throat.

(Continued on page 56)

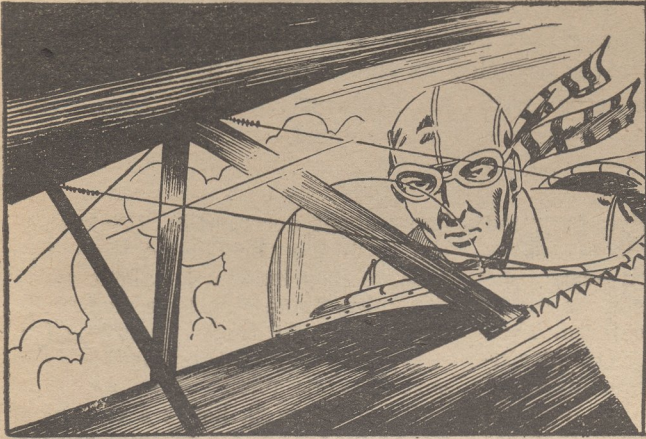




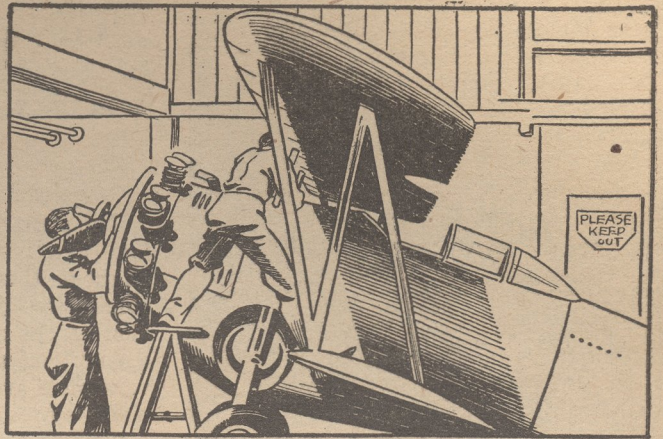
# They Had What It Takes

XXXVII—LEROY E. GRUMMAN—TOP-NOTCH DESIGNER

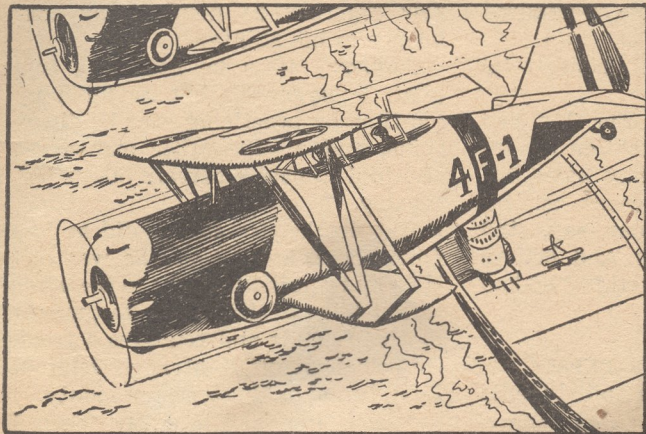
By ALDEN McWILLIAMS



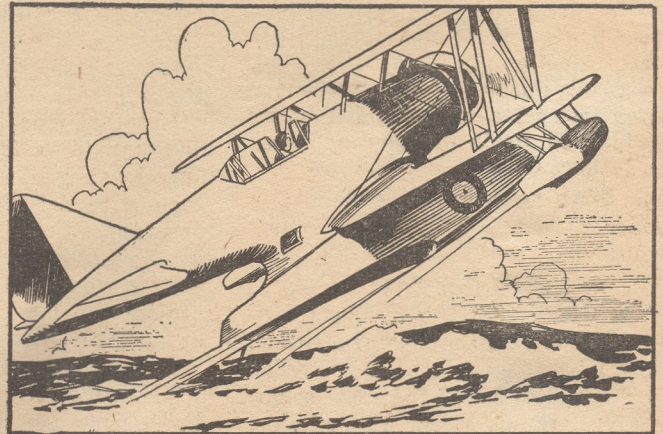
1—Born in Huntington, L. I., Leroy E. Grumman received a Mechanical Engineering degree from Cornell University. He was in the Naval Air Service at Pensacola during the First World War, and became a Naval test pilot in 1920. He next spent three years at the Naval Aircraft Factory in Philadelphia, then several years with the Loening Aircraft Company in New York.



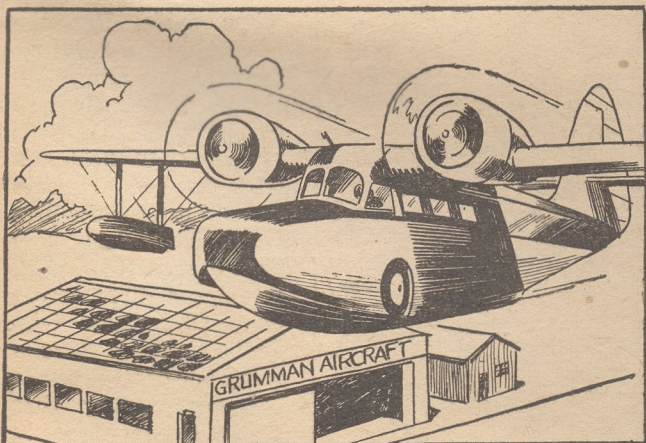
2—He rented a small frame shack in Baldwin, L. I., in 1929 and began his career as a manufacturer by turning out amphibian floats for the Navy. In 1931, after painstaking work, the infant company completed its first ship, the XFF-1. This two-placer was 25 to 30 m.p.h. faster than the current single-seaters. A contract for 27 jobs was granted by the Navy.



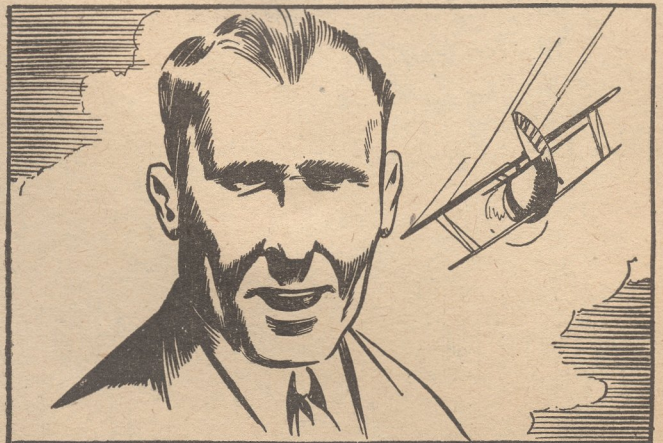
3—In 1932, Roy moved his company to Valley Stream, L. I., where 34 ships of the SF-1 type were built for the Navy. After these airplanes had seen lengthy service on the U.S.S. *Lexington*, they were distributed among Naval Reserve squadrons. At this time, Grumman, foreseeing increased success for his company, moved to more spacious quarters in Farmingdale, L. I.



4—Late in 1934, one of Grumman's stock Coast Guard JF-2's broke Seversky's amphibian record, chalking up a new mark of 194 m.p.h. This proved to the world the designing efficiency of the Grumman Company, and it also showed that biplanes were not quite yet ready to be relegated to the scrap heap. Ships of this type are still employed in the Coast Guard service.



5—Roy Grumman moved his company again in 1936—the third time since 1929—to Bethpage, L. I. Here, F3F-2, F3F-3, F4F-2, and J2F-1 types were built for the Navy, also a number of G-21's. The G-21 amphib, shown above, has been widely sold to England, New Guinea, and Australia for military purposes. Moreover, many Americans have bought these seven-placers.



6—Long Island is rightfully proud of her Grumman Company, which builds virtually all of the Navy's shipboard fighters. But Roy Grumman, the man behind the company, is little known. He is quiet, unassuming—a plain, all-around, regular fellow who has worked hard and studied long to get where he is. We hail the man who has made Grumman an American by-word.



# “Talk About

Many a fledgling flyer has told you in these pages what he went through to win his wings. But how about the poor, harassed instructor? What does HE go through? We asked Sky Trainer Fred Lord. And Fred, after assuring us that most of his studes have been Okay, came across with this lively article about those who weren't. It's a honey!



## By Major Fred Lord

Flying instructor, war Ace, and author of “I Faced Death in Spanish Skies,” “Close Calls in Russia,” etc.

With Cartoons by Joe Archibald

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### GOOD OLD JON!

OVER THE BAY at Floyd Bennett a Cub climbs for altitude. Up it goes to 2500 feet. The stick is pulled back, the nose comes up fast into a vertical. It hesitates, then points down. A beautiful whip stall! Beautiful—and how!

The plane now dives for speed and two perfect loops follow. Right on the button—each time coming out in the same direction as the ship entered. Then a snap roll and a vertical reversion are followed by a precision spin.

“Who’s that guy?” inquires one of my instructor pals in admiration.

“Jon Paliologue—my student!” I proclaim with expanded chest.

“Not bad! Couple of hundred hours, huh?”

“Nope. Exactly eleven hours total time.”

And that was true. For Jon had always paid *strict* attention to instructions. While he may have had some personal preferences on instruction, when I’d order, say, stall flying, stall flying it was. And, believe me, Jon would put everything he had into it.

### CROSS-COUNTRY CRACKPOT

UNFORTUNATELY, all students aren’t as good as Jon. Many, especially certain cocky fellows who are hepped on what they already

know about aeronautics, think they can fly like experts in no time just because they know a lot about aerodynamics, plane structure, and technical terms. All the instructor is for—to their way of thinking—is as a sort of safety pilot.

Oh yeah? Well, here’s a case of a young model builder whom I taught to fly several years ago—one of the many balsa fans who’ve come to me for time. This fellow quickly soloed. He knew his aviation. He was eager, learned fast. And during the time we flew together he inspired my confidence in his ability.

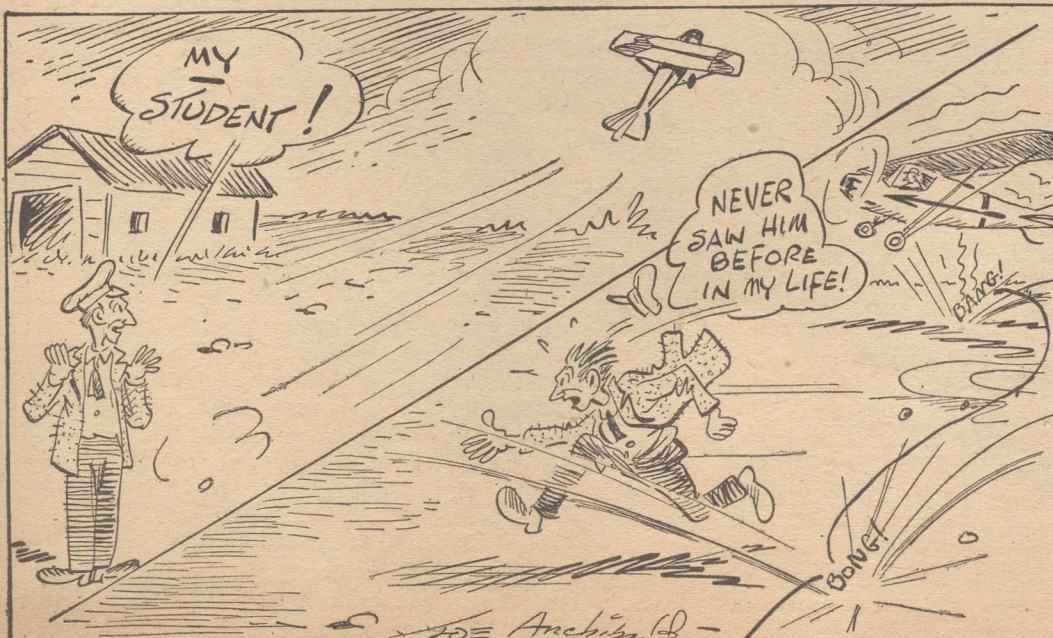
Anyhow, after he became a solo pilot, I suggested that he build up his time by practising spot landings, spins, and all the other maneuvers required to pass a private pilot’s test capably.

But not he. No sooner did he hop from the runway when he was off! He’d fly to-heck-and-gone to the other side of town to circle his home, maybe to give friends and relatives a treat. Or he’d buzz off to strange fields in Long Island or Westchester county.

“Good practice” he’d say when I remonstrated. “Gotta get experience somehow, you know.”

True, he *was* getting good experience, and by virtue of his solo license he was entitled to fly to other fields. But the point is that a fledgling flyer is courting decidedly too much danger when he wings off to a foreign field and tries to set his ship down there for the first time. The field may have obstructions on it, perhaps a ditch across one end, maybe telephone wires strung along one of its borders.

Hence, trying that sort of thing willy-nilly



Left: “The Life Of An Instructor”—a drama in two parts.



# Screwy Students—!"

is getting ahead of the game, as I figured it. Another angle is that when the solo stude buzzes off like that without notifying his instructor, the said instructor has no way of knowing where his nervy charge is going. All of which is no way to make an instructor happy. The CAA doesn't offer any congratulations on that, either.

Floyd Bennett Field, where I base my training, is well situated and larger than most other layouts. From all angles its approaches are clear, thus it's ideal for student work. The trouble, though, is that when our lads get used to it they somehow get the cracked idea that getting into *other* fields is the same old matter of circling in and setting down.

Well, things are not quite that easy—as our young model building friend found out. Because of his hankering for skipping the reins, he probably had more close calls packed into his green flying career than lots of old timers. The fact that he's still in one piece today is undoubtedly because of good luck rather than good sense!

Anyhow, I would reason with him, plead with him, and threaten him—but his next flight would invariably take in another field or two. An hour or so later, he'd float back over Bennett and I'd sigh with relief. When he left Bennett, the luggage compartment would be empty. But when he got back it'd be filled with assorted pies and candies as a peace offering—stuff picked up at heaven knows what airport. He simply loved flying cross country!

One day a ship sailed over the field in the wrong direction—right toward a number of other student trainers. At 1,000 feet it throttled back and spiralled down. But what a spiral! Nose up and stalling . . . flat turns . . . and *downwind* no less! "Good grief!" I thought. "That guy's going to spin in!" Then the goofy bozo did a 180-degree turn at about a hundred feet, nose still up and the prop barely turning over. Then somehow he bounced her down onto the field.

"Ye gods!" gasped another instructor standing near me. "Whose student is *that*?"

Mine I suddenly realized! My prize cross-country pilot.

I grabbed a car and raced across the field. Ooof! He had taken off again, which meant I had to live through another ordeal before I had him safely flagged down.

"Now my fine feathered friend," I said half out of breath as I climbed into the front seat, "take her off."

Up to fifteen hundred feet we went, and when we came back over the field I pulled on the throttle. "Let's see you land on that brown patch under us. And keep up flying speed, understand?"

"Sure, that's easy," grinned our hero.

Well, he *only* missed it by about a thousand feet. And he thought that was pretty good, too. Anyway, that

of dual just to correct those faults. Now let's take off again and we'll go through the full routine."

When we landed, a very sheepish and chastened model builder clambered out and scratched his head. "Gosh, Fred," he said, "I'm lousy all right and darn sorry I didn't follow your instructions. Next five hours give me dual. You bet!"

Today, this fellow is a bit of all right.

That matter of learning a lot about the aero game before you take up flying is Okay, too—just so you don't let it throw you.

## WHOOF—THE WIND!

**I** SOMETIMES doubt my wisdom in asserting that anyone can fly. Some people learn their maneuvers like parrots but never learn the whys and wherefores of the things that are really important in flying. For instance, one bird I trained had a fair mastery of the maneuvers and had long had his solo ticket. Yet one day he bowled me over with, "Say, Fred, why must I take-off into the wind?"

Speaking of this wind business, there was a prize story they used to tell us in the R.F.C. about the cadet who took off downwind. On realizing his mistake, he quickly *landed downwind*—then turned about and took off again into the wind!

And then there was the guy who had about twelve hours of dual when one day we got caught upstairs in a very high wind. With motor throttled, I poised her right over the field. I didn't attempt to land, knowing that the gale would wrap us up

into a ball if we set her down then. I decided to ride it out till the mechanics saw my predicament and came out to grab a wing.

Turning around to my student I said, "Look, we haven't moved a foot in the last five minutes." Well, he must have taken that to mean that we were a free balloon without a vent cord. His scholarly reply was, "Hey, can we ever get this thing down?"

## HAMED, THE RAMBUNCTIOUS

**N**EXT let me tell you about my Arab student. Hamed, as I'll call him here, was surely a pip! Sev-



"Say, Fred," chirped this bird long after he got his solo ticket. "Why must I take-off into the wind?"

got me. I decided I had better deflate his balloon, before it busted itself.

"Look, Lindbergh," I growled, "your flying reeks! And now for once you're going to listen and listen hard! Everything you did just now was everything a good pilot doesn't do. Savvy? Your tail was too high on the take-off. The city cuts the grass on the field—so don't use the propeller for that purpose. On the straight-away you fly right wing down. You skid on your turns, you don't even know the proper gliding angle of the ship, and you landed on one wheel. Son, you need at least five more hours





"Hamed, my Arab stude, had a charming little trick—"

eral instructors had already given him up as both dangerous and hopeless. And when I gave him a trial spin, I at once saw he was going to be difficult—plus.

His airwork wasn't too bad. But how he did manhandle that poor plane! I explained to him in words of two syllables that he had to take it easy—that the ship would fly itself and he was only to guide her and treat her like a lady. In other words, he should take it easy.

"Hah!" he snorted. "You bet I treat heem like a ladee. I boss heem and trow heem around! No?"

What's more, Hamed hadn't the

least idea where the ground was in landing, and so he'd either not flatten out at all or he'd make a beautiful set-down while still fifty feet up in the air.

One charming little trick of his was to suddenly push the stick 'way forward when we were only a hundred or so feet high. Naturally, I'd always yank it back to level the ship off. Then it dawned on me one day that he must be doing this purposely for some obscure reason. For certainly he knew better. So the next time he tried it I pretended I didn't notice our plummeting drop earthward. Instead, I turned loose the control and casually pretended to be tying a shoe lace.

Sure enough, at fifty feet he leveled off and started to climb back to a sensible altitude. And

later, after we landed, he explained that he delighted in scaring the instructors. In fact, he declared happily, one of them really got frightened as all get-out and grabbed the upholstery!

He never tried that again with me, though—for I told "heem" plenty!

At any rate, after many gruelling hours of landing practise, this Arab gazabo was ready for his solo. During those hours, I had also taught him spins, loops, stalls, spirals, and side-slips.

"Now look," I admonished as I got out of the ship. "She'll climb much quicker without me. But keep her

down to 500 feet, circle the field once, then land near me." Hamed nodded cockily, I gave him the "all clear" signals—and away he went.

Let me say right here that when a student makes his first solo it's the instructor who is the scared one—the one who pinches his left cheek and prays for luck. The student is usually too occupied with flying to think much about the gravity of his great moment, so he's usually around and down before he knows it. Anyhow, I like the first solo to be as short as possible so that the stude doesn't get time to do much philosophizing.

Well, anyway, up went the mad Arab. Five hundred feet! He should turn now. Phew! One thousand and still climbing! And now he turns by doing a wing over, zooms her to 1500 feet downwind from the field, and swings around to head in for a landing.

I could see that he was in one of his frisky moods. Yep, there he went. Two turns of a spiral, then he cocks her over into a steep sideslip. Down . . . down . . . down—and just a few feet more to the ground!

My knees shake. But then he abruptly straightens out and proceeds to do the darndest fishtailing to kill his speed that I ever saw a novice get away with. And I was too weak to say anything when I struggled aboard again after he landed.

Talk about screwy students! Nevertheless, Hamed has 800 solo hours today—and he hasn't wrecked a ship yet.

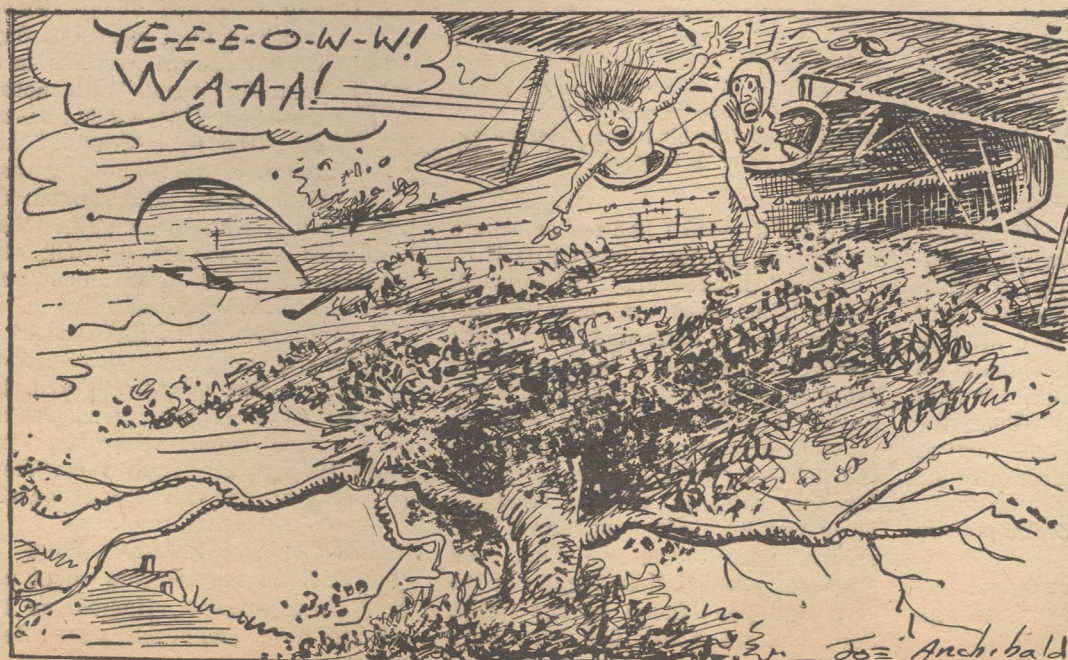
But you can have him!

#### CHARLIE—AND "THE ACE"

**T**HE GUY who said "Students are just students" was a goof—for you simply can't figure 'em. I've never met any two alike. Another

"different" one is my present sky pupil who has been dubbed "the guinea pig." You see, when a discussion arises as to whether my little job can do a double snap roll, or just how a vertical renversement is pulled off, I generally say, "Well, let's go up and we'll all know." Then I look around for a passenger—for usually some stude wants to learn it, too.

Well, Charlie Elson always volunteers. It's finally got so that if I (Continued on page 31)



Left: "I got a horrible fright—for the girl was yelling to high heaven!"



# American "Hawks"

# Flay the Nazis!

## THE GRIPPING STORY BEHIND OUR COVER PAINTING

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**W**ILL American warplanes prove to be the deciding factor in the New Great War?

Well, that's a mighty big order. Nevertheless, there is a great possibility that military planes, designed, tested, and manufactured in the United States and flown by Allied pilots, may give just that extra punch required to shatter Germany's air threat.

Already the world is beginning to question the vaunted air might of the Reich. As you know, that super-sky-power story was questioned in FLYING ACES more than six months before the Second World War began.

From the start, Allied superiority in the air has been apparent; for French fighters scored early and decisive victories over German reconnaissance machines. The Tri-Color's Dewoitine and Mureaux fighters have been more than a match for the German Messerschmitts and Heinkels whenever the clashing forces have been anywhere near even in numbers.

The British also have showed their contempt for German defense machines by almost daily thrusts deep into Germany on leaflet raids and reconnaissance patrols. And defensively the English Hurricanes and Spitfires have generally stopped German attempts to raid important industrial and naval centers before they could get within bombing range.

Then on November 6 the superiority of Allied fighting equipment in actual mass aerial action was graphically portrayed when nine French fighters engaged twenty-seven German Messerschmitt fighters and destroyed nine Nazi craft without a single loss.

This story might have been taken as propaganda had it not been for one very important point: No less than seven of the defeated planes were brought down in French territory where they could be examined by neutral correspondents. Three of the German pilots were killed outright, one was wounded, and three were taken prisoner.

Especially of interest to American

readers is the fact that the victorious machines were American Curtiss Hawk-75A's.

On our cover this month, our artist, Mr. Schomberg, depicts a dramatic incident of one of the French-German sky clashes. A Messerschmitt has darted in to worry one of the Tri-Color Douglas DB-7's, whereupon a French Hawk has speeded to the scene to fight off the Nazi.

The German is forced to let the Douglas continue its patrol—for the Curtiss ship is upon him. The two fighters now turn and twist in an effort to gain an advantage in their battle to the death, and the air is filled with flying lead. But suddenly the Messerschmitt is caught! Bits of its tail surfaces are shot away . . . the smoking slugs weave a design of doom along its fuselage . . . they

This figure was obtained over a closed course and under special timing conditions. The motor was souped up and many refinements were included in this particular Messerschmitt. Anyhow, certain American experts who have flown the Messerschmitt have stated that it is the fastest fighter in the world.

Now for the speed comparison: According to the Curtiss firm's official publicity on the Hawk-75A, the American machine can do no better than 280 m.p.h., and it cruises at 240. On the face of these figures, then, the Messerschmitt must have been at least thirty miles an hour faster, since we are informed that the service type Messerschmitt does 310.

Speed then was not the factor in the Hawk's superiority.

**Flying U.S.-made Curtiss craft—Hawk 75A's—the determined French are now winning decisive victories over the highly-touted German Messerschmitts. So a couple of "back seats" may now be brushed off for our so-called experts who termed the Nazi machine "the world's most efficient fighter."**



**B**UT what about the armament? Well, the German fighter is equipped with two fixed rifle-caliber machine guns. It also has wing mountings for larger caliber weapons, however, no Messerschmitt captured thus far appears to have carried more than one air-cannon and most of them had none.

The American Hawk, on the other hand, has two fixed machine guns of the Browning type. They may

be either .30 or .50 caliber weapons. But whether the French Hawk is so equipped we do not know. These jobs may have been sent abroad minus armament, and if so, they could have been fitted with British-made Brownings or regulation Vickers or Darns.

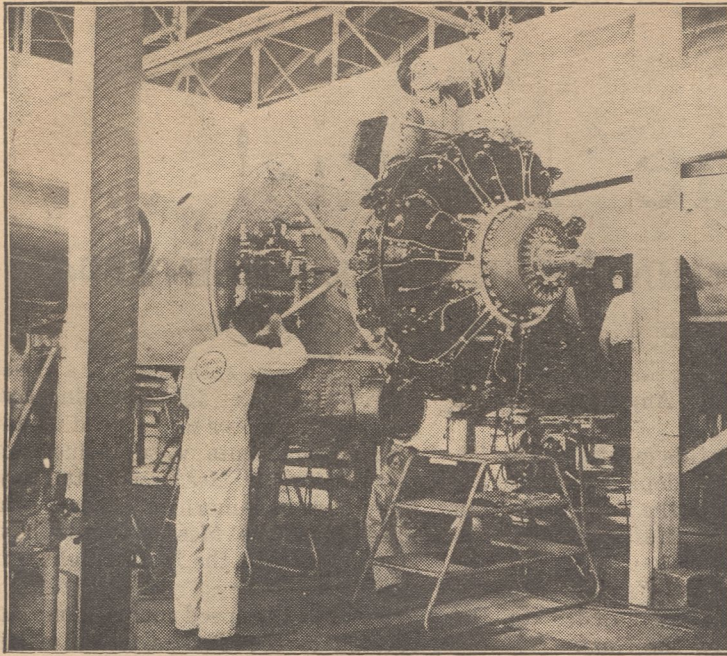
The Hawk can also carry ten 25-lb. or six 50-lb. bombs under its wings. In place of these, however, two additional machine guns may be carried in the wings. It is our guess that the French, who are great believers in armament, have given up the bomb racks and put in the extra guns.

On this armament question, we are getting somewhere; for it is evident to our way of thinking that the American planes were better armed, even though they carried but two

(Continued on page 79)



# Through the Aero Lens



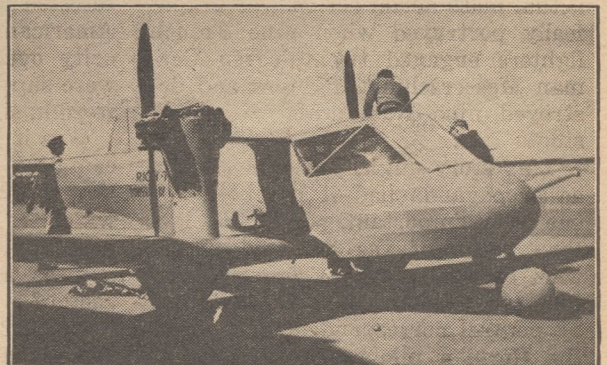
Left: One of the two new Wright Double-Row Cyclone 14 engines is here being installed in the huge 36-passenger Curtiss-Wright "Substratosphere Transport." Behind the firewall, inside the nacelles, are compartments that house the 55-inch landing-gear wheels. This shot shows many details of the engine installation.



Right: War-like — and how! Just look at that fellow in the back pit! He seems all set to send a stream of tracers streaming from the high-speed muzzle of that Browning of his! This is an exceptionally fine photo of the Seversky "Convoy" two-place fighter. The ship is powered with a Cyclone, is constructed entirely of Alclad, and mounts two forward guns and one swivel m.g.



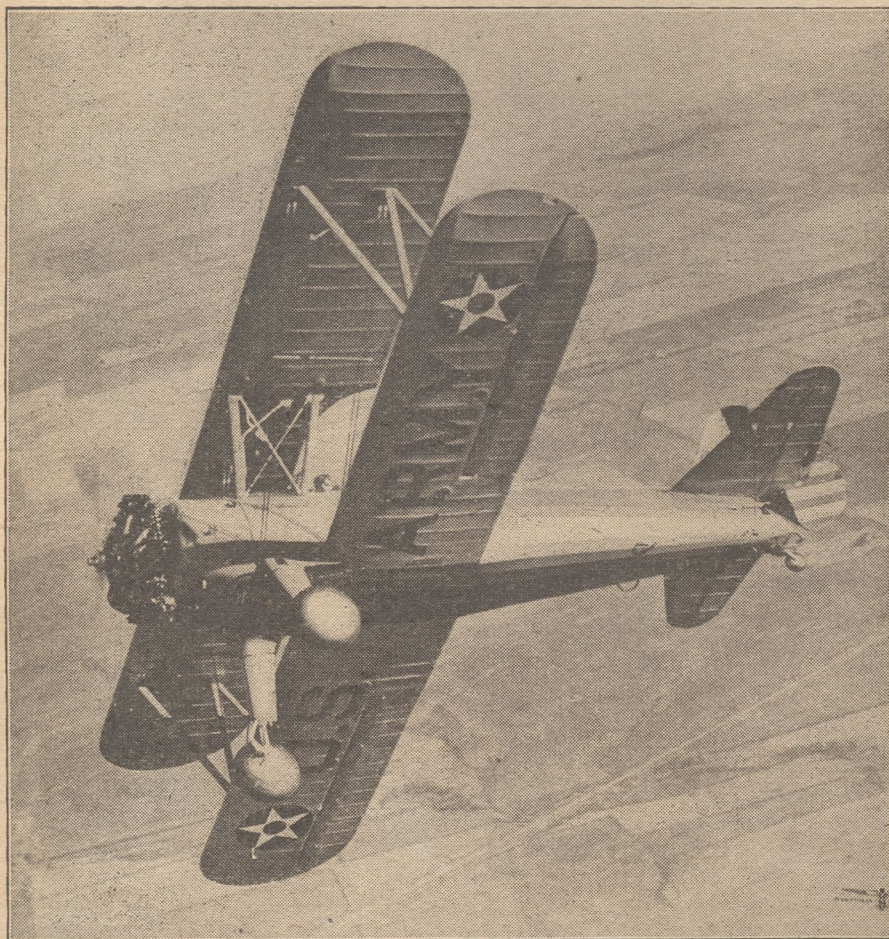
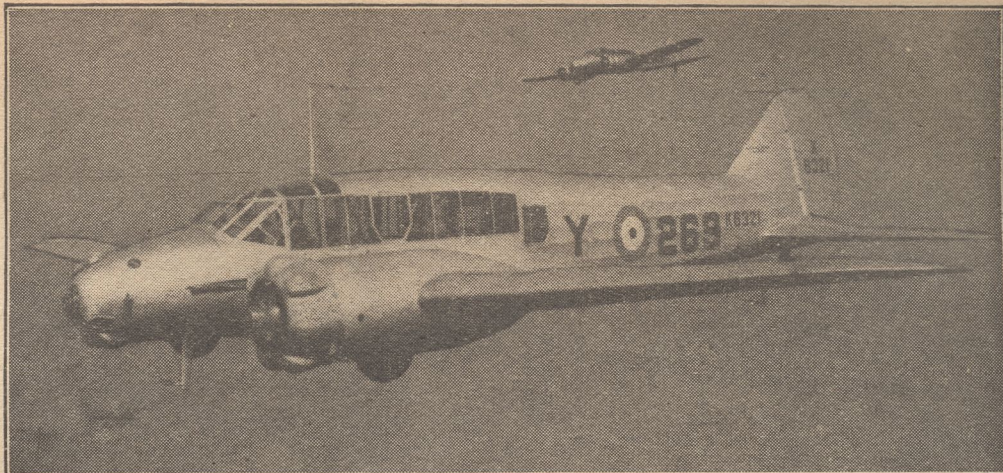
Left: It's not all fun by a long shot when you study to be an airline hostess. Here we see T.W.A.'s Captain Felix Preeg showing Martha Sampson how the Librascope Flight Computer works. And she is checking it in her manual. The L.F.C. helps the pilot calculate the relationships of wind, drift, velocity, weight, and other elements during flight.



This strange looking Rich-Twin, powered by Lycoming engines, is one of the latest things in light planes. It made its appearance at the National Air Races in Cleveland last Fall. The ship is an experimental cabin job. Yes, it sports a tricycle landing gear.



Right: Avro Anson reconnaissance planes are now being used by the R.A.F. with great success on the North Sea defense work. These machines carry on patrols 'way out over the Sea, and they tip-off the fighter squadrons when the enemy raiders appear. Hurricanes and Spitfires, according to the British, do the rest. At any rate, these Ansons look like good sturdy jobs for the duties they perform.

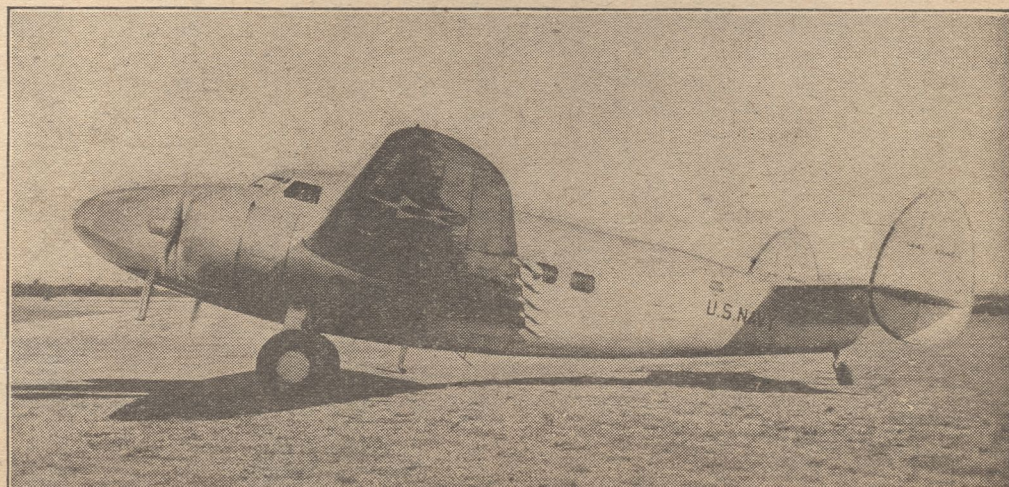


Left: One of the Army's new Stearman PT-13 trainers struts its stuff high over the farm-lands. Stearmans are now standard trainers at Randolph Field, where many are being slammed about in daily instruction work. The ships are so good that the Air Corps just ordered another \$2,000,000 worth of 'em.



Leroy E. Grumman, president of the Grumman Aircraft Company, posed on the flight deck of the "U.S.S. Lexington" for this photo. He was on board to see how well his Navy fighters and scouts were doing. That be-goggled chap with the megaphone is Lieutenant Carney. (See this month's "They Had What it Takes" for full dope on Roy Grumman).

Right: No, the R.A.F. isn't the only service that uses Lockheed 14's. This job was purchased by the Navy for personnel transport. Designated as an experimental craft—the XR4O-1—it's possible that the Navy boys are giving this ship a good trying out before ordering more. Powered with two Hornet S1E2-G's of 850 h.p. each, the ship has a top speed of over 245 m.p.h.





"Too long dis Pingham try to fool us," yipped the Boche. "Look! I have light der fuse und I vill now t'row dis ting!"



# Fright Leader

★ ★ ★

**A**BOUT the year 433—that would be 1484 B.P. (Before Pinkham)—Attila the Hun was considered Public Barbarian No. 1 in the then supposedly civilized world. Yes, before he got knocked for a row of catapults by the legions of Theodorick, Attila had been just about the toughest plug-ugly who had ever carved himself a piece of throat.

Well, let us now suppose that the Hun Hoodlum's shade often went A.W.O.L. from Satan's subterranean hot spot and that he stood on the Western Front from 1914-1918 and took a gander at the brand of skull-duggery dished out by the Huns of a modern era.

Attila, perhaps, watched the Kaiser's Vons drop steel darts down upon the noggins of unsuspecting Frog, Limey, and Yank doughs. He no doubt got a squint at the flame throwers that fricasseed the Allied troops right in their boots. And he might have gotten a whiff or two of the gas that

the Potsdam poisoners introduced to this so-called improved planet.

Attila must have said, "Ach! Only a panty-waist was I, as the people say today. Just a sissy. Look what they do after fifteen hundred years of civilization! Ho! Ho!"

But Attila knew that the Allies had seen nothing yet. He had peeked into the workshop of a Heinie brain truster near Oberstein far back of the Kraut lines. He had seen the little stunted Teuton with the noggin shaped like an electric light bulb and whose eyes reminded even a fugitive from Tophet of nights spent with Edgar Allen Poe.

Afterwards, Attila had wrapped his shroud around him and had sneaked back into Hades and there the C.O. with the pitchfork laughed at him for being only a mere sissy.

**By Joe Archibald**

Author of "Impropa Ganda,"  
"Ye Ould Emerald Oil," etc.

With Illustrations by the Author

"Enough punishment you have had Attila. You saw what kind of a world you would have lived in if you had been born 1484 years later. Yes?"

"Sire," Attila quoth with a shake of his noodle, "The Allies across the Rhine know from nothing. I see big horseless carriages filled with corpses—boneyards stretching from the Rhine to the Pyrenees and—"

"Shut up, Attila. I can stand only so much!" And thereupon Old Nick shivered and drew his red robe more tightly around his torso, although the temperature in his parlor was 198 degrees Fahrenheit.

**T**HE OLD ADAGE, "When ignorance is bliss 'tis folly to be wise," was holding good behind the Allied lines, particularly in the neighborhood surrounding the Frog hamlet of Bar-le-Duc. Major Rufus Garrity's Ninth Pursuit Squadron had lately been enjoying more than average success against the Kaiser's cocky Vons. And Phineas Pinkham had found plenty of time in which to practice



# A MADMAN, MOSQUITO, MAGINOT MUDDLE

## FEATURING PHINEAS

That Satanic scientist, Otto Biehung, had plenty on the ball. And that particular ball turned out to be an ebon sphere sporting a figure "8"—with Phineas behind it! But when it came to talking, the Boone-town Bam was a champ. He had a line! Whereas all Sergeant Maginot had was an idea for one.

his amazing, albeit pesky, arts pertaining to legerdemain, prestidigitation, black magic, and plain down-right skullduggery.

And while all this was going on, a rumor trickled along the Allied front that brought chuckles from many a brass hat. It had to do with a far-sighted Frog topkick who had been looking ahead twenty years—a gaza-bo who had conceived a sketchy plan to put up a big spite fence between the Rhine and Alsace, in the event that the Allies got the nod in the Big Tiff that was going on.

It was known that certain Frog solons in the Quai D'Orsay in Patee did not think the idea was such a crackpot one after all and that they were considering it seriously.

But when Phineas Pinkham heard about it at mess on the drome of the Ninth one night, he sniffed and dismissed the amazing scheme with a flip of his head. "Huh? Why, if I had thought up that one, what would have happened? A dome specialist from the U.S. Army observation squadron would walk in here, nab me, an' put me in a straight jacket. Haw-w-w-w! Well, maybe the Frog is dicker-in' with the architect who drew up the wall of China or hung the gardens at Babylon. Now I know I am sane!"

"They laughed when Edison made an electric light," said Bump Gillis, Pinkham's buck-toothed hutmate. "Anythin' you don't think up is no good, I suppose."

"They laughed when I spoke to the waiter in Frog," Phineas cut in. "—Because he turned out to be a Greek. Well, I am goin' into Barley Duck, as—"

"You were broke last night," Captain Howell said. "What will you use for money? Don't look at me—"

"I try hard not to," Phineas countered. "You are no oil paintin' to hang in the Looove in Patee, skipper. I do not intend to ask you bums for money, as you are all tighter than little Lord Fauntleroy's pants would be on Jess Willard. Well, I will beg to be exc—"

At that moment a man came into the farmhouse followed by a little orderly toting his bag.

The new pilot had a pair of eyes that harbored a permanent far-away look. He said: "Er—I am—Lieutenant Dombey Darby—from the pool. I would—er—like to see the Commanding Officer, if I could."

"Well! Well!" Phineas grinned. "You could—but who wants to? Haw-w-w-w! Shake, Darby. How did you leave Joan?"

"Who?" queried the stranger grasping the Pinkham hand.

"Forget it," Phineas said. And he backed away—leaving his hand still clutched in Lieutenant Darby's.

The pilot from the pool almost let his lower jaw break loose. His knees buckled. "Y-You—er—I-left y-your hand in m-mine, er—gulp!"

"Haw-w-w-w-w! It is a fake one. I got two more," Phineas said. "As for the C.O., he is behind that door over there. And if you have got a watch on you, you better hide it, as he would—"

"I would *what*?" Garrity yelled from the doorway behind Darby. "Pinkham, I do not intend to tolerate such insolence much longer! If I ever hear— Say, who are you, anyway?"

Lieutenant Darby shivered and dropped the wax hand to the floor. "L-Lieutenant Dombey Darby reporting for d-duty, S-s-sir! I—know I will—er—not be here long m-maybe b-but I will d-do the b-best I—"

"What?"

"I—er—am a fatalist," Darby said. "I don't k-kid m-myself, an'—"

"Walk into the Operations Office," the Old Man sighed. "I got one screw-ball here already. If you turn out to be one, I'll knock you off myself."

**FIFTEEN MINUTES LATER,** Phineas sat on a cot in a Nisson hut and watched Darby unpack his warbag. The Pinkham optics merely widened a little when he got a gander at the electric bed warmer and the hot water bottle that Darby placed on his bunk. But when the newcomer came up with what looked like a home-made cannon cracker, Phineas let his peepers pop out. The object that intrigued him was a length of lead pipe about seven inches long, and from one end of it trailed a fuse.

"W-What in th' deuce is that?" Phineas said.

"H-Huh? Why—er—I am not going to be burned alive," Darby said. "I been hearin' about flamers. So every time I go up in the air I tie that on a mid-wing strut so that if the plane catches fire it will light the fuse and blow up the ship before I get cremated."

Phineas blinked and shook noises out of his head. "Er—did you ever hear of jumpin' out? Or side-slippin' to get the fire out?"

"Oh, I would try side-slippin' first, all right," Darby said. "But sometimes in a spin you can't jump out. This thing is just somethin' I figured out to end it all quick."

"Adoo," Phineas said dryly, and he forthwith got out of the Nisson. He took a bicycle that stood nearby and pedalled across the drome. "I guess the C.O. won't think I am so nutty now. First, a Frog who wants t' build a new Chinese wall—and now a crackpot who ties a bomb on his Spad so's— Well, I must think up a way to git cognac in Barley Duck without *argent*.



"I am desperate," Phineas bellowed. "I will shoot to kill!"



I—er— Yeah, I got it! Frogs are dumb, haw-w-w-w-w!"

In the Cafe De La Vache Rouge, there was a motley crowd. The pick of three armies reveled in their cups. Phineas Pinkham walked into the oasis and leaned over the bar. "Bawn sore, mawn amy," he said to the bartender. "Maybe eet is *vous* are ze sport, *non*?"

"*Un sport? Je ne comprend—er—mais oui! Les Americains* call heem ze *garcon* who spends ze moch monee ze sport, *oui*? Zen I, too, am ze sport!"

"Awright, then. Lookit—I will bet *vous* that you have eleven fingers. Eleven—compree?"

"Ha! Ha! Bah! Eet ees only ten."

"I bet you ze four drinks of coneyac," Phineas said.

Across the cafe, three Frenchmen took notice. They pivoted in their chairs and regarded Lieutenant Pinkham, who did not see them.

"Hold out your hands," Phineas went on, and the Frog barkeep did so. Phineas started counting on the pinky of the Frog's right hand. He counted backwards: "Ten-nine-eight-seven-six" and finishing with that hand, pointed to the Frog's left flipper and said "an' five is eleven!"

"*Sacre! Mon Dieu! Oui—eleven—seex an' five ees—*" the Frog said scratching his noggin. "*Voila! Ze dreenks ees on moi!*"

"Mercy," Phineas said and grinned inwardly. "Boys, are Frogs dumb." He downed two stiff hookers of cognac, then heard someone close to his shoulder blades say: "*Bon soir, Lieutenant. You join us perhaps an' play what ees called pokair in *votre* coun-tree? Onehand more we need at table.*"

Phineas turned on his heels, hid his jubilation. "What a night," he enthused deep inside his torso, "Barley Duck is alive with suckers." Out loud he replied: "May wee. Let us *allez an'—er—*but it is ze *argent* I do not have at the moment, mawn amies. Now if I can scrape up some, I—er—"

"Maybe we theenk up somezing. Now—er—"

"I got it," Phineas said suddenly. "I will bet each of *vous* have eleven fingers. I will write out an I.O.U. for 100 francs as a bet against my pay huh?"

"Ha! Ha! Such a bet, Lieutenant. Eet ees impossible. Mak eet 150 francs, *oui!*"

"I will begin with *vous*," Phineas said to the shortest Frog pilot. "Hold up your hands." The miracle man from Boonetown proceeded to repeat the performance of a few minutes before. He counted backwards on one of the Frog's gloved hands and then added the other five. "That is eleven—pay *moi*," Phineas snickered and started to tear up the promissory note.

"Just *un moment, mon ami*," the little Frenchman chuckled, pulling off his glove. "*Regardez! Ze meedle fin-gair of zis han' I lose in ze battle weeth ze Boche. Look how eet ees empty. So I have ten fingairs!*"

"Uh—er—look here! That is not fair, as you had gloves on, an'—"

"Eet is ze ha-ha for *vous*, Lieutenant Pinkham. Smart weeth ze tricks, *oui*? Geeve eet ze I.O.U.!"

The laugh was on Phineas, the mirth rolling back and forth throughout the confines of the Frog grog

shop. Phineas Pinkham went out of the place grinding his big molars and swearing a vendetta against everything that was born in France. His pride deflated and a big void already scooped out of his next pay check, Boonetown's jokesmith pedalled homeward. "Laugh, you snail gobblers—but a Pinkham never forgets! That is two strikes on me, but I am still in there swingin'. Wait 'til I git one in the groove. Oh, you bums!"

IT IS NECESSARY for us now to give you a look into the benighted atelier of one Herr Otto Biehung in a farmstead near Oberstein. Outbuildings stretched out from the main layout, these being the hatcheries of something that would make T.N.T. seem like some harmless brew for putting out fires. Otto, the hump-back Hun, worked here in his little laboratory. He chuckled as he labored, and his attempt at mirth would have raised hackles on a billiard ball. Be it said here that the gray matter inside his big noodle had been personally placed there by the hoofed brass hat of Dante's Inferno.

Not far from the farmstead there was a big bog and Otto had constructed some strange low coops on the dryer spots. In these, mosquitos had been imprisoned and commanded to breed. Otto had just been out looking over his little workers and had brought several of them back to his den of iniquity.

He was deep in an experiment when three Heinie officers demanded entrance. They knocked loud and long before Otto unlocked and opened three doors to give them access.

"*Wie gehts, Herr Otto. How is the work coming, ja?*"

Otto rubbed his hairy lunch hooks together and bared two rows of yellow tusks. "*Sehr gut, mein freunds. The little ones are ready—the ones I bring all the way from Africa. They now show their bite is filled with the fever. For their target, I would suggest the air-drome near Dommartin, for it is near a big swamp, hein?*"

"Ja," a Herr Oberst said and shivered. "The mosquitos—they will not get loose, *nein?*"

"Otto he knows his business, my proud Junkers! (Continued on page 72)



"*Oui!*" droned Sergeant Maginot. "But we will build ours first!"





# 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.

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## STILL LIFE

*City Editor* (blazing): I don't care how slow the air race was. I told you to get photos—and you tell me to go to the museum of art. Are you crazy?

*Photographer*: But you don't understand, Boss. The air race was so slow that they kicked all us photographers out and got an artist to make an oil painting of the finish!

## KIND-HEARTED SPOUSE

*Husband*: I'm going to sock that pilot. He almost killed me again today!

*Wife* (soothingly): But, Darling—you really ought to give him another chance.

## FORCED DOWN

*Flight Instructor*: So the limb broke and you fell out of the tree. But what the deuce has that got to do with learning to fly?

*Stude*: But didn't I make a perfect dead stick landing?

*The man who buys a second-hand Jenny* may not have a belligerent disposition—but nevertheless he'll always be trying to start something.

## A GOOD MAN

*Cop* (with fellow in hand-cuffs): Dis crook got hold of one of yer planes and we caught him selling it. Ya wanta press charges?

*Manufacturer*: Absolutely not! I'll hire him!

## HAD TO

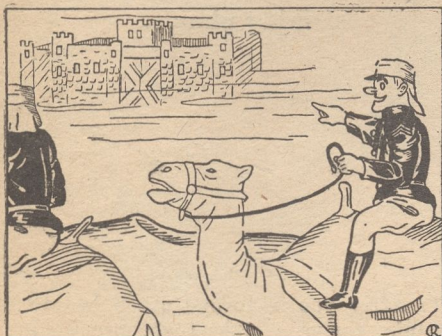
*Industrious Harry*: How long have you been working for the Douglas company?

*Lazy Joe*: Ever since Mr. Douglas threatened to fire me.

## IN THE GROOVE

*Jim*: How do you get your radio-controlled plane to stunt?

*Slim*: Easy! I just tune it in on a jitterbug radio station.



*New Legionnaire* (seeing mirage): "Zat mus' be ze 'Flying Fortress' of which we read zo much in ze Americaine papers."

## GOOD ADVICE

*Stewardess* (making announcement): Passengers will please refrain from getting out at Hartford, since the plane will not land at Hartford.

*Dumb Dora* insists that the only way to make a wheel pant is to exercise it violently.

## THE REAL TEST

*Jill*: That airplane my brother invented is certainly a good piece of work.

*Jack*: Well, I hope he can keep up the good work!

## AIRMINDED

*School registrar*: So you came from a family of flyers.

*Prospective stude*: Yes sir. Father and mother were always flying at each other.

## SCREWBALLS TAKE HEEDA

Plane speeda,  
Mountain meeta;  
Pilot greeta  
Saint Peta.

## CARVING IT

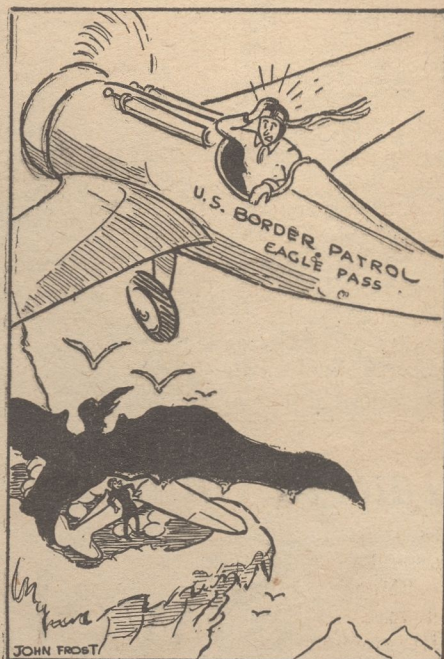
*Instructor*: Hey, wait! What ya doing with that knife?

*Goofy stude*: Why—er—I'll swear that you told me to cut the throttle!

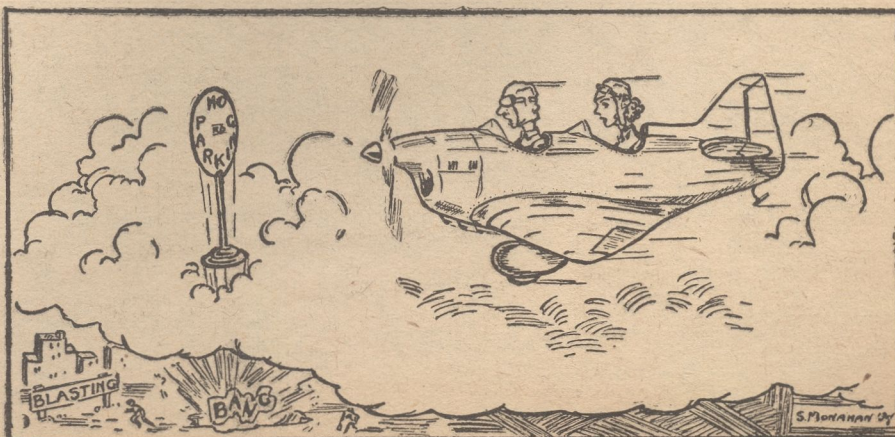
## THE MILLENNIUM

*Aero enthusiast*: Why, the time is coming when everybody will be flying airplanes.

*Pedestrian*: Thank heavens!



"Now where the deuce did that smuggler's plane go?"



She: "But how silly! Who'd want to park on this damp old cloud?"





Hardly was the ink dry on Hank Clark's "Aero Snapshot Fiend" article when a slew of you urged us to follow it up with a feature chock-full of practical aircraft clicking hints. Well, that's just what we've got for you here—dope on stills, action shots, night views, camera angles, exposures, lens stops, developers, negative filing, and whatnot. And you'll get many extra tips from the shop-talk captions that go with the striking photos.

Left: After you've turned out a beauty like this, you've a right to be proud. A low-flying plane, a cloudy sunset, a fast lens, and red filter—that's the combination that does the trick!

## How to Snap

# Swell Aero Shots

★ ★ ★

By William T. Larkins

ONE of the top-notch ways to follow the grand old game of aviation is through the medium of aero photography. With a camera, you can learn as you click. And you don't need a high-priced snapper to get into this fascinating hobby, either. The cheapest miniature or box affair makes you a member of the Exalted order of Aero Film Fans.

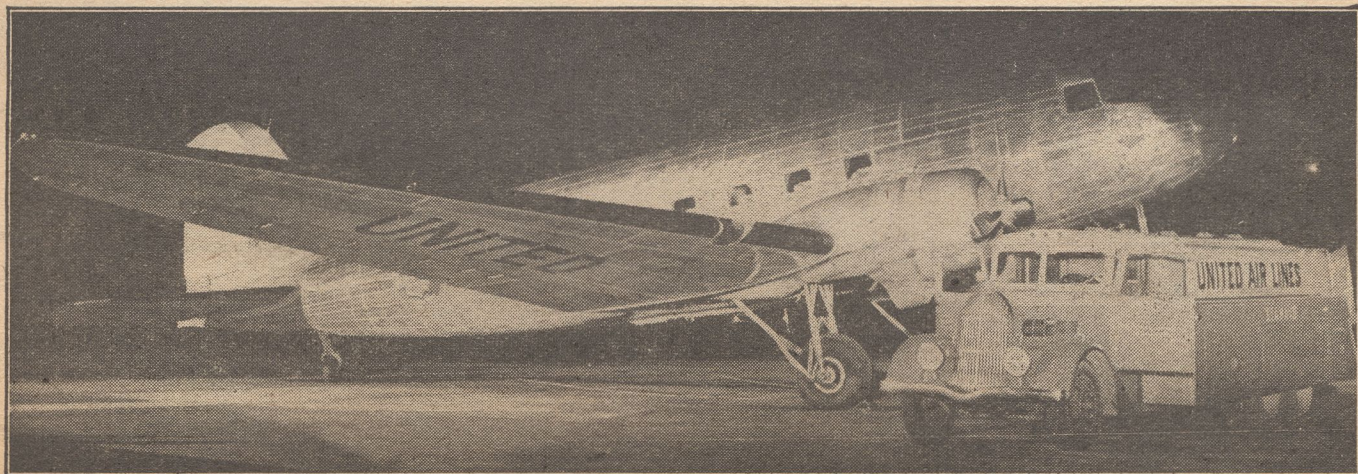
There is something about aircraft photography which gets in the blood of those who engage in it. It's that "something" which tempts a man to spend hours and hours at this entrancing hobby and still yearn for more time to enjoy its pleasures.

As with any other hobby, however, a much greater enjoyment and appreciation is achieved if the thing is done correctly. To be sure, much has already been said of the methods for obtaining good general pho-

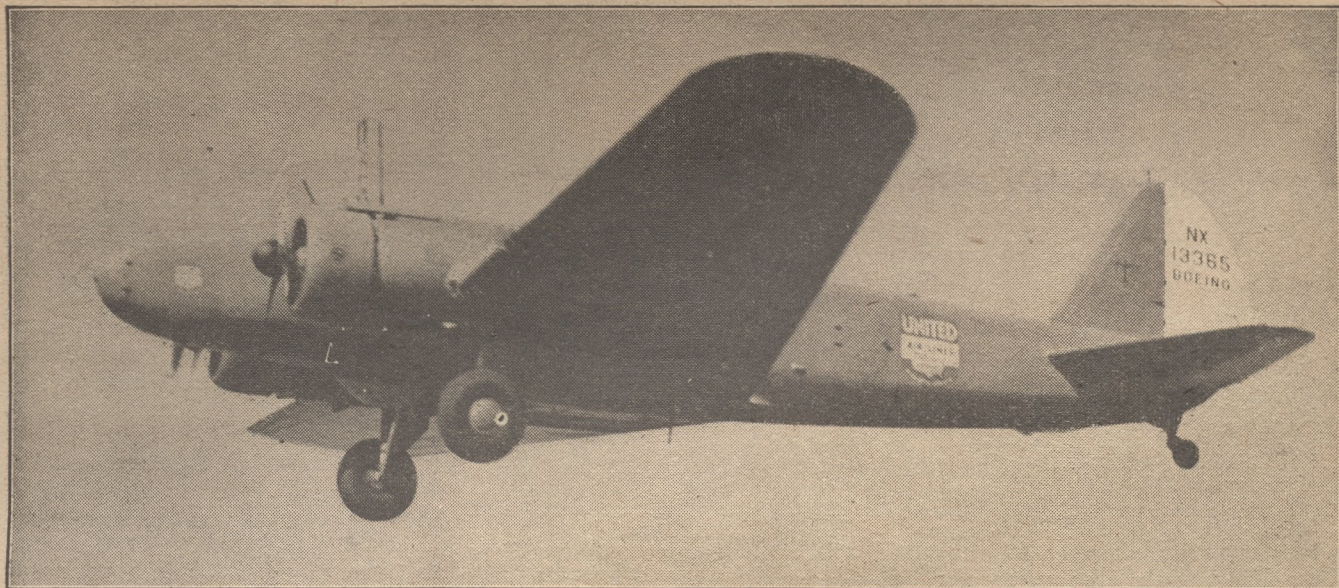
tos for your prized collections. But here the author will try to give you a hand by summing these points up and applying them directly to our aircraft field. And he'll include hints along the way designed to gather in the loose ends.

If you're just downright lazy, you can consider aircraft photography as

Below: Good night shots are neat! This impressive Douglas DC-3A "Mainliner" was lighted only by regulation airport floodlights. The author packed Super XX film in his camera, stopped the lens at f6.3, and exposed for two minutes.







merely an excuse for gathering together a helter-skelter group of photographs. But why be lazy? Why not apply a very definite and logical procedure to the game? My advice is: "Shoot if you must that old gray Jenny"—but remember that while there are various ways to take photographs of airplanes, there are only two or three which are considered to be the correct ones.

When shooting airplanes for a collection of ship types, experts will tell you that photographic "art" is not wanted but rather the cold facts presented in clear-cut fashion. The three most important factors to remember are these:

1—There should be good definition; that is, degree of sharpness.

2—There should be an absolutely clear background; in short, a background devoid of any obstructions whatsoever.

3—There should be an absence of any dense shadows.

Also, when shooting for such a collection, one should be interested in the plane in its entirety, not just parts of it. Hence, a very important point to remember is to allow room on your film for the entire plane. More than a hairline border should be left

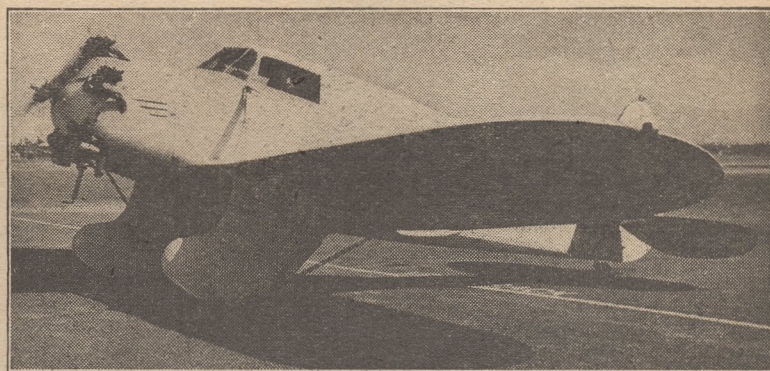
when you view the job in your finder—so as to not crowd the plane in the finished print.

Sure, some very beautiful prints, even salon prints, can be obtained by shooting planes and parts of planes from queer angles and applying the basic principles of composition, tone, and quality. These photos, however, are not for the ordinary collection we're discussing here.

The most important point, outside

You get the real majesty of aviation when you snap a perfect action shot. Tips on hitting the target for corking views of this kind are included in this article. As for the ship, it's United's "Flight Research" Boeing 247-D. Note the instrument mast extending above the fuselage.

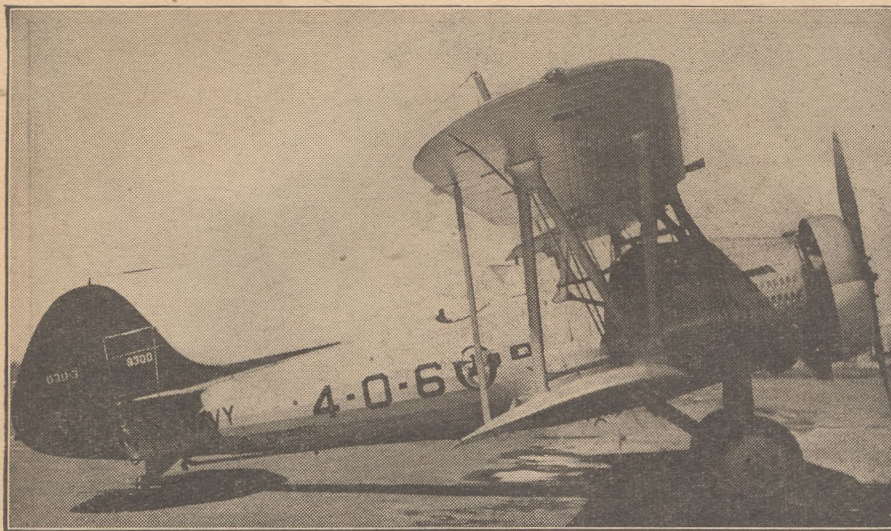
of having your shots absolutely in the clear, is that business of sharpness. But if you handle your work carefully, it should not be hard to obtain sharp negatives. On cameras which have a ground glass focusing through the aperture, use a tripod if you've got one. There are other reasons for



Right: Here we have the photographic problem of light planes and dark planes. Larkins eased the glare of the brilliantly white Kinner R "Playboy" in the top print by employing a K-2 filter. But with very dark planes, such as the Curtiss SOC-3 in the lower view, experimentation with exposures is often called for when detail is desired. The water made this particular picture tougher; for water, like snow, reflects a great amount of light and so affects the exposure to be given.







Left: Jobs with insignia, lettering and contrasting colors make fine side views. Yes, it's a Navy Vought O3U-3 that the author clicked here. Many aero camera fans go a step further by getting a helmeted flyer in the pit for a personal touch.

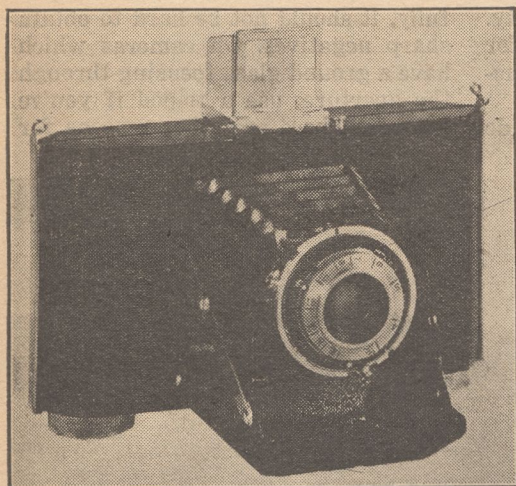
this besides steadiness, one being that you cannot see the entire image when "stopped" down to the opening that must be used. This point is solved, however, on certain cameras which boast synchronized range finders.

With the ordinary folding bellows camera, unless you know definitely that you are accurate at guessing distance it is advisable to pace off the distance. This takes very little time

and will make a great deal of difference in your finished print. In taking a direct side view of the plane the distance should be measured from the tip of the wing to the camera. The lens should not be open farther than f.22. I'd say the most advisable lens stop to use is f.45.

The reason for "stopping" down so far is to give a greater depth of focus. If the camera is set to be in focus at 25 feet and the picture is shot at f.45, everything will be in focus from approximately 20 feet to 50 feet. But by "stopping" down to f.45 and shooting at 25 feet everything

Any kind of a camera will start you off in this gratifying aero photo hobby. For the simplest of box cameras will turn out clear prints under usual conditions. Finer clickers are priced higher according to their lenses, speed, and the like. One of the newest is the Vokar, shown on the left, which features an automatic setting for correct stop and speed according to the light conditions.



is in focus from 8 feet to infinity.

With the f.45, then, be sure to measure your distance not to the body but to the wing tip, for otherwise you stand a chance of having the wing tip out of focus. But if you shoot at f.45 the depth of focus will take care of every part of the plane and foreground.

A recommended exposure is 1/50 second at f.45 on Super XX film. I'd then suggest that you develop in Eastman Kodak Fine Grain Developer (Formulae DK-20) for a period of 40 minutes. It will be found that after a few rolls the developing time will increase to even an hour and a half. The solution, however, should be discarded at such time.

**B**ESIDES the straight-on nose and straight-on tail shots, there are five standard views that may be taken of a plane. These may be varied, but they are commonly considered as follows:

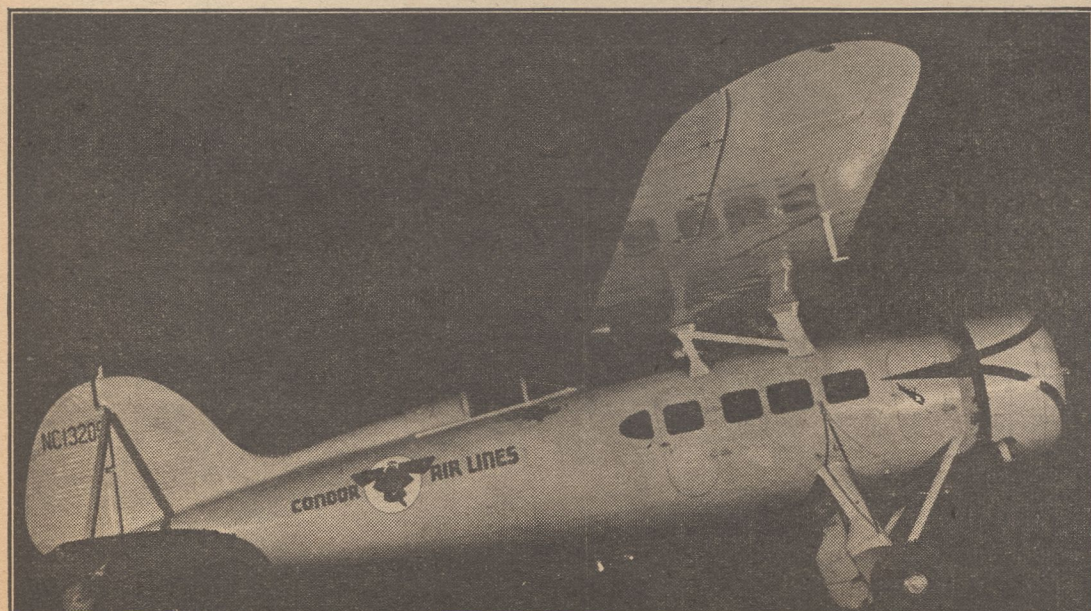
1—Three-quarter-front. In shooting from this angle, get in front of the plane and roughly line-up one front wheel with the tail wheel or tail skid.

2—One-quarter-front. This time, moving farther away from the nose, line-up the wing tip and the tail fin.

3—Side. Here we have the most popular shot for collection purposes. The usual views in this category are ranged by lining up the two landing wheels or the two wing tips.

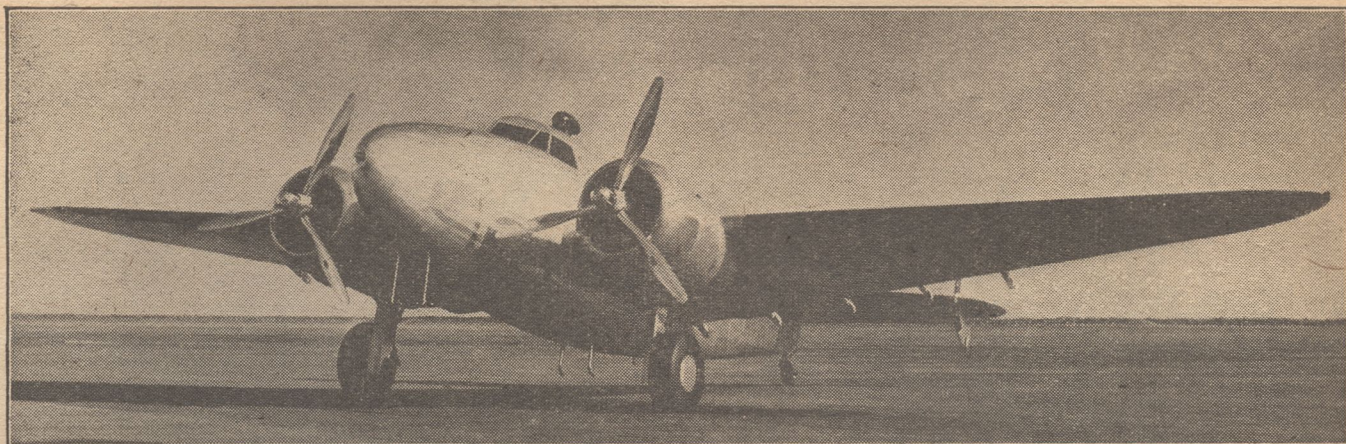
4—One-quarter-rear. This is just the reverse of the one-quarter front. Line-up the tail fin and one wing tip and fire from behind the ship.

5—Three-quarter-rear. This angle corresponds to the three-quarter-front and is obtained by lining up the tail wheel or tail skid against one of the front wheels and, of course, clicking from the rear of the ship. This view is ex-



Left: Night photography with flash bulbs is illustrated by this bright study of a Consolidated "Fleetster" 20-A. The plane was painted yellow. One flash bulb was fired a few degrees off the nose, while another was triggered at the tail.





cellent for showing the outlines of wings and tail surfaces.

The shooting angles just given are approximations. They'll offer you a working basis. But before clicking you should study each of your "shooting subjects" carefully in order to obtain the range that'll give you the best print.

It is advisable to use some type of fine grain developer for all airplane photos. The improvement in the tone and quality of your finished print will readily warrant it. It is also advisable to use a type of blue-black developer for printing, such as Eastman Formulae D-73.

All prints should have a glossy finish. The standard print size for collections in the United States is  $2\frac{3}{4}$ " by  $4\frac{1}{2}$ " (Kodak sizes 616 and 116). Enlargement or projection prints are commonly 8" by 10". It's best to have shots of standard size if you expect to do any trading.

One of the most interesting phases of this hobby comes under the head of "action shots". This category includes aerial photos and ground photos of planes in action. These latter usually involve planes in the act of taking off or landing.

A high shutter speed is essential for this kind of work. Anyway, if your camera is fast enough to "freeze 'em," as the saying goes by all means take a try at this most interesting angle of aeronautical photography. Landing shots often show up the slots, flaps, and other details of a plane, in a way that can't be obtained in any other

Right: And now we have a shot which shows you how NOT to do it. A dark combination of a hangar, another plane, telephone poles, and a hill make the poorest sort of background. And when you add insult to injury by putting a dark plane in front of it, it's even worse. Note how almost all of the detail has been lost. As for the men, they may be helping the plane along—but they're not helping your picture.

manner. Why not try some?

We recommend use of a speed no slower than  $1/400$  second. Light planes, however—such as Piper Cubs, Taylorcrafts, and Aeroncas—land at such a slow rate that it is possible to "stop" them with a speed of  $1/150$  second. You understand, of course, that the closer the camera is to the plane the more speed has to be used.

On shots in which the plane image is larger than two inches on the finished negative, a speed of  $1/440$  or even  $1/680$  second will prove best. Such super speeds as  $1/1000$  second and  $1/2500$  second can be used, but this velocity will offer no real advantage in such shooting as the average person will try. With a speed of  $1/440$  second, the lens stop should read somewhere in the neighborhood of f.16. At  $1/150$  second it is possible to use a lens stop of f.45.

For all special work on the airport, you'd better get permission from the field manager before traipsing about the end of the runway. At no time get closer than 25 feet from the runway. The safety of all concerned is essential.

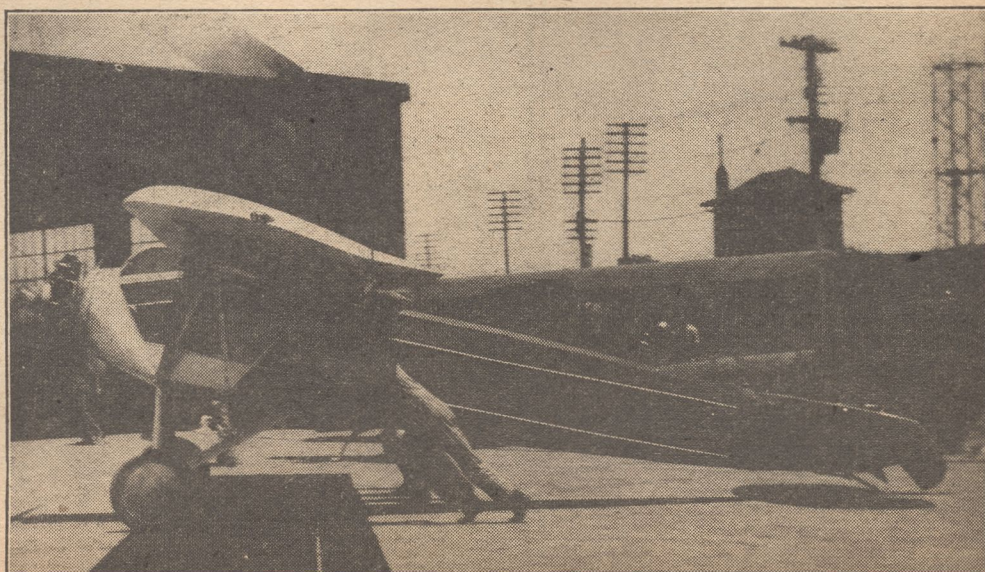
For photos of other planes in mid-air, a speed of  $1/395$  second is good if

This three-quarter-front photo of the Lockheed 14 plainly proves the advantage of having an absolutely clear background. The sun was on the side of the ship, but glare was brought to a minimum by first studying various angles in the finder.

the plane to be shot is traveling in the same direction and at the same speed as is your ship. The best results can be obtained by getting the plane to be clicked in such a position that the sun is directly on the side of the said plane. Late in the afternoon or early in the morning is the best time for this. A Wratten K-2 filter is suggested if there is any trace of haze. The two main points to remember are: Don't lean on any part of the plane while shooting, and don't let the camera get in the slipstream.

WHEN it comes to making good shots for a collection, take my advice and use very fast film such as Super XX, Super Panchro Press, Super Orthro Press, Agfa Superpan Press, or some such. With this sort of film anything can be shot with the large opening of f.8. It is advisable not to go beyond this opening, however, if good definition is desired. As for speed,  $1/25$  second can be used, but this is often too slow to use with-

(Continued on page 72)





# Raider Wings

## TUG AND BEANSIE IN A STIRRING NEW AIR YARN

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By Arch Whitehouse

Author of "Contraband Cocardes,"  
"Wings For the King," etc.

Illustrated by Alden McWilliams

**T**HE SURFACE of the Sulu Sea simply sizzled. With merciless intensity the sun beat down on the metal and paint of the hurtling Northrop. Every part was hot to the touch and the high speed of the fighter did not seem to ease the discomfort in any way.

For more than an hour now, Tug Hardwick and his cockpit partner, Beansie Bishop, had been scouring the far reaches of the Sulu Sea on the first legitimate news assignment the Amalgamated Press had sent them in months.

"And I say," wailed the Bish, "that this is a dumb show. These guys are slug-nutty. Whatta they mean, a German raider—away down here?"

"You can't laugh off those poor guys who clambered from that raft at Davao the other day," insisted Hardwick. "They didn't float about for three days just for fun. Not in this climate!"

"Well maybe not. But I wish we had o' got a straight story out of those guys."

"But they all agreed on one thing," reminded Tug.

"Yeah. The guy that knocked 'em off laughed at them like the Bull of Basham. All screwy skippers laugh like that. They all think they're Captain Bligh, or . . . or . . ."

"Or von Luckner. Remember him? He used to pull that ha-ha gag."

"But these birds all came in with a different story. One day it's a schooner, the next day it's a giant submarine, then we hear that old Skipper Ho-Ho used a rusty old trawler, and—"

"And then it begins all over again," broke in Tug. "That's why this is a real story. That's why Amalgamated is sending us out to get it."

"I'll bet old Ho-Ho is a phoney."

"You don't dare go back and tell those Limey seamen he's a phoney. He real enough to them."

"They claim the guy just blows them out of the water and laughs at them. What the deuce sort of a story is that?"

"It's a pip—if we get it," said Tug, peering over the side again.

They settled back and continued to fly back and forth over the area where this new high seas menace would have to be if he was using ordinary means of ocean travel. They had checked closely his every move, based on the meager reports of his activity, and they decided that he must be working from the string of islands which formed the Sulu Archipelago. From there, this boisterous German raider could work either the Sulu Sea, way-laying shipping out of Borneo, or he could scour the busy coastal routes of the Celebes Sea. There was plenty of cover and enough shipping to make this particular area a very fruitful playground for this modern pirate.

They had been cutting back and forth in their Northrop fighter persistently. They had studied every vessel that left a wake, and they had gone down low in several instances to check structure. But they had discovered nothing that would lead them to the elusive raider.

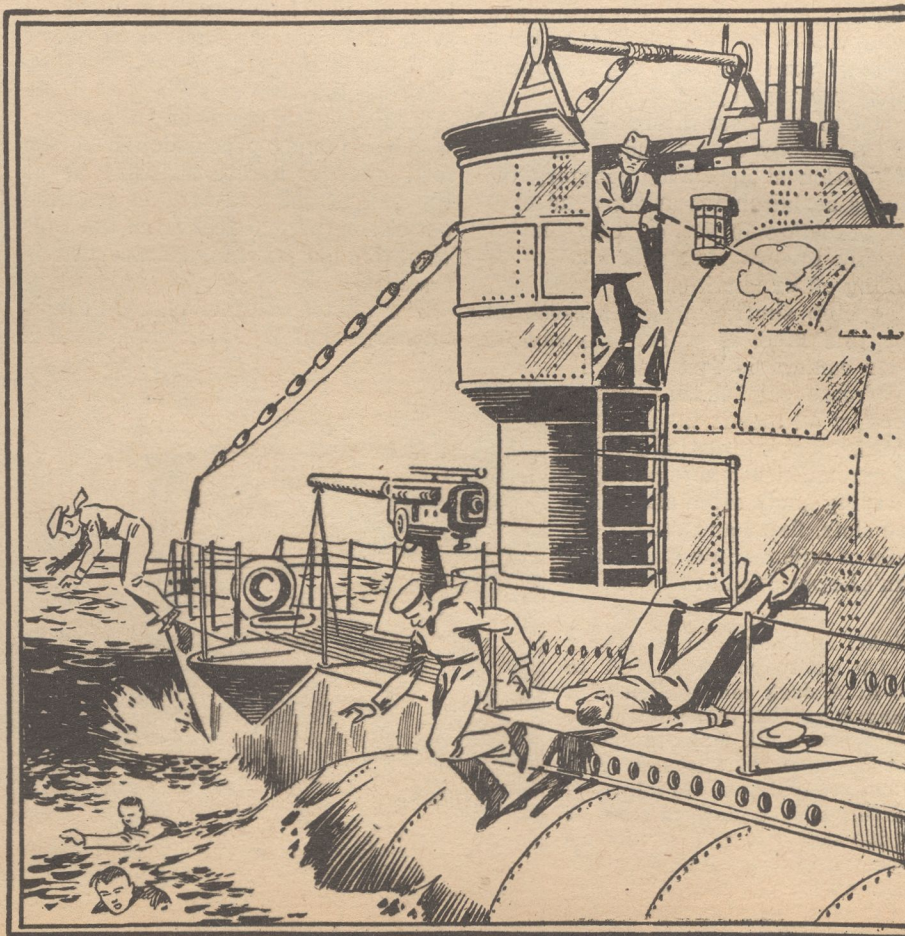
A primitive airport hacked out of the jungle near Zamboanga, on the western tip of Mindanao, was their

base of operations. Today they had been doing a series of southwesterly and northeasterly runs back and forth over Jolo until they were almost within sight of the northeastern shore of North Borneo. It was difficult territory to cover, but Amalgamated wanted the story of this new character of modern piracy for their syndicated features.

It promised to be one of the greatest yarns spun during the New World War. They had no intention of letting this one slip through their fingers to be picked up years later by some enterprising newspaperman who would make a fortune out of it.

No, Amalgamated decided to get it *now*, while this amazing German raider was at the height of his career. At any date, he might be trapped by the British who were steaming out of Singapore in an attempt to capture this elusive Jolly Roger.

It was all very simple for Amalgamated to cable from Chicago—but an entirely different matter to follow through out here in the heat and mystery of the Sulu Sea.





Hardwick would have liked to have contacted this mad German on the surface, but he first had to find him. At first he considered a fast boat, but then he realized that he could cover more territory in the high speed Northrop. After he located the German, perhaps a secret meeting could be arranged.

"We're just a couple of fools," argued Beansie from the aft section of the Northrop's control pit. "We don't even know what we're looking for. She might be a schooner, a submarine, or a rusty tramp. What sort of a gag is that? Meanwhile, you can just call me Beansie," concluded the Bish, peering below again.

**T**HEN Hardwick suddenly twisted in his seat and glanced up. He caught the glint of wings. Black wings of a fairly small pontooned seaplane banked sharply over them and suddenly came down like a bullet. Bish caught the scream of it before Tug could shout a warning. They both sat there stupefied watching the black seaplane hurtle at them.

Tug brought the fighter around hard and then sensed that the seaplane was actually firing at them.

"What the devil?" he snorted, bringing the Northrop back again

That sleek Northrop was beautiful as it hurtled over the shimmering Sulu Sea—beautiful, that is, until its vitals were poisoned with whistling lead! Anyhow, this hot interview was something Flying-Reporter Tug Hardwick hadn't expected. Why, before his story was written it was getting punctuated—with bullets! But bullets or no, Tug was bent on tracking down his man. And he knew he was on the right track when a booming laugh brought forth—a little ship that wasn't there!

and clearing with a swish of the tail as the black attacker slashed past.

Bish was trying to break out a gun of some sort to ram out of the tail slot of the nacelle and get a burst in at the mysterious raider. Tug pulled rods and loaded. He watched the pontooned fighter intently, then suddenly whipped over and ripped a short burst at her. The raider darted clear, swished her tail again, and with a wild scream came around full on the Northrop and blazed away again.

The torrent of the burst caught the Northrop stiff. She seemed to halt under the impact of the thud. Tug fought to get her clear again, and as the enemy plane slammed under them a ghostly roar of derision came rip-

pling up from the attacker.

"What was that?" yelled the Bish. "A laugh, wasn't it? You could hear him above all this racket."

"Never mind him. Watch out for us. We've stopped too much lead. We have to go down somewhere. Meanwhile, you keep that swine off."

"But the guy *laughed* at us," the outraged Bish wailed again. "I heard him. I heard him distinctly!"

There was no time for argument, however. The double-fanged fighter came at them again from below and behind. But this time Bish was ready.

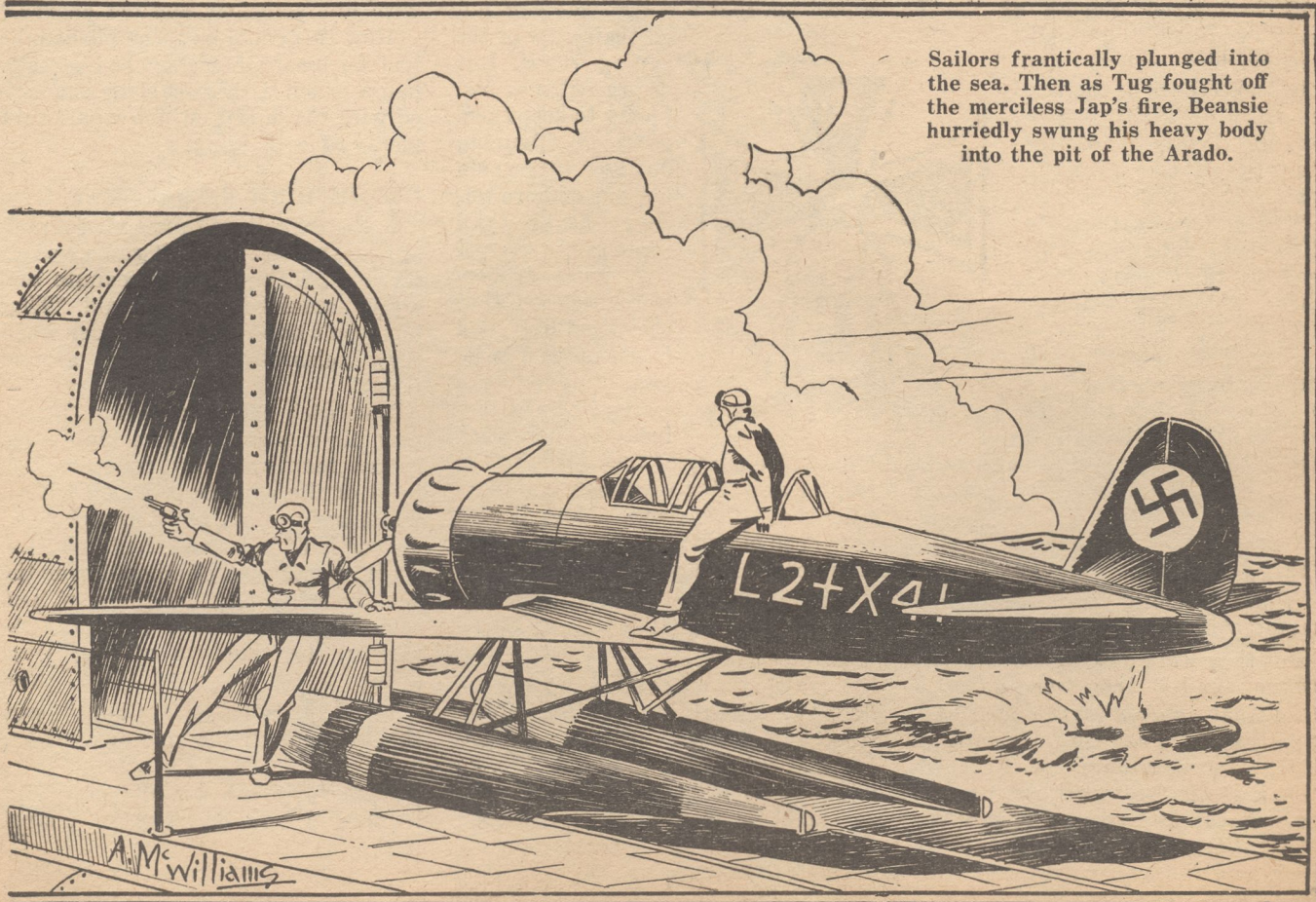
He tripped the trigger of his Browning and let the seaplane have it full in the nose.

The result was all that could be desired. The seaplane was halted cold. It slithered in a flat wallow for a second or two, hoiked a wing-tip, then went down.

**"T**HERE'S something to laugh about out the other side of your face," growled the Bish, watching the seaplane go down in a series of twirls and with a fluttering of smoke behind the rudder.

"Where's he going?" demanded Tug.

"Down into the drink. And where are *you* going?" queried the Bish.



Sailors frantically plunged into the sea. Then as Tug fought off the merciless Jap's fire, Beansie hurriedly swung his heavy body into the pit of the Arado.



"I mean, is there anything down there?"

"Not a splinter. Hey, is our boiler really conked, too?"

"Sure! We took plenty. Now, do you see that island down there?"

"I only hope there's no head hunters on it."

"Don't worry. You'll never miss yours."

Bish ignored that, glanced over Tug's shoulder, and gave the instruments his attention. He was trying to figure out what had happened.

"Never mind *my* job," cracked Tug. "You watch that guy as long as you can."

"Sure . . . Hey! Hey, wait a minute! Look back here. He's—say, that thing wasn't there a minute ago!"

"What?"

"I guess it must be a submarine. It just came up from nowhere."

"Swell! Now we're getting warmer. That guy was part of this German raider's outfit."

"Yeah, and he had a dirty laugh, too. And look! There he goes down right alongside of the thing. But hey! What did I say it was?"

"A submarine," reminded Tug, giving his attention to getting the Northrop down to within an easy glide of a beach that skirted a small island.

"Well, I guess I made a mistake. It's a sailing vessel of some kind."

"Sailing vessel? You just said—you just said it was a submarine!"

Regardless of what they had heard, they exchanged glances of the I-guess-you-ain't-got-all-your-marbles school and both looked back at the vessel again. A swift inspection and they went into the "marbles" questioning again.

"Cripes!" wailed the Bish.

"You don't dare turn your head in this racket. Now where did that seaplane go?"

They both stared back and Tug dared another turn to get a full view over the side. There was the sailing lugger, holding her position as neat as a pin. But the seaplane was nowhere to be seen.

"How do they do that—with mirrors?" he gaged.

"But I'm telling you, it was a submarine at first," the Bish argued.

But they were getting dangerously low now and if they were going to make that island, they would have to get over it quick. In their interest at the transformation below, Hardwick had almost forgotten his own predicament. But now he gave it his fullest attention. He S-turned into position and finally brought the Northrop around well into the wind, nosed

down for a silver strand of beach, and let her "stand" on her flaps and ease in. He aimed her well up on the beach, not knowing how the tide would run.

The Northrop finally came to a crunchy stop on a flat section of shingle that curled a sandy finger deep into the shadows of a nipa palm clump.

Neither attempted to move for the first few moments after they were down. They simply sat there staring at nothing.

Finally Tug nailed Bish with: "Did you say you *heard* that guy laugh?"

"Sure, it certainly sounded like it."

"And when you looked the first time, the—the thing on the surface was a submarine?"

"Right! And there wasn't anything there before that."

"Okay. We'll let that go. Now after you looked the second time, the submarine had become a sailing vessel, huh?"

"That's it. Then when I looked the third time, the seaplane wasn't there."

"It's a good job you didn't look still again. It would all have split apart and spelled out the name of some new breakfast food," mooned Tug. "But let's get out and see what made the wheels stop going around in this bus of ours."

They clambered down and looked about them. They had landed in such a position that a spit of the land cut off their view of the sailing vessel. But at present they had plenty to keep them occupied, figuring out how they could get out of here under their own steam.

A quick inspection disclosed that the Northrop had taken quite a beating. There were fully fifty bullet holes in her sleek frame. Too many of them were in the long sleek motor cowling which covered the Allison engine, and it was with deep misgivings that they raised the upper panel and peered inside.

"Baby, oh baby!" wailed the Bish. "Look at that mess!"

One packet of slugs had perforated the ignition wire tubing and had no doubt taken out most of the cables. Another had battered the gear housing just behind the propeller. What's more, three slugs had spanged into the Scintilla magneto and scattered it into a junk pile. The rest was too horrible to contemplate.

Bish placed the palms of his hands

together, muttered something, then tenderly lowered the panel cutting off all view of the tragedy.

"Well," he muttered. "I always wondered what it would be like to go native on a South Seas island."

"First you've got to find some natives. I don't believe there's a soul on this bit, let alone a sarong," Hardwick mumbled squatting down in the shade of the wing. It was pretty hot and even though they wore tropical kit, they sensed it was going to be uncomfortable.

"I think I'll make me one of those sarongs out of my parachute," gaged the Bish.

"Talk sense," said Tug. "We have to think about advising some one in Davao. Is the radio working?"

"There may be some juice left in the batteries, but we won't get far from here. Still, I'll try."

The Bish clambered back into the tail-cockpit and Tug sat there pondering on the situation. It was beginning to dawn on him that there were too many strange coincidences to all this. He was certain now that they had at last picked up the trail of the mysterious German raider who was playing havoc with Allied shipping in the Far East. The submarine-sailing vessel gag, the high-pitched laugh, and all the other business spread out over this particular area.

"I guess we've found the raider, all right," he muttered to himself. "Now all we have to do is to get in touch with him somehow and get aboard."

How this could be accomplished, he had no idea, since they had already had a brush with a seaplane connected with the outfit—which would take plenty of explaining.

THE BISH dropped down from the cockpit and presented a mug as long as a wet week. "I guess we better start looking for coconuts and a guy named Friday," he said. "That box won't blip a spark. Wonder when they celebrate Christmas around here?"

Hardwick had no time for Christmas. He was staring at a high-speed cutter that was now rounding the bend of the spit. It came up with a white bone in its teeth and swished around hard in a small sheltered cove. Then several men clambered over the side, splashed through the surf, and came up on the beach dripping. Obviously, they knew what they were about.

"Well, here's Santa Claus," said the Bish out of one side of his face. "Now what?"

"Anything can happen now. But let me do the talking. Don't you start any fights!"

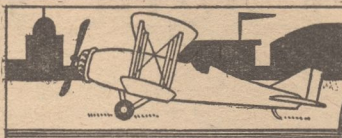
They stayed where they were, Bish  
(Continued on page 65)





# HAPPY LANDINGS

BY ARCH WHITEHOUSE



## A Communique From the Book Front

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**Q**UIETLY CHUCKLING to himself because he knows I'm the bird who writes numerous articles, features, and fiction for F.A., my newsdealer nailed me at the cigar counter the other day.

"What I'd like to know," he said, "is how you do it. I can't for the life of me figure out how one man can corral into his brain such a multitude and profusion of aviation facts and theories. To me you're just a fellow who drops in here once or twice a day to buy a newspaper—but then the next day I get a wad of aero magazines carrying your name over copy that expounds on bombing planes, retractable landing gears, and a guy named Kerry Keen. Yeah, how in the deuce do you do it?"

Well, I did a little explaining to this newsdealer. I drew the veil away from some of the mysteries of how authors in particular fields work, and I told him how a lot of personal experience, mixed with a slew of reading and study, and sprinkled generously with a knack of pounding the typewriter go far toward answering his question. And when you're working in a lively field like aviation, there's always plenty to be said.

I told him that personal contacts and experience are of utmost importance to the writing game, relating how I myself had flown with the British in the First World War and had come home to continue my relations in the field—to keep my fingers on the pulse of aviation by visiting the air shows, by stopping around at the airports, by examining new planes, and by logging further hours in the air.

But what I want to emphasize to you readers here, is that other thing besides building up his experience that a person who's considered as an air expert must continually do. Read, read—and then read some more! That's the answer.

The newsdealer, you'll note, said he "couldn't figure out how one man

can corral into his brain" so much aero dope. Well, the real fact is, fellows, that one man never has done any such thing—and never will. It takes a lot of men to rope in the great wealth of aero fact and theory. Many of these men write books about what they have done and what others have done. And it's in these books that the aero info is corralled—not in the mind of any one man.

That brings me right to my point, which is that to know aviation thoroughly you've got to know how to read books and publications in such a way that you get the most out of what they offer you. And from there on you've got to learn how to select

### "THE AIRCRAFT YEAR- BOOK"

### "PRACTICAL AERONAUTICAL ENGINEERING"

### "HANDBOOK OF AERO VOCATIONS"

### "FAMOUS PLANES AND PILOTS"

the best reading matter from the overwhelming flock of stuff that's poured helter-skelter onto the market.

Anyhow, my subject this month is the books that have come to my desk during the past few weeks. I have four of 'em on hand that you really should know something about. They've got the stuff, so you should check the ones that are down your runway. And if you haven't the jack to buy 'em, then borrow 'em, if they've got the dope you're hankering for. What's that dope? Listen closely—

### THE AIRCRAFT YEARBOOK

**F**IRST OFF, if you really want details of the status of aviation in these United States, you can't turn down the *Aircraft Yearbook For 1939*. This work is edited by Howard Mingos—a fellow you'd like to invite to your home any time for a session on the subject—and it's published by the Aeronautical Chamber of Commerce at 30 Rockefeller Plaza, New York City.

The cost is \$5.00, which at first seems like a lot of money. But I can tell you that it's crammed full of everything aeronautical under the sun — pictures, plates, drawings, three-views and a raft of explanatory copy, on Army, Navy, Coast Guard, commercial, and private aero doings. Almost 600 pages in all! That'll give you F.A. readers some idea of its value.

With this book, the thing to do is to sit down for a solid month just pre-viewing and sampling its copy, then sit down again and actually *study* it. It's a pip for aero info, but you can't get its real meat by just skipping through it and looking at the pictures. The trick is to take it word for word and assimilate it—and after you've done that, you'll be an expert on current aeronautics in your own right.

This year's issue is the twenty-first annual edition, and as the standard reference work on American aviation, it's better than ever. Besides the subjects I mentioned above, the *Yearbook* tells of Government activities, notable flights and records, airlines, aerial services, private flying, airports, state aviation endeavors, and new things in the air.

There's a chapter, too, on world air power. Here Mr. Mingos gives you a lot of good angles which will help you get the perspective between our American aviation and progress in the field abroad. It was in this chapter that I found my only personal disagreement—I mean the part where

(Continued on page 78)



# On the Light Plane Tarmac

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## BEFORE YOU BUY THAT SHIP—

ALL OF US, here, have done plenty of joy stick handling, so it's only natural that during the late afternoons, after we've thrashed through our various editorial conferences, we often settle down into a session on light planes.

Commonly, the discussions get under way with some such question as, "What sport job do you like?" That's the signal for everyone to start putting in his two cents. And before long the other angles come up: "What ship would you like best for vacation purposes?" . . . . "Which craft do you think would be best for regular commuting?" . . . . "Would you go for floats on your job?" . . . . "How about that open-versus-closed-cockpit business?" . . . . "Do you crave deluxe trimmings, or would you be satisfied with just a sturdy, flyable ship?" . . . . *ad infinitum*.

Anyhow, when all this gassing of ours is over, we find that several sound ideas have been brought out. And since you or your club may be considering the purchase of a plane, we're going to outline the critical approaches to you here. Perhaps in these paragraphs you'll find a nubbin or two of good advice that may pay dividends to you in the long run.

In the first place, we've come to the conclusion that light plane buyers, like those who put money into autos, are too often one-plane men. They are sold on one certain type year in and year out, seldom considering another good job put out by a rival maker. Once they have bought that type, they refuse to admit mistakes and go on loudly proclaiming the virtues of their ship while carefully concealing the drawbacks.

Many who favor the Cub, for in-

stance, say they can't stand the sight of an Aeronca or Taylorcraft. The Taylorcraft boosters meanwhile sniff at anyone who would be caught buzzing around in a Cub or Aeronca. And the Aeronca flyers smirk at the C. and T. boys. Often it's that way, anyhow.

Well, all this, of course, is ridiculous. The main point to consider is just what plane fits your purpose and your pocketbook. Do you find a tandem-seat type better than a side-by-side? Do you handle a wheel type of plane better than a stick control model? Is the price more within your bank balance?

There is no sense in buying a \$1,500

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## Before You Buy That Ship—

### The CAA Said It

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## Wally Vs. the Weather

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plane when you can only afford a \$1,200 job. Anyhow, for that extra \$300 you can get a lot of things that are worth a great deal more than some particular trade mark on your rudder. And \$300 will buy a lot of gasoline, too, remember.

Then there is the matter of engines. All of us usually want high power, whether we have any particular use for extra oomph or not. We somehow want the biggest airplane we can get for our money, regardless of upkeep and hangar expenses. And here we find one of the main reasons

why the small automobile has never caught on in this country. We are all "size-proud" and willingly sacrifice hundreds of extra dollars every year because we want to keep up with the Joneses.

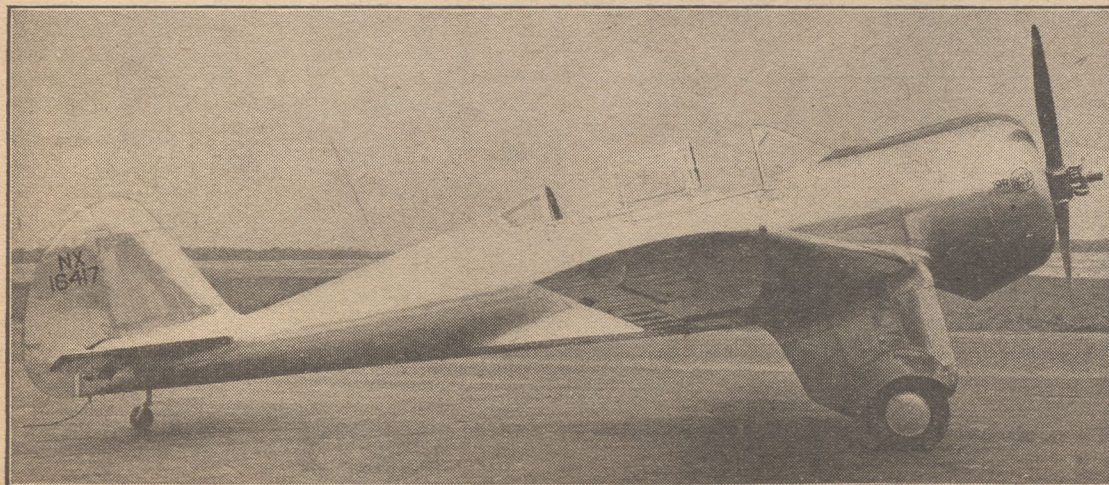
After all, the main thing is the fact that you want to fly. You should forget name plates and extra horsepower and concentrate on buying the best machine for your particular needs. In the matter of engines, for instance, you should weigh such motors as the 40-h.p. Continental against such plants as the Franklin-50. Are the mechanics in your area familiar with the new engines? Can they do your required repairs and overhauls reasonably and safely? It is quite true that all mechanics who work on these planes have to pass CAA tests. Still, aircraft mechanics are like auto mechanics. It is natural that they know one engine much better than another.

Are you buying a 50, a 65, or a 75-h.p. engine just because it gives you a certain standing on the apron? Do you know what it costs to run a 75-h.p. engine as compared to a 50? Are you prepared to pay extra for everything connected with the heavier engine? Have you considered whether the new and higher powered engine has been on the market long enough to check all the "bugs"?

The fact that a certain engine has passed a 500-hour running test on a factory bench, means that the engine is capable of running that long under test conditions. The automobile which captures the Pike's Peak run this year may be a flop on your local hills in the hands of a "Sunday driver". How well will this new engine stack up in the hands of the 40-hour-of-solo pilot under actual flying conditions?

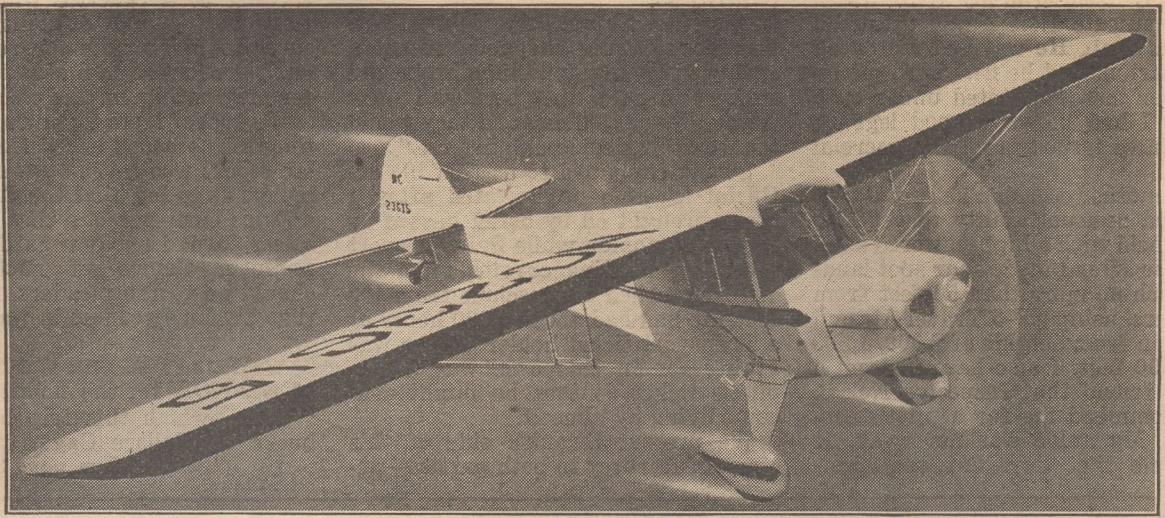
When you buy a plane you should go into the market with an open mind.

To be "up" on matters you should know all the specifications of most of the jobs, remembering, too, that specifications on paper are one thing and actual performance figures in the air are another. No two planes off



After graduating from the lighter jobs, you might try this striking Curtiss-Wright 19-R two place sport craft. Developed from the C-W military trainer, it mounts a 420-h.p. Whirlwind engine and does 190 m.p.h.





*The Taylorcraft for 1940! No one could ask for more in streamline appearance than this modern light plane. Note how well they have finished off the nose of the machine and cowled the engine. By the way, you can now get it with either Lycoming, Continental, or Franklin engine.*

any assembly line perform exactly the same. Even our finest military plane manufacturers have a clause in their contracts which gives them a leeway of from 3 to 5 percent from their quoted performance figures.

You should study the construction carefully and ask the sales fellow to remove certain sections of the fabric to see how well the job is put together. Inquire, too, as to the test pilot's report on this particular plane. Make sure whether it is properly stressed for the type engine it carries. Question every owner you can dig up. Then go around and take a look at the rival machines.

The salesman won't like you. But you're buying the plane, not him.

Maybe you'd like to own a plane fitted with floats. But remember that the average light plane must be re-rigged to take floats. New or extra fin surface must be attached. The floats cost a lot of money. Some of the restrictions on flying in tidewater areas and from certain lakes are much too demanding to make seaplane flying as attractive as it might be. At least that's the story in certain sections.

And how about an open cockpit job? Well, open cockpits are not always comfortable for passengers. The cabin machine is more convenient all around, since for vacations and week-end trips, the shelter it offers both in the air and on the ground cannot be ignored. As for this trip business, consider the luggage space available in each plane and how it is laid out. If you are a specialist in one sport, make cer-

tain your baggage space will accommodate your equipment.

Next—and very important—you should make certain that the firm which manufactures and sells your plane will have convenient service shops in your area. You don't want to wait weeks for a new aileron, a replacement to the tail assembly, or a tail skid. Find out, too, if replacements are simple so that the mechanic can easily make the change and so that the inspector can quickly sign you out again.

Before purchasing, you might have some skilled pilot fly the craft first to check against the report of the factory pilot. Then finally, for good measure, take inventory to see if you have enough instruments, enough insurance, and above all enough training.

If all these things have been attended to, I am sure you'll enjoy your new light plane a lot more.

#### THE CAA SAID IT

**O**UR READERS will perhaps remember the series of items on hearings at Washington, D. C., that

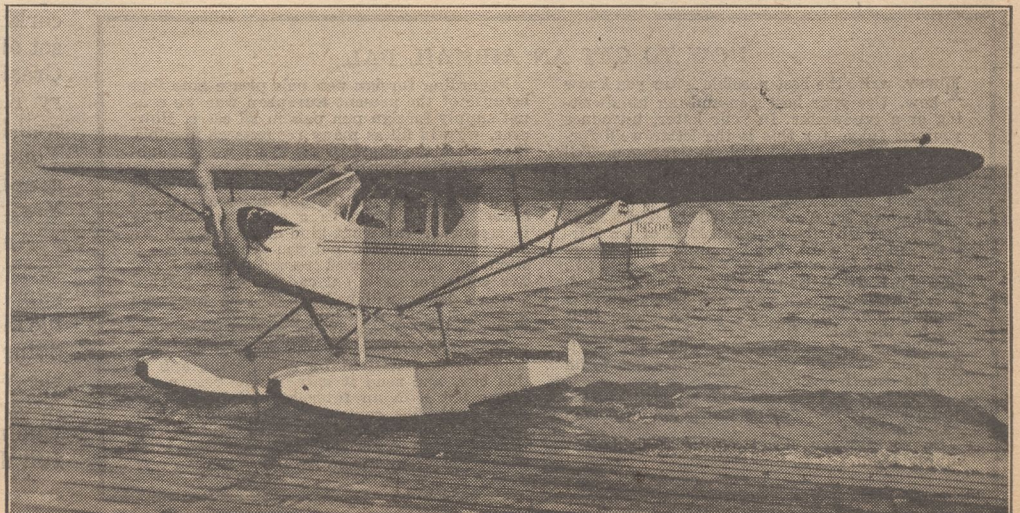
ran in this department in our December issue, where we presented details of the Civil Aeronautics Authority's find-

ings in the matter of issuing or withholding pilot licenses in cases where the prospective flyers had certain physical disabilities.

Theodore L. Swank, of Clinton, Minn., one of the individuals mentioned in the article—a man with an artificial limb who was refused a license—has written us to explain some of the points on his side. We should, of course, point out here that our own details were taken word for word from the official reports released by the CAA.

However, Swank feels that the report did not do him justice, and he has written us his complaint. Naturally, such kicks should go to the CAA rather than to us, since it was the CAA that made the investigation and published the findings. We only offered the details to show our readers the work carried out by this board.

"In the first place," says Swank, "your article mentions that my flying was competent but not excellent. Regardless of what the CAA may say, Inspector David R. Nelson said under oath at the hearing that he could find



*When a Piper Cub is mounted on pontoons, extra fin surface is added to the empennage to counteract the resistance offered by the long floats. Take a look at the tail assembly of this neat Cub seaplane and you'll note the auxiliary fins set on the horizontal stab.*



absolutely nothing in my flying which would indicate that I was using an artificial limb. He watched me fly on one occasion, and he flew with me on the other test and stated under oath that if I had had two good legs he would have issued me a Commercial license.

"On another occasion he stated that I showed unusual ability to get into a small field with a high-powered ship. That was after I made four spot landings, each no more than 50 feet from the others, using a J-5 Travel Air and coming in from heights of 2,000, 1,500 and 1,000 feet. I also have it from a mutual friend that Inspector Nelson did recommend me for a pilot's certificate. My ankle was not weak. It was lame that day, but only tem-

porarily so.

"Another thing they didn't know was that during the noon recess a spring in my artificial limb broke and I didn't dare tell them because I knew it would be prejudicial and they would immediately decide against me."

Swank explained to us that his artificial leg was necessitated after a crash brought on by being gassed by carbon monoxide while flying a sport job while hunting coyotes from the air. He crashed unconscious from 400 feet. He had had about 2,000 hours as a Transport ticket holder. All he was asking for in this case was a solo pilot's ticket so that he might continue flying by himself.

We present Swank's side of this story in fairness to both parties—ac-

cording to a practice which has always been our F.A. policy. We are sure that Mr. Swank now realizes that our mention of him was not a matter originating in this office.

We gather from Swank's letter that the first he heard about that particular report was in FLYING ACES. This brings us to feel that the CAA should apprise such persons that public releases are issued regarding their findings. Copies of such reports should go to the pleaders. Or was it that Swank's got lost in the mail?

#### WALLY VS. THE WEATHER

AND NOW for the month's best letter—which this trip brings two bucks to Wallace Gage, of Stanley, (Continued on page 80)

## The Airmail Pals

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EVERY once in a while a letter comes in to the R.H.P.D. that reads something like this: ". . . I don't care what kind of a fellow you hook me up with—but he must be a model builder, an aero fan, and about my own age."

Now, fellows, what is "Your own age?" Ye Right Honorable Pal Distributor sometimes has to wade through pages and pages of personal paragraphs to discover what that age is—and then he usually finds that the last line in the letters says: "Oh, by the way, I'm 'steen years old."

Some of you lads also leave your names out of your notes to the R.H.P.D., no doubt accidentally. But if you'd like to make life just a mite easier for the old guy with the beard, how's about giving *all* the dope near the top of the first page of your messages in the future. Okay? Well, then here we go flashing into the missive makers' world—

The war in Europe has put the kibosh on our foreign writers, so it seems, but just the other day we received a letter from a fellow in Den-

mark who said that he'd take care of all correspondence that came his way. Interested? Well, here's part of his letter:

"I'll be glad to find pen friends for all fellows who might care to write to Danish boys. And all I ask is that those requesting pals send an International Reply Coupon for my reply."

There's your offer, chappies. Now all you gotta do to get a Danish pal is to drop a line to A. Haugstrup-Soreuseu, Gronnegrade 12, Veile, Denmark. It takes a 5c stamp to Denmark, remember.

The prize-winning note of the month—the one that told best of interesting doings of fellow ink-slingers—was penned by Glenn M. Hedrick, of Ithaca, N. Y. Glenn says:

"I just want to tell you how much I owe to FLYING ACES for introducing me to Tom Shaw, of England. Tom and I feel as if we have always known each other, after these five years of corresponding.

"Tom promises to have his voice recorded for me the next time he is in London, and I feel sure that'll bring us still closer together. Tom has

had many interesting things to write about because he's done quite a bit of traveling. He's told me about West Africa, the Swiss Alps, France, Italy, and Germany.

"Also, my pal has given me an insight into European troubles that I couldn't have otherwise got—at least, not as grippingly. The last letter I got from him described the black-outs."

Glenn quotes Tom as follows: "You bump into an object, raise your hat, and mumble 'I beg your pardon'—only to discover it is just a lamp standard. Then, when it happens again, you say 'Blast these obstructions!'—and horror or horrors, it's some starchy old maid!"

"At present," Glenn continues, "Tom's doing ambulance duty. But he plans to get in the R.A.F. soon by volunteering, because that's the only way he'll be able to get in the particular branch he likes. For in conscription, you have to take whatever they hand out."

Well, you're really getting plenty of interesting news, aren't you, Glenn? We know that you must eat up every word of it, too. And for that corking 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 well-known Westland Pterodactyl V. Your Black Bullet plan is autographed by Arch Whitehouse, too! Yes, they're plenty swell!

And now, as your pen pal Distributor wishes you "Snappy Landings," suppose you sit right down and scribble off a letter telling about *your* A.P. doings. A set of nifty 3-views goes to the writer of each month's winning letter. And if you haven't got a pal yet, read the accompanying box for full dope on how to get one.

—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.



# All Questions Answered

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**S. Gorgenson, Taft, Calif.:**—I am afraid you will find trouble in trying to build present-day racing type planes in gas model form. The idea doesn't work well because of the comparatively small wing-spread of the racers.

**Keith K. Cooper, Pleasant Garden, N. C.:**—No, Wiley Post was not flying the Winnie Mae when he crashed in Alaska. That plane is in the Smithsonian Institution. The plane Post was flying when he cracked up was a mongrel type involving the wings of one plane and the fuselage of another. I believe it was assembled at Post's request at the Lockheed factory.

**Billy Barnum, Medford, Ore.:**—The difference between dive bombing and regular bombing is this: In dive bombing, the missile is usually out side the plane and the pilot actually dives his machine almost vertical at the target and thus aims it by the direction of his plane. When quite near the target he releases it and pulls up. In ordinary bombing the plane can carry the bombs inside or outside the cabin. In this case, the plane is flown to a point high above the target and the bombs are released while the plane is in a nor-

mal flight position. Here allowance must be made, of course, for speed of the plane, drift, and wind. We cannot give out the specifications of the service plane you mentioned.

**Robert Heaslett, Green Bay, Wis.:**—The planes used in the movie *Dawn Patrol* were not authentic types at all. They (in most cases) were modern types decked out to look like Nieuport war planes. Most of them were Fleet trainers, I believe. The gun on the top of Errol Flynn's plane was a very early form of the Browning, a type used before the war, but which no doubt was suitable for the movie work required. Only blanks were fired out of it.

**C. Rehm, Plymouth, Wis.:**—The German, Messerschmitt M-109-R fighter flown by Fritz Wendel, is said to hold the world's air speed record at about 469 m.p.h. But there is still some question as to the method of clocking this speed, hence the mark has not been accepted by certain experts.

**Dewey Mills, Perry, Fla.:**—Humorous verse is always welcome in our Wisecrack-Ups department, as per the reading lines at the top of that page. But "pomes" over 8 lines

## And Now~ We'll Ask You a Few

- 1—What is the difference between the Hawk-75 and the standard P-36?
- 2—What engine is being used in the new Curtiss XS03C-1 plane?
- 3—Why do British mechanics find American engines difficult to service?
- 4—Do variable-pitch props always increase the speed of a plane?
- 5—Have aircraft carriers taken part in any naval action thus far?
- 6—What new British fighter may soon be produced in great quantities?
- 7—What is a "medium" bomber?
- 8—Are there any Americans in the present Lafayette Escadrille?
- 9—Why are weather conditions against Germany in any plans she may have to bomb Britain?
- 10—From where does the Scarff mounting get its name?

(Answers on page 76)

in length are "out."

**Desmond Alberson, S. 6th St., Chipley, Fla.:**—You have a slew of old F.A. magazines you're willing to exchange for books on world war flying, huh? Okay, readers—there's a tip for you. And here are a couple of others: Joe Gacek, of 4610 S. Wolcott Ave., Chicago, has some F.A.'s of the years 1932 and 1933 that he'd like to trade for issues of 1934 and 1935. Also, Jack Schumacher, of Walkerton, Ontario, Canada, would like to get hold of copies of F.A. prior to November 1938. Go to it, you mag traders!

BY ARCH WHITEHOUSE

## "Talk About Screwy Students—!"

(Continued from page 12)

want to try something new, the yell goes up, "Where's Charlie? Where's the guinea pig?" But as a result he's the first student at the field to do several new stunts that many instructors themselves had never attempted.

I recall with a decided shudder an episode in Texas back in 1920. A young kid, whom we barnstorming pilots dubbed "The Ace," got flying time from us in exchange for the chores he performed around the prairie we kidded ourselves into calling a flying field. I was then the proud possessor of an OX-5 Standard J-1 biplane.

Anyhow I asked "The Ace" to fill my gas tank one day—and he accidentally picked up the wrong can. I just got the Standard off and over a clump of trees when the motor quit cold. He'd filled my tank with water! The little gas I had in the carburetor gave out before I could sail over the top and into a clear pasture. I had one swell time getting that crate down from the trees. And on a busy Sunday, too!

ALAS, THE WOMEN!

AND what about the girls? Surely we can't overlook the streamline side of aviation. One time in the piney

woods section of east Texas I was giving a young lady some cross country in an old Jenny. And I mean an old one.

This crate could barely stagger along—and now suddenly in mid-air its motor developed a sputter and lower and lower we came over the tree tops. The higher branches grazed our wheels just as I espied a level stretch of ground just beyond. Level, yes. But dotted with bushes five to ten feet high. Yet I prayed that our Jenny would make that doubtful refuge, for I'd gladly chance the bushes if we could only evade those trees.

Then before we cleared the branches I got a horrible fright. The girl was yelling to high heaven and pointing excitedly to a tree skimming our fuselage. Had we hit it? I was so scared I almost rammed full into another tree.

Finally we touched the ground, caromed from a bush, and came to a stop just four feet from a tree skirting the clearing. And upon examination I found only a few minor rents in the wings.

Thanking my lucky stars, I turned around to the girl and asked her what in the name of all that was holy had

got her so wrought up. Her reply was, "Aw, I wanted you to see that cute crow's nest back in those branches!"

She's still living—but she's not flying.

I made the mistake of looping another girl stude on her first trip. And then in our subsequent dual, she had to loop, loop—and loop. She could loop 'em with her eyes closed—and at 50 feet! I hasten to say that all this took place long before the Government air regulations went into effect.

I don't know whether she ever soloed or not. Anyhow, the only time I ever remember her holding a crate straight was one day when I noticed one of our wheels slowly working its way off the axle. I climbed onto the undercarriage to fix it—and am I glad she didn't decide to loop just then!

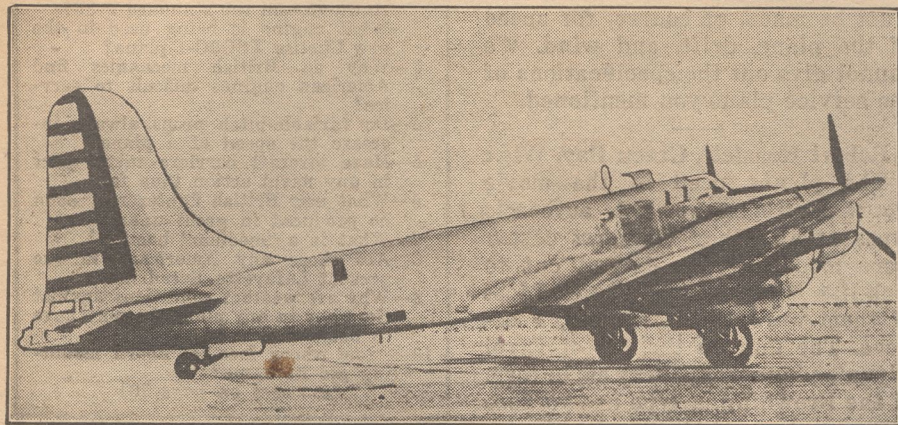
Another cute little trick—a gal who later became a swell flyer—used to come to the field escorted by a different boy friend each time. One could almost hear her say, "Stronger sex, huh! Well, watch *this* girl show you mugs up!" Then she'd take off in a majestic zoom before their admiring eyes.

Came her big moment—a gala day when two auto loads of her boy friends were on hand to watch her. And a darned good show it was at

(Continued on page 64)



# Modern Planes Album



New Douglas B-23 Bomber

## NEW DOUGLAS B-23 BOMBER

IT seems that the so-called "medium bomber" is having success in the present war—what with British Blenheims doing just about as they please over Germany. And now it is interesting to note that the U. S. Army Air Service has placed an order for 38 new Douglas bombers of the "medium" type.

This machine, the first of which you see in the accompanying photograph, appears to be a militarized version of the Douglas airliner but with a smaller fuselage and a larger fin. We must

make our judgment, of course, from an inspection of the photograph, since we have no other information to go by. Advertisements in the technical mags call this job an "attack-bombardment plane." However, there seem to be several discrepancies somewhere, and we'll still settle for the "medium bomber" designation.

According to what information we do have, the new Douglas has a cruising speed of 295 m.p.h., which indicates her top speed must be about 325. The first of the group of 38 craft has been flown to Wright Field, Dayton,

Ohio, for official service testing.

In general design, the machine is a low wing with two radial engines—probably 1,150-h.p. Pratt & Whitney "Twin-Hornets." The wheels retract into the engine nacelles, and the tail wheel retracts into the rear end of the fuselage. A machine gun may be noted poking out of an aperture below the rudder. And it is quite possible that we have something new here in the way of an almost-prone position gun turret.

We believe that the placing of outside turrets has been left for the Army officials to decide; for it is hardly likely that a modern bomber of this type would be sent into the air with so little apparent armament. The plane, we may add, is supposed to be able to carry 2,500 lbs. of bombs.

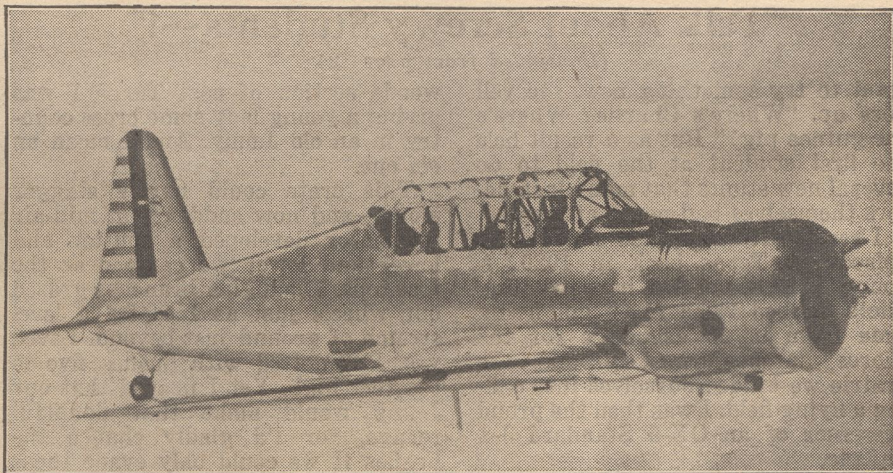
As we go to press, late news from the Air Corps says that ships of this new Douglas type will replace all present Attack duty machines. The strafing jobs, it is said, will be relegated to the scrap heap because of the drastic change recently taken in this field. It's been discovered that modern warfare and new-type ground gunnery is too potent for strafing tactics. These B-23's will bomb and fight from safer altitudes.

## VULTEE VALIANT-51

WE ARE more than pleased to call your attention to this job—because for a change the manufacturer has been kind enough to give his product a name instead of only a set of those unintelligible letters and figures so dear to the military trade. A fellow can remember names like Hawk, Flying Fortress, Hell-diver, and Hudson—but those combinations of scrambled telephone numbers simply get us down.

The Vultee Aircraft company of Downey, California, has just produced this new American trainer titled the Vultee Valiant-51. It is a low-wing equipped with wing flaps, plus a completely retractable landing gear. The fuselage is of composite construction, using a forward section of welded steel tube covered with removable panels and a rear section of semi-monocoque type.

The wing and tail surfaces are full cantilever. They're of all-metal construction, except for the movable control surfaces which are fabric covered. Butt joints and flush rivets are used on the all-metal surfaces exposed to the air stream.



Vultee Valiant-51

This Valiant is a basic combat and advanced trainer plane, according to the official specifications. It carries a two-man crew—pilot and gunner-observer. Actually, it appears to be an advanced trainer alone, since it uses only a 550-h.p. Pratt & Whitney R-1340 engine. Where a two-seater of such power would fit into the modern scheme of aerial warfare is hard to see.

Armament installation consists of

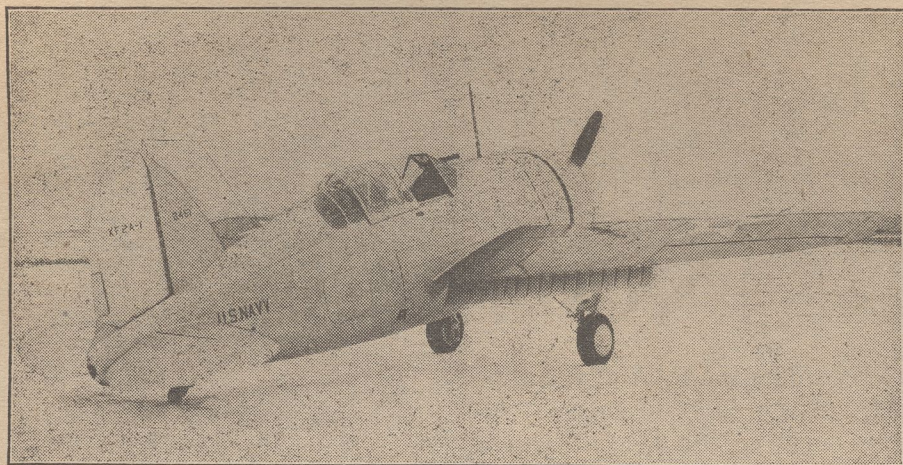
one or two .30 caliber synchronized machine guns up front with stowage for 375 rounds of ammunition. Another .30 caliber machine gun is carried in the rear cockpit.

According to the manufacturers the Valiant has a high speed of 236 m.p.h. at 9,500 feet—an exceptional performance with the power available. At sea level its top speed is 217, and its service cruising speed at 11,000 feet is 213 m.p.h.



## FOUR STRIKING AMERICAN WAR CRAFT

This trip our peppy monthly review offers you a bomber, a combat trainer, a deck fighter, and a unique experimental scout-observation job. And the makers, respectively, are Douglas, Vultee, Brewster, and Curtiss.



Brewster F2A-1 Deck Fighter

**BREWSTER F2A-1 DECK FIGHTER**  
**C**ONTINUING our policy of offering at least one modern service type each month in this collection of modern planes, we have here selected the Navy deck fighter known as the Brewster F2A-1. The maker is the Brewster Aeronautical Corporation of Long Island City, New York. Our photograph offers interesting detail on the this little-publicized Navy mount.

It is a mid-wing cantilever monoplane of all-metal structure with stressed-metal skin. The metal framed ailerons are covered with fabric. And the wing carries hydraulically-operated split flaps, which can be seen in the picture between the ailerons and fuselage.

Of oval metal monocoque type, the fuselage has a smooth stressed-skin covering. Note the neat appearance of the panels and their careful fit-

ting. The empennage is of cantilever construction and is completely built of anodized dural and alclad framework, with the tail plane itself metal covered. Rudder and elevators are fabric covered in the usual high-speed military style.

In the retractable undercarriage used here, the wheels turn up and inward toward the body. Struts slip into spaces in the wings and the wheels into wells set in the side of the fuselage. The gear operates on a hydraulic system, but in case of an emergency it can be lowered or raised by a hand crank. The tail-wheel also retracts in flight.

One 850-h.p. Wright "Cyclone" provides the power. It has a Hamilton-Standard three-bladed hydromatic airscrew. The fuel tank is carried in the fuselage.

The pilot's pit, set over the trailing edge of the wing, has a sliding, transparent hatch. There are additional transparent panels in the floor to afford visibility downward. There are two machine guns which fire through the airscrew. Fittings are also provided for two more m.g.'s in the wings.

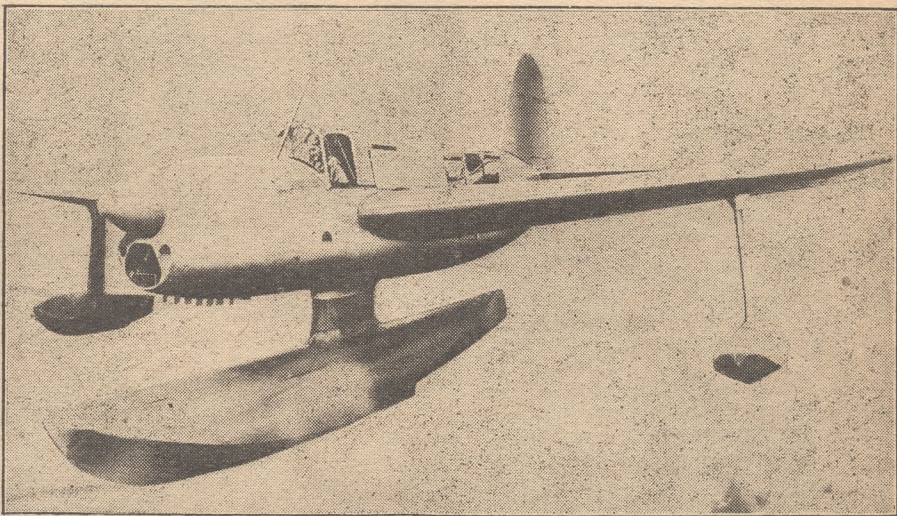
**CURTISS XSO3C-1 SCOUT**  
**T**HE new Curtiss experimental XSO3C-1 scout observation plane shown here has been developed for our Navy by Curtiss-Wright for "Eyes of the Fleet" work, and as this is written it's undergoing factory flight tests. Though depicted here with the unique seaplane gear, it may also be carried as a landplane.

Following the usual practice, no details of its performance were included by the firm when it sent us this photograph. So we cannot tell you anything definite.

At present, Chief Test Pilot H. Lloyd Child—the fellow who's famed for his 600-mile-an-hour dive in the export Curtiss Hawk—is carrying out the preliminary trials. He does give us a hint—says it's unusually fast and has an extended cruising radius.

An interesting feature of this machine is the fact that it's powered with the 12-cylinder Ranger, an inverted Vee-type air-cooled engine which we believe turns out about 800-h.p. and which is said to rival any European motor of its type on the weight-per-horsepower basis.

In design, the new Curtiss is a mid-wing job carrying a large single hull.



Curtiss XSO3C-1 Scout

This hull, we figure, must include some sturdy cantilever fixtures to support and strengthen the main float, which you will note has no outside bracing. Probably it's fitted to the hull by means of two pneumatic legs over which streamlined fairing is carried. Stability on the water is maintained by the two smaller floats carried on single struts and fastened near the wing-tips.

The body structure is not unlike most modern Navy machines used for this purpose, since it is made up of one long cockpit which accommodates a crew of two under a long transparent hatchway. It is assumed that two-way radio, several machine guns, camera equipment, and gunnery spotting gear is carried, as well as oxygen, parachutes, flotation gear, and visual signalling devices.



# Youth AIRMENT MOVEMENT 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.

## When, Oh When?

Scads of stories are currently appearing in the newspapers telling how the first collegians have soloed in the big CAA 11,000-pilot training program. Which is swell. But we have yet to hear of any instruction getting underway for the poor 550 non-college boys, let alone something being done to give 'em a better break. The higher-education lads are learning flying at some 400 schools. That number is mighty significant. You see, the fellow in the street doesn't "belong to the 400."

## Sky Texts

Readers have asked us what the CAA studies study in their ground courses. Well, they're given three manuals and a pamphlet: *Primary Ground Study Manual*, *Practical Air Navigation*, and *Digest of Civil Air Regulations*, plus the pamphlet *Load Factor Information for Pilots*. You can get the manuals yourself—from the Superintendent of Documents, Washington, D. C. The first two named are priced at 15c and 65c, respectively.

## Tuned In

That "lost feeling" some solo studes suffer when first going aloft alone is being neatly cured at Stanford U. They use Cubs fitted with radio receivers, and during each CAA solo flight Instructor Harry S. White is able to coach his pupil by mike from the ground.

## Jobs Rev—And How!

Tremendously boosted by Allied military orders and our own augmented defense plans, American airplane manufacturing is now traveling at the fastest clip in its history—more than 1,250 planes per month, according to the Aeronautical Chamber of Commerce. That's brought aero factory employment past the 50,000-men mark, whereas 36,000 has

been the average in the past. To name a few firms, Douglas will increase its personnel from the present 11,000 to as many as 17,000 by next June, Vultee hired 136 new men in the first ten days of November alone, and Ryan's employment has more than trebled, jumping from 138 to 475 in the first 11 months of '39. We hope this prosperity will mean many jobs for our older readers. And we hope it'll continue, so as to offer real opportunities to our younger fans later.

## Confidentially, It Sank

Still another hope is that you fellows never have the bad luck of Richard Burns, of Kansas City. The disgusted Dick hauled his plane to the Kaw River the other day—and pushed it in! He explained that he'd spent 400 bucks for repairs on the craft in the past year, yet was unable to get it off the ground. Think that over, fellows. There's a big lesson there.

## Modeling Not Enough

When a boy is selected for the Manhattan School of Aviation Trades, in New York City, good scholastic marks and mechanical inclination are given more weight than the fact that he makes models, according to a recent statement by the principal. Which brings us to spout off: "Hit the books and know your mechanics, if you're planning on getting into the aero industry." Graduates of the Manhattan School have gone with Martin, Brewster, Republic, Vought, Sikorsky, Edo, Sperry, Pioneer, and most of the big airlines.

## Swell Contest

Four college undergrads submitting the best aero treatises to United Airlines will each receive a thorough non-flying course at Boeing School, Oakland, Calif., plus 10 hours of instrument flight training. The treatises may be on any aviation subject, should not be more than 3,500 words

in length, and must be in by March 11, 1940. The scholarships are valued at \$2,875 apiece, so you'll be getting what amounts to more than 82 cents a word—if you win.

## On To Florida!

As 1940 dawns, the greatest mass flight of sport jobs ever staged will be underway—the "Light Plane Cruise to Florida." Flocks of the tiny jobs plan to take-off from New York, Cleveland, Dallas, Memphis, and San Antonio on December 30 and convene at Orlando, St. Petersburg, and West Palm Beach, Fla. The Piper firm speaks about the event as the "Florida Cub Convoy"—and maybe the company isn't so nervy, at that, considering that 201 Cubs took part last year and more than 400 are expected this trip.

## How Far Is a Meal?

According to an American Airline stewardess, a Douglas plane travels 100 miles while the average passenger is eating his sky meal. She breaks that figure down to: Soup 25, salad 20, entree 40, and dessert 15 miles. "But some fast eaters," she says, polish off their food in 85 miles, while one slow fellow I noticed spent 401 miles, no less, plying his knife and fork."

## Plan To Revamp NAA

Recommendations for reorganization of the NAA will be made at the annual meeting of the Association at New Orleans January 10-12. The scheme is to coordinate NAA efforts with those of various patriotic, civic, and business groups in order to achieve a sound and constructive national aviation program. A grand idea, say we.

## Fast Work!

One day was all it took for Frank Eng, young Chinese pilot of San Antonio, to teach his 16-year-old brother to fly a Taylorcraft! The instruction began on a recent morning at 6:30 a.m., and the necessary 8 hours of dual were completed by late afternoon. The solo flight, however, had to be postponed until the following morning because of bad weather. To this we say: "C.T.C.!" (Address All Questions Answered if you don't know what that means.)

## About That NYA School

Plans were all set for the establishment by the National Youth Administration of an aircraft workers training school at Oyster Bay, Long Island—which would have been swell for a lot of air-minded lads needing employment. But as we went to press, this fine project was held up because of the difficulty of raising the necessary funds locally. Nevertheless, we can assure our interested readers that the school idea will not be abandoned—for White Plains, Buffalo, or Poughkeepsie, N. Y., will take over if Oyster Bay can't "make it."

(Continued on page 62)



# 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
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Major von Schleich	Willy Coppens
Lieut.-Col. Pinsard	General Balbo
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John K. Northrop	Dwane L. Wallace
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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

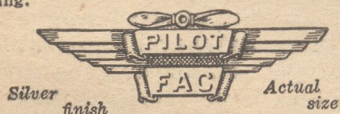
F.A.C. Flights and Squadrons are recognized at GHQ only after they have received their official charters. These illustrated documents, printed on fine paper and portraying various features in the field of aviation, are excellent for framing and display. Their inspirational text is in keeping with the 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.



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.



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). [20]

## 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, to show prospective new members, and to allow a selection of pictures to be sent to GHQ for reproduction in our monthly Club News pages.

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

## Correspondence

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

## Official Supplies

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

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

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

## February Membership Application

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

My name is .....

Age ..... [20]

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

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Happy New Year, Clubsters! Once again we're booting the old annum in the pantaloons and looking forward to the good tidings of the infant year. This month it seems as if the Penn boys are getting the jump on you other fellows, judging from our many Keystone State photos. News of the coming census, dope on a new radio program, and many other choice aero tid-bits are offered here on our F.A.C. menu, too!

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## By Clint Randall

National Adjutant, Flying  
Aces Club

**W**E'VE JUST about completed our "face lifting" operation on the ol' mag, Clubsters. How do you like her in the 3-col-to-a-page style? With so many new things happening every day in the aero game, we're now giving you more fact articles, and more pix, too. What's more, the same number of corking sky adventure yarns and the same big model section is still on tap for you every month here. Better than ever—that's the theme song of FLYING ACES!

And you F.A.C.'s are the lads who helped us bring this all about. We editors, you see, have been checking all your suggestions—and now we've gone ahead and carried 'em through.

But now let's see just what all you fans have been doing. Gather over in the corner of the hangar, here, and listen to Uncle Clint as he reels off his real story about the star members. Get set, boys, for it's coming plenty fast. Okay, here we go—

**T**O START the ball rolling this month we're presenting Wally Bickmire, of St. Marys, Pa., his second D.S.M. prop! Wally has been promoting aviation for a long, long time, and he's one of the finest boosters that we've ever had on our Club's roster. Here's a partial biography of this Ace member:

Has been an F.A.C. for six years. Received Distinguished Service Medal in September, 1938. Has been writing a weekly aero column for a St. Marys' newspaper for more than a year. Is C.O. of the "Doug Corrigan" F.A.C. Squadron, which boasts twenty-five members. And is a full-fledged member of the FLYING ACES ESCADRILLE.

Just imagine, fellows! He's done all that—and is only nineteen years old! We'd say that's cramming a lot into a short space of time—and how!

But Wally's not the only St. Marys Clubster who figures in the news this month—for Jack Meyer, of the same outfit, has just earned enough points for his D.S.M. Jack, like Wally, is an ardent aviashun fan and has arranged many displays in local store



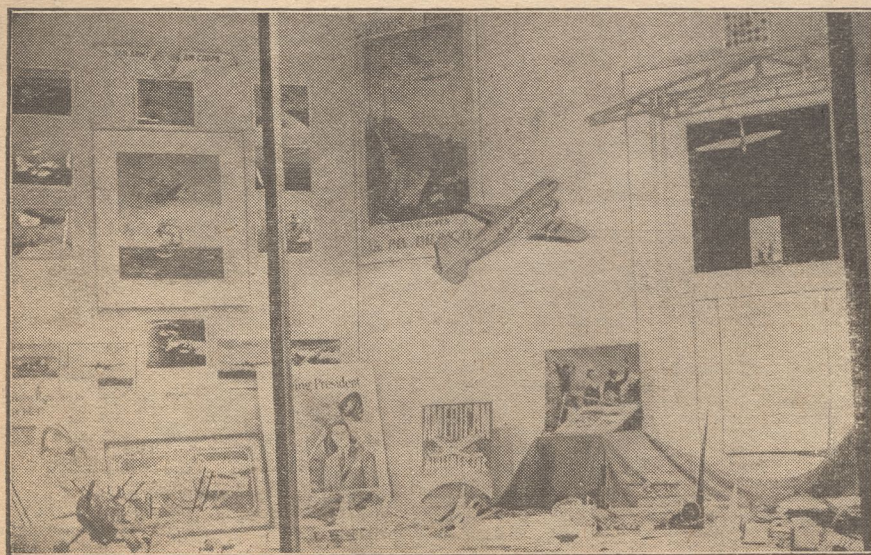
Here, fellows, is Thomas "Ace" Satyshur, who hangs his hat in Erie, Pa. Tom has been a loyal F.A.C. for many moons now, and he thinks that the Club is tops. And see that writing on the pic? Yes, Tom autographed it for Clint's personal collection.

windows to make the public more air-minded. The swell layout shown at the bottom of this page is just one of the many he's worked on. And when the moom-pitcher *Men With Wings* appeared in St. M., Jack almost single-handed put on the display that advertised the show.

Our hats are off to you, boys. Sorry we can't use more space to tell everything that you've done, but we've got a lot to say about the other Clubsters, too, you know. Anyhow, congrats—a million of 'em!

Henry Ruscin, of Hamburg, Pa., is well on his way to being decorated, too. And if he continues to work as hard as he is now, he'll soon be sporting one of those handsome D.S.M.'s. This young chap is ill and is recuperating in a sanatorium—or rather he was when Clint received his most recent letter. But we all hope that he'll be well and back home by the time he reads this. Happy landings, Henry—and may you win that medal in flash-bang, zip-whiz, lighting-speed time!

Personal to Bill Dukes, San Antonio, Texas: Thanks for those swell remarks about our book, old timer. We're glad that you like it so much. We think it's plenty swell every time we get letters of praise. And we do our best to straighten out things when they go wrong, too.



Left: Here's one way to merit a D.S.M. The St. Marys, Pa., "Doug Corrigan" Squadron arranged this fine display in a local store window to promote aviation. And Jack Meyer, who helped in this show and put on several others by himself, is being presented with a swell F.A. medal for his fine work. Don't you think he deserves it?



HERE'S some dope for you laddies who're interested in jobs in the sky business and plan to enter the manufacturing end of aviation "for life." 'Way back when—in 1914—Uncle Sam made the first official census of aviation. There were just sixteen establishments in the game then—and they employed but 222 people altogether. The World War—or maybe we'd better say the First World War—busted loose, and in five years the number of plants nearly doubled and the employes jumped about two thousand percent—to 4,202.

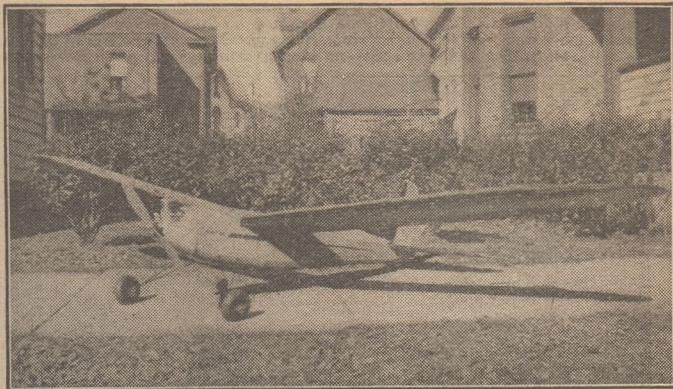
After the war, aviation had its ups-'n-downs. By 1933, when the depression had partly settled itself, aircraft factories in the United States numbered 64, and their employee lists were really grabbing altitude. There were 7,816 men with "jobs"—ackem-mas, welders, laborers, and about 2,000 "white collar" men, engineers, and technicians.

In '37 there were 92 plants, with nearly 8,000 men drawing regular salaries for their "brains" and 24,000 of the fellows who roll up their sleeves and get their hands dirty. And close to \$50,000,000 was paid out in salaries and wages.

Looks as if aviation's sort of a growing business, doesn't it? Well, on top of all this, the last couple of years have seen startling developments in the game. A slew of the shops are now working 24 hours a day, with the "Help Wanted" signs hanging out all the time and factory extensions being built to take care of tremendous orders.

Just how many shops are open now we don't know. Just how much money is being spent in the aero game is not known, either. But it will be known soon. For every single factory making planes, power-plants, parts, parachutes, pontoons, pitot tubes, and other equipment, and every single outfit selling these things either at

Right: Ferd Page, of Williamsport, Pa., wins the F.A. Distinguished Service Medal this trip as our Master Model Builder of the Month. The ship that brought him the award is the gas-powered "Cumulus," built from plans appearing in the September, 1937 issue. And if you other Clubsters want to have your names logged on our Model Builder's Honor Roll, then just read Clint's instructions in this issue.



wholesale or retail, and every airport and flying field except Uncle Sam's own and those operated by cities or airlines—will soon be called on by the U.S. census takers and asked a whole scad of questions about whom, what, when, where, why, and how about the business. And when they've all answered, the Census Bureau will know *exactly* what the sky score is.

Keep your eyes open for those final figures. They'll probably be released within the next six or eight months, and Uncle Clint'll try to print 'em for you. But don't ask the census chap who calls at the airport—he won't tell you a thing. If he did, it'd mean a thousand-bucks fine or a couple of years in the brig for him.

You see, all the dope he collects is *konfidential* and the only way it's ever released is in general statistics. That applies, too, to the facts they'll gather when the census man stops at *your* door along about April and asks all about your family affairs. He isn't being personal. He's gotta ask those questions for Uncle Sam so we'll all know which way the wind's blowing in our national affairs. And you (or someone else in the fam'ly) has gotta

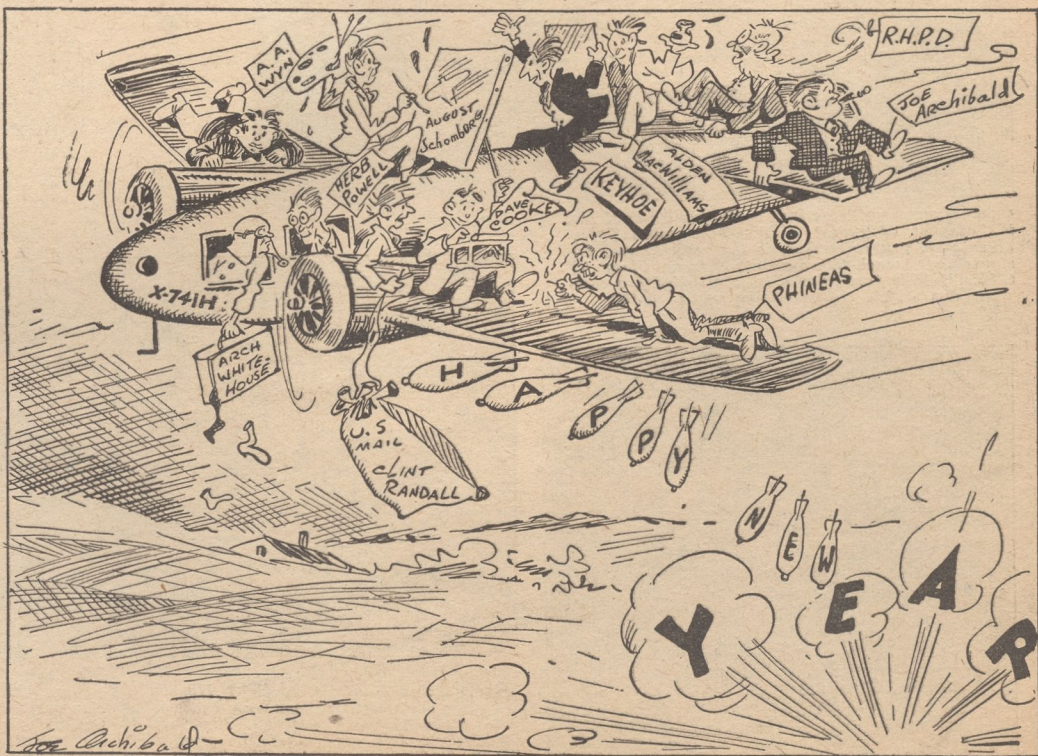
answer 'em. The law says so! But the actual answers are so confidential and secret that he won't let even you see the answers to your *own* questions!

ALBERT CREE, JR., is what we'd call a real up-an-at-'em Clubster. He tells us that his Rutland, Vt., F.A.C. group has two aims: "to propagate that swell game, aviation, and to wake up the Rutlanders to the fact that they need an airport. We've got the mayor behind us," he continues. "And my pop, who flew in the First World War, knows the Governor. Besides that, the town's newspaper is rooting for us. We've got a job on our hands and we'd appreciate any help we can get."

Well, Clint hereby calls upon all Rutland F.A. readers and Clubsters who're not now in touch with Al Cree—to get behind this program. Al lives at 94 Church Street, Rutland. Why not offer him your services in putting this proposition over?

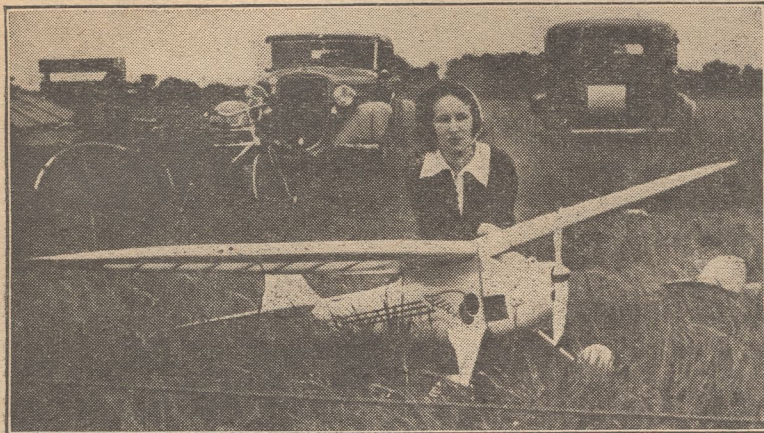
Tell you what you might do, Al: Make up a petition in the name of (Continued on page 64)

Right: Well, shiver our tail skids if it isn't the whole GHQ gang wishing you F.A.C.'s a rousing Happy New Year in modern bang-up style! They're flying the good old F.A.C. Transport, too, which just had its valves reground. What's that? You say we haven't got enough fin surface on 'er? Well, fellows, that's where the R.H.P.D.'s aerodynamic beard comes in. And if the tail gets heavy, stogie-smoking Joe Archibald, back there, just gets out his lighter. The balsa bamboozlers from the model department also send you their regards for 1940. They were going to be here in one of Hombre Al Orthof's streaking stick jobs—only Orthof's omnibus got stuck in one of its own streaks.

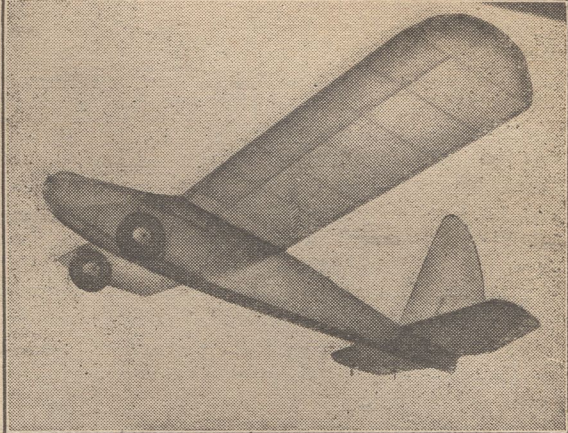




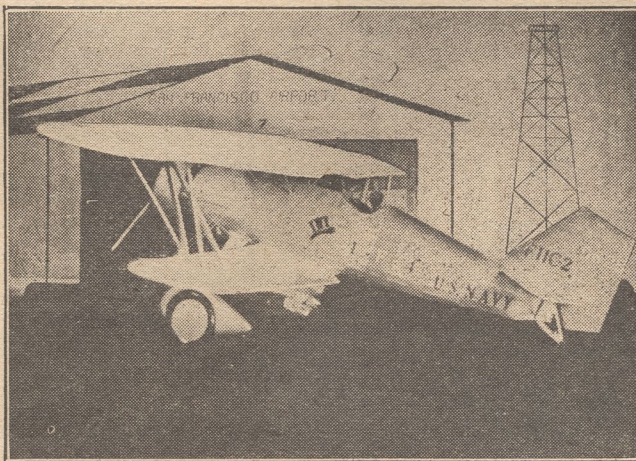
Below we have a swell shot of Wilma Clemens minding Joe Respante's super-detailed gas-powered model. The craft was designed by Bill Effinger, who may generally be found wherever fuel jobs are flying. But regardless of this mizup of personalities, we still think that the ship—no matter who lays claims to it—is a beaut.



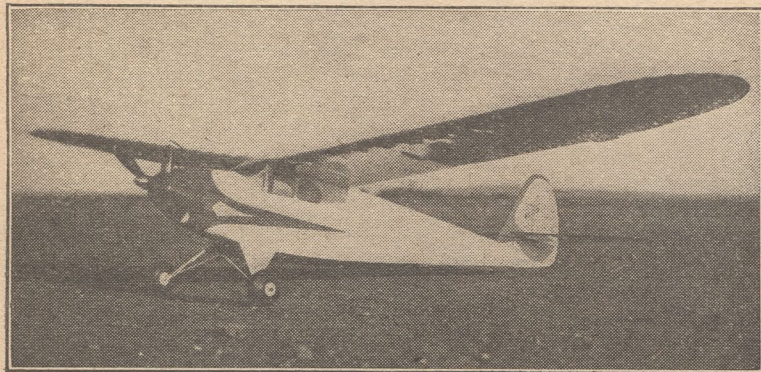
In flight! Here we see the "Classy Class 'C' Glider" (August F.A.) reaching for altitude. H. L. McCullohr, Jr., of Eufaula, Ala., tells us that this was the first ship that he ever built from magazine plans. He thinks it's a corker, and he's right.



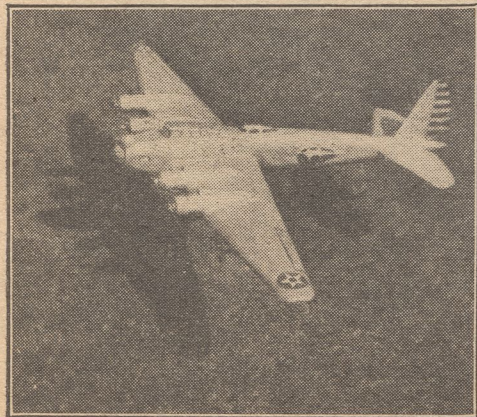
# With the Model Builders



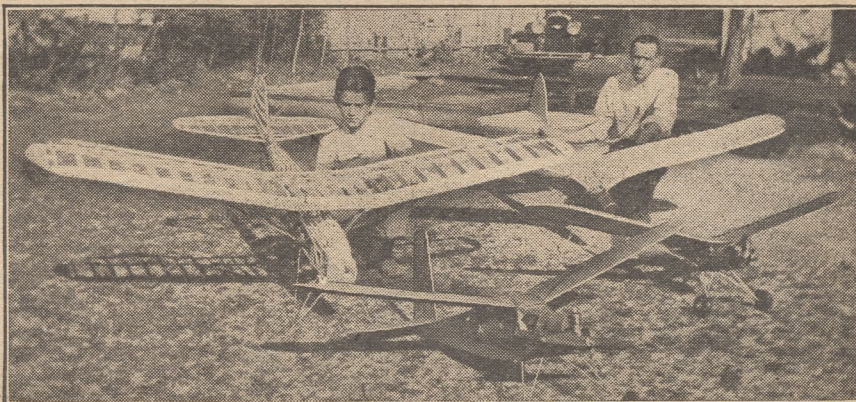
Left: J. A. Jenks, of San Francisco, sends us this realistic photo of his completely-scaled Curtiss "Goshawk" F11C-2. The ship has a 24-in. span is equipped with movable controls, and is built to the scale of  $\frac{3}{4}$ " to 1-ft. What's more, if you look closely you'll see a bomb hung between the wheels.



Guess again, boys. This isn't a real light plane! No, it's another of Elbert J. Weathers' swell flyers. (Weathers, you remember, is the modeler who designed our much-talked-about "Classy Class 'C' Glider.") This particular ship is fitted with a camera which automatically snaps shots while the craft is in flight.



Here's Murray Whittner—Quaker City Club gas-job addict. His pet plane can be flown in Class "A" monoplane form, as seen here, or in Class "B" with detachable lower wings in place.



Left: Coming in for a landing? No, it looks like she's setting down only because she's mounted on a pedestal. It's Ted Enticknap's 4-ft. replica of the Boeing YB-17. Ted lives in Seattle, Washington.

Big Stuff! Dan Garrabrant and his father show us a few of their many ships. The first gas job that Dan ever built was the Shereshaw "Pioneer," plans for which appeared in January, 1938, F.A. Incidentally, that craft Dan's holding is his brother's "Pioneer."



# News of the Modelers

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## McCullough Victor in Iowa

WITH a high gas time of 2 min., 56.5 sec., Claude D. McCullough, President of the Ottumwa, Iowa, Rocketeer Aero Club and popular FLYING ACES model designer, copped the Central States Model Airplane Meet held October 15, in Centerville, Iowa, and was awarded the Howard Hughes Gold Trophy. And as the most outstanding modeler at the meet, he was presented the giant David Lodwick Memorial Trophy.

In the rubber division, Ken Heckart, also of the Ottumwa Club, took first place with a flight average three times as high as his nearest competitor. He took home the Sweepstakes Gold Trophy as his prize. And Johnny Ireland, another of the R.A.C.'s delegation, made the only out-of-sight flight of the day. Unfortunately, however, this hop could not be counted as official due to a .5 sec. motor overrun.

The contestants—who represented the five states of Iowa, Wisconsin, Illinois, and Missouri—fought a losing battle against the 32-m.p.h. wind which raged all day. About half the ships entered crashed.

## Big Contest at Akron

A TOTAL of 418 contestants competed in the Fifth National Scripps-Howard Championship Model Airplane Contest held recently in Akron, Ohio. They brought 457 ships to the field and put on 945 official flights.

Winners were: Stick: Junior—First, Louis Bruno, Jr., Washington, Pa., 7 min., 28.3 sec.; second, Sam Scuro, Pittsburgh, 3 min., 49.4 sec.; third, Robert Kaufmann, Jr., Barterton, Ohio, 2 min., 3.6 sec. Senior—First, Robert Hoffmeyer, Akron, 10 min., 37.4 sec.; second, Ed Naudzius, Detroit, 7 min., 43.4 sec.; third, Nola Ellen Bodle, Akron, 6 min., 42.4 sec. Open—First, Leo Bailey, Akron, 9 min., 35.4 sec.; second, John Wull-

schlager, Cleveland, 7 min., 54 sec.; third, Dick Everett, Elm Grove, W. Va., 5 min., 1.6 sec.

Fuselage: Junior—First, Bob Effinger, Medina, Ohio, 2 min., 16.1 sec.; second, Louis Bruno, Jr., Washington, Pa., 2 min., 3 sec.; third, Robert Kaufmann, Jr., Barterton, Ohio, 1 min., 41.2 sec. Senior—First, Ed Naudzius, Detroit, 8 min., 16.7 sec.; second, Earl Lombard, Washington, Pa., 6 min., 54.1 sec.; third, Billy Brown, Akron, 5 min., 8.5 sec. Open—First, Dick Korda, Cleveland, 6 min., 22 sec.; second, Dick Everett, Elm Grove, W. Va., 5 min., 51.2 sec.; third, Earl Stahl, Johnstown, Pa., 5 min., 24.4 sec.

Gas: Jr.-Sr.—First, Willard Broughton, Barberton, Ohio, 14 min., 17 sec.; second, Bill Blair, Mt. Lebanon, Pa., 4 min., 32 sec.; third, John Hoover, Flint, Mich., 4 min., 20.8 sec. Open—Carl Goldberg, Chicago, 3 min., 54.6 sec.; second, Walter Good, Kalamazoo, Mich., 3 min., 50.8 sec.; third, Fred Smith, Buffalo, 3 min., 47.6 sec.

Exhibition Scale: First, Peter Zalesk, Cleveland; second, Don Taylor, Wadsworth, Ohio; third, Joe Angellone, Alliance, Ohio.

Speed: Dick Korda, Cleveland, and Dick Everett, Elm Grove, W. Va., tied for first at 72.50 m.p.h., but Korda was awarded first by the judges; Don Orman, Akron, and George Vassenko, Cleveland, tied for third at 54.50 m.p.h., but Orman won third.

Flying Scale: First, Ed Naudzius, Detroit, 83.5 pts.; second, Anthony Kazlouskas, Akron, 76.8 pts.; third, Henry Thomas, Akron, 77.1 pts.

Original Design: First, Walter Good, Kalamazoo, Mich., radio control; second, Leo Bailey, Akron, flying ray; third, Chester Stasik, Pittsburgh, triangle landing gear, long shaft drive.

## M.M.A.C. Has Birthday

IN NOVEMBER, 1938—a little more than a year ago—the New York Metropolitan Model Airplane Council

was formed. And in the short space of a year this organization developed into one of the leading groups of its kind in the country.

Shortly after that first 1938 meeting officers were elected. They were: Irving Polk, President; Ben Shershaw, Vice President; Bill Effinger, Secretary; Sam Block, Treasurer; and Joe Raspante, Corresponding Secretary.

The M.M.A.C., in preliminary plans sought to give the Metropolitan builders more contests and more opportunities to compete in tournaments. As a result, three endurance gas model meets, a seaplane gas tourney, a marathon gas competition, and two rubber contests were held during the year.

The Council meets every other Thursday evening. Matters of National and local importance are discussed and voted upon in many occasions the vote being deferred until representatives have conferred with their Clubs on the questions.

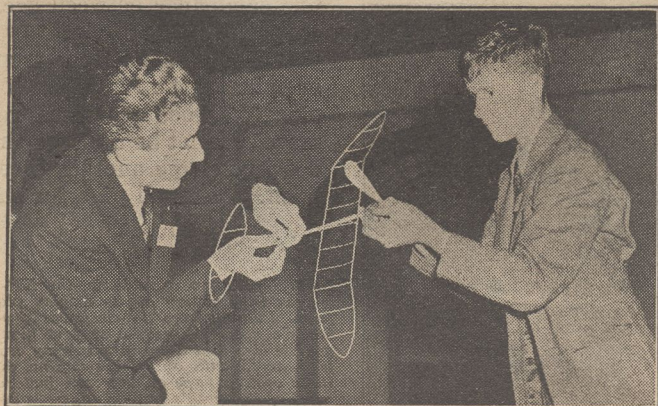
A schedule of Winter events has been tentatively arranged, and it is expected that the Council will stage several contests following the success of the February, March, and April events.

## Academy Meeting Doings

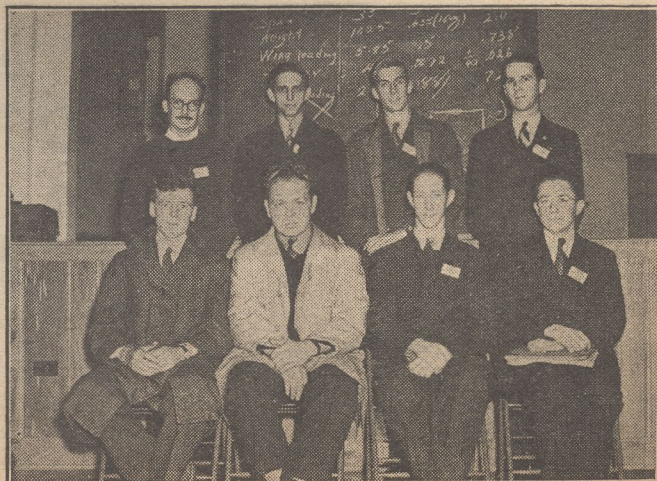
FOR the first time in the history of gas model rulings, a uniform weight-displacement rule was adopted at the Annual Fall Meeting of the Academy of Model Aeronautics. Held during the Second National Model Aircraft Conference at Hampton, Va., on Saturday November 25, the Conference was sponsored by the Virginia Model Association, the NAA, and the Academy of Model Aeronautics.

The 8 oz. per sq. ft. minimum wing loading was retained in the three gas model Classes "A", "B", and "C". The former irregular division into displacement classes was replaced by a uniform power loading minimum of

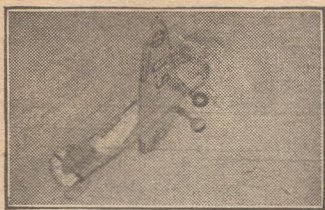
(Continued on page 54)



Above: The wing covering that wasn't there! Herb Weiss, left, shows the V.M.A.'s new invisible covering to the Academy of Model Aeronautics delegates. And some of the fellows fell for the gag—until Herb flight tested his craft! Right: Here's part of the V.M.A. group.







# Build the Curtiss XP-42

The evolution of pursuit jobs took another great step forward recently when the up-to-the-minute Curtiss Company pushed its new XP-42 out of the hangar doors for the first time. And when we got wind of the new job, we immediately put Balsa Ace Jesse Davidson to work on a set of model plans. Jesse took a long time in designing the job to make sure she'd be a good flyer, but at last he got everything set to satisfaction. So, boys, F.A. scoops once again—for here she is!

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## By Jesse Davidson

Author of "Presenting the Curtiss Wright 19-R," etc.

be sturdy and can withstand plenty of crackups. Well, that's all the dope, so let's start with the—

### Fuselage Construction

**T**HE HOLLOWED type of fuselage used in our model has been chosen because this is the best way to simulate the metal skin used on the actual ship. The fuselage, which is carved in halves, necessitates the use of stiff paper templates for its top and side views, as well as for the cross-sectional contours.

The fuselage blocks should be of knot-free soft balsa. Cement together both body blocks very lightly, since they must later be separated. Trace the side views of the fuselage on both sides of the block and remove all the excess wood with a sharp knife. Use sandpaper to smooth the surface, and then trace out the top view of the body.

Reverting to the fuselage plans for the moment, notice the section just aft of the sliding hatch, marked "C-C". At this portion the upper part of the fuselage is channeled. To get the proper dimensions and contours, make a stiff paper template of the

portion to be channeled. Trace the template in its proper position and carefully carve out the channel. A fuselage cross-section template at "C-C" will provide the depth at the extreme width.

Carefully eliminate the wood portion of the fuselage which forms the cockpit housing. The section is identified on Plate 1 between "B-1" and "C". The slanted broken line at "C" indicates the angle at which the rear portion is cut. Later—after the fuselage has been hollowed—this portion is completely covered with celluloid to form the cockpit enclosure.

The fuselage blocks are carefully pried apart with a long thin bladed knife. Another inside template must be made and cut to shape by following the series of dotted lines which indicate the wall thickness throughout the fuselage design.

This template is then traced onto the inner side of each fuselage half. All of the wood inside the new outline is to be removed. You'll find that the walls are about 1/16" thick all around the fuselage, except the portions near the nose and the extreme tail. Use a sharp knife and work slowly and carefully. When nearing the bottom of the shell, use coarse sandpaper to smooth out the rough spots near the 1/16" wall, and then finish the sanding job with very fine paper. Give the shells three coats of dope, both inside and out. Brush over with fine sandpaper between each coat.

Cut out a small door from one side of the fuselage. The piece of wood which is removed cannot be used for the door, so shape another piece to fit. Use small pins for the

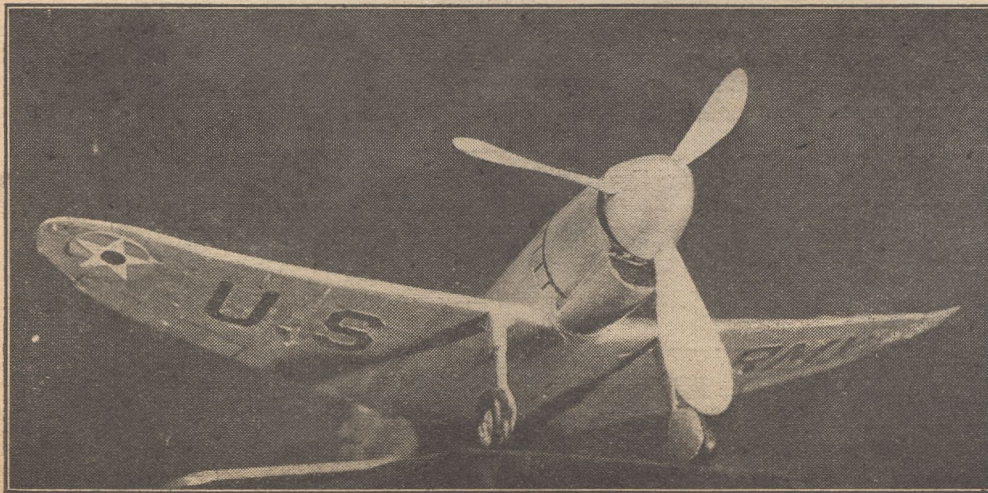
**C**OMBINING the efficiency and light weight of the air-cooled engine with the low frontal area of the liquid-cooled engine, Curtiss has once again set the pace with their radically-cowled XP-42.

An 18 cylinder P & W "Double Wasp," developing 1,600 h.p. at 20,000 ft., mounted behind an enormous propeller spinner cap inside a snug fitting cowl, gives the XP-42 all the slim rakishness of its predecessor, the Allison-powered XP-40.

Due to the brawl that's raging in Europe, our Air Corps has thrown a black cloak of secrecy over all the details and performance figures concerning this new sky terror. It's our guess, however, in view of the past performances of the products of the Curtiss organization and the Army's new 400-m.p.h. request, that this ship will turn in a speed rating second to none in the military field.

The general specifications follow closely to the XP-40. The only apparent change lies in the treatment of the nose and a slight modification of the retractable landing gear. Visibility has also been increased.

Our XP-42 scale model presents a very realistic and deadly appearance. In flight, the ship has the swift characteristics of its big brother. It takes plenty of rubber to keep the model in the air, but the craft is designed to



Left: Looking very realistic, the XP-42 is seen here sitting on its display platform. Judging from the sleekness of our model's nose, you might at first glance get the idea that the original Army craft is powered with an in-line engine. But those cooling flaps on the cowl just forward of the wing's leading edge are dead giveaways that it mounts a radial. When lettering "U. S. ARMY" on the wing of your job refer back to this swell shot for the correct location.



## Bill of Materials

(All wood is medium balsa except where otherwise specified)

Three pieces hard balsa  $\frac{3}{8}$ " by  $1\frac{1}{8}$ " by  $3\frac{1}{4}$ " for prop;  
Two blocks soft balsa  $1\frac{1}{2}$ " by 3" by 14" for fuselage;  
Two strips balsa  $\frac{1}{8}$ " by  $\frac{1}{8}$ " by 8" for leading edges;  
Two strips balsa  $\frac{1}{8}$ " by  $3/16$ " by 8" for No. 1 spars;  
Two strips balsa  $1/16$ " by  $\frac{1}{8}$ " by 8" for No. 2 spars;  
Two strips balsa  $1/16$ " by  $\frac{1}{8}$ " for trailing edges;  
Two pieces soft balsa  $1\frac{1}{2}$ " by  $2\frac{1}{4}$ " by  $7\frac{1}{2}$ " for wing fillet parts;  
Two pieces hard balsa  $\frac{3}{8}$ " by  $1\frac{1}{2}$ " sq. for landing gear part "LG-1";  
Two pieces hard balsa  $\frac{1}{2}$ " by  $\frac{5}{8}$ " by 1" for landing gear

part "LG-1a";  
Two pieces hard balsa  $\frac{1}{4}$ " by  $5/16$ " by  $1\frac{1}{2}$ " for landing gear braces "LG-2";  
One sheet balsa  $1/16$ " by 3" by 36" for wing ribs and tail surfaces;  
One piece balsa  $2\frac{1}{4}$ " sq. for prop spinner;  
One piece balsa  $\frac{1}{2}$ " by 1" by  $2\frac{1}{2}$ " for air intake;  
One length of .020 wire for fittings, bottle of cement, dope, paper, colored regulation insignia, celluloid, aluminum paint, black paint, six feet of  $\frac{1}{8}$ " flat rubber, and four copper washers.

hinges and the door knob. Join the shells together by applying cement generously along the inner sides of both halves, and then press them firmly together. Place rubber bands at intervals along the fuselage to keep the shells firmly together while drying.

When this operation has been completed, small parts such as the rear wire hook and tail wheel are placed in position.

The next addition to the fuselage is the cockpit enclosure. This is built up from two pieces of celluloid. The first part retaining the shape of the conventional windshield and the rear portion forming the hatch.

Thin sheet celluloid is bent to the required shape, allowing a small edge to overlap the body sides. Apply cement to the wood and glue the celluloid in place.

The frame shown on the windshield on Plate 1, incidentally, may be duplicated by placing black paper strips in their respective positions.

### Fillets and Wings

**S**HAPE the fillet pieces from the blocks listed in the Bill of Materials. Inasmuch as they form a very important part of the model, they should be made with extreme care. Study the front, side, and top views of these parts as you proceed with your work. Finally, apply a generous amount of cement and press the fillets into place. Allow a couple of hours for drying.

A plan view of the left wing is shown complete. By going over its outlines with a hard pencil, applied with sufficient pressure to make its shape visible on the reverse side of the page, you may use the same plan to build the right wing-panel. Twelve ribs, each cut from  $1/16$ " sheet balsa,

make up the necessary amount for both panels. The wing tips are cut to shape from  $1/16$ " flat balsa and are glued at the joining ends.

Round off the leading edge and taper the trailing edge to an airfoil section. Note that rib "R-1" on both panels slants inward slightly to obtain the necessary dihedral angle.

Upon completion of the skeleton framework of both panels, cover the wings with fine Japanese tissue. Use banana oil for the adhesive. And before doping the wings, spray the tissue lightly with water.

### Tail and Landing Gear

**M**AKE the tail surfaces from  $1/16$ " by  $\frac{1}{8}$ " sheet balsa. An exception, however, is made for the inner rib of the stabilizer. This rib is marked "S-1" and is cut to shape from a piece  $3/16$ " sq.  $1\frac{7}{8}$ " balsa. The thicker outer-edge gives more cementing area when the stabilizer halves are joined to the body sides. Apply glue carefully at all joining ends, keeping the parts flat until they are thoroughly dry. This will prevent warping. The tail surfaces are covered on both sides and prepared for doping in the same manner as the wings. But dope only one side at a time.

The landing gear legs are made in two parts. The lower parts, "LG-1's," are cut to shape from hard balsa. A

razor-edged blade can be of great help in this operation. Study all three views and get a clear picture in your mind before starting on this work. The upper portions, "LG-1a's," are carved to shape from separate pieces and streamlined. Part "LG-2" is cemented to the landing gear in the position shown on the plans.

### To Make the Prop

**F**ORM three blades from  $3/16$ " sheet balsa. Join them at the center with glue, and then re-inforce additionally by cementing small triangular blocks between each blade. (See drawing on Plate 2.) The rear of the spinner nose block is carved away to accommodate the hub of the prop. Apply cement to both the prop hub and back of the spinner cap. Press them flush together and allow plenty of time to harden.

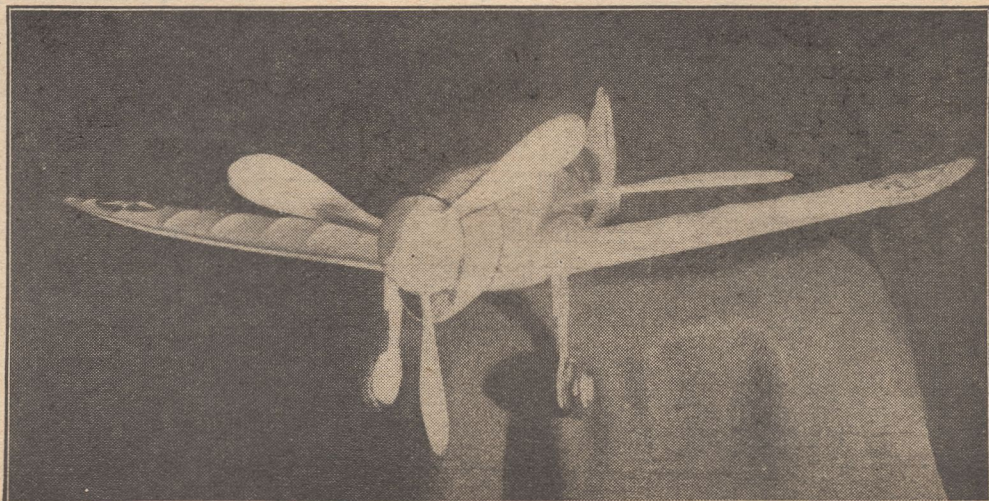
For motive power, use six strands of one eighth inch flat para rubber. Fasten an "S" hook to each end of the strands. Complete the hook-up as usual.

### Assembly and Flying

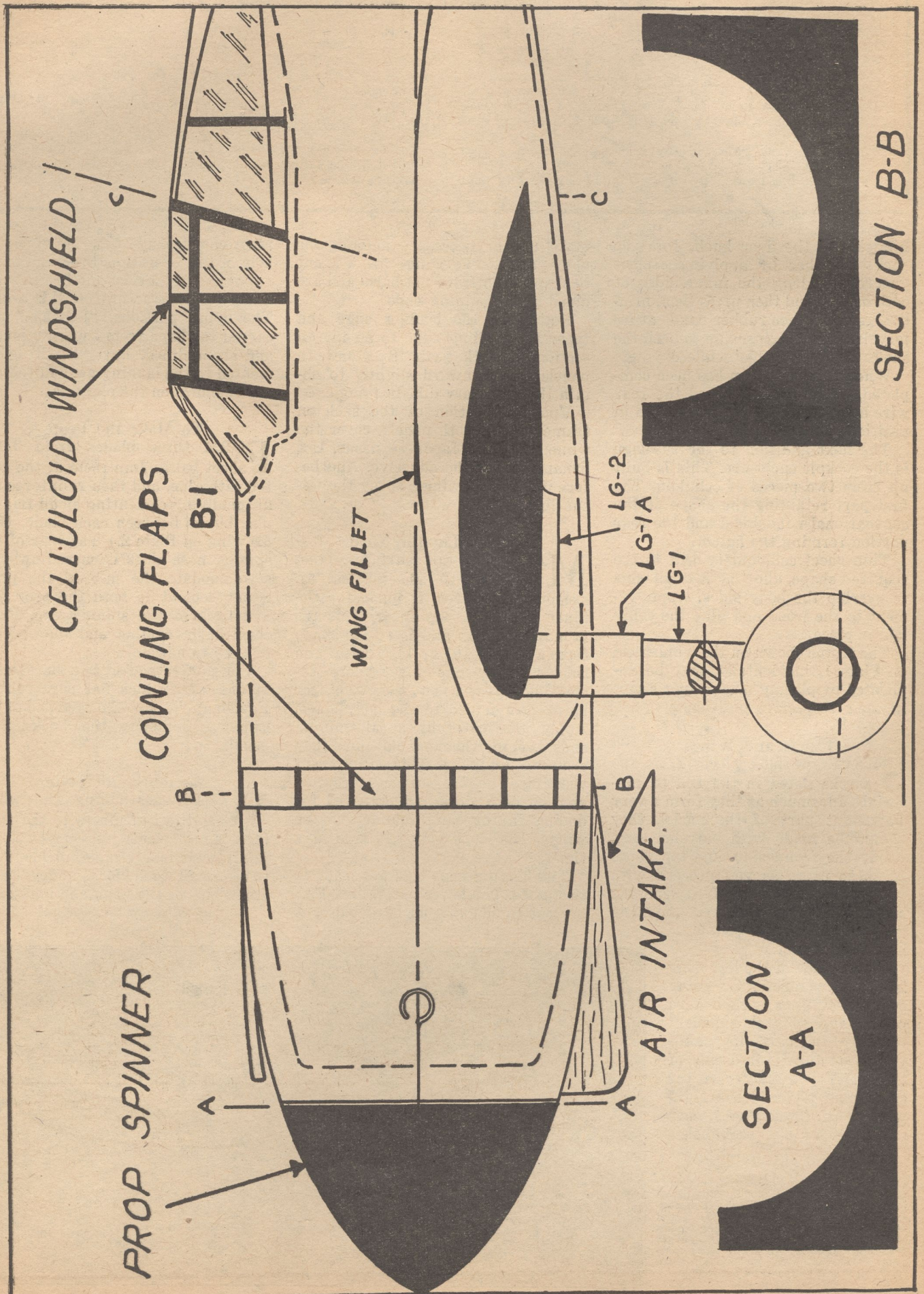
**W**HEN assembling the wings and tail members to the fuselage, apply plenty of cement at all joinings. It is advisable, incidentally, to use small wood blocks under the extreme tips of the wing and horizontal

(Continued on page 72)

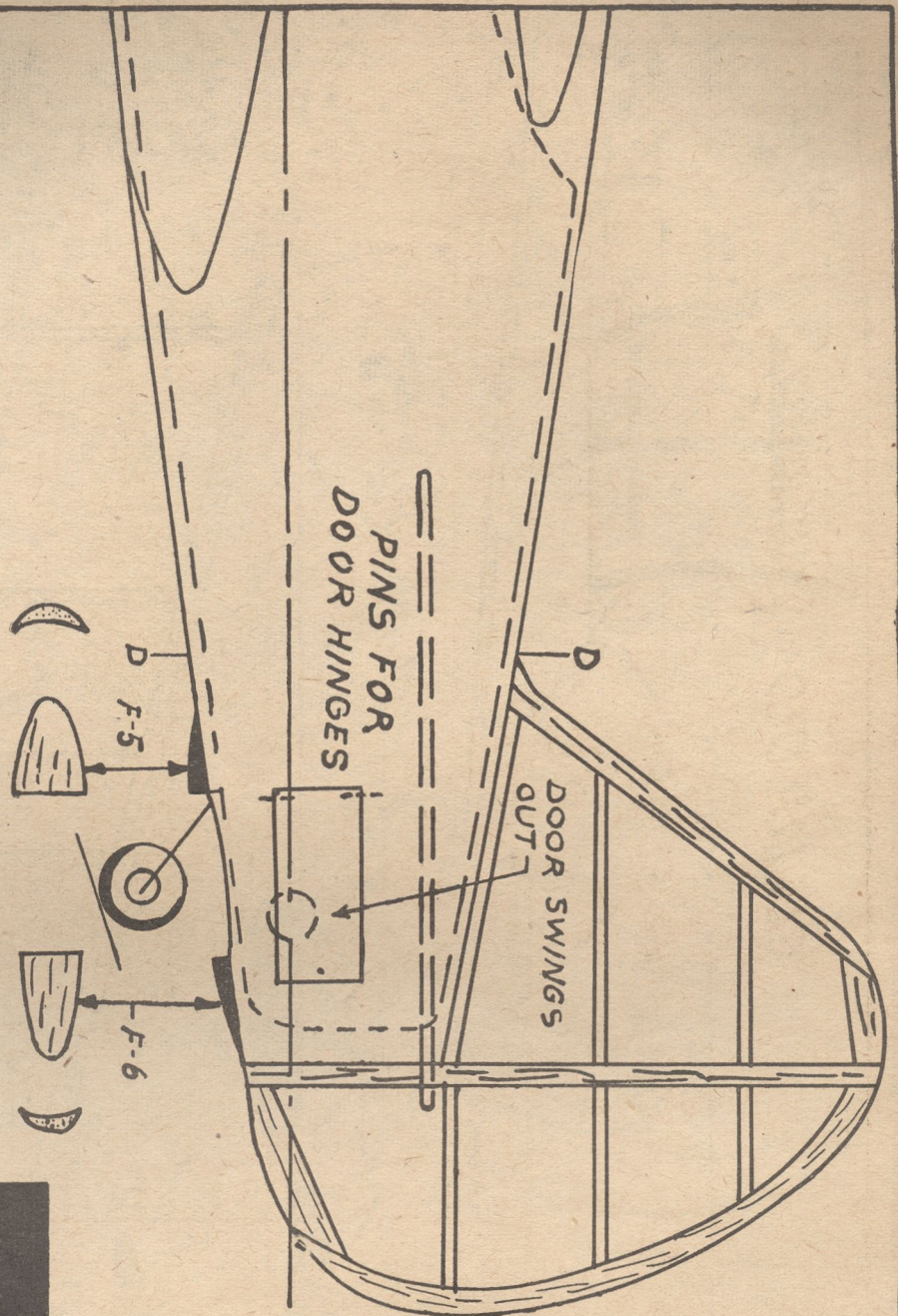
Right: In this three-quarter front photo we get a good view of the model's rakish lines. Incorporating pencil type streamlining, the XP-42 is reputed to be the fastest ship in Army service. And in our replica these speedy details are brought out in true-to-life fashion. All set to start work now? Okay, full plans for this top-notch flyer will be found on the four following pages.









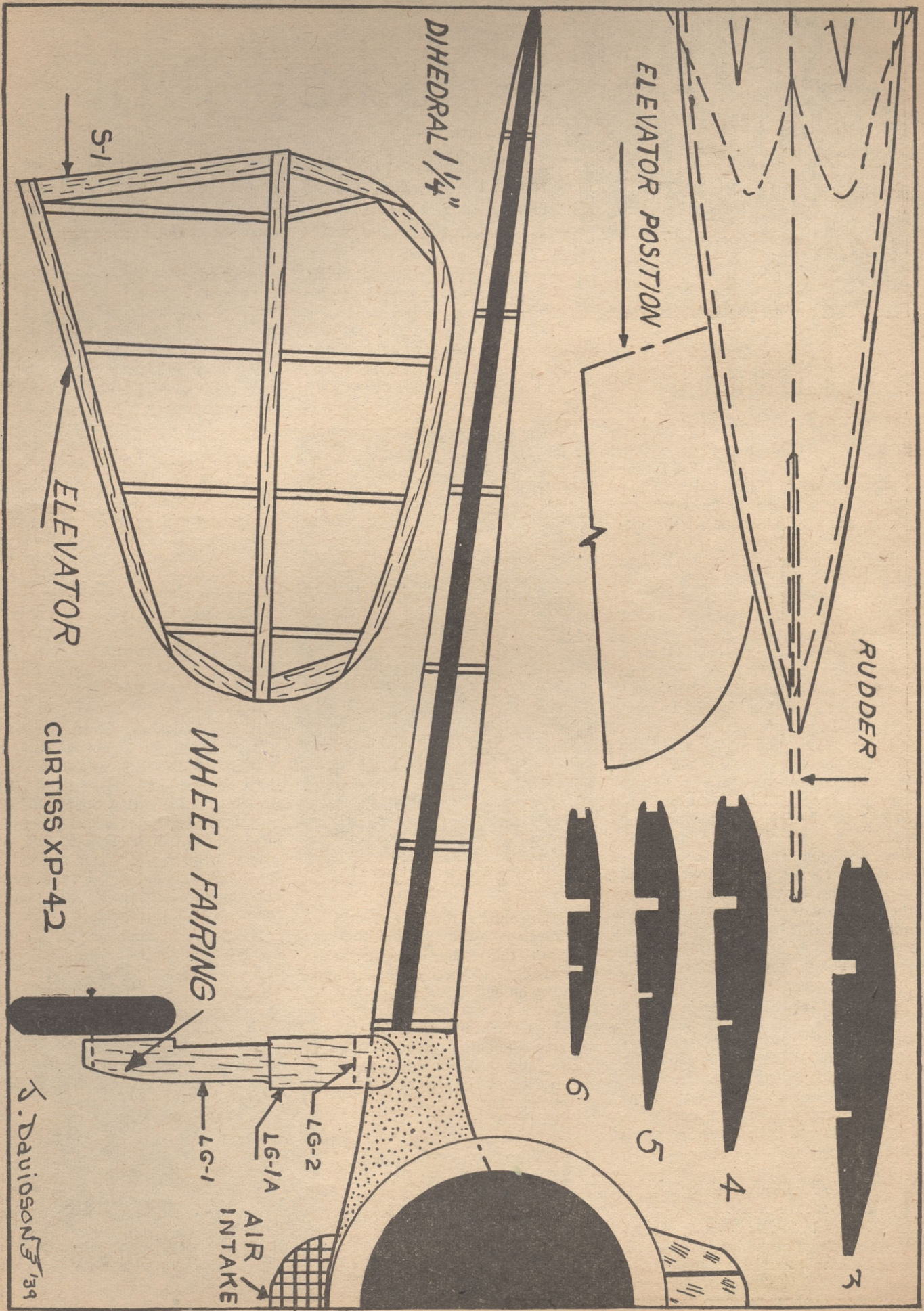


3 BLADED PROP  
6 1/2" D/A.



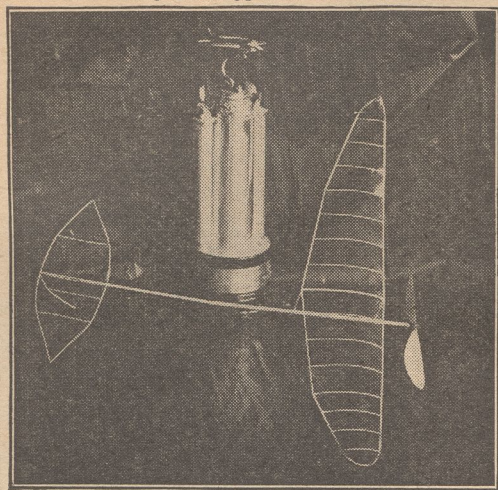








Below we have a top-shot of Ed's winning model beside the F.A. Trophy it copped at the '39 Nationals.



\*\*\*

## By Edgar Fulmer

Drawings by John F. Trace

**T**HE DESIGN of this ship dates back to the 1936 Junior Birdmen National Indoor meet held in Chicago, in which it placed third with a time of 13 minutes and 45 seconds.

Using the same stick, boom, and prop, the ship took eleventh in the Open Division at the '37 Nationals in Detroit. Its time this trip was 14 minutes and 25 seconds.

Continuing to use the original stick and prop, the craft placed third in the Open Division at the '38 Nationals in Detroit with a time of 18 minutes and 14 seconds.

I then rebuilt the model, using the previous design and the old prop. With this arrangement it eked out an average time of 14 minutes and 34 3/5 seconds for three flights at the 1939 Nationals Indoor Class "B" Open Division. The highest individual time was a flight lasting for 15 minutes and 22 seconds. Incidentally, the second-place winning time was 14 minutes and 32 2/5 seconds! That's really splitting seconds. Only 2 1/5 seconds behind my first place!

Now that you know all about the model, suppose we start the actual construction and get the ship into the air and "exploring the girders!" of your local armory. Care should be used in constructing the entire model and you should spend most of the building time on the propeller, making it light and both blades of equal pitch.

### To Make the Stick

**F**IRST, secure a 3/16" metal or hardwood dowel; this is to be used as a form around which we will bend our motor-stick. Then get a sheet of 1/64" "A" grain indoor balsa. Trim the sheet balsa to the shape

## Nationals Class "B"

# Champ Stick

**Fourteen minutes plus! That's what this job did at the Nationals to win the FLYING ACES Trophy for Ed Fulmer! Yes, she's a champ—a real one. And yours can be one, too, if you carefully follow the designer's easy instructions—**

and size shown on the drawing. After carefully sanding the sheet on both sides, moisten it and bend around the rod and carefully wrap gauze around the sheet to hold it in shape until it dries.

After the wood is dry, cement the seam carefully. Then add the caps to

trailing edges to the shape that they will assume.

Get a thin piece of aluminum or cardboard for the wing and trace the curve of the rib pattern on it. Obtain a sheet of 1/32" "C" grain balsa, and using the rib template cut out the required number of ribs, each 1/32" square. Make the wing spars from 1/16" "B" grain balsa and taper to the sizes shown.

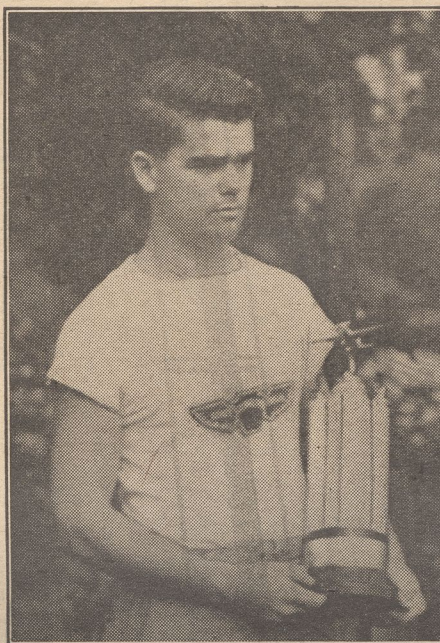
Lay out the spars on a full size drawing of the wing. Trim the ribs to size and glue carefully to the leading and trailing edges. Pull the leading and trailing edge together at the tip and cement firmly, forming the tip outline. Cut the wing-clip struts to size and shape, ready for mounting. Do not form the polyhedral angle until the wing is covered. The completed parts of the model are all covered at the same time.

### To Make the Propeller

**O**BTAIN a block of light indoor balsa for the prop. Lay out lines on the block as shown on the drawing and identify them with letters (this is to get a quarter-grain effect in the two blocks used for each prop). Measure 7 1/4" from the end of the block and cut out a thin, small notch, square with the leading edge of the prop.

Next, cement the blocks with a 1/2" overlap, having the notches coincide

(Continued on page 71)



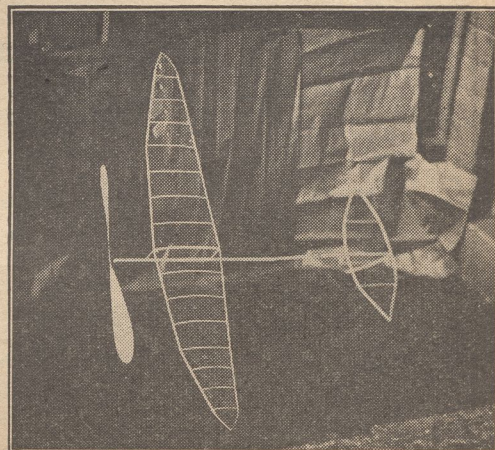
Ed Fulmer himself toting his handsome FLYING ACES Award. (P.S.: The Trophy was so heavy he couldn't find strength to raise a smile!)

the front and rear of the stick. Glue the dural prop-bearing and the rear hook to the stick. The boom is formed around a piece of wood shaped teardrop on end, 3/16" high and 3/32" wide, tapered to 1/16" round on the other end. After we have completed the boom, it is carefully butt-jointed to the motor-stick at the angle shown on the drawing.

### Tail and Wing

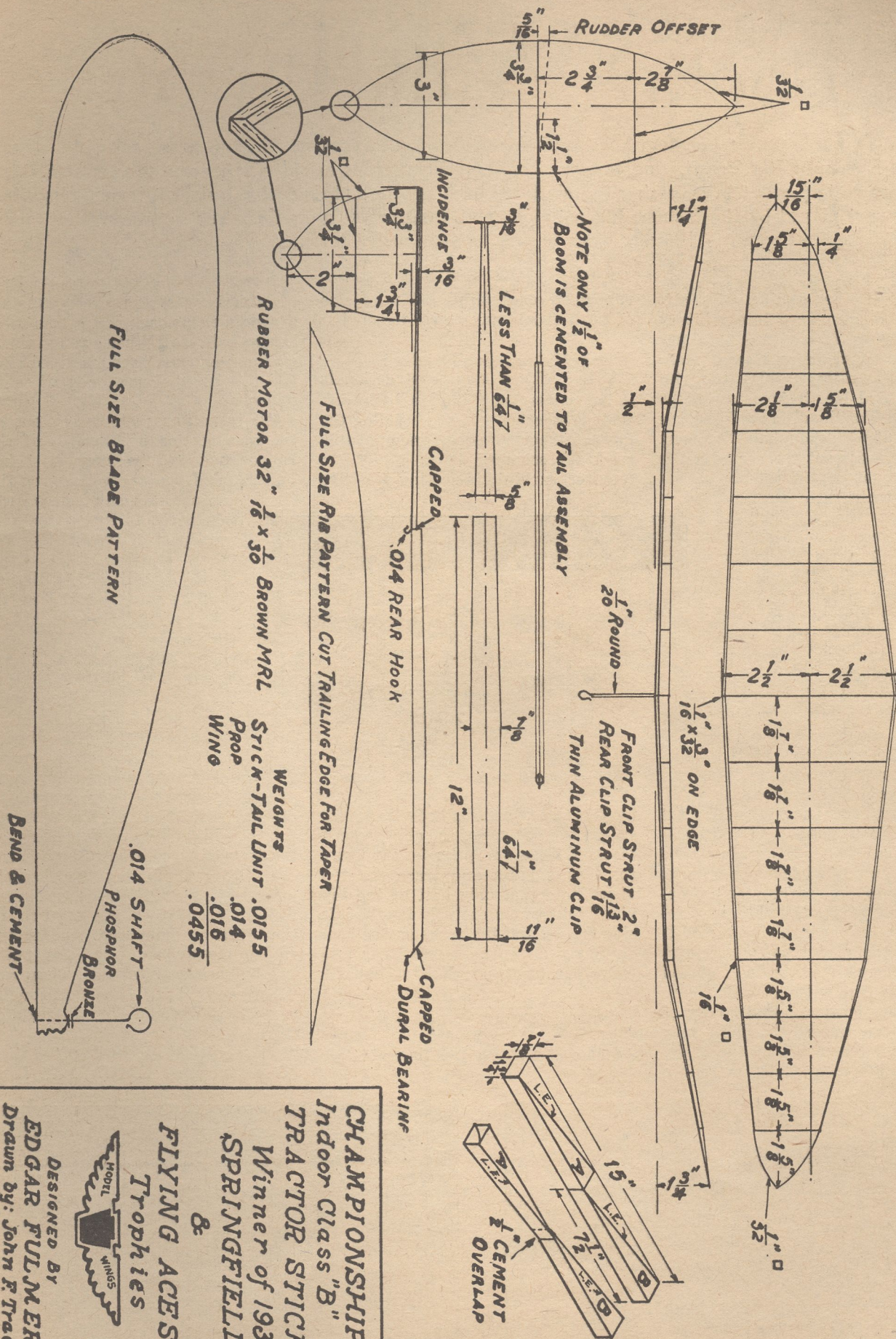
**M**AKE a full size drawing of the tail surfaces. Cut the ribs and place them on the drawing. Then bend the leading and

Right: With her microfilm covering practically invisible, the "Champ Stick" looks almost like a ghost ship. But Ed's tourney-winning time quickly proved that she was the real thing.





## CONSTRUCT A REPLICA OF FULMER'S NATIONALS CHAMP



CHAMPIONSHIP  
Indoor Class "B"  
TRACTOR STICH  
Winner of 1939  
SPRINGFIELD  
&  
FLYING ACES  
Trophies



DESIGNED BY  
EDGAR FULMER  
Drawn by: John F. Tractors



## A Two-in-One

# Focke-Wulf Fw-56

Fast riding pursuits and bombers have been featured almost every day in the press accounts of the current European Big Brawl. And meanwhile practically nothing has been said about the training ships which are so important in grooming the air force boys for the fighting jobs. But F.A. hasn't forgotten the big part played by the trainer. Indeed, right here we give you a swell gas-rubber trainer that you'll surely want to add to your model tarmac.

\*\*\*

**W**ITH the coming of swift combat planes into military flying forces, the necessity for advanced trainers became more pronounced. In this country, the trim Seversky and North American ships fill the bill. For the Nazi air force, the Focke-Wulf Flugzeugbau Company developed a combat trainer which is perhaps equal in performance to that of other trainers of its type. Known as the Fw-56, the Craft is powered with an Argus As 10 Series C motor capable of driving the machine at a speed of 179 m.p.h.

Surpassing even the rigid military specifications set down by the Nazi air force chiefs, this ship has proved ideal. Maneuverability, speed, and the high rate of climb of this job accustom the student to the properties of the fighters he is expected to fly in battle against Spitfires and Hurricanes, to say nothing of Hawks and Douglasses. Capable of a 19,200-foot service ceiling, the craft climbs at the rate of 1,645 feet per minute.

Because of the craft's stable properties, this particular ship was selected for this month's gas model. And like the prototype, our replica boasts unusual qualities and should prove a favorite with all modelers.

Realizing, however, that many of the less experienced builders may wish to build a model of the craft, the drawings were made so that a

rubber-powered ship, half the size of the gas job may be constructed.

**Making the Fuselage**  
**A**S FAR as body construction is concerned, it makes little difference whether you are building the gas or rubber powered version of this sleek sky scooter.

After carefully selecting the two

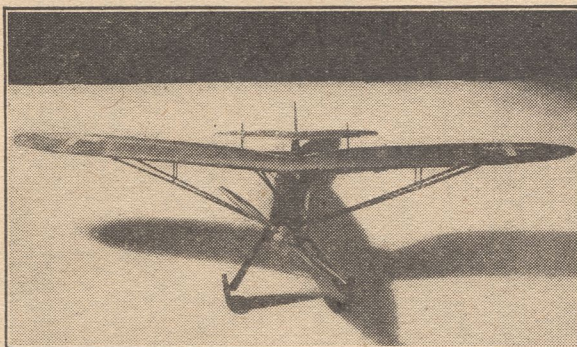
Referring to the cross-sectional drawing, shape each half of the fuselage as indicated. When a rough shape of the body has been obtained, finish off with various grades of sandpaper.

An inspection plate is cut out of the rear portion of the body if the rubber powered version is being built. And if you are working on the gas powered ship, an inspection hatch is cut in the forward part of the fuselage between stations "A-A" and "B-B." In either case, the inspection hatch is cut out of one side only. Therefore, before starting to chisel out the inner portion of each block, draw lightly in pencil the outline of the inspection hatch as indicated on the plans.

Scoop out the inside of each half with a sharp curved chisel. Continue clearing away the excess balsa until the desired wall thickness has been obtained. This will vary, depending on the type of propulsion to be used.

If you are building the gas job, indicate in pencil lines on the inner wall of each block the location of the stiffener bulkheads. And if the rubber powered craft is being built, two bulkheads are needed. These are "A-A" and "H-H." Note that for the gas job, bulkhead "A-A" is made of three-ply.

The portion forward of station "A-A" in either craft is built from

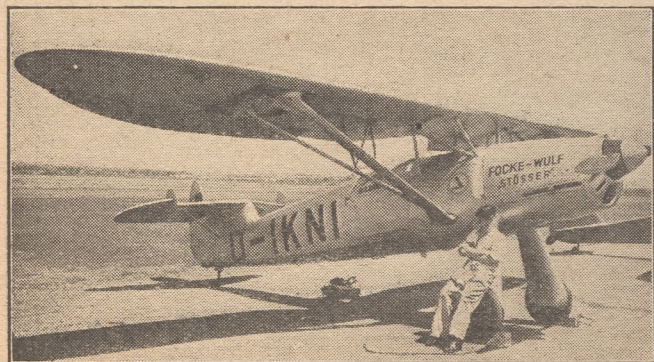


This head-on view shows our model's neat lines.

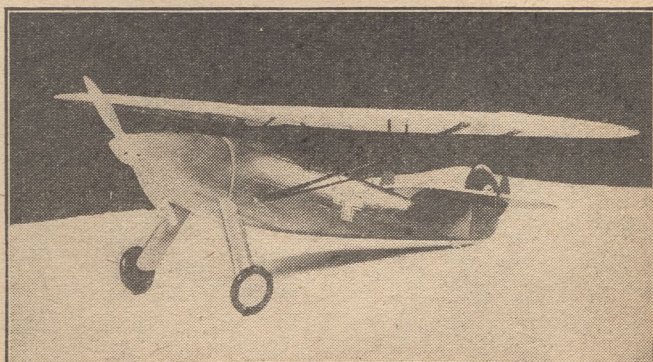
blocks from which the body is carved, trace the side view of the ship on each block. With a sharp knife, cut away the excess balsa and trace the top view. Note that only half of the top view is drawn on each block—the left side on one and the right on the other. Shave away the excess balsa and carve the block roughly to shape.

**By Nick Limber**

Author of "Heron' Gas Buggy," etc.



Here's a shot of the real ship. This "Stosser" was flown at the 1936 National Air Races by Nazi Gerd Achgelis. The job's exceptional maneuverability was marveled at by all who saw her perform.



Looking strikingly similar to the real ship, here's our miniature gas-rubber craft. She's fitted with a power-job prop here. For the rubber version, make an airscrew of the usual flying scale type.



# FOR BOTH GAS AND RUBBER MODEL FANS

a separate block. In the rubber powered model, this is fastened to the fuselage proper with four dress snaps, as indicated in the diagram labeled "Motor Hooks."

Cut out each stiffener from the prescribed stock and cement in place. Fasten the aluminum angle mounts to the firewall before cementing in position. Also fasten the coil and condenser to the firewall.

When each bulkhead has been cemented to one half of the fuselage, allow the glue to harden before joining the blocks to form the complete fuselage. Through the inspection

landing wire, bind with tissue, bamboo paper, or silk to insure a strong gear. The wheel pants are also constructed by laminating three pieces of balsa. The two outer portions of the pants are made of  $\frac{1}{8}$ " sheet while the center section is  $\frac{3}{8}$ " stock. The wheel pants are used only on the rubber powered model. Although they may also be built for the gas job, for show purposes, it is advisable to fly the craft without them.

By referring to the drawings, the builder will note that the craft's stabilizer is raised considerably off the top of the fuselage. To achieve

for the framework.

When the frames for each unit have been cemented in place as shown, it is advisable to place a heavy, flat object on the structure to prevent it from warping. The units are covered with tissue for the rubber powered model, and with silk or bamboo paper for the gas job.

Cement the assembly in place, making certain that the units are properly aligned both horizontally and vertically. Drawing of the rudder are full size for the rubber ship, half scale for the gas job. See Plate 4 for layout of this section.

## Bill of Materials

(All wood is medium balsa except where otherwise specified)

### For Gas Model

Four sheets  $\frac{1}{16}$ " by 2" by 36" for ribs and fuselage;  
Four strips  $\frac{3}{16}$ " by  $\frac{3}{4}$ " for spars;  
Three strips  $\frac{1}{8}$ " sq. for rudder and stabilizer frames;  
Three sheets  $\frac{1}{4}$ " by 36" hard for wing, rudder, and stab tips;  
Three strips  $\frac{1}{16}$ " by  $5\frac{1}{2}$ " by  $1\frac{1}{4}$ " plywood for battery box;  
Two blocks  $3\frac{1}{4}$ " by  $2\frac{1}{4}$ " by 28" for fuselage;  
Two strips  $\frac{3}{4}$ " by  $\frac{1}{2}$ " for leading edges;  
Two strips  $\frac{1}{8}$ " by  $\frac{3}{4}$ " for trailing edges;  
One sheet 4" sq. plywood for firewall;  
One block 6" by 2" by  $1\frac{1}{2}$ " for stabilizer base;  
One length  $\frac{3}{32}$ " wire for landing gear, bamboo paper or silk, clear dope, cement, aluminum for motor mount, and other accessories.

### For Rubber Job

Four strips  $\frac{3}{32}$ " by  $\frac{3}{8}$ " for wing spars;  
Two blocks  $2\frac{5}{8}$ " by  $1\frac{1}{8}$ " by 14" for fuselage;  
Two strips  $\frac{1}{16}$ " sq. for rudder and stabilizer frames;  
Two strips  $\frac{3}{8}$ " by  $\frac{1}{4}$ " for leading edge;  
Two strips  $\frac{1}{16}$ " by  $\frac{3}{8}$ " for trailing edge;  
One sheet  $\frac{1}{16}$ " by 2" by 36" for ribs, etc.;  
One sheet  $\frac{1}{8}$ " by 2" by 36" for struts, etc.;  
One block 2" by  $2\frac{1}{8}$ " by 1" for nose piece;  
One block 3" by 1" by  $\frac{3}{4}$ " for stabilizer base;  
One length .040 wire for prop shaft hooks, etc.;  
One block  $6\frac{1}{2}$ " by  $1\frac{1}{4}$ " by  $\frac{5}{8}$ " for prop,  $\frac{1}{8}$ " flat brown rubber, tissue, dope, bamboo, dress snaps, sandpaper, pins, and elbow-grease.

hatch in the forward part of the gas job, fillet the firewall and fuselage side with a liberal amount of plastic wood. When hard, this forms a strong joint capable of withstanding the vibration of the power plant and the wear and tear of hard landings.

At the bottom of the fuselage at bulkhead "B-B" cut a trough into which the landing gear wire is fitted. The wire is backed with two strips of  $\frac{1}{4}$ " square balsa as shown in the plans.

Construct the landing gear struts by laminating several pieces of  $\frac{1}{8}$ " sheet. After cementing these to the

this on the model, a balsa block carved as indicated on the plans is used. Referring to the Bill of Materials for the size of block used, shape as indicated and cement to place.

### The Tail Assembly

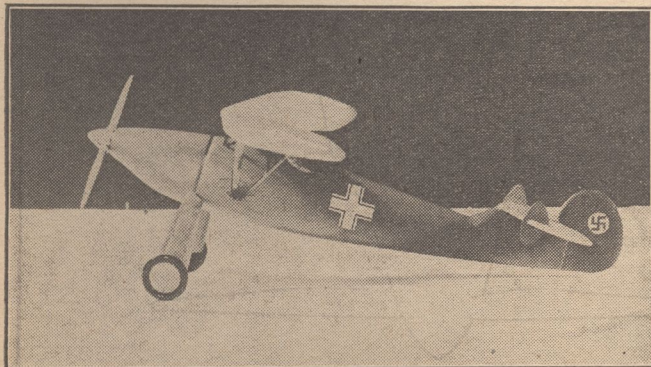
FOR BOTH models, the tail unit is of orthodox construction and the units vary only in the size stock used for the construction. Refer to the Bill of Materials for the size wood to be used in building each unit. The outlines of the sections are made of the same thickness stock as selected

### Building the Wings

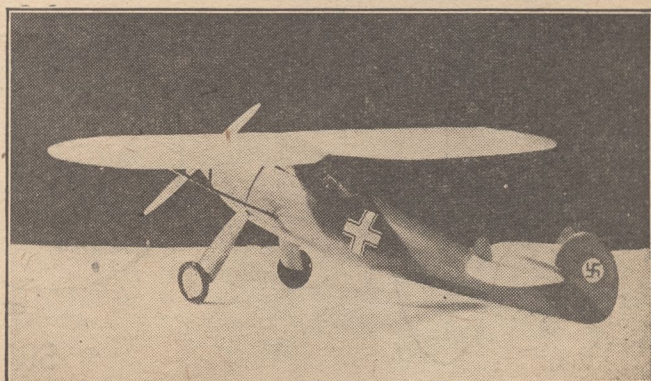
TRACE the ribs onto a sheet of  $\frac{1}{16}$ " balsa. Cut them out and finish with fine sandpaper. The openings for the spars are cut out with a sharp razor blade or knife. The spars are tapered to accommodate the ribs.

Lay the spar over the plan of the wing and mark off the location of each rib. Cement the ribs into place and allow ample time for the glue to harden. The leading and trailing edges are cemented into position after being shaped as indicated. Cross

(Continued on page 65)



In this pic you can see how simple it'll be to make the Focke-Wulf. There are no troublesome or extra struts to add and there is no fancy rigging that takes up so much time to attach. In fact, fellows, the ship's as clean as that well-known whistle!

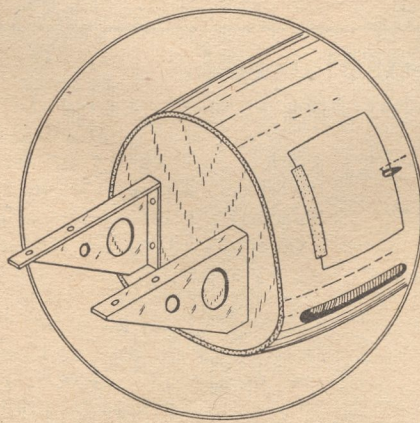
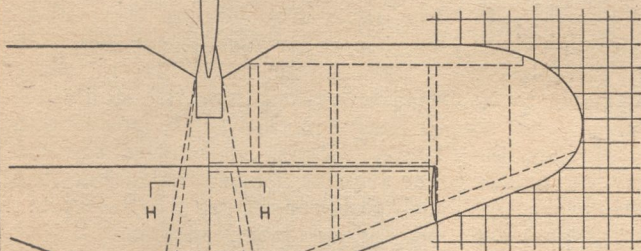


With her full-cantilever landing gear spread wide, our sleek Fw-56 presents a thrilling picture. In fact, she seems almost real enough to take off any moment from our "table-top drome."

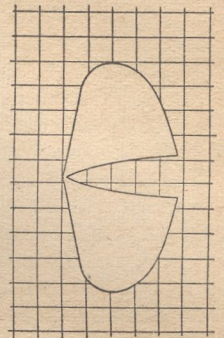


# FOCKE-WULF

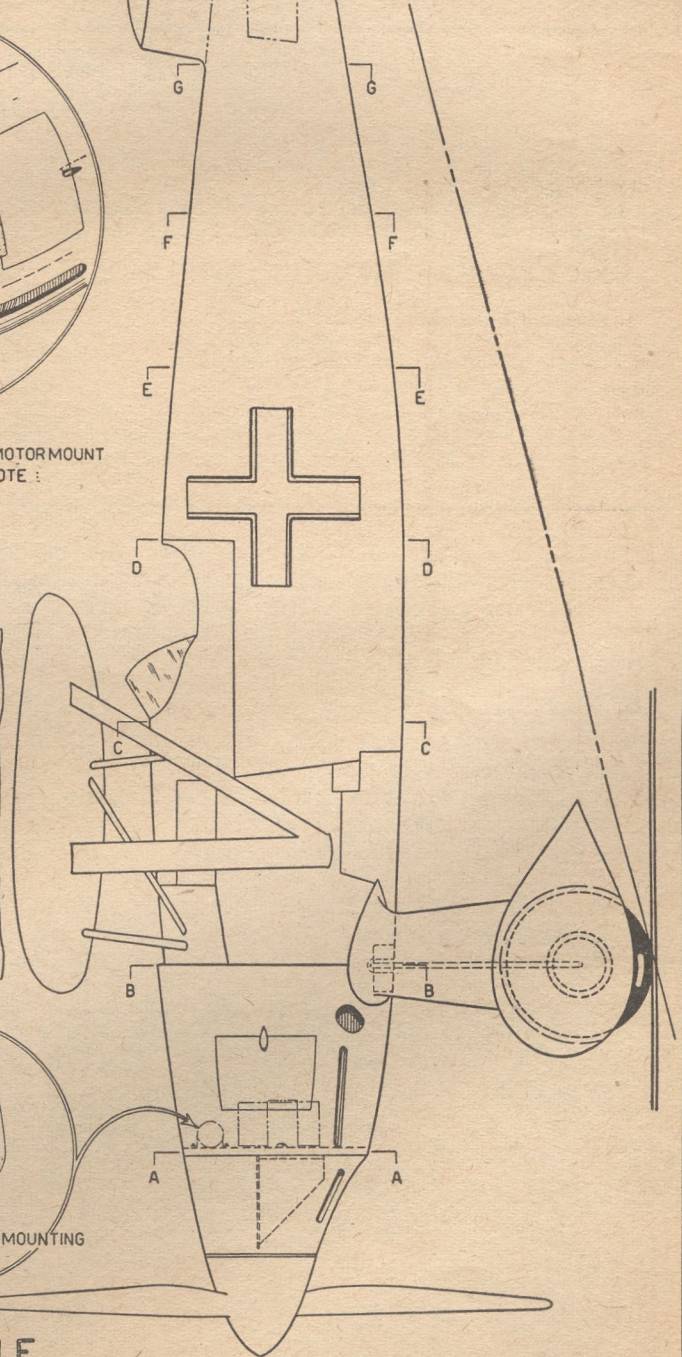
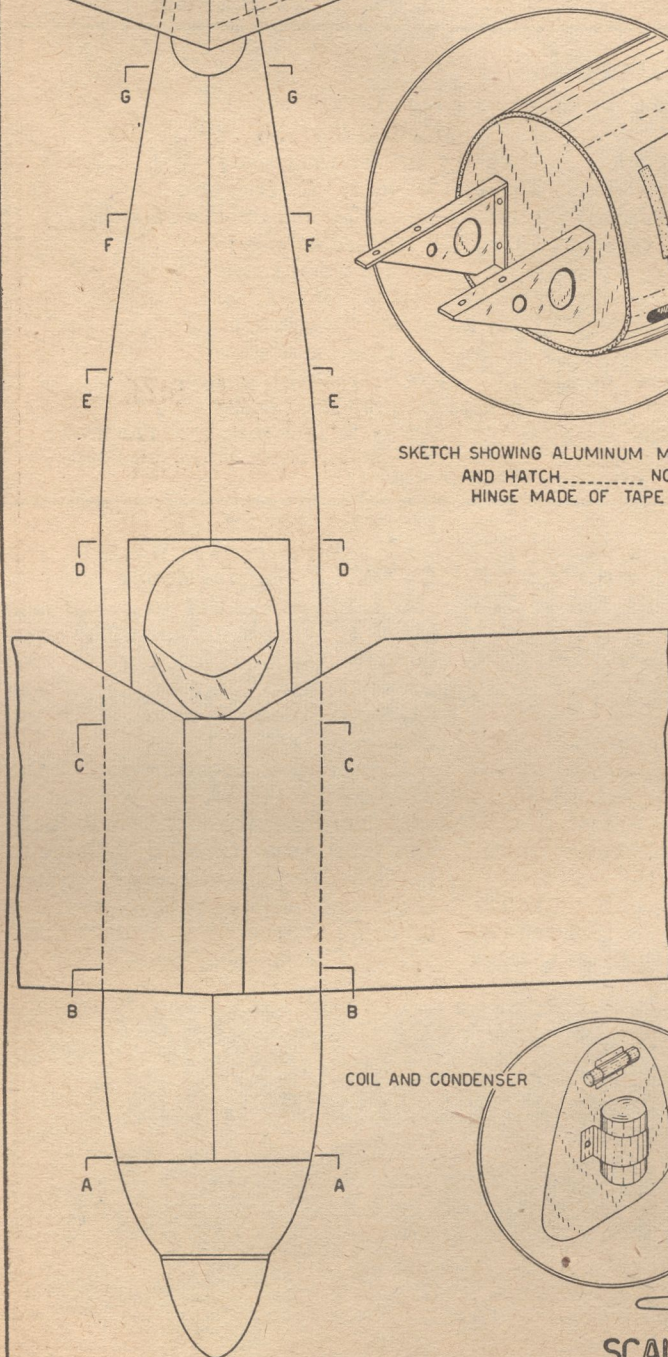
## Fw 56



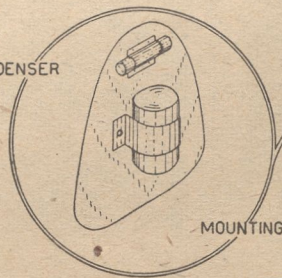
SKETCH SHOWING ALUMINUM MOTORMOUNT  
AND HATCH..... NOTE :  
HINGE MADE OF TAPE



AUX. STABILIZER  
TWO MADE OF SHEET BALSA



COIL AND CONDENSER



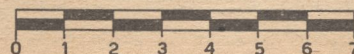
MOUNTING

SCALE

FOR RUBBER POWERED



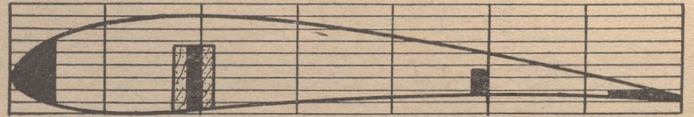
FOR GAS POWERED



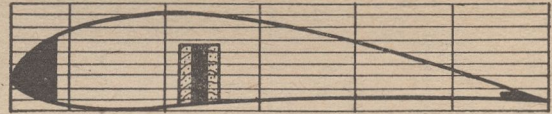




RIB NO. 3 TWO REQ.

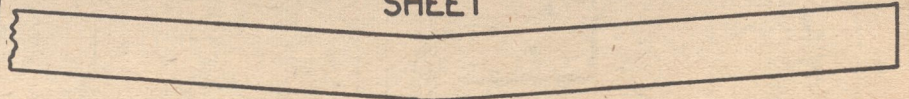


RIB NO. 2 EIGHT REQ.



RIB NO. 1 FOUR REQ.

ALL RIBS AND SPAR BRACE MADE OF 1/16" SHEET

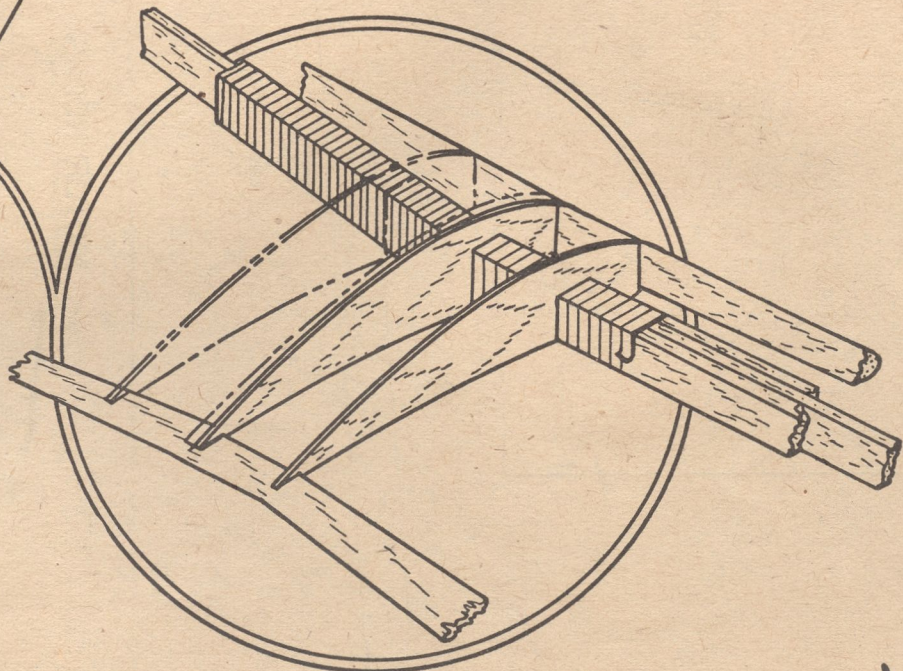


SPAR BRACE TWO REQ.

NOTE-----

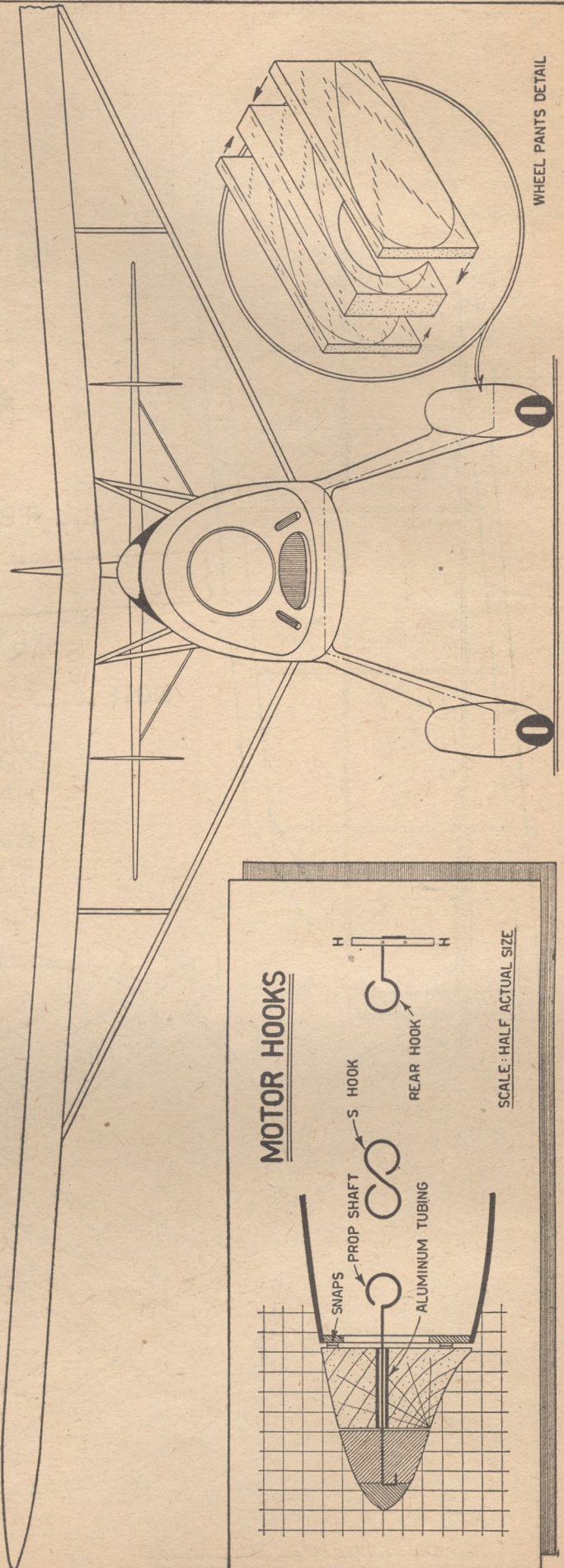
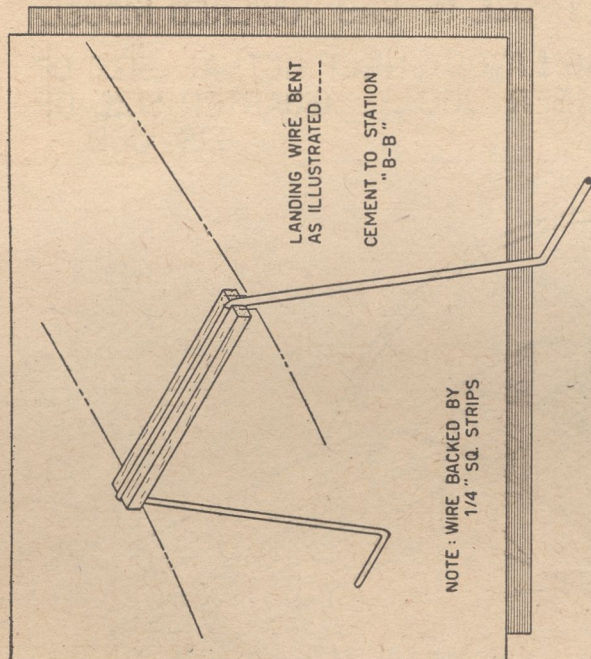
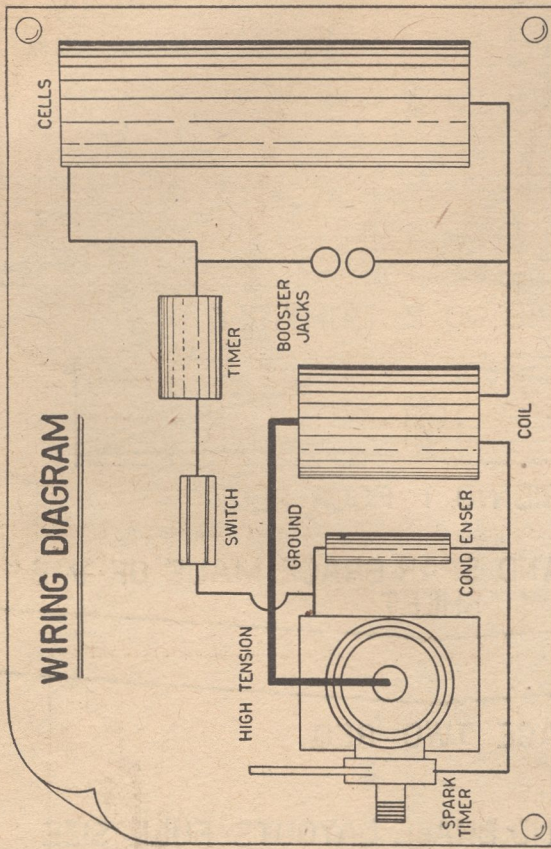
RIB AND BRACE LAYOUTS FULL SIZE  
FOR RUBBER POWERED MODEL-----  
HALF SIZE OF GAS POWERED MODEL

WING LAYOUT HALF ACTUAL SIZE OF  
RUBBER JOB.....QUARTER SIZE OF  
GAS JOB.

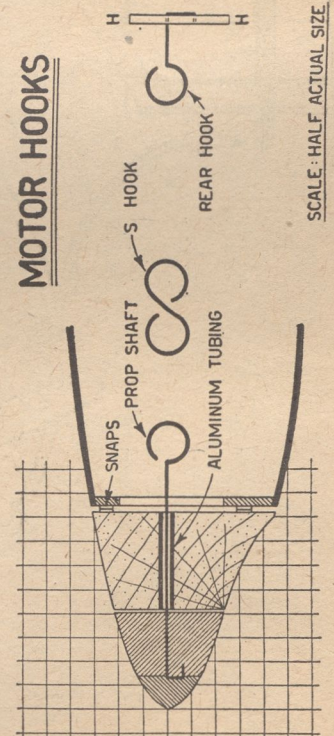




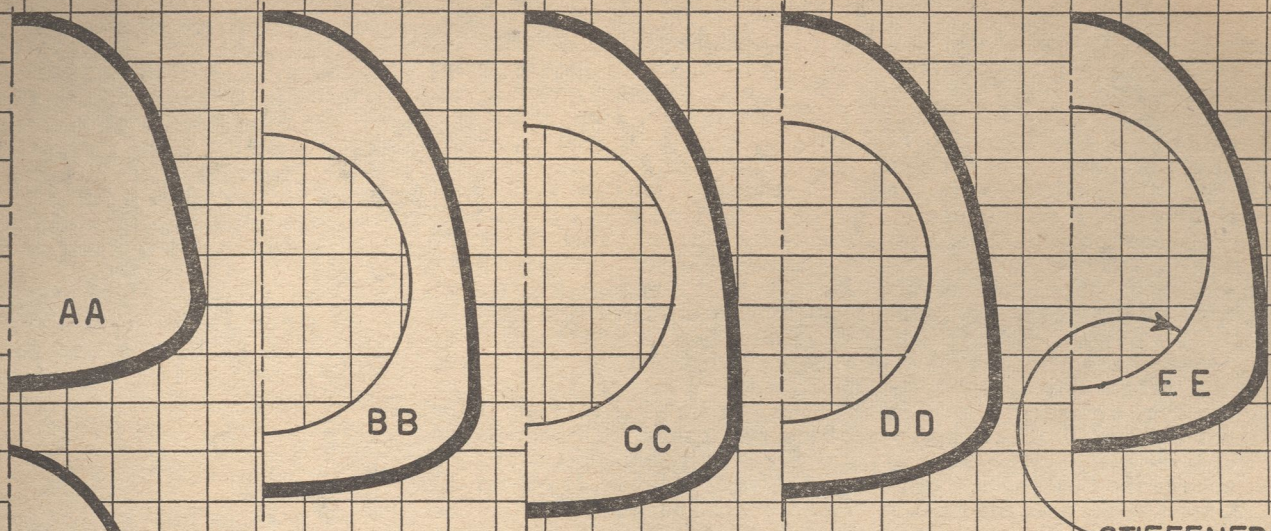
# WIRING DIAGRAM



## MOTOR HOOKS

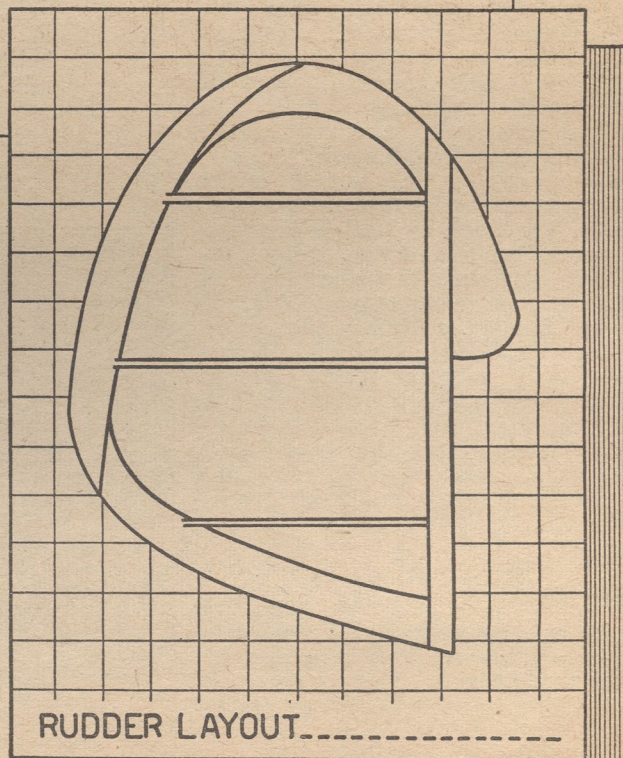
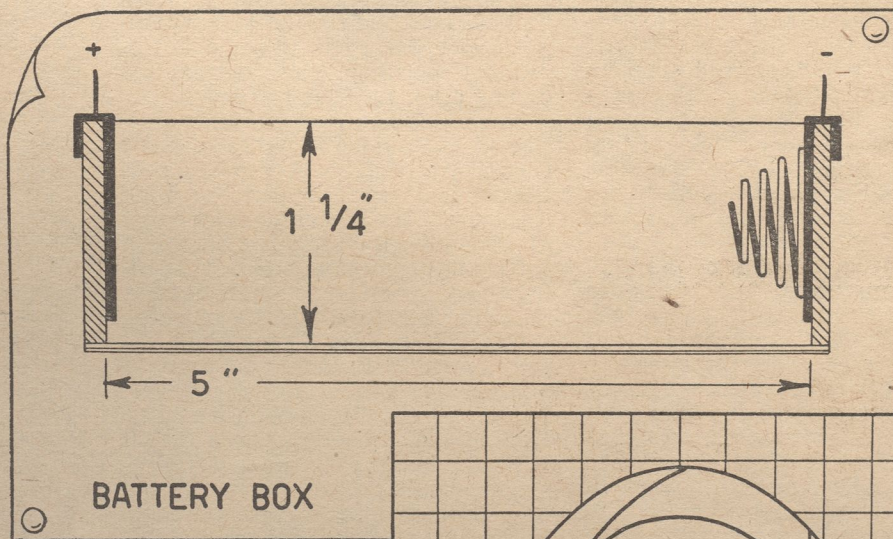






STIFFENERS

MADE OF Balsa.....USED  
ONLY FOR GAS MODEL FUSE-  
LAGE



by Nick Limber



## News of the Modelers

(Continued from page 39)

80 oz. per cu. in. engine displacement. The upper Class "A" area limit was raised to 250 sq. in.

Launching in gas model events was made optional at the discretion of the contest director when suitable R.O.G. sites are available, with the understanding that hand-launched gas model times could not be accepted as national records.

Announcement of election of officers at the meeting Saturday night showed that Edward Roberts had been re-elected Academy President, with Irving Polk East-Coast Vice-President, Carl Goldberg Mid-West Vice-President, and Al Lewis Secretary Treasurer.

Delegates to the Conference Saturday afternoon heard E. R. Sharp, Administrative Officer of the NACA tell model builders to "stand on your own feet", and to encourage original design.

H. J. E. Reid, Engineer-in-Charge of the N.A.C.A. described the benefits derived by the builder from his modeling experience when he enters full-scale aviation. Maj. H. H. George discussed the U. S. Army G.H.Q. Air Force. Many other qualified speakers discussed radio-control, youth organizations, contest models, and experimental work, among these being Ernest Gamache, Clinton De Soto, Herb Weiss, Carl Goldberg, Lawrence Smithline, Leon Shulman, Frank Zaic, and Floyd Barclay.

On Saturday morning the 120 Academy members and delegates were guests of the N.A.C.A. on a tour of the wind tunnels and laboratories at Langley Field, where they saw a model XP-40 with various tail arrangements tested in the free-spinning tunnel. In addition, they watched a modified five-foot "Stratoliner" take off and fly under remote control in the free flight tunnel.

Saturday night at dinner at the Hotel Chamberlain, the delegates saw motion pictures in color of model flights, witnessed a demonstration of helicopter flying by Herb Weiss, and an exhibition of a new super-light, invisible covering developed by the V.M.A. (see photo on page 39).

On Sunday morning the group visited the G.H.Q. Air Base at Langley Field, and after seeing "Flying Fortresses" and tiny fighters and witnessing several gas model demonstration flights they finally departed for home after one of the most interesting meetings in the history of the Academy.

### Pittsburgh Scores

**T**HE Tri-State Airplane Championships, sponsored by Pittsburgh's Model Wings, were recently run off near Mt. Lebanon. Times were good and there were not too many crack-ups to spoil the day.

Winners were as follows:

Gas: First, Joe Steele, Slushing, Ohio, 4 min., 27.1 sec.; second, Joe

Boyle, Jr., Corapolis, Pa., 3 min., 25.3 sec.; third, Fred Taylor, Blarsville, Ohio, 2 min., 32.7 sec.; fourth, Sam Poole, Pittsburgh, 1 min., 48.2 sec.; fifth, Dick Everett, Elm Grove, W. Va., 1 min., 44.4 sec.

Fuselage: First, R. R. Shaffer, Ford City, Pa., 3 min., 3.1 sec.; second, Dick Everett, Elm Grove, W. Va., 2 min., 40.4 sec.; third, Joe Boyle, Jr., Corapolis, Pa., 1 min., 57 sec.; fourth, Charles Harris, Johnstown, Pa., 1 min., 52.7 sec.; fifth, John Harrington, Elm Grove, W. Va., 1 min., 35.1 sec.

Stick, H.L.: First, Peter Bila, Pittsburgh, 1 min., 40.5 sec.; second, Joe Scuro, Pittsburgh, 1 min., 36.7 sec.; third, Joe Boyle, Jr., Corapolis, Pa., 1 min., 35.6 sec.; fourth, Paul Salake, Pittsburgh, 1 min., 25.4 sec.

### Lada Cops Linden Title

**R**AY LADA succeeded Silveo Colletti as Champion Modeler of Linden, N. J., in the meet held in that city on October 8. According to Silveo Colletti, editor of the LMCA's monthly *Gazette*, Lada has an enviable record and one which may never be tied by any other modeler in Linden.

In the first half of the year while classed as a Junior he won the Junior City Championships. And by the time the Seniors got around to running their meet, Ray had entered their age group and went on to prove his worth by taking the meet on points, thus being the only builder to win both titles the same year. Results of the tourney:

Gas: First, Fred Gross, 3 min., 53 sec.; second, Francis McElwee, 3 min., 52 sec.; third, Roy Messenger, 2 min., 49 sec. Fuselage: First, Ray Lada, 6 min., 27 sec.; second, Russell Hiltz, 6 min., 26 sec.; third, Roy Messenger, 3 min., 22 sec. Stick: First, Ray Lada, 8 min., 47 sec.; second, Ralph Mann, 8 min., 26 sec.; third, Silveo Colletti, 6 min., 49 sec. Glider, H.L.: First, Silveo Colletti, 6 min.,



For Frank Lilly of Kansas City, Mo., the Seventh Annual Mississippi Valley Model Airplane Meet held in St. Louis was not all rosie. He's seen here totin' his badly cracked gas job from the field. Yes, he seems plenty sore—but can you blame him? Better luck next time, Frank.

20 sec.; second, Russell Hiltz, 3 min., 46 sec.; third, Francis McElwee, 3 min., 6 sec.

F. A. also received the results of the group's October 29th tourney just before going to press. Results follow:

Fuselage: First, Ray Lada, 6 min., 14 sec.; second, Russell Hiltz, 3 min., 36 sec.; third, Phyllis Hiltz, 3 min., 28 sec. Stick: First, Ray Lada, 6 min., 47 sec.; second, Russell Hiltz, 3 min., 9 sec. Glider: First, Russell Hiltz, 13 min., 9 sec.; second, Don Huff, 9 min., 43 sec.

### Stunt Flights in Philly

**Q**UAKER CITY modelers gave a demonstration of radio control, pick-a-back launching, parachute dropping, and banner towing at the Legion Air Races held at Northeast Philadelphia Airport. October 29 was the date and the crowd totaled 30,000. Norman Bean, Len Gutekunst and William Beck received trophies. Other awards went to Walter Eggert, Gerald Obschleger and Joe Kapral.

### Strawn Wins on Coast

**H**AROLD STRAWN took first place in the San Diego (Calif.) Aero-neers' October 29 gas meet with a three-flight average of 2 min., 18 sec. Don Jones took second with 1 min., 43 sec.

The following officers were recently elected to head the club: President, Robert Seeley; Vice-president, Charles Hart; Secretary, Rae Davis; Treasurer, Harold Strawn; Recorder, Tommy Staunton; and Corresponding Secretary, Dan Halacy, Jr.

### Trenton Meet Results

**M**ORE than 126 contestants flew jobs in the recent Trenton Model Aircraft Engineers' Third Annual Trenton Eastern States Gas Model Meet held at Mercer Airport in Trenton, N. J. NAA rules were strictly enforced—especially that of checking all contestants to see that they possessed an NAA license. And special charts were employed for registering times of the official flights, which made it possible to announce the winners 10 min. after the close of the contest.

A consolation prize was awarded to Dale Edgerton, Narbeth, Pa., who did not place in any of the events. And the longest flight of the day was turned in by Herb Friedlander, of Brooklyn's Sky-Scrapers Club. His Class "B" Ohlsson-powered job disappeared from sight after 17 min., 10 sec.

Winners were: Class "A": First, Howard Simmons, Middlesex, N. J., 1 min., 28.6 sec.; second, Louis Garami, Woodside, N. Y., 52 sec.; third, Henry Wesley, East Paterson, N. J., 50.3 sec.; fourth, Leon Shulman, Brooklyn, N. Y., 42.25 sec.; fifth, Walt Eggert, Philadelphia, 41.16 sec.

Class "B": First, Loucks Stibgen, Philadelphia, 6 min., 57.8 sec.; second, Herb Friedlander, Brooklyn, N. Y., 5 min., 46.6 sec.; third, Mrs. S. F. Andes, Birdsboro, Pa., 2 min.,



11.75 sec.; fourth, Russell Simmons, Middlesex, N. J., 1 min., 54.16 sec.; fifth, Elmer Granitzki, Garwood, N. J., 1 min., 45.4 sec.

Class "C": First, H. M. Fitzcharles, Phoenixville, Pa., 5 min., 46.6 sec.; second, John Findra, Sr., New Brunswick, N. J., 5 min., 8 sec.; third, Walt Eggert, Philadelphia, 4 min., 31.9 sec.; fourth, Russell Scott, Laurel Springs, N. J., 3 min., 42.5 sec.; fifth, Russell Simmons, Middlesex, N. J., 2 min., 33.1 sec.

Appearance: First, Mathew Kania, Philadelphia; second, Art Gray.

#### New Gas Rules Suggested

NEAL M. KOHLER, of Lewisburg, Pa., has drafted a perspective set of new gas rules upon which he desires comments. We pass them along to you readers for consideration. Please send any criticisms and suggestions to Mr. Kohler, care Model Department, FLYING ACES Magazine.

Kohler says that the purpose of his rules is to make it possible for any model to compete against any other and have an equal chance of winning, thus entirely eliminating classes. The rules suggested are:

1—Formula governing rules for judging contests where any size model plane with any wing loading of 8 oz. per sq. ft. or over and any size engine is used to compete against any other models—

$$\left(\frac{D}{8}\right)^4 + \frac{A}{C} = \text{Factor}$$

2—Each model will have a factor, determined by the above formula. This factor is multiplied by the glide ratio of its official flight, or flights, and the resulting figures are used for comparison in determining the winning models.

3—Contestants are required to make three official flights to compete for winning places.

4—When one model is used for all flights, its total flying time in seconds

is divided by the total engine-run time in seconds, giving the average glide ratio for the three flights. This is multiplied by the model's factor.

5—One, two, or three models may be entered by a contestant, and any or all three may be used to complete the three official flights. If more than one ship is used, however, the factor for each must be multiplied by its glide ratio. The resulting figures for each craft will be added to the others and the total divided by three.

6—Contestant will be allowed to use any engine run he chooses up to and including 30 sec.

7—A flight of twice the engine run, or less, will be considered a delayed flight.

8—Cross-sectional area of body is taken at largest place. When central part of wing sits directly on top of the body, that part is considered part of the cross-sectional area and not effective wing area. Any supports holding the wing above the fuselage is considered part of the cross-sectional area.

9—No restrictions on size or design of model, except a minimum wing loading of 8 oz. per sq. ft., and no part of model is allowed to be detached after flight has started.

10—Each contestant is required to furnish the following figures for each ship he enters:

A—Effective wing area in sq. ft.

B—Cylinder displacement of engine in cu. in.

C—Wing loading in oz. per sq. ft.

D—Flying weight of model in oz.

E—Model's factor.

Wing loading would be determined by dividing the flying weight in ounces by the effective square feet of wing area. Cylinder displacement would be found by multiplying cylinder area by the length of stroke in inches. Cylinder displacement is determined (Continued on page 64)

## What Do You Say?

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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.

#### LIKED "CHAMP GLIDER"

Model Editor, FLYING ACES:

I built your model of Mort Kaufman's *Champ Glider* (June, 1939, F.A.) and am very pleased with its flights. It turns in better time than any glider I ever had before. How's about some more like it?

LLOYD UNGER,  
Cynwyd, Pa.

#### "T. T." TRAGEDY

Model Editor, FLYING ACES:

I finished the "F.A. Twin Transport" (September, 1939, F.A.) and it was great. A bunch of us boys went on a trip up to Grand Father Mountain recently and I took my glider along—unfortunately with no name or address on it. Well, I sailed it off from a thousand feet up—and the last I ever saw of my ship it was heading for the small town of Boon. Alas!

Yes, that one's gone—but I'm now working on another "Twin Transport."

EDISON MCCRAG  
Senoir, N. C.

## Workbench Tips

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#### FREE WHEELING TIP

WHEN putting a free-wheeling device on rubber-powered models, a small spring is often needed. I have found that the spring from an inner-tube valve is just the item to fill that bill. This spring will fit a prop-shaft up to 1/16" in diameter.

—BILL RIEGER

# In The Next Great FLYING ACES

**FACT**—"Is Our Air Force Ready For War?" A smashing article by David Martin revealing the present sharpness of the American Eagle's talons.

These CAA Field Inspectors—what kind of lives do they lead? Pilot Jack Scherer tells you in a peppy special feature.

"Attack At Dawn"—a stirring true story of a recent American Air Corps sky battle. Dramatically told by Lieut. R. C. Paul, who took part in it.

**FICTION**—"Secret Flight Sixteen," in which Don Keyhoe introduces his striking new characters, Eric Trent and Mort Crabb. A startling aero mystery!

The dread "Griffon" encounters the ruthless "White Face"! Latest of our Kerry Keen sky adventures.

And how Phineas Pinkham's leaflet raid changed the course of history.

**MODEL BUILDING**—"The 'Windmill Plane'" —Hank Struck's newest "Trail Blazer of the Air." "Scale Bombs." The lowdown on how to make 'em, by Col Cameron. Build Steve Zavodny's automatic fuel tank! A swell gas job article.

In March FLYING ACES

On Sale January 26th (Canada One Week Later)



## The Golden Strafe

(Continued from page 8)

"Messieurs, I am Major Weed, senior officer here," he began in execrable French. But Knight quickly broke in.

"You can speak in English, Major. We're Americans. But if possible I'd rather explain this situation to your Intelligence."

Weed drew himself up stiffly. "Sir, I am the Intelligence officer of this area—as well as commanding officer of the station."

"That's fortunate," Knight said courteously. "Could we see you alone?"

Weed looked sourly at him and Doyle. "I suppose so. Follow me."

WITH the two Tommies trailing, Knight and Doyle followed under the camouflage nets to one of the houses near the inlet. As they entered, several British pilots glanced out at them from a flight-office which opened into the hall. One of them, a plump, pink-cheeked captain, jumped to his feet.

"Dick Knight!" he exclaimed. "What are you doing over here? Don't tell me you've signed up with us?"

"Tubby Trevor!" said Knight. "This is luck. If you'll just vouch for us with Major Weed—"

"Just a moment," Weed said in an altered voice. "Come into my office. You, too, Trevor."

When they were inside, the Major closed the door, turned quickly to Knight.

"Is this a special mission from the French?" he said. Then, as Knight hesitated, a ghost of a smile replaced his dour expression. "I know all about the Maginot Line affair, Mr. Knight. We're working closely with French Intelligence. But I thought you and Mr. Doyle had quit the French air service after that incident."

"We did," said Knight. "Our main purpose was to solve the riddle of those incriminating notes that were being dropped in Germany. But our embassy at Paris left us out on a limb. In short, we had a little difference with the Air Corps attache, and he refused to cable Washington and get us re-instated in our special-agent unit, or even to straighten out our passports. So we hopped over here to see Ambassador Kennedy."

"By Jove, this is a surprise!" exclaimed Trevor. "When I was in Washington I thought you chaps were just a couple of sportsmen. I never dreamed—"

"You'll keep quiet about their Intelligence status," Weed said hurriedly. Then he turned back to Knight. "But about the fight we heard. . . ?"

Knight told him without wasting words. And both Weed and Trevor stared at him open-mouthed as he described the golden seaplane.

"But this is impossible!" the major said when Knight had finished. "There's no such thing as a golden

robot-plane. We've some Queen Bees and Queen Wasps, yes. On special work, you know. But a golden ship—are you certain it wasn't the rays of the sun that made it seem like gold?"

"Positive," Knight said firmly. "And the pilots looked like golden statues. But I can tell you this much—it was a Fairey Sea Fox."

Trevor started.

The major looked at him sharply. "What's the matter?" he demanded.

"The O.D. just phoned in a minute ago," said Trevor, his plump face paling. "Adams and Lord failed to return at sun-down."

### CHAPTER II

#### THE CORPSE THAT TALKED

NO ONE spoke for a moment. Then Knight broke the silence. "They were flying a Fairey Sea Fox?" he queried?

Trevor slowly nodded. "Right, and we're the only station in Area D that had a 'Fox' out on patrol."

"It wasn't really a patrol," Weed muttered. "It was a special mission. Two of our listening-posts caught a fragment of some unknown code and got a bearing on the transmitter. I sent Adams and Lord to see if they could spot anything out there—it was about midway of the Channel."

"Whatever happened, the Nazis were desperately trying to cover it up," said Knight. "Are you sure there's been nothing queer going on that would link up with it?"

"Not a thing," Weed said helplessly. "We've been concentrating on building these hidden air bases and getting ready for German raids. We expect more attacks on the Fleet, so we've been shifting—"

He stopped abruptly as sounds of a commotion became audible from outside. Wheeling to the door, the major jerked it open just as an orderly dashed in from the entrance.

"A man in a parachute, Sir! Something strange, the O.D. said!" blurted out the orderly.

Weed pushed by the man, and Knight hurried after him, with Doyle and Trevor at his heels. When they reached the edge of the woods a searchlight was probing up at a figure swinging down toward the side of the field. A frightful cry from that swaying figure brought a sudden chill to Knight's blood.

"It was that cry we heard that made us turn on the searchlight, Major," a junior officer hastily explained. "He must be terribly wounded to yell like that."

"Judas Priest!" Doyle said hoarsely. "It's another golden man—and he's alive!"

Knight stared up at the figure caught in the searchlight beam as an awestricken silence fell over the assembled men. Not only the figure but

the parachute itself was a dazzling golden color. As the man swung down through the bright rays it was like some fantastic creature from another planet descending to the earth.

Another bloodcurdling scream burst from the lips of the golden man, a cry broken as he thudded to the ground. The parachute slowly and stiffly collapsed.

Knight and Major Weed were the first to reach the spot. The weird figure staggered to his feet, clawing at the goggles which covered his eyes. Glass lenses became visible through the streaks made by his trembling fingers, and the truth burst on Knight.

"He's been painted with gilt!" he told Weed tensely. "And the chute, too."

He reached out toward the shimmering figure, but a shrill cry halted him in his tracks.

"In Heaven's name don't touch me, it will kill you too!"

"What is it?" Weed gasped. "What horrible thing—"

"The Golden Death—I've only a few seconds left," moaned the unknown man. His gilded face contorted with a frightful spasm, and for a second Knight thought he would collapse. But he drew in an agonized breath, and forced himself to go on. "Send—planes . . . all you have . . . the *Deutschland*—"

"The *Deutschland*?" Weed exclaimed. "Quick—where is she?"

"Off—Yarmouth . . . three East, fifty-three North—position at seven." The golden face of the stricken man writhed with another spasm, and Knight heard the breath whistle in his throat. "They tried to . . . kill me . . . got away in plane—the Grand Fleet—" his knees suddenly buckled and he slumped to the ground. Through the streaks where the gilt had been scraped from his goggles, Knight saw the man's eyes, wild, dilated.

"The Golden Death—what is it?" he said swiftly.

"Nazis—on *Deutschland*," came the strangled answer. "Going—Hull—the Fleet—"

The last word broke with a tortured sound and the golden man stiffened convulsively. For a moment longer he lay there, twitching, then with a last shudder he was still. Weed wiped the perspiration from his ashen face.

"Horrible!" he whispered. "The fiends! What awful thing have they discovered?"

Knight gazed down at the silent form without answering. Doyle and Trevor stood a few feet away, looking at the eerie, tragic figure. And back of them the station personnel stood watching in horrified awe.

Weed finally broke the hush: "Captain Trevor, order all ships started up, full bomb loads on the Lerwicks! This poor wretch gave his life to warn



us—we'll carry on. We'll take off as soon as possible."

TREVOR TURNED, gave the orders in a thick voice. Then the pilots and mechanics hastily went to their posts. The major beckoned to a gaping medical corpsman.

"Get another man and bring a stretcher. Use heavy gloves, and roll the body onto the stretcher with something so you won't have to touch it. Then put it in that storeroom we haven't used yet."

"Yes, Sir," mumbled the corpsman, with a frightened look at the body.

"Major, what do you think it is?" Trevor said huskily.

"Heaven only knows," said Weed. "There's no time to think of that now. We'll have to move at top speed to catch the pocket battleship *Deutschland* at that position—and she may not be exactly where he said. If they know he got down alive, they'd undoubtedly change their course—but we'll sweep the whole area. We'll use flares and winglights, and if she's anywhere in our range, we'll find her."

"What if—the Golden Death—" Trevor did not finish.

Weed's face hardened. "We'll have to risk it. It's plain the Nazis have learned about tonight's Fleet concentration near Hull. We don't even dare radio a warning—it might cause them to advance the hour for whatever hellishness they're up to. I'll send a land-wire code to Hull before we take off."

The men appeared with the stretcher, and after fearfully maneuvering the golden corpse onto it they moved off toward the storeroom. Knight stood for a moment listening to the roar of hastily started motors, an uncertain look on his face.

"Mr. Knight," Major Weed said gravely, "there won't be many minutes before we take off. I'm using every available pilot and observer. Will you stay on the phone after we take off and verify my land-wire if the authorities at Hull—"

"Wait," Knight interrupted, and the uncertain look was gone. "There's something—give me two minutes before you order that take-off!"

"What do you mean?" said Weed, blankly.

"I'll show you—come on!" Knight turned to Trevor, "Tubby, get me a couple of surgical knives and a pair of rubber gloves from your dispensary, will you? Hurry! Meet us at the storeroom."

"See here," exclaimed Weed, "there's no time for any such business now."

But Trevor had already gone, and Knight was striding toward the shack into which the golden man had been carried. They met the stretchermen hastening out. Knight switched on the light, gazed down at the uncovered form shimmering there in the glow.

"Dick, what're you up to, anyway?" Doyle said in an undertone. "You're no—"

"Ah, here are the knives and my gloves," Knight cut in sharply, as Trevor came in, panting. "This won't take but a minute, gentlemen."

"I've had enough horror for one evening," Weed said hoarsely. "I can't stand a post-mortem, and there's no time—"

"All I intend to do is open the jugular vein," said Knight. He bent quickly beside the gilded body.

With a cry of terror, the golden man suddenly came to life. He made a frantic motion to seize Knight's hand, stopped as the Q-Agent drove the tip of the knife within an inch of his throat.

"Lie still, *mein Herr*," Knight said grimly, "or that jugular vein *will* be opened."

"Great Heaven!" Weed said in amazement. "Then it was all a trick?"

"Precisely," said Knight. "I fell for it, too—until something about that profile of his got my memory to working. I should say that this is Hans von Kreiner, the Nazi pilot who broke the Berlin-Tokyo record."

"Very clever," said the gilded Nazi coldly. "And now may I stand up?"

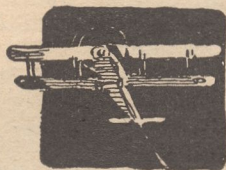
"As soon as we've arranged for your permanent stay," said Knight. "Lothario, suppose you—"

"I'm 'way ahead of you," grunted Doyle. He stepped forward with the automatic he had taken from under his coat. "All right, little fairy prince, get off your empennage, and make it snappy."

Von Kreiner glared at him, silently got to his feet.

"But why—why?" Weed said helplessly. "I don't understand—"

"He came here as fast as he could—to try to cover up the story of that golden seaplane," said Knight. "Whatever's back of it, it must be



vitaly important to keep it a secret. He wouldn't have taken such a chance, otherwise. The *Deutschland* story was obviously a trick."

"You will find how much of a trick it is," von Kreiner said icily, "when your accursed battleships are filled with—"

HE CLAMPED his lips tightly shut, and behind the streaked goggles his eyes took on an inscrutable look. The frightened expression came back into Tubby Trevor's face.

"What if—if it's partly true?" he stammered. "Knight, there's the Fleet—if the *Deutschland* is really out there with some terrible thing aboard—"

"Ja—now!" shouted von Kreiner, and at that instant there was a vicious thud as some one leaped through the opened door and struck at Weed's head. The major went down without a sound, and before Doyle

could swerve his gun a pistol was rammed into his side. Knight, rigid at the swift action, recognized the mechanic who had helped the hospital corpsman with the stretcher. A hard, murderous light had come into the man's eyes, and he drove the snout of his gun harder into Doyle's ribs.

"Don't kill him!" von Kreiner rasped. "Some one might hear the shot."

He snatched Doyle's automatic, backed away with a satanic smile on his gilded face.

"Keep them covered until—" the rest was inaudible to Knight as von Kreiner stepped closer to the spy-mechanic. Outside, the thunder of the engines made a steady, earth-shaking din. Knight saw the covert gleam that came into the mechanic's eyes, and he suddenly knew what von Kreiner had ordered. As soon as the senior man had had time to slip out near one of the idling ships to make good a swift escape, the spy would shoot down the three of them and disappear in the gloom of the faintly-lighted base.

A desperate look came into Tubby Trevor's plump face. As Kreiner vanished through the doorway, the Englishman tensed for a frantic leap. The spy's pistol jerked toward him—and in that flashing instant Knight hurled the surgical knife he had held flat against his leg. The spy whirled, and flame spurted from his gun. The roar of the shot was still echoing through the room when he started to fall, with the shining knife deep in his throat, suddenly darkened with blood.

"Tubby—see if Weed's alive!" Knight shouted. He snatched at the gun in his armpit holster, leaped over the dying spy. Doyle charged after him, scooped up the mechanic's gun as he ran. Just as they reached the entrance of the storeroom a staccato pounding came dimly through the thunder of motors. Knight swore under his breath. They were too late!

Down at the bottom of the ramp, mechanics were running and falling before the fire of a blazing machine-gun on a small concrete emplacement. The golden von Kreiner was crouched behind the weapon like some frightful robot of death, spraying a tracer stream in a wide arc. Knight blasted three swift shots, and the Nazi dived from the machine-gun saddle, raced for the nearest Fairey Sea Fox.

A dead mechanic lay sprawled beside it, where he had been holding the pontoon line. Von Kreiner kicked the dead man away from the pontoon, vaulted onto the wing and into the front pit of the seaplane. Pistols were flaming from both sides as the German slammed the throttle open, but the shots went wild. Knight shoved his gun under his coat, whirled to Doyle.

"Cast off the line on that second plane! I'll be right there."

Doyle ran to the ship, and Knight dashed across to the nearest pilot. But Trevor appeared before he could begin his hasty explanation.

"Tell the other men what happened,



Tubby!" Knight shouted, after learning Weed would pull through. "I'm going after that devil."

HE WAS in the front pit of the Sea Fox and the seaplane was churning the now lighted waters of the inlet before he realized he and Doyle were plunging into action without the slightest authority for being in a British plane. But it was too late now—a hot rage against von Kreiner and the memory of those dead and dying men strewn along the ramp drove him grimly ahead.

The Nazi's ship was already in the air, and as Knight brought the Fox onto the step von Kreiner lanced into a sharp climbing turn to evade the searchlights. Knight tripped a warming burst from his two forward guns, and Doyle blasted a stream of tracers up at the German. Back at the base, lights were flashing on, and as Knight lifted the seaplane from the water he saw three Lerwick flying-boats start out from shore.

Von Kreiner suddenly renversed, dived down a light beam. The search light went out under a hasty burst, and a few seconds later the other beam vanished.

Knight cut loose at the stolen ship just as the second light went out. Two streaks of tracer instantly blazed out and curved toward those tilted wings, as von Kreiner made a savage stab in the dark. Then the Nazi's guns ceased to flame, and Knight let up on his trips, unable to see his target. A few moments later one of the searchlights again came to life, pawed aimlessly about the sky. But there was now no sign of von Kreiner's ship.

The beam whipped across, half-blinded Knight, and the next second ground guns began to hurl tracers up at them. He heard Doyle howling down at the British gunners as he zigzagged swiftly off to the safety of the North Sea. Switching on the hooded cockpit light, Knight found the communication tube to the rear pit. He pressed the button beside the tube prongs, and Doyle's wrathful voice answered.

"Th' dumb Limeys! We try to help 'em out of a jam and they give us th' works!"

"They mistook us for von Kreiner," said Knight. "And what do you want to do now, Lothario—stick your neck out, or go back and look up those telephone numbers La Roche gave you?"

"What do you mean, stick my neck out?" demanded Doyle.

"We've enough fuel to check on that position von Kreiner gave us," explained Knight. "Of course, we haven't any business poking into this war. But there must be something out there—probably a trap of some kind."

"A trap—so we jump into it!" snorted Doyle sarcastically.

"No, we try one of our own. We scoot under the edge of the clouds and drop a flare to see what's up." Knight paused. "But maybe we'd better forget it," he added.

"All right, go ahead," growled Doyle. "We're both screwy, but I

ought to be used to it by now."

Knight grinned, bent over the map clipped in the pit, and quickly laid out his course. For almost half an hour the Sea Fox droned through the starless night, and once or twice Knight had to nose down to keep from climbing into the overcast. As they neared the position given by von Kreiner, he began to search the inky blackness below.

Suddenly Doyle jerked the dual controls. "Look—over to starboard!"

Knight twisted around, saw faint lights on the water. Gliding with throttled motor, he carefully circled down toward the spot. The lights became brighter, were unmistakably those of a vessel. There was an unnatural brilliance about them—and abruptly the truth hit him. The decks were agleam! The portholes a dazzling yellow!

He snapped on his wing-lights, stifened at the grim confirmation of his swift suspicions.

The vessel below them was gilded from stem to stern. The Golden Death had struck again!

### CHAPTER III

#### SINISTER SECRET

"HOLY MOSES—it's happened again!" ejaculated Doyle. Knight nodded grimly, then banked sharply around the vessel. It was a trawler, and a limp, gilded flag hung aft. But he could not tell its identity.

Out on deck several bodies lay, gleaming like the golden figures which had been in the Fairey seaplane. There was no sign of life. The trawler was wallowing in the waves, mutely testifying that no hand held the wheel.

"That ain't the *Deutschland*," Doyle said hoarsely through the tube. "What do you think—"

A vivid streak abruptly appeared in the sky, cutting off Doyle's words as both men stared upward. Then a rocket burst into three red stars. Knight snapped off the winglights and climbed at full motor, but they had barely reached a thousand feet when the betraying brilliance of a parachute flare blazed up above them.

Knight hastily charged his Vickers "K" guns, expecting instant attack, but none came. He swerved to escape from under the flare, was almost at the edge of the brightly lighted space when Doyle gave a wild yell. Knight whirled, and a cold hand seemed to clutch at his heart.

Sweeping down toward them at incredible speed was a billowing golden cloud!

Beyond that fantastic cloud he thought he glimpsed a huge shape, moving at tremendous speed. But he had no time to make sure. Throttle wide open, he jammed the stick forward and dived. The seaplane howled back toward the sea, and the gilded trawler seemed to leap up at them. He threw a desperate glance over his shoulder. The cloud was setting fast, but he had widened the gap. With a

pull at the stick he leveled out fifty feet above the sea, racing from under that mysterious doom.

A clattering roar from Doyle's gun cut through the engine's thunder. A second later two streams of tracer shot by the seaplane's right wing, whipped in toward the front cockpit. Knight spun the Sea Fox into a vertical bank, and the burst missed his pit.

But that hail of slugs was too well-aimed. The engine's smooth roar broke into a ragged pound, then stopped completely. Knight had a fleeting glimpse of von Kreiner's seaplane pulling out of a dive less than a hundred feet above them. As he jerked the wing up from its steep bank he heard Doyle's gun pound again—then their Sea Fox plunged sidewise into the sea, its right wing-tip hooked by a wave.

Just as the ship slued around, Knight threw his hand before his face, and the safety-belt kept him from more than a breath-taking jolt. Cold sea-water gushed over him, and he hurriedly opened his belt, thinking the wreck was sinking. But the pontoon still held its air, and the battered Sea Fox remained afloat, its crumpled wing under water. With sudden astonishment, Knight saw von Kreiner's ship also in the sea, its nose buried in the water. Doyle came spluttering up from an unintended plunge.

"Well, I got that rat, anyway!" he grated.

Knight stared across at the Nazi's wrecked ship. A golden hand had appeared above the half-submerged front pit, clawing feebly at a strut.

"Stay here," he told Doyle, and jerked off his coat.

"Let him go," snarled Doyle. "You didn't see him goin' easy on those poor Limeys, did you?"

But Knight was already in the water, and within a few moments he was alongside the other seaplane. He climbed aboard, hauled the drowning man out of the cockpit. Von Kreiner's eyes were closed. His gilded face sagged and he had a bad cut over one eye. Knight felt the seaplane give a lurch and sink deeper into the water. He lowered himself into the waves, towed the unconscious German back to the other plane. Doyle, disgusted, helped him drag von Kreiner onto the wing.

"I think you're nuts," he growled. "His weight'll probably sink us—and anyway he's a lousy butcher."

"Yes, I know," muttered Knight. "And I'd be glad to see him face a firing squad. But somehow just standing by and seeing a man drown—"

"Listen! What's what?" exclaimed Doyle.

Knight gazed up into the dark. It was a faint moaning whisper, like the wings of a ship gliding flatly. But there was no sound of engines. Then, against the lights of the gilded trawler, now more than a mile away, a huge shape was briefly silhouetted.

"It's a flying-boat—and a big one," Knight said tautly. "They must be



looking for von Kreiner."

"Well, it's been nice knowin' you," grunted Doyle.

**K**NIGHT WATCHED the silhouette settle onto the water, a massive bulk between them and the trawler. There was no doubt that the flying-boat was headed toward them. He turned, hopelessly. But then von Kreiner's gilded face caught his eye.

"We're not licked yet!" he said quickly. "Peel off that flying-suit he's wearing while I rub off some of the gilt."

"What th'—" Doyle blurted. Then he snatched at the zipper of the Nazi's flying-suit. "I get it—but I don't think it'll work. They'll recognize him—"

"Not when I'm through with him," Knight rapped. He rubbed furiously at von Kreiner's face, and the gilt came off on his hands. He smeared his own face hastily, all but his eyelids, then seized von Kreiner's helmet and goggles. Doyle had the flying-suit ready, and he swiftly pulled it on.

"Dive overboard," he told Doyle, "swim away from the wreck until they've picked us up—then come back and hang on. By morning there'll be Channel patrol planes and destroyers looking—"

"Nothing doing," stated Doyle, obstinately. "You can't get away with it alone."

"But, you idiot, you'll be a prisoner—they may shoot you!" Knight protested.

"I'll risk it," said Doyle. "If you get by with this act, you can give 'em some reason for puttin' me on ice for a while. If you don't get by, well . . ."

The muted throb of engines was now faintly audible, and with a frantic haste Knight went to work on von Kreiner. In a few seconds his handkerchief, wet with blood from the Nazi's cut, was tied around von Kreiner's head, hanging down over his forehead and one corner dangling below his left eye. Blood, trickling slowly from the cut, completed the hasty disguise as it ran down his right cheek to the side of his mouth.

"Wad his uniform coat up and stuff it down under the front seat," Knight said hurriedly. "Here, I'll help you slip my flying-coat on him."

"You're goin' to be spotted," Doyle said dismally. "They'll wonder why you don't take off that suit and th' helmet."

"Not if I can talk fast enough. Don't say a word—even if I bawl you out and tell you to talk. If I see a chance for a break, I'll signal you some way."

The huge flying-boat was now so close that its bulk almost obliterated the light from the trawler beyond it. But there was enough for Knight to make out the lines of a monster Dornier with a hull even larger than the once-famous Do-X, which had carried 170 people in a trial flight over Lake Constance. Eight motors, in streamlined tandem nacelles, pow-

ered the giant ship. From two points on each side of the enormous cantilever wing projected peculiar flat vents.

"Gas sprayers!" Doyle said fiercely. "So that's it—that's where th' gold cloud came from."

"You're right. Those vents must be for that gas," Knight said grimly. "If we only knew more—"

They both started as a spotlight from the control-bridge of the Dornier flicked squarely onto the wreck. Knight gave Doyle a shove, turned and raised his gilded hand peremptorily toward the Dornier. After a



moment a sliding window opened and a Nazi protruded a megaphone.

"*Herr Kommandant*—are you safe?" a guttural voice said anxiously.

"Ja, I am all right," snapped Knight. Then in an undertone he told Doyle: "We're in luck—von Kreiner is the senior officer of this Dornier."

"What of the secret, *Herr Kommandant*?" the Nazi called through his megaphone in the same anxious note.

"The secret is safe," Knight said irritably. "I'll explain when I get aboard. Hurry up, before some accursed *Englander* investigates that vessel and sees us."

The Dornier slowly maneuvered in until its massive sponson was within a few feet of the wrecked seaplane. A door then opened in the side of the flying-boat and several Nazis hurried out. Knight swore in fluent German as one of them turned on a flashlight.

"*Verdammt Dumkopf!* Do you think the English have no planes? What if a bomber happened to see that?"

"I'm sorry, *Herr Kommandant*," stammered the man. "But Lieutenant-Commander Werncke said the upper wing would hide—"

"I'm *Kommandant* here!" rasped Knight. He indicated Doyle, added curtly in English: "Pick up that other American pig and get him aboard."

"*Vas ist?*" exclaimed some one back in the hatchway, and Knight recognized the guttural voice of the man who had been on the bridge. He took a quick chance.

"Is that you, Werncke?" he queried.

"Yes, *Kommandant*," said the Nazi. He came out onto the sponson, and in the half-gloom Knight saw a heavy, bulldog face and a solidly built figure. "Did I hear you say *Amerikaners*—"

"You did," Knight retorted. "Important ones—and that is why I am not having them tossed into the sea. One of them will probably die—he

was hurt in the crash. Fortunately, too—or I might not have been able to subdue this other one."

**W**ERNCKE peered through the shadows at Doyle, who had hoisted von Kreiner's limp form over his shoulder and stepped onto the stub-wing. The Nazi's face was only a blur, but the handkerchief across his forehead stood out, and as Doyle, at Knight's sharp command, carried von Kreiner into the ship, the blood on the pilot's face became visible in the wan bluish lights of the interior. Knight beckoned imperatively to two Nazis who stood nearby.

"Lock them in a cubby—anywhere so they can't get out or do any harm. Put a guard on the door. I'll want to question this crooked-nosed *Schwein* a little later."

The two men saluted and marched Doyle down the dim-lit center passage, between rows of gleaming duralumin tanks. Knight made a swift inspection as Werncke busied himself superintending the closing of the hatch. Ladders led up on both sides, between the tanks, to an upper deck, and the passageway extended forward to a steep stairway. He turned and found Werncke looking at his gilded face.

"Shall I take off, *Kommandant*, while you get rid of that gilt?"

"I'll take care of that later," said Knight. "An emergency has arisen, and we must act quickly."

"But you said the secret was safe," Werncke said, alarmed.

"It is—if we keep our wits about us," snapped Knight. "Go ahead! We'll take off and I'll explain while we're climbing."

Werncke hurried forward, and Knight followed him up the steps to the next deck, which also was almost completely filled with the gleaming tanks he had seen below. He now felt he had solved some of the mystery of the gas. Undoubtedly it was some deadly suffocating substance that required a catalytic agent—in this case gilt. Thus anything sprayed with the horrifying gas became coated so that it looked like gold.

Arriving at the bridge deck, Knight found that it resembled that of the old Do-X, with a chart room aft and a radio compartment adjoining. Swiveled cannon hung from port and starboard gun ports. An unfamiliar arrangement of valves and gauges filled a small space at the rear of the chart room, and he knew this must control the deadly Golden Death. Forward, past the table where the avigator was scanning a map of the North Sea and the English coast, two pilots sat at the dual controls of the giant Dornier. One small blue lamp, recessed and shielded from the front, provided the only illumination, so that viewed from a short distance beyond the bow the control-bridge would be practically lost in the darkness.

Knight felt his hopes quicken. In this semi-shadow his chances were doubled.



Werncke gave the order to take off, and the co-pilot barked a command through an interphone "mike" to the engine control-room farther aft. The pilot opened the master throttles, and the silenced motors picked up speed. As the Dornier lifted, the pilot looked back at Knight.

"What course, *Herr Kommandant*?"

"Head for the British air base again," ordered Knight.

"But, *Kommandant*, the plans!" Werncke burst out. "What of the English warships at Hull? They will be gone again before dawn."

"This will take only a short time," Knight interrupted. "Before I escaped, I did away with the Commanding Officer and one other—the only ones who had even an idea of the truth, except those *verfluchte Amerikaners*. But I took care of them just now, as you saw, even if it did get me a drenching."

"Then we shall still gas the warships at Hull—then go on to the Firth of Forth and Scapa Flow?" said Werncke eagerly.

"Certainly," answered Knight. Then to cover the start he had been unable to conceal, he jerked at the goggles and shoved them up onto his gilded forehead. In that dim light, he could barely distinguish Werncke's bulldog face, and he knew he was safe in uncovering his eyes—safer than leaving the goggles down, and perhaps arousing suspicion among even these iron-disciplined Nazis.

"That air-base proved more important than I thought," he went on matter-of-factly. "There is an enormous underground hangar beyond the clearing—so cleverly camouflaged I hardly saw it until I reached the entrance."

"*Himmel!*" said Werncke, and the avigator and gas-control officer stared at Knight. "According to the report from R-14 it was only a secondary base."

"R-14 is a lying traitor—or he was," Knight said harshly. "He sold out to the British. I was relying on him to help me, and he almost ruined everything. But I put a bullet through him before I got away."

WERNCKE looked at him with what seemed to be genuine admiration. "For sheer courage, *Herr Kommandant*, that trick of pretending to be a victim of the 'Golden Death' takes all honors."

"The secret had to be saved—until we could strike at the Grand Fleet," said Knight in a complacent tone. "It was desperate, but after those stupid pilots failed to bring down the seaplane, something had to be done."

"It was an ill fate that brought that Potez along just then," said Werncke. "The Heinkel pilots weren't to be blamed—any more than we were when we came out of that cloud and almost ran into the seaplane."

"We were to blame," Knight said sharply. "It was that code message which brought the seaplane out there."

There was silence for a few minutes, while the huge Dornier steadily climbed. Knight surreptitiously surveyed the control compartment, finally located a hinged trap near the radio cubby, beside a bulkhead on which several pack chutes were hung.

The story was finally fitting itself together. Von Kreiner had ordered the reconnaissance pilots gassed—when the big Dornier was discovered emerging from the cloud—to prevent their radioing back the news of the raider's existence and location. Then, to delay investigation until the Grand Fleet attack was finished, he had evidently hastily donned a chute, gilded his face and flying-gear, and dropped through the emergency-escape hatch for that fantastic role, expecting R-14 to aid him in silencing the British at the air-base—perhaps by setting off the station's bomb supply and wiping out the entire squadron.

Knight glanced at the altimeter, waiting until the ship was cruising in the clouds. The pilots' attention would be on their instruments, and his plan, if it worked at all, would have a better chance. He turned abruptly to Werncke.

"Send for one of the men," he ordered.

"But they are all at their battle stations," demurred the second-in-charge. "Except the guard you left on the prisoners."

"Where did he lock them up? Can you get him on the interphone?" queried Knight.

"We can signal him on the aft passageway unit," said Werncke, with a brief look of surprise.

"Call him," Knight directed. "Tell him to bring that crooked-nosed *Amerikaner* up here at once."

"Here on the bridge?" Werncke said uneasily.

"Are you afraid of one man—unarmed at that?" Knight said with



heavy sarcasm. Werncke made no answer, but turned sullenly to the phone and pressed a button. In a few moments an orange light flashed, and Werncke picked up the transmitter.

"Here—let me talk with him," said Knight. He put a savage note into his voice. "Bring the *Amerikaner*—the one with the broken nose—to the bridge, at once. Be sure the second man is locked up. He is a dangerous foreign agent."

"Ja, *Herr Kommandant*," came the answer. Knight hung up, turned to find Werncke confronting him.

"*Herr von Kreiner*," the Nazi officer said stiff-lipped, "I may be court-

martialed for this—but you are risking the success of our mission. A dangerous foreign agent has no place up here."

"Give me your gun," snapped Knight. "If you are so afraid of him I will keep him covered. Between myself and the guard, he can hardly do any damage."

"But why question him now?" insisted Werncke.

"Because those two men were bringing some secret information from the French High Command," Knight invented rapidly. "As senior agents of the American Government, it has a sinister look—there may be some gigantic plot of which *Der Fuehrer* should be warned at once. If you wish to take responsibility for blocking my investigation—"

"*Nein, nein, Kommandant*," Werncke said hastily. "I did not understand. You say they are important agents?"

"Acting under secret orders from Washington," lied Knight. "I overheard part of their conversation with the British commanding officer, but not enough to know their purpose."

Before Werncke could ask anything else, the guard appeared, marching Doyle ahead of him at pistol point. Knight lifted the gun Werncke had handed him and stepped menacingly in front of the prisoner.

## CHAPTER IV

### GILDED DOOM

"SO, my fine *Amerikaner* spy!" he snarled. "Perhaps you do not think you are so clever now, *hein?*"

Doyle glared at him and made no answer. Knight gave the guard a quick look.

"The other prisoner—you locked him up?"

"Yes, *Kommandant*, but there was no need to worry—he is still unconscious."

"Go back and keep guard at the door," ordered Knight. He waited until the Nazi had holstered his pistol, departed, and closed the control-compartment door. Werncke stood nervously at one side, his eyes on Doyle. The avigator and the radio-operator likewise were staring at the prisoner.

Knight prodded Doyle to one side, so that he could also see the pilots.

"In a moment, *Schwein*, you will have a chance to talk," Knight said fiercely. "And you had better be ready to talk fast!"

A glint came into Doyle's eyes.

"Werncke, how far are we from the British base?" Knight demanded suddenly.

The Nazi officer turned to the chart table, and the avigator glanced down at his map. In a twinkling, Knight thrust the gun into Doyle's fingers and snatched out his arm-pit .38.

"We're about—" Werncke's eyes bulged, and his bulldog face turned a ghastly color in the bluish light. "*Mein Gott*—we have been tricked!"

"Don't move!" Knight said grimly. "Doyle, keep the pilots covered."



Both pilots had jerked around in their seats, were staring back in consternation. Knight looked coldly over his automatic at the radio operator.

"Stand up! Get over there by the chart table. You, too, Werncke."

"*Ach du Lieber!*" groaned Werncke. "This is von Kreiner's fault. I told him—"

"Never mind the post-mortems," snapped Knight. "Doyle, give me that gun a second. I'll cover them while you get two chutes and open the trap."

Doyle gave him the gun, hastily brought the pack-chutes and started to open the escape hatch.

"Put on your chute first," Knight directed. "You can cover them while I buckle mine on."

In less than two minutes both packs were in place. Knight took back his .38, stepped to the communications switchboard. He was about to tear the wires loose when Doyle gave an exclamation. Knight whirled, gun lifted. He peered through a port.

"Outside there!" Doyle said. "I saw a light flashing."

Then Knight saw it, a wan bluish light like the one in the Dornier's control-room, and he realized they were out of the clouds.

"Bring that nose up!" he flung at the senior pilot. Then he caught the furtive look Werncke had stolen at the blinking light.

"What's that light?" he said savagely. "Speak up!"

The Nazi's bulldog jaw set stubbornly. Knight stepped back, swung the .38's muzzle toward the radio operator.

"Talk—*Schnell!*" he rasped.

The operator gulped, looked wildly at the gun.

"It's the—the other Dornier," he moaned.

"Another? Like this one?" Knight said, startled.

"Yes—just like this—"

"You cowardly *Schweinhund!*" shouted Werncke. "Now you've given him a chance—"

"Shut up," Knight ordered. His eyes flicked back to the operator. "What's that code? What do they want?"

"They're signaling that they're in position—we've a low-power transmitter no one can hear more than a few miles, and they've been closing in on my signal."

"Cut that microphone into the circuit," ordered Knight. "Tell them *Kommandant* von Kreiner wishes to talk with them."

"*Ja,*" faltered the operator, quailing under the glare Werncke gave him.

"One wrong word," warned Knight, "and the Nazis will have to get a new radio operator." Quavering but obedient, the man cut in the microphone, called the other Dornier.

Almost at once an excited voice answered through the loud-speaker, which was connected for two-circuit direct communication.

"Tell *der Kommandant* I want to talk with him!"

Knight took up the microphone, covering the operator and Werncke and the aviator while he spoke: "This is von Kreiner—"

"*Kommandant, we are off course!*" came the voice from the other Dornier.

"I know that," broke in Knight. "We are going to make a preliminary raid on that British air base before carrying out the main plan."

"*Zum Teufel! Then you did not succeed?*"

"I did," rapped Knight. "But there is something else. I have no time to explain. Here are your orders—"

"*One moment, Kommandant. The concentration of gilt in the gas can be reduced at least twenty per cent. We boarded the trawler after gassing it, and I examined the bodies. Three of the men had time to put on their gas-masks when they saw the cloud. And they had pulled them off—I could tell from the way they lay. The gilt clogged all three masks more heavily than the laboratory tests showed was necessary to make men take them off. We could use less gilt and still clog the masks.*"

"Very well, use less!" Knight said brusquely. "I've no time to discuss it now—for we must strafe that air base."

"*Wait,*" said the man in the other Dornier. *There was a brief pause. "My radio operator said he just intercepted a message from a Captain Trevor in one of the Lerwicks. This Trevor was telling the station men to stand by, that all ships were returning. If we can get them just as they land—"*

"*Sehr gut,*" said Knight. "Drop down to three thousand feet and hold your course, with blinker-signals every ten seconds. We will be in position beside you in two minutes."

He stood up, backed over to the starboard cannon, without taking his eyes from the three Nazis.

"Watch out, Dick," said Doyle, "that guy Werncke is all set to try a break."

Knight fixed Werncke with a cold glance. "It'll be the last break he'll ever—"

Without warning, the control-room door burst open, and von Kreiner plunged inside, with the guard, white-faced, behind him.

"Werncke—they're spies!" shouted von Kreiner. Then his eyes took in the grim tableau he had first missed in the dim light. With an oath, he leaped to one side and fired, just as Knight swerved his gun.

Von Kreiner's bullet ricocheted from a riveted beam, and he threw himself flat as Knight fired again. The guard caught Knight's second bullet squarely in his breast and fell with a muffled groan. Two shots blasted up forward, and as Knight spun around he saw the co-pilot topple beside his seat. The other pilot dived madly for a flare-pistol which the first man had snatched up, and a rocket blazed across the control-room, missing Doyle by inches. Doyle's automatic roared again be-

fore the pilot could cock the second trigger, and the Nazi sprawled across the body of his comrade.

Von Kreiner sprang back of the chart table, pitched a wild shot at Knight. Canvas flew from the edge of the chute-pack Knight had buckled on. He fired under the table, but missed. Before he could fire again the aviator gave a frenzied leap and hurled the table on one side as he fled for the door to the steps. Von Kreiner's gun flew from his fingers as the overturned table came down on his chest and threw him to the deck.

The radio-operator was cowering back against a bulk-head, but Werncke charged desperately after his fallen weapon.

"Get back!" shouted Knight. "Or I'll let you have it!"

"To the *Teufel* with you!" screamed Werncke. His clutching fingers closed on the butt. Knight dropped him an instant before he started to fire, and the stocky German died in that last vain effort.

Somewhere in the ship the aviator's voice sounded, raised in shrill alarm.

"Bar that door!" Knight shot at the terrified radioman. "Doyle, get the trap open! They'll be up here in no time."

"But what're you doing now?" Doyle demanded, as Knight sprang to the gas-control panel.

"We've got to get rid of that damned gas," Knight said swiftly. He jerked around—to find that the radioman had suddenly thrown the door open and was now racing down the steps. "Let him go," cried Knight. "The alarm's already been spread, anyway."

HE BARRED the door, flung a hasty look at von Kreiner. The man's eyes were open, filled with a murderous hatred. But the table was still across his body, and his face was twisted with pain. Knight spun the release valves wide open, saw the pressure-gauge needles quiver.

"Load that cannon," he said tensely. "That other ship must be close under us. If I can spot it before those devils rush us—"

He rushed to the controls, ran his eyes frantically over the maze of switches on the instrument board. A second later two bright tunnels bored through the darkness as he turned on the landing-lights. He gazed down, saw the other Dornier a few hundred feet below and to the right. But his brief triumph was replaced by a cold horror.

Half a mile ahead, flying a wide formation, were Tubby Trevor's Lerwicks and their escort of Spitfires. And the Dornier below, with the deadly golden gas whirling from its wing-vents, was sweeping down on the massed British planes!

Knight seized the controls, nosed down in a wild dive.

"Slip her, Dick! Slip her!" shouted Doyle. "I can't see the other ship!"

Knight rolled the wheel, pressed top rudder, just as a furious pounding



shook the barred door. The Dornier went into a screaming forward slip, and a series of muffled yells and curses replaced the pounding at the door as the Nazis tumbled down the ladder. Something thudded violently behind Knight, then he heard Doyle blast out with the cannon twice.

Before he could see whether his comrade's shots had struck, two clawing hands closed around his throat. He sprang up, hauling the control-wheel back as he clung desperately with one hand. The terrific sideslip had thrown the chart table across the control room, freeing von Kreiner, and the Nazi was battling with the fury of a madman. Knight stumbled, fell against the master-throttles and switches, and the surging power of the Dornier's eight engines was abruptly ended.

With a tremendous effort, Knight threw off von Kreiner, and staggered back toward the starboard cannon. Doyle whirled around from the gunport, a fierce grin on his face.

"I got 'em!" he cried—then leaped and threw Knight to the deck just as a gun slug blazed over Knight's head. Von Kreiner had recovered Knight's gun, dropped in the struggle. Doyle tackled him at the knees and he went down with a mad yell.

"Jump!" Knight shouted. "She's almost stalled!"

Doyle dived through the escape-

hatch, and Knight plunged after him. Just as he went through he saw von Kreiner trying frenziedly to fasten on a chute.

When the Dornier appeared as a rapidly lessening bulk above him in a ghastly sky, Knight jerked the ring, and his chute billowed overhead. Below and off to one side, the other Dornier was wallowing down in flames, above it a weird golden cloud, borne up by the heat of the blazing ship. Doyle was slipping his chute steeply, and Knight followed suit to get away from that flaming charnel-house. Half a mile or more to the West, visible against the darkened coast, were the British planes, circling in wide formation.

Knight stared back at the other Dornier, saw it twist off in the first turn of a spin. Underneath it, he saw a falling figure. For an instant he thought von Kreiner had jumped without a chute, then the silk blossomed out. Half-way into the spin, the Dornier suddenly slued off and dived, leaving a golden trail from its wings where the released gas spewed out.

At terrific speed, the giant ship plunged on past von Kreiner, the churning air buffeting his chute. The wretched Nazi now pulled madly at his shrouds as the great, golden cloud rolled out toward him. For an instant Knight thought he had escaped—then

both man and chute were lost from view in that beautiful cloud.

Moments later, a shining golden figure swayed slowly into view, suspended from a gilded chute above. The awesome figure descended majestically toward the sea, its hands hanging limply at its sides.

With a shudder, Knight looked away and down at the breaking surf. Doyle and he would land not far from the shore. With unsteady fingers, he began to unbuckle the top harness, to be ready for the swim.

Later, when he looked back, only a golden parachute floated on the sea.

\* \* \* \*

"FOR a couple of guys tryin' to be neutral, we sure run into tough luck," said Doyle, as they sat next night in the smoking-room of the club at which Tubby Trevor had introduced them.

Dick Knight slowly sipped his brandy-and-soda.

"You're right, Lothario. As soon as we can get to the Ambassador and have this thing cleared up, we'd better hike for home—on the first Clipper."

"Hey! Hold on!" said Doyle. "We've got to stay here a week, anyway."

"Why a week?" queried Knight.

"Well," snickered Doyle, "I've still got seven telephone numbers, ain't I?"

## Youth Air Movement News

(Continued from page 34)

### Public Takes To Air

Proof that the average guy and gal is now accepting flying in a big way is offered by the recently-formed Brooklyn Civilian Flyers Association, of Floyd Bennett Field. A barber, saleswoman, trolley line traffic inspector, electrician, mechanic, housewife, doctor, realty dealer, and butcher are numbered among the 30 members. "Sure," says Archie Baxter, secretary of the club. "Flying will now boom for the average man—because the cost of it has dropped to one-third what it was 10 years ago."

### AYA Offerings

We can now report the services to be offered by Air Youth of America, the new national organization with headquarters at Radio City, New York. There will be the *Air Youth Bulletin* for group leaders, a series of four or five graded model kits,

plans for more advanced models, an instructor's manual, and a contest handbook.

### Slipstream Briefs

Fort Morgan, Colo., is rightfully proud of its Young family, which boasts six licensed Cub pilots ranging from 17-year-old Cora Mae to the 59-year-old father. . . . Pilots needn't worry any longer about whether they'll go to pieces under the strain of flying faster than 350 m.p.h.—for an Army captain in the medical branch has devised a way of testing their ability to "take it" before they try it. . . . Zack Mosley, creator of that famed flyer of the comic strips, Smiling Jack, has just bought himself a Continental-powered Cub Coupe. . . . Chicago civic leaders are studying slum clearance plans by making flights over the city in a TWA plane. It seems this is one kind of problem

which looks simpler the farther you get away from it. . . . Sites were recently looked over at Corpus Christi, Tex., for location of a proposed new naval air training base. . . . Canada will depend, for the most part, on U.S.-made aircraft in grooming 25,000 war pilots for the war with Germany. . . . An even larger aviation exhibit is planned for the New York World's Fair next year, with a Boeing "Flying Fortress" slated to be the big attraction. . . . Vultee seems to be the "sportiest" of the aero plants. Employees there engage in bowling, archery, basketball, baseball, horse-shoe pitching—and apparently a hundred and one other competitive recreations. . . . And in closing we'll remark that all the big airlines served turkey on Christmas. In short, if you were so up in the air as not to be at home for your holiday dinner, the transport lines gave you the bird.

## Where Is Germany's Sky Menace?

(Continued from page 5)

structural details. In addition, the Ju.87 is said to have done very well in Spain.

The earlier models carried the wider "trousers" type of wheel pants, but the modern job is more simply and maybe more efficiently covered. It is powered with a Jumo engine rated at 1,000-h.p. Its top speed is

240 fully loaded and it will dive at 430 m.p.h. It carries two fixed rifle-caliber guns and another standard machine gun on the flexible mounting in the rear.

Hitler's Henschel 123 single-seat biplane has also seen service as a dive-bomber, in the Spanish war, anyway. Whether it has appeared as

such on the Western Front is a question. This model uses the 660-h.p. B.M.W. 9-cylindered radial, and special tanks can be installed in the fuselage or between the legs of the under-carriage when a longer range is desired. The bombs, of course, are carried on wing racks. This Hs.123 has a top speed of about 220. Two rifle-



caliber machine guns are carried under the hood and fire through the prop.

A new Heinkel known as the He.270 has recently been seen on the Front, and we now remember that there was some talk of developing the former Heinkel He.118 into a dive-bomber. In all probability this is the machine. From reports we've seen, it carries a 1,100-lb. bomb, has a top speed of 267 m.p.h., and has a range of 1,550 miles. It uses the Daimler-Benz Db. 600G inverted Vee-12 engine, which turns out 910 h.p.

We also understand that this machine is fitted with a reversible pitch prop as well as the most advanced form of dive-flaps to regulate the speed in the attacking dive. The airscrew just named has been developed by V.D.M. (Vereinigte Deutsche Metallwerke A.G. of Frankfurt) and is said to be quite effective.

Another dive-bomber is the Blohm & Voss Ha.137, another single-seater which, by the way, gives the pilot a splendid view forward and downward. It carries two fixed rifle-caliber machine guns which may, according to German reports, be replaced with two 20-mm. shell guns. None of these shell guns have yet appeared, however. We suppose they could be replaced by whaling harpoon guns, too.

The Arado Ar.95, a coastal-defense type, may also be used as a dive-bomber by fitting racks to the wings, which could accommodate six 110-lb. bombs. The more famous Henschel Hs.126 is still another which could be used as a dive-bomber. Shallow dive-bombing attempts could bring in such jobs as the Dornier Do.17.

WE'LL now consider the part the seaplane and the flying boat here played in the new war for Germany. True, the Germans have already made several air thrusts across the North Sea to attack British naval bases and surface craft. And they've had varying degrees of success or failure, all depending on your point of view.

Their most important raids have been carried out with the Dornier Do.18, a postal flying boat converted for military purposes. A number of these were shot down in the raids on Scapa Flow, some Allied reports, putting their losses as high as seventeen in one week. In any event, we'd say that Germany hasn't so much on the ball in using this giant flying boat class for long-distance bombing raids, since it's definitely a conversion job and not a true military type.

There is a possibility, of course, that Germany may ultimately use the Blohm & Voss *Nordwind* and *Nordmere* trans-Atlantic transport types. These planes are well known on this side of the Atlantic; for they have visited this country. However, while they are interesting commercial types there is again a question whether they will fill a military bill. The Do.18's most certainly have not fared well against real military planes, and if Germany hopes to carry out any

emphatically successful raids against Britain she will have to build true over-seas bombers or call upon her land types to risk the North Sea crossing.

Some of the earlier Heinkels, such as the He.59 and He.60, have now been relegated to training. The Heinkel He.115, shown in our drawing, appears to be one of the better types of German Naval aircraft. This machine is considered very efficient by Allied experts—for last year a special version of the He.115 broke eight international records in the seaplane category.

This He.115 is a mid-wing monoplane of all-metal construction and with a fuselage of oval section. It is driven by two B.M.W.132 Dc. radials fitted with three-bladed air-screws. Top speed is put at 215 m.p.h., the range is 1,500 miles, and the weight fully loaded is 20,060 lbs. It carries a crew of two.

Probably the most interesting and the most carefully-guarded German seaplane today is the new Arado low-wing monoplane now being used aboard the notorious German pocket battleships. Built for catapult take-offs, this craft has two pontoons and is powered by a B.M.W. radial. It appears to be a reconnaissance two-seater which doubles for fighting when necessary. Perhaps it's quite fast, but apparently we'll have to wait until the British capture one of those Nazi P.B.'s to find out more about it.

THE HEINKEL HE.114, a B.M.W.-powered reconnaissance sesquiplane seaplane, is another on which we have no performance figures. But it is now in service with the Naval squadrons and apparently seeing much action.

We include this plane in our accompanying plate of sketches. However, it will no doubt be replaced, if the war lasts any length of time, by the new Arado Ar.95, which is a combination torpedo carrier-spotter-reconnaissance machine of interesting features. This Arado can be flown as a land-plane, a normal seaplane, or a catapult seaplane. The swept-back wings—they fold for stowage—are of particular interest because their upper surfaces are metal-covered while the lower are fabric-covered. A system of N-struts and inverted Vee-struts supports the center section and the lower wing roots are built integral with the fuselage and are considerably thicker than the outer panels.

The fuselage is of light metal monocoque structure, and the cockpits are roomy and well sheltered with a long transparent enclosure. Armament includes one fixed 7.9 machine gun with 500 rounds of ammunition and an additional free gun with 600 rounds. Six 100-lb. bombs may be carried in the racks, or a 1,700 lb. torpedo. Extra fittings will carry a 1,100-lb. bomb. It has a two-way radio set and two special air cameras. Top speed is 187 m.p.h.

And now for the bombers:

More wordage has been published

concerning the power and efficiency of the German bombers than of any other military planes in the world. Much of it, of course, has been just German Air Force propaganda. Very little of it seems to be authentic. And in the light of events thus far in Europe, one begins to wonder whether there really is any great German bombing arm.

Pictures have been published showing German bombers, many of them artist's conception drawings, some photographs. But few such big menacing machines have appeared anywhere on the Western Front and at this writing none had appeared over London or Paris.

The largest of the German bombers is probably the Junkers Ju.89, a four-engined low-wing monoplane revamped from the Junkers four-engined transport seen on European airports before the war broke out. It uses four Junkers Jumo-210 engines rated at 640 h.p. apiece. It is supposed to have a top speed of 225 m.p.h.

Another Nazi bomber derived from a transport is the Heinkel He.111, shown in our drawing, and some believe it to be the most effective the Germans have. It is said to have a top speed of 261 m.p.h.

Here again we find grave discrepancies in the "pictures" of this machine. No two seem to have the same tail, no two seem to have the same motors, and no two have anything in common about the nose turret. A version called the "Modified-K" appears to be using either the Daimler-Benz engines or the Junkers Jumo.

Several Dornier Do.17's—which are popular with news writers because of the "flying pencil" tag they carry—have been shot down in France by the Royal Air Force. This machine has all the looks and specifications, but somehow it doesn't seem to have clicked. Beautifully designed, it uses two 950-h.p. Daimler-Benz motors and speeds at 292 m.p.h.

Its armament is a question, but some have two fixed guns firing forward and two movable guns firing aft behind the trailing edge of the wing. Bombs can be carried inside the fuselage or on outside racks. The writer believes this to be the best bombing machine in the whole German Air Service because it was designed as a true bomber.

The Dornier Do.25, a newcomer, is obviously a later edition of the Do.17 with a special military nose. New fighting windows have been cut in here and there, but there is otherwise no particular improvement discernible.

The Junkers Ju.86K bomber, another ex-transport design, is reported to be now headed for the "obsolete" list. They are being replaced, it is said, with Junkers Ju.88's, which are lauded as very fast.

IN SUMMING all this up, it appears that while the German Messerschmitts have received the bulk of the ballyhoo, Hitler's fighting



jobs really do not compare with the Nazi bombers on the score of effectiveness. These bombers, as far as we can make out, are generally multipurpose craft which can be used for fighting, reconnaissance, or bombing. So far, though, they have done very little bombing.

Just what happened to the German Air Force once hostilities started is

very hard to state. If we knew what the *actual* strength of the service was before the war began, it might be easier to figure out what the status was afterward. Certainly none of the action since war was declared justifies those summer stories on the fearful size and quality of the Goering's *aeroforce*.

Less than 800 planes were flown by

the Nazis on the Polish front and nearly 200 of these were either shot down or severely damaged before that campaign was completed. If Germany had 10,000-plus warplanes, why weren't more of them brought out? A mystery of this kind only adds to the growing belief that something is very fishy about Hitler's super-super claims.

## Flying Aces Club News

(Continued from page 37)

your Rutland FLYING ACES CLUB on that airport matter and get a slew of people to sign it—to the effect that they're for the establishment of a good field. Such a petition, we figure, should go to the mayor or city council when you've got it completed. Get the newspaper to help you with publicity. Go after the Rutland radio station, the American Legion, the Kiwani, Rotary, and Lions clubs, too.

We're sure the various F.A.C.'s there in Rutland will be happy to give you a hand, Al. Maybe some store in town will let you make up an airport-promoting window display—something of the order of the one shown here in our News this month. That would help put the movement over, you know. Meanwhile, keep Clint posted on how you are making out. We're certainly for you. And F.A. awards will be on tap if you put this airport proposition over.

Special to all Bronx Boy Scouts: Fred Porphyrius, of 349 Broadway, the Bronx, would like you to get in

touch with him immediately. He is interested in forming a Flight or Squadron and would like to have it composed entirely of air-minded Scouts.

For you boys who like to sit back and listen to the radio, there's now a weekly program that you won't want to miss. Here's the dope:

Exploited as "the air show of the air," a new program, "Sky Blazers," made its bow over the nationwide CBS network on Saturday, December 9, at 7:30 P.M. EST—with the history of aviation as its source for authentic, dramatic presentations. To be heard weekly at the same time, it will, according to the sponsor, be the first radio presentation of its kind. Col. Roscoe Turner, famed sky racer, by the way, is the master of ceremonies.

Through dramatizing the exploits of famous pilots, "Sky Blazers" is keyed to give graphic pictures of aviation in its experimental days, of its amazing growth, of the develop-

ment of engines, plane structures, safety instruments, and of the wide and vital part aviation today plays in our daily lives.

Each "Sky Blazers" broadcast is devoted to the dramatization of exploits of an aviation personality. As a supplement to the dramatizations, noteworthy practical developments in aviation will be heralded on the program.

And now, before we say "aw revor" until next month, Clint'll give you full dope on our newest Master Model Builder—this Month's D.S.M. winner:

Ferd D. Page, Jr., of Williamsport, Pa., won the medal this trip for the swell work on his Shereshaw-designed "Cumulus" gas job (see photo) built from plans in the September, 1937, FLYING ACES. Congrats, Ferd!

Heck, we're clean out of space, fellows! There's only enough left to repeat a peppy "Happy New Year"—and a special "Happy Landings!"

## News of the Modelers

(Continued from page 55)

### Sunbury Tries Kohler Rules

terminated by squaring the diameter of the cylinder bore in inches and multiplying by .7854.

With the above formula, No. 1, a small model having a light wing loading and a large engine would, says Kohler, have a lower factor than a large model with the same wing loading and the same size engine. But a large model having a heavy wing loading and a small engine would have a higher factor than either of these.

INSTEAD of the usual 20-sec. motor run, contestants in the gas contest held October 15, at Sunbury Airport, Pa., were allowed to use any run up to and including 30 sec. Winners were determined by the system advocated by Neal M. Kohler.

First, second, third, eighth, and ninth places were taken by Comet *Zip-pers*. All placing ships were powered with Brown engines. (Incidentally, in

our last F.A. we mentioned that three first places were taken at the Nationals by Carl Goldberg-designed Comet ships. The actual number was five.)

Results of the tourney: First, Walter Sprague, Lewisburg, 1.3 min. on 11.6 sec. run; second, Edward Ritter, Bloomsburg, 14.1 sec. on 6.6 sec. run; third, Terry Noll, Pleasant Gap, 1.2 min. on 12.6 sec. run; fourth, Clark Hile, Pleasant Gap, 42 sec. on 7.9 sec. run.

## "Talk About Screwy Students—!"

(Continued from page 31)

that—but not the way she intended. For the first time, she bounced the bus, and the O-X engine didn't "take" when she jammed the throttle wide open.

PLUNK! My how chagrined she looked with the fuselage hugging the sod and the landing gear spread out on both sides of her!

### SCREWY FOR SURE

YOU'VE probably read of the lunatic who hired a plane and suddenly went to work on the pilot with a hammer. The recent case of the nut student who became berserk in the air, drew a gun, and murdered the

pilot has also come to your attention, no doubt.

While no such drastic experience occurred to me, I do remember a rather unusual case that did happen one day several years ago, and I didn't copy this one from Wisecrack-Ups, either. While visiting some friends in what was to me new country, I wandered down to the local airport and ran into a pilot friend of mine. He had an old J-5 Ryan cabin job and suggested that I take it up for a hop.

Just as I was ready to take off, he flagged me to stop and pushed a passenger on board. Since I knew noth-

ing of the town, the passenger, once we were in the air, started pointing out things of interest. He finally indicated one large building and said: "That's been my home for the last twelve years."

"Hotel?" I asked.

"No, insane asylum."

"Oh," I grinned hopefully. "You're a doctor there."

His reply was, "Hell no! I'm a patient—killed a couple of relatives thirteen years ago."

He sure gave me a funny feeling in the roots of my hair. I grinned weakly and wished I were back on the ground. "Aw, nuts, don't worry about



me," he cracked. "I often spend the day at the field, and I'm all set to learn to fly." He laughed at my discomfiture.

Later, I learned he'd told me the truth about the murders—only he'd had enough money to have himself declared insane. For the last couple of years he had almost full freedom to come and go as he pleased.

#### CADET CASES

**OF COURSE**, the First World War brought out enough cockeyed cadet occurrences to fill a library. I was the goat one day at Chattis Hill, England, where we were training on Sop Pups. That was when Jack C., of Toronto, and I were alternately flying the same plane.

Well, during one of my rest periods I got busy and cleaned all the castor oil from the cockpit. And I was rather proud of the job I'd done in making her spic and span. So after Jack brought her in after his flight, I smiled at my instructor and said: "Will you come over here a minute, Sir? I want to show you how neat I've got our Sop."

The instructor took just one glance in the cockpit—then he swung around at me blazing. What a tongue lashing I got! He bellowed something about my trying to get fresh with him, then

he put me to work washing down ships for the rest of the day.

Bewildered, I got busy on the busses, but the moment I got a chance I sneaked over to our Pup to see what had caused the instructor's blow-up. And one look inside that pit was enough for me, too! I'd forgotten that Jack was an avid tobacco chewer. The cockpit was dripping with the oozy brown juice.

Unfortunately, not all mistakes end happily, as was sadly exemplified by the case of poor Williams, who trained with me at a base near Toronto. None of us, at that time, had yet seen a loop. And someone told Williams that to loop it was only necessary to dive and then yank back on the stick. You see, in those days training was not the fine science it is today.

Anyhow, Williams went up to 5,000 feet, and then with motor wide open he plunged down to 2,000 in a vertical dive. For having been told to start his loop with a dive, he figured that emphasis was the thing. You know what happened, of course. When he yanked back on the stick, there came a sound like a cannon shot. The wings came off and Williams hurtled into the earth and was killed.

To end on a humorous note, let me relate that eight miles from that field

there was a girls' school situated on a beautiful lake. In front of this school, and on the edge of the lake, was a stretch of lawn that made a fair landing run, and you can be sure that our love-hungry young cadets frequently developed "motor trouble" while flying by. Anyhow, that was the common excuse for landing there.

In the course of our training, two of the boys over-shot the lawn—ending up by wishing they had pontoons on their planes. But the school still continued to get a great play.

One day, when I was preparing to take off solo, an instructor hopped in and grabbed the controls. He was mad as a bull over some tip-off he'd got, so I said nothing and just sat still. In a few minutes, he landed at the school. And there, surrounded by a group of admiring girls, was one of our cadets and his Jenny.

"What's the meaning of this?" barked the instructor.

"Motor trouble, Sir," answered the cadet, and he indicated his engine.

And he might have got away with it—if it had looked right. But if the suspicious instructor was mad before, he was as one possessed when he examined the power plant—for the cadet's idea of faking motor trouble was to knock off his spark plugs with a rock!

## A Two-In-One Focke-Wulf Fw-56

(Continued from page 49)

braces are cemented parallel to the ribs for the anchorage of the wing struts. Carve the wing tips from the required stock and cement in place.

To assume the proper dihedral angle for the wing, two spar braces are made from 1/16" sheet balsa and attached to the spars. After sufficient glue has been applied to hold the braces firmly, bind with a strip of tissue as indicated in the perspective sketch.

Cover the wing with the material chosen for facing the tail surfaces. Apply several coats of dope until the covering has become taut. The wing struts are made of bamboo and laminated balsa. The "N" struts are of bamboo while the larger struts are made by laminating 1/16" by

5/16" or 5/8" strips to form the desired thickness. The struts are bound with strips of tissue. Pins, cement, and plastic wood are used to anchor the struts.

#### To Test the Ship

**GLIDE** without power several times until a perfect, long flat glide is attained, followed by a three-point landing.

With the rubber powered job, warping the tail surfaces will exercise sufficient control over the flight of the craft to offset any intricacies. With the gas model, however, the job is slightly more difficult. Balance is achieved by proper distribution of weights such as the batteries, switch, timer, coil, or condenser.

Although suggested locations for the units have been indicated on the plans, placement will depend upon the engine used. The craft incidentally, has been designed and constructed so that any power-plant of the Mighty Midget to the Ohlsson "23" type be used.

If you fellows would like to make your Focke-Wulf extra-authentic, paint the ship and add markings. However, you do this at your own risk. Because if some one takes a pot-shot at your job don't complain to us, for the craft is so true-to-life that even the Nazis would have a hard time trying to prove it's just a replica. Camouflage may prove helpful—but official warning before each take-off may prove even better.

## Raider Wings

(Continued from page 26)

leaning against the edge of the wing and Tug sitting beneath pouring sand through his fingers. The distance between the cove and the plane gave them plenty of time to inspect their visitors.

For one thing they were all armed. The men carried short carbines and heavy Mauser machine pistols were at their hips. They were led by a giant of a man with a grim black beard. He was dressed in some form of naval uniform, trim and clean. A navy cap with gold braid was atop his massive head, and enough braid was on his epaulettes to bow-leg a burro.

The stocky, beetle-browed men with him were togged out in various kinds of uniforms. Many had grease streaks across their faces and down the sides of their slacks.

The leader now stuck out his chest, which was as big as a rolled mattress, and let out a roar of laughter that literally battered back off the bullet-slashed dural of the Northrop.

"The Shadow knows," muttered the Bish.

"Shut up! This is our raider guy."

"They ought to plant him in a turbine and just let him laugh to furnish the power. He'd put fifty knots

on a destroyer with that bellow."

"I'll punch you right in the nose," husked Hardwick.

"Save your punches. You'll get plenty of chance to use 'em in a minute. I can see that these guys mean business."

The leader threw back his head and laughed again. Meantime, his men formed a half-circle behind him, their carbines cradled menacingly in their arms.

"You are English—no?" the big man began, standing wide-legged before them.

"No, we aren't English. We're



Americans," snapped Hardwick. "And if you're the guy I think you are, you owe me about ten grand for potting my engine. What the deuce was the idea, anyway?"

"Now don't get into any fights," smirked Bish in a high-pitched voice he'd souped up for the occasion.

The big man, who had a decided teutonic accent, stopped dead in his tracks. It was evident that he had not expected this sort of reply. He was used to men cringing before him—but this fellow was still sitting there calmly sifting sand through his fingers.

"And what's more, I don't like that dirty beard of yours. It's not sanitary. Why don't you burn it off?" added Hardwick.

"Mother's little helper," mooned the Bish sadly under his breath.

"Do you know who I am?" demanded the big man. Then he let out a bellying laugh that rang amid the taipang and nipa palms. "Budt nefer mind. That does not matter. I like you, *mein freund*. We shall be friends, *nein*?"

"Look here," came back Hardwick. "I think you're the guy who is pestering the British down here in the Sulu Sea. You're probably what we Americans call a heel, but I've met all kinds and I have to put up with that sort of thing in my business. What is more important is that I have to come all the way down here to get a story from you for my press service. Now if you aren't the bird I'm looking for, you can shove off, advise my people in Davao, pay for the damage you caused, and then forget it."

The big man bellowed again and slapped his thigh. And the Yanks were beginning to like him, even though they, too, were putting on an act.

"You haff come all *der* way here to get *der* story of Bolko von Reidel?" he boomed. "You *must* be *Amerikaners*. It is a good joke, on me, eh?"

"Von Reidel?" snapped Hardwick, getting up. "You are the Bolko von Reidel? The German naval officer who—who scuttled the German fleet at Scapa Flow years ago?"

The big German stiffened. He drew himself up and assumed a more serious *mien*. Now he bowed slightly from the waist, and they could see that the backs of his calves were tense.

"Gentlemen," he said solemnly. "I thank you for your memory. I am the Bolko von Reidel of which you speak. I am the man who scuttled our vessels more than twenty years ago. At least, it was my idea." He laughed. "Yes, I planned the measure. Again, I thank you . . . *Herr* . . . *Herr* . . ."

"My name is Hardwick—Tug Hardwick. And never mind the '*Herr*' business," snapped Tug believing he had found a chink in the man's armor. "And this man," he added, without getting up but pointing to the Bish's boney kneecaps, "is my partner, Mister Alton Bishop."

"Call me Beansie," wailed the Bish

at Tug. "And never mind the '*Mister*' business."

The big man with the beard, who now seemed to have lost his Teutonic accent in the face of the nervy Americans, said something over his shoulder to his men and they relaxed somewhat. But they did not ground their arms.

"Look here, von Reidel," Tug went on, determined to hold the edge in the conversation, "we'll forget all that twenty years ago business. That's your memory not mine. We're simply representing the Amalgamated Press in the United States and we came to find you. To interview you. Get it?"

"Well, my friend," von Reidel smiled, "in finding me you have done more than the whole British Navy could do—and the French navy, too, eh?"

He broke out in another booming cackle and his men managed to distort the masks of their mugs to indicate a smile. One of them now said something to von Reidel and the big man stopped his booming and glared at the two insolent Americans.

"How do I know you came simply to satisfy the curiosity of the American public?" he demanded.

"I don't care whether you believe me on that or not," snapped Tug. "We have about enough information for our purpose now. But I'd still like to find out why my plane was fired on—and by whom."

NOW the big man seemed a bit puzzled. He started still another laugh but stopped it half way up and glared down at Tug.

"That was my son, Justus—Justus von Reidel. He is my—how you say, 'spotter'? He is my son, Justus. He believed you were an Englander from one of the cruisers."

"What, with a plane like ours?" growled Tug, pointing to the nose of the Northrop.

"Exactly. You did not know the English have such a plane? It has been under secret construction at Britain's Phillips & Powis company for months. We thought they would be in production by now. This plane looks exactly like the Phillips & Powis machine."

"I don't care if it looks like a Samoan eggplant, it didn't have British markings on it, did it?" argued Tug.

"Bah! The British would do anything to get me," the big German responded.

"That's *your* story. Now what about our plane, which your dumb son shot up?"

The big German laughed again.

"Ach! But that was very funny. He caught you beautifully, while you were watching him and trying to make out just what sort of plane he was flying, yes?—We saw it all—from the *Boarhund*."

Tug and Bish exchanged glances. They were both wondering what he meant by the *Boarhund*. But they concluded it must be the mystery vessel. The German broke it up: "But you can't stay here. You want a story,

of course. So you will come back with us to my vessel. You will meet my son Justus. He will tell you how he shot you down. Ho! Ho!"

"You take me anywhere near him and he'll never get a chance to tell me. I'll punch all his teeth down his throat," snarled Tug.

The big German roared at that sally. "Fine!" he finally said. "Then you will come, eh?"

Tug reflected a minute. It was a risky thing, but he had to get the rest of his story somehow. He nodded to the Bish. Said: "Get a camera. We'll do this thing right." Then to the German he added: "Sure, we'll come. I want to see how a modern pirate lives. But no monkey business, von Reidel—or we'll take your lugger apart."

"Ho! Ho! Ho! How I love this man!" the big man boomed. "He should be a German. I would take him for my First Mate. This is a real man! We shall see some sport!"

"If that dopey son of yours is aboard, you will," growled Tug getting to his feet."

BISH selected a camera of the Graflex type, then secreted another, which looked like a candid Leica, in his pocket. He checked the film-pack holder of his Graflex, then nodded to Tug.

The armed men were already heading toward the water. Their boat was drawn around into a better spot so that they could climb aboard from a large flat rock. The big German took a seat in the stern and Tug and Bishop sat down beside him as a seaman took the tiller and swung the craft out to round the spit.

Once in the clear, the Yanks caught sight of what appeared to be a somewhat disreputable schooner with a spoon bow. Neither commented, but they inspected the vessel with interest—extreme interest.

"You like her, eh?" the big German boomed.

"Not much. She looks a trifle false to me," cracked Tug.

"She looked like a submarine before," added the Bish with a leer.

The big German simply laughed at that.

As they came nearer her, Bish prepared to take a couple of pictures with his Graflex. At this, the big German let out a bellow and kicked the camera from Bish's hands. It rolled about in the laps of two of the seamen and Bish scrambled to retrieve it.

"You will not take pictures until I give you permission," the big German boomed.

"Look," broke in Tug, "if you ever do a thing like that again, von Reidel, I'll kick all your teeth in—or out, just as you wish. Get that?"

The big German doubled with mirth at that sally and slapped his thigh.

"You know," said Bish, "I don't know whether I like this guy, or whether we should dump him overboard now. I'll bet he'd go straight to the bottom."

But Tug was really mad—fighting



mad! "See that your camera is Okay. We're going to take all the pictures we like. We have enough of the story now to give Chicago all it wants. Go ahead! Take a picture of her! And if this guy gets gay, I'll slap his chops for him."

Then when von Reidel's head lifted in his next laugh, Bish—before the Teuton realized what had happened—snapped his picture in a characteristic attitude. Then Bish turned, ripped out the film pack sheet, and took a picture of the ugly vessel. He ripped out the shield sheet still again and snapped yet another.

Von Reidel gasped. Rage seemed to be in conflict with his humor for a moment, but a laugh finally broke the silence nevertheless. They both knew now that he intended that they should never get away with those pictures. His attitude was changing as they approached the vessel.

"I get it," muttered Tug, "this is an A-I phoney. Look! The sides are simply panels that fold up from somewhere. She's really a sub. This is going the British Q-boats one better."

"A beautiful fakeroo!" agreed Bish, taking another snap.

Their boat eased around to the side of the "schooner." A section of the false hull then opened and the boat was warped in. They stepped out on a short gangway lowered from the narrow deck planking of a submarine!

The framework of the deck sides could be lowered at an angle and lie flush with the deck. The two masts could be concealed and the false sails quickly removed and stowed. They climbed up and saw the seaplane lashed down in front of a small, water-tight deck hangar. Its wings were folded back.

With determination, Tug Hardwick walked up to the man who stood beside it with a chunk of waste and a wrench in his hands. "Are you the guy who flew that thing a short time ago and fired at my Northrop?" he demanded.

"I am *der* pilot, if that is what you mean," the man replied.

That was as far as he got. Tug brought his right around hard and it caught the man flush on the button. The Nazi took it, though, his legs spread wide. He tried to lurch toward Tug, but his legs buckled and Tug brought in another from the other side and caught him full on the temple. The young German went to the deck like a wet bag of cement.

Tug stuck a leg out and stopped the man from rolling over the side, then he brushed his hands together and turned to the elder von Reidel:

"That's just to let you know that I mean what I say!"

The suddenness of the attack on young von Reidel left the various German seamen stunned for a moment, but now they swarmed at the two Americans with the butts of their carbines raised. Bish brought the heavy Graflex camera down on the head of one and he flopped across the inert body of von Reidel. Tug dodged a blow, pivoted hard, and another

German seaman fell flat on his face. At that point the elder von Reidel stepped in and took command.

"Stop it! Stop it!" he boomed, almost making the false sails belly out with his roars. He barked at seamen and junior officers. He raged at Tug and at Bish, who was now taking a shot of the general layout aboard the deck. He started to rumble toward Bish, but he stopped and thought better of it as he saw Tug poised on the balls of his feet. The big German knew this American was tough.

"You will come below, now," he ordered, and finally managed another roaring laugh. "This way, gentlemen!"

He strode up the steps to the bridge of the conning tower. The plate door to the depths below was open and the big German led the Yanks down to the control room, passed forward to the officers' room, and pointed to some chairs set around a narrow table. As they passed through the control room, dank and oil-stained, Tug caught the dim outlines of a man in civilian clothing and a felt hat. He was small, dapper, and moved with short steps as he hurried around the periscope wheel and bent over an open drawer of a chart locker. Of one thing, Tug was certain. This civilian was not German—he was a Japanese!

"Now I *don't* like it," he muttered to himself as he passed through into the officers' quarters.

"What's the Jap doing aboard?" he demanded the minute he sat down.

VON REIDEL was reaching in a locker for a bottle of wine and some glasses. He turned sharply and nearly dropped two glasses. He swore quietly in German.

"The Japanese gentleman is working with me," von Reidel announced as he pulled the cork from the wine bottle with a plop. He poured into the glasses and examined the wine against the dull light overhead.

"Then that means," snapped Tug, "that you are not simply a German raider preying on merchant shipping. You are working with the Japs here and are probably laying the groundwork for some big coup in the Pacific. Am I right?"

"We will drink to that," grinned the big German, shoving the glasses into place.

"We'll drink to the success of right against might," Tug replied taking up the glass.

"As for me, I'll drink to the hope that we get off this tin fish alive," mooned the Bish.

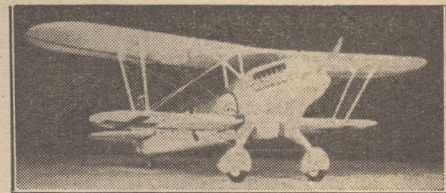
The big German emptied his glass at a gulp and laughed: "I will now give you your story, gentlemen. It matters not that you will never leave this vessel to publish it. That point, of course, must be obvious to you now. To allow you to go—once you have the secret of my craft—would of course be out of the question."

"Don't forget that we are American citizens," warned Tug, fingering the stem of his crystal goblet.

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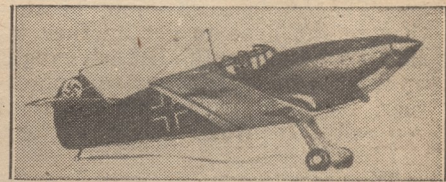
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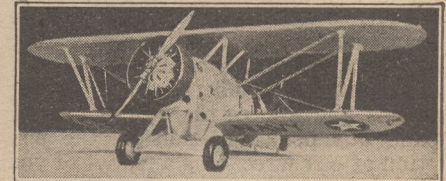
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# AIRCRAFT

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"You are neutral, yes?"

"Sure, we are neutral. That makes it a crime for you to detain us or harm us in any way, von Reidel."

"There is no such thing as neutrality. I have my own personal ideas on that. You are either for us or against us, and the events in the last few weeks, in my opinion, disclose that you are wholeheartedly against us. Your embargo repeal, for instance. Your obvious hatred of our Government long before the war began, for another. America can never be neutral, my friend. Americans are too outspoken. They have what they like to call a free press. How then can she be neutral?"

"We Americans inherit the right to think for ourselves, von Reidel. That includes the right to remain neutral, and neutral we'll remain, if I have any idea of my countrymen's wishes."

The German's eyes narrowed. "You came here to seek me out in the guise of a newspaper reporter. I respect that point, but I also have the right to draw the conclusion that you intend to report our position and the secret of my vessel. Is that not so?"

"That is positively not so. I have my cabled orders," snapped Tug. "Here, you can read them for yourself."

The big German waved the papers away. "Of course. You are a legitimate newspaperman. Your company would willingly make thousands of dollars selling the rights to this story. But they would also willingly turn over certain specific details to Britain and France, because—well, because they might hope to get another inside story on how the British caught up with me and ended my raiding career. It would make a . . . what you call a beautiful follow-up story, eh?"

"You're attitude," insisted Tug, "is screwy. You trust no one. But in any event, I'm taking the stand that you can't hold us here under any pretext. I demand that we be allowed to communicate with officials in the Philippines and assure them of our safety and our position—that is, the position of our wrecked plane, not of your sub—so they can send help to us and get our Northrop into the air again."

Tug's insistence had rather stunned the big German, but somehow he managed to produce another bellowing laugh. He again reached for the wine bottle and poured before he answered: "A very smart trick, Mr. Hardwick! A very smart trick! All you wish to do is to have us use our wireless set so that you can get off and present your story and produce your pictures. Very simple, eh? Then all your British and French friends would have to do would be to take a bearing on our signals and send a searching party out for us. Very clever! But not clever enough, I'm afraid."

"That's not my intention at all," Tug replied, glancing about the compartment. "You can send one message alone, get a receipt, put us ashore

again, and be miles away by the time any French or British ship could get near this spot."

"What the deuce is the idea of having that Jap aboard?" broke in the Bish suddenly.

The big German stroked his great beard reflectively, then said: "The Japanese gentleman, if you must know, is a secret agent. He is working with me down here. He sees that we are kept in supplies, and we take him where he wants to go."

"What you really mean to say," said Tug getting to his feet, leaning across the narrow table, and glaring full into von Reidel's face, "is that you are a mug for this Jap. You're not a romantic raider, as you would have the world believe. You're just a stooge for a man who is using you to gather secret information—information which like as not would be employed later against the United States. So that makes you a partner in action against a neutral nation. You'd like to think that you're another Count von Luckner, but I now figure you as nothing but a cheap edition of that guy. He at least sailed the seas on his own hook. He didn't pull tricks like that. Which is why the world loved him. Yes, even the British liked that guy."

AT THIS, von Reidel tried to find words to pour back at this barrage of contempt. He pawed at his beard, started to get to his feet. But Tug Hardwick shoved him back with a thud.

"You wanted to become a romantic figure. You had all the makings, too. You got a sub with stage fixings, you sank enemy ships, and you built up a legend on your laugh. You even had that screw-ball son of yours get in on it with a loud-speaker laugh gag. It was all swell stuff—enough to make you a great hero."

"I haff sunk seventeen ships in ten days!" von Reidel argued, lapsing back into his German accent. "I haff allowed der crews to escape."

"Sure. I agree to all that. You may sink seventeen more in the next ten days—but you have outlawed yourself by taking on that Jap spy. We can't swallow that one, von Reidel."

"He vos only taking a few soundings around der Philippines."

"Yes, soundings to complete a plan for the future capture of the islands."

"But I haff to have supplies, oil, food, and torpedoes!" spluttered von Reidel.

"Sure! All of which is an admission that you are not the clever South China Seas raider you would want the world to believe. You are not being successful because of your own gallantry or skill. Your way was to sell out. Well, that won't read well in the papers, von Reidel."

"And you told me not to start any fights?" bleated the Bish to Tug.

"Shut up. This guy won't fight. He's a mug for the Japs," taunted Hardwick. Then he turned back to the big German: "Well, what's it going to be? Do we go free to return to our

base and file a story on you and your von Luckner laugh?"

The big German gripped his wine glass nervously, twisted it back and forth in his great fingers. He stared down into the dregs with blazing eyes. Tug's barbs had pierced his thick skin and he did not like the feel of them.

He leaped to his feet screaming: "You will not escape, *schwein!* You will not spread my name across your filthy papers. You will not betray me. You have seen too much, you know too much—and I will yet live to become the great von Reidel who cleared the seas of the perfidious British. I will live to see a hundred vessels go down dragging the British flag beneath the surface of the sea! And now I will break you in my great hands as punishment for these insults of—"

But that was as far as he got. Tug made a quick gesture, knowing that he meant business. The Yank's hand found the neck of the long black wine bottle. There was a quick flip of his wrist and the bottle crashed across the big jaw of the German, causing him to gasp like a grain sack ripped open with a bayonet. Then he folded up and slid with a grunt under the table.

"Quick! Stick that film pack in your pocket. Never mind the camera," hissed Tug. "Come on, we're getting out of here."

"What do you think I am?" cried the Bish obeying orders. "I'm no Gertrude Ederle. I can't swim that far."

"Shut up. Let's go!"

"Sure! Where?"

"Next room, aft. That's the radio cabin."

THEY OPENED the heavy door quietly, glanced out. Then together they slipped through and surprised a square-headed radio man who sat at the bench with heavy earphones on his head. The poor devil didn't have a chance. He started to move, but Bish brought an uppercut up from under the bench lifting him clear off his chair. The man went over backward, and Bish fell on him and in no time had him trussed up and gagged like a capon.

"Quick!" whispered Tug. "We may be neutral, but with that anti-U.S. Jap aboard I figure this is now our fight. If this fellow can pull that against us on his own personal account, then we can fight back on our own personal account. Get TSF—that's the Kudat station in British North Borneo."

Bish flipped the call book, found the Kudat wave length, and began calling. He watched the pad as Tug printed out the message:

*German raider Boarhund on surface off Jolo. Have new Arado seaplane on board. Commanded by von Reidel of German Navy. Japanese aboard also. Am being held captive. Our plane damaged on nearby island. Raider may appear either as submarine or schooner.*

—Hardwick, Amalgamated Press.



They sent the message twice and finally got a reply:

*Will try to make necessary contact.*  
—Crossfield, R.A.F.

"Come on! Now for the activity," Tug muttered.

The Bish got up and fumbled in his pocket for his Leica camera.

Tug glanced at it and cracked: "I hope it works."

They started quietly out of the door—and walked smack into the Jap who stood covering them.

"So, gentlemen. It was *you* who were using the wireless set, eh?" the little Jap smirked. "You would betray us! Where is Commander von Reidel?"

"He's back there. Too much bottle," gagged Tug.

The Jap raised his eyebrows a trifle. He was a bit uncertain what to do next. Now Bish came from behind Tug, fumbling with his Leica. The Jap snarled: "You will please put that camera away? It is not allowed aboard here."

"All right," said Bish pleasantly. "I was only going to try getting you in this bad light."

Then something happened. There was a dull flash, a coughing explosion, and the Jap dropped the big Mauser to the metal floor. He stood there, his mouth open, holding his right arm above the wrist.

Tug stepped in quickly, gave the Jap a shove, and picked up the Mauser. "Nice work, Bish!" he laughed.

"Call me Beansie. I told you it would work."

"Swell! Who would think you could hide a pistol mechanism in a Leica camera?"

The Jap had let out a yowl that could be heard from one end of the sub to the other. Doors slammed. Heavy sea boots ran along the alleyways, more feet skipped down the ladder from the conning tower, and orders began to blast forth from the loud-speaker system.

"Beat it!" rasped Tug. "Back into the officers' quarters. Get von Reidel!"

They darted back past the radio cabin and hurled themselves inside the cabin where they had left von Reidel. They slammed the door and dogged it behind them.

Then they stood there and glanced about.

"Where the devil did he go?" snapped Tug, waving the big Mauser about.

"Flew the coop. What a jaw that guy must have to have recovered from that!"

They searched the lockers, but the German commander was nowhere in sight. Tug finally darted to a side wall and studied a chart giving the submarine's layout.

"Look! Through that door is the locker room when the men sleep. They keep extra torpedoes there, too. Forward of that is the bow torpedo room where they have four tubes, two on each side. Von Reidel evidently sneaked through there, then went out

through the forward escape hatchway. He's probably on deck now. Let's go!"

Bish looked at the plan form and squinted. It was too much for him to assimilate in one glance, so he simply followed Tug who went on through the door, shoving the big Mauser ahead of him. They peered into the bunks, but there were no men there. They went back and dogged the watertight door, then proceeded on through into the forward torpedo room. There was a glint of light from somewhere above. That came from the forward escape hatch, which was still open.

Tug spotted two men huddling behind the torpedo release column and he quickly covered them. They backed up raising their hands helplessly.

"Okay! Play fancy and I'll fill you full of slugs. Open those tubes now!"

The men tried to look dumb, but Tug drew his fist back and they suddenly remembered that they understood English. They released the air a trifle, ripped open the tube breeches, then stood back helplessly.

"Go over and open the other two now," ordered Tug. "Keep them covered, Bish. Take this portable cannon with you."

Bish pocketed the Leica and took the Mauser. Tug moved to the torpedoes. He worked like a madman with a wrench, loosening rudder vane set-screws, twisting the rudders at a 45-degree angle, then tightened the set-screws again. Previous they had been fixed in a neutral position.

One of the Germans came forward gingerly and looked at what Tug had done.

"They will not go straight," he cried. "They will go in a circle . . . and . . ." He clapped his hand over his mouth.

"Sure! That's the idea. I'm going to torpedo this lugger with her own torpedoes. Some fun, eh, Keed?"

The German torpedoman went the color of Roquefort cheese as Tug now dashed across the compartment and went to work on the other two torps.

"All right," he cracked at length.

Now close the tube heads and fire them—all four of them," he ordered.

The Germans hesitated nervously. "But they will come around and strike us. We shall be blown up—all of us, you, too," one pleaded.

"Well, now you guys are gonna know what it feels like. You'll be able to tell the lads back home how it feels—if you ever get back home. You may even get your pictures in the newspapers," taunted Tug.

"Say, Tug," gasped the Bish. "How are we gonna get out of this? There's something in what they say."

"Don't ask me. But it's better than taking it sitting down. You don't want to live forever, do you?"

"No-o-o-o! But we still ain't filed that story and we ought to get these pictures off."

"Put it all in that small, watertight container over there and tie it to the tail of one of these babies,"

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grinned Tug. "There's no telling where it'll go."

Then he turned to the Germans: "Come on! Blow those tubes!"

He rammed the gun in the back of one and shoved him up to the torpedo control column. The German twisted wheels while one closed the rest of the tube covers. Air hissed and sizzled. Then the German pulled intermittently at the release lever and one by one the torpedoes went out of the tubes.

"Let's go now!" yelled Tug. "Give me the gun. You lead the way up the ladder. These squareheads can come second—after us."

**B**ISH was up the ladder like a bloated cat. He came out on the deck and first saw the uproar of the water where the torpedoes had churned out of the tubes. Then, as Tug joined him, he saw that they were covered by three armed German seamen who had been awaiting them near the escape hatch.

But now the seamen were pointing at the four curling plumes of white foam that were twisting away from the disguised sub. Both Tug and Bish stood still. They could see, back beyond the conning tower and the bulge of the seaplane hangar, that the wings of the plane had been spread out again. The false hull had been lowered out of sight.

A clack of vibrating sound now echoed along the sub. A voice, raised to an insane pitch, retched over the inter-compartment speaker system:

"Everyone overboard! Everyone overboard!"

Bish stood there, stared at Tug. Tug, noting that the attention of the Nazi seamen had been distracted, raised his pistol and fired. The Germans hesitated but a minute. They glanced out at the swirling designs being cut by the torpedoes—and went headlong into the sea and began swimming. Tug and Bish darted along and hid in the lee of the conning tower. Tug fired two more shots and a group of men went pelting along the deck, passed under the wings of the Arado seaplane, and went pell mell off the stern.

"What do we do now?" wailed the Bish.

"Work fast. Get to that seaplane as quick as you can!"

The four concentric wakes of the torpedoes were well out on their beam now and were starting to turn inward. In a minute they would be curling around for their last quarter-circle—if Tug had figured correctly.

The Americans now passed the companionway and cut along on the narrow footing that edged around the watertight hangar. Bish held up one hand and glanced back over his shoulder.

"They're cutting the plane loose. That young von Reidel is beating it!"

"He would! His old man had more buff to him than that," Tug growled. "We've got to work fast."

Bish moved like a beefy guard and in a few strides had caught the young

German about the thighs. They both went down in a heap. Tug looked out at the oncoming torpedoes, and took in the distressed faces of the men in the water. They were struggling in groups and trying to figure the converging paths of the oncoming torpedoes.

Tug shoved another man overboard and rushed toward the Arado. Its engine was ticking over idly as Bish and the young German still tangled in a heap on the deck. Tug halted, fired a shot back toward the conning tower, drove two more seamen over the side, then went over and calmly tapped young von Reidel on the skull with the butt of the Mauser.

"Stop it, you dope!" he said to Bish. "Get aboard the Arado. Quick!"

He dragged Bish to his feet shoved him toward the plane, and pushed to get the floats moving down the greased slide.

Just then something went past the stern of the sub with a roar. *Swis-s-s-s-s-s-s-h!*

"W-a-a-a-ahat was that?" gasped the Bish, standing on the float.

"One of those torps—and here comes another!"

**T**UG HARDWICK knew he would remember the details of that scene as long as he lived. The deck of the submarine was now nearly empty. The plane was sliding back toward the water. And young von Reidel lay there semi-conscious.

From the bridge of the conning tower, the Jap now appeared and began potting away at them with a pistol. He was screaming at the men dog-paddling in the water. Tug returned his fire as the wild, berserk torpedoes still circled the submarine, threatening at any second to plunge their war heads deep into the hollow shell of the vessel and blow the lot to smithereens.

More men came scrambling up the ladder of the conning tower, clambered over the edge, and threw themselves into the sea. Heads bobbed about, arms flashed in the sun, and putty-like faces glared from between the rollers.

The Arado finally hit the water and slithered away just fast enough to evade a torpedo which flashed by. Tug climbed up from the port pontoon and joined the Bish in the pit.

Tug fumbled for the throttle, opened her up, and fanned the tail around on opposite rudder. Then he whanged her over the rollers, keeping clear of two more torpedoes that were still running unevenly off the sub's port bow.

"I thought you said they would come around and blow those guys out of the water!" yelled the Bish.

"I thought they would. It was worth a whirl, anyhow."

"You think of the screwiest things," cracked the Bish.

"What about you? For instance that one-slug camera of yours?"

"But that had sense to it—it worked," argued the Bish as the Arado bounced away.

"Swell! But it's a good thing for us that my idea didn't. Now sit tight, will you, while I get this barge off the water."

"You'd better—and darned quick. Here comes a Japanese flying circus," raged the Bish. "Where's the guns on this barge?"

Tug stiffened in his seat, but didn't have time to look around. He had to give his full attention to the unfamiliar plane and her controls. She finally smacked full at a roller, zoomed up, and finally floundered into the air.

"Should have left a book of directions with her," growled the Bish. "I thought you said you were a pilot!"

"Shut up! What about that Jap circus?"

"They're only just behind us and they're acting rather nasty. See the lovely tracers?"

Tug swung the Arado over, held her there a few moments for speed, then took a chance on climbing. As he came around he saw a formation of Japanese Nakajima 94's swinging down at them from a stiff dive. Long pencil-like streams of bullets spanged into the water below their pontoons. Tug nosed down slightly and raced under them with plenty of oomph from the big B.M.W. radial up front.

**T**HEN from behind, something began to chatter. The Bish had evidently uncorked a gun from somewhere. Tug glanced over his shoulder and saw the gleaming feed drums of a new Parabellum. The Bish was recking off short bursts at the Jap two-seaters and getting plenty back in return. From the deck of the sub, too, now, a crew had unleashed the three-pounder mounted on her deck. Heavy concussion deafened them and they bounced around on the billows of the explosions.

They had stepped into a beautiful hornet's nest now and Bish wailed: "Why didn't we stay in that nice warm compartment and drink old von Reidel's wine?"

But he went back to work on the Japs while Tug fumbled about under the instrument board to find out if there were any pop-guns for him to play with. He caught a release gadget on his stick and followed the flexible cable to the trigger release mechanism bolted to a weapon the type of which he had never seen before.

"Must be one of the new Knott Bremse guns," he muttered. He pulled the control-stick lever just to see what would happen.

Immediately the whole ship vibrated with concussion and recoil. A wild burst of something spat across the sky and left long fiery tails.

"Lovely!" he beamed. "Now then, Jappos. Let's see how you guys like it."

The Arado, flying beautifully now, was in full control. Tug made the most of it and took wild chances on tight turns, but the B.M.W. was equal to the task.

"That Jap must have tipped these guys off," he muttered as he whanged the Arado around and put her nose



dead on the formation of Japs. "They're going to bat for their spy, regardless of the outcome."

He drew back the release gear and let her bellow. Long streaks of terrific fire spat out and tagged two Nakajimas. They folded up like box kites in a hurricane. Tug tread the rudder stirrups gently, brought her around a trifle, then let fly again. Another long streaked burst wailed out and broke the formation.

"Let me have a whirl at them?" yowled the Bish.

Tug swung over again and flew broadside to two Nakajimas, whereupon the Bish had a holiday. He poured burst after burst into their engine cowlings and saw prop blades flash off into the sunlight like great broadswords. He flipped bursts into tail surfaces and made the Nakajimas wriggle.

Then Bish let out a sudden whoop of joy. "Look! Here they come. We can beat it now and file that story!"

Tug looked and saw a beautiful formation of British Navy Albacores coming out of the southwest. He blinked, then pondered. "How the deuce did they get here?" he asked aloud.

"They must have come off a carrier somewhere in this vicinity. I suppose the British have something in this area. Boy, they look good to me!"

The remaining Japs now flew off in a hurry, not desiring to bring about an "incident" with the British. But they didn't get away before Tug and Bish had knocked off another of them—a deed which proved to the oncoming British which side of the affair the Yank Arado flyers were on.

That was the signal for the finale. The British planes snapped in from a position above, with the leader passing close to the Arado as he came out of his dive. He waved a greeting to the Americans.

Then the Albacores curled over the submarine. The leader's observer leaned over and snapped an Aldis signal lamp, but all he got in return was a chug from the German's three-pounder. The shell went wide and two more Albacores came in from behind, raked the deck with Vickers lead, then pumped a storm of long projectiles into the sub from their wing racks.

The long armor-piercing missiles fanged through the metal deck of the submarine and blew her apart. The

curved hood of the water-tight hangar burst open leaving a great gash from which spat scarlet flame. The conning tower fell over drunkenly and pitched its upper half into the sea.

Two more Albacores darted in from a tight angle and let more bombs smack in, and now the big sub rolled over on its side, nosed down, and broke apart in the middle. Someone had launched a boat, however, and a number of men were clinging to it as it swirled away from the floundering sub. The stern half of the undersea boat now doubled in the middle, its screws came up brassy and dripping. She vomited a thousand gallons of green oil and went to the bottom.

"Well, all I hope," muttered Tug, "is that that guy von Reidel gets away."

"There he is in the stern of that boat—beard and all," cried Bish. "I'm glad, too. You know you could almost like that guy if you knew him long enough—except for that Jap gag."

"Signal the Limeys to follow us," broke in Tug. "I'm going back to the island before those Germans get there."

"Wait a minute," the Bish replied. "They're signalling to us."

From the leading Albacore a signal lamp spluttered dots and dashes, and finally Bish waved back and then yelled at Tug.

"The guy says they have a beautiful aircraft carrier just over the horizon."

"Tell him we'll come along. We'll return for the Northrop later. We'll give this boiler to the British in exchange for some service by their mechanics and a few spare parts. That ought to be an even swap."

"And we can file our story from their carrier," came back Bish. "Then we'll kid them to fly these films of ours through—perhaps to Singapore from where they can air-mail them, eh?"

"Sure!"

"Oke! But don't you think we sometimes do things too much the hard way—like how we got this story and the pictures?" mooned the Bish as they fell in line behind the Albacores.

"Well," came back Tug, "when you put it that way, my dear Mr. Bish—"

"Say," interrupted his comrade sadly, "can't you ever call me Beansie?"

## Nationals Class "B" Champ Stick

(Continued from page 46)

in the center of the prop. Carve the blades carefully to about 1/16" thickness, and camber to 1/8" at the deepest point. Sand very carefully until the blades are 1/16" at the center and gradually tapering to the tips. Be sure both blades are evenly matched in thickness and camber curvature. Then make a paper template of the blade pattern and trim the blades to this shape, so that the prop is 14" in

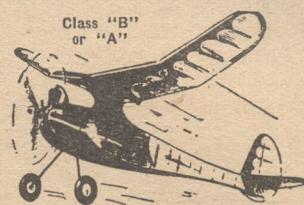
diameter. Balance the finished prop carefully to insure smooth running. Bend a wire prop shaft, insert in place, and cement.

### Covering and Flying

COVER the wing in one piece. The polyhedral is put in by carefully cracking the spars and re-gluing to the angle shown on the drawing. After the dihedral angle is formed,

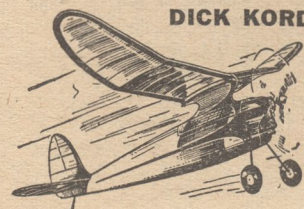
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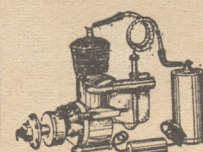
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add the wing struts. Since the tail surfaces are flat and simple to cover no further instructions are necessary. However, use the best grade of micro-film obtainable. The original ship was red and green.

After assembling the completed model, cut a 16" loop of 1/16" flat rubber for the motor. But before flying the craft under power, be cer-

tain that the surfaces are not warped.

Give the motor 600 turns and release the model for a trial flight. She should climb gradually in approximately 60 foot diameter circles. And if the craft dives or stalls, adjust the wing accordingly. If the diving or stalling is excessive, however, increase or decrease the incidence an-

gle of the wing to correct this tendency.

After adjusting the model to fly well, wind the motor 1,200 turns and try another flight before giving the motor the maximum number of turns. Because at maximum turns, the ship has climbed to approximately 120 feet, and come down with about 100 turns still left in the motor!

## Build the Curtiss XP-42

(Continued from page 41)

tail members. These will hold the parts in position while drying and will serve to properly align the members.

The ship is painted aluminum throughout. To get an exceptionally fine finish apply three coats of wood filler to all wood parts. After the last coat, wet-emery over the wood surfaces and dry thoroughly with a rag. Then apply a single coat of bright aluminum paint to every part of the plane.

Parts such as wheels and hinge

lines are touched-up with black paint. The rudder markings of red and white are added. And then regulation stars are attached to both the upper and lower surfaces of the wings. The words "U. S. ARMY" are divided by placing "U. S." on the under surface of the left wing and "ARMY" on the under surface of the right wing. The letters should be in black, so they will show up well.

Before test-hopping, glide the ship over clear ground several times. By following this procedure, you will be

able to determine just which way the craft should be lined up for power flights. Give the prop about fifty turns for short flights—never more. Any tricky characteristics that should be corrected will crop up during these first test hops.

Now, if everything is all set and the XP-42 is in perfect flying condition, take the model to a place where there's plenty of room and send her off with maximum power. And as a last warning—*always* launch the model into the wind!

## How To Snap Swell Aero Shots

(Continued from page 23)

out a steady tripod. The best all around speed for ground work is 1/50 second. At f.8, that exposure will give good results in the worst of weather.

There is another phase of aeronautical photography which I've found especially fascinating, and you may get the same kind of a "kick" out of it. I refer to the taking of night photos of planes. The equipment needed is a steady tripod plus a flash gun and a supply of flash bulbs.

The first way to shoot night photos is with flash bulbs. This manner should be used when there is very little light at the airport. There should be just enough light so that you can place the plane in the finder. Then the distance should be measured from the camera to the body of the plane. With that distance recorded on the camera, the shutter should be placed at "time" and the opening at f6.3 or f4.5.

On a light colored plane which is not too large, two medium-size flash bulbs will be found sufficient. One should be shot off in front of the wing and the other to the rear of the

wing. This bulb firing should be done rather fast so as not to leave the camera open too long. First open the camera, next set off the flash bulbs from such a position that you won't get between the camera and the flash bulbs, then shut the camera again.

The second method can be tried at any big airport where there is a group of bright field lights. Lights are usually found around the hangars of the large airlines. Be sure there is no motion around the plane, then open the camera and expose your film for a period of approximately two minutes. The best time depends on the amount of light and the size of the opening of your camera. This detail will take some experimentation before a perfect negative is shot. Your developing time should be the same as that for action shots—that is about five minutes longer than ordinary.

ONE MAY FEEL that taking a photograph is the whole of the procedure, but this is hardly the case. After the negative is finished it should be filed in a clean envelope, one

negative to an envelope to prevent scratching. To achieve a really good file on your work, you should jot on each envelope the name of the plane, its model number, the make of the engine, the model number of the engine, and its horse power. Also note on the envelope the place where the photo was taken and the date. The view of the plane may be added, too, plus any data you might wish to remember regarding the exposure.

The data on the plane will be invaluable in helping you build up a knowledge of the various types of planes that are manufactured. Such is the way in which one can follow the great advancement that is being made in aviation today. Those who know of the older types of planes from their early photography can really appreciate the finer jobs that are being produced today. This combination of knowledge and personal satisfaction in producing a good set of photographs, are only two of the many reasons that can be offered for entering this most interesting hobby—aero photography.

## Fright Leader

(Continued from page 18)

An' Otto wants his marks first, you understand? Ha-ha-ha-ha!"

"We bring the marks, Herr Otto."

"Gut! I make ready my little ones. You will wait. No! No! Do not sit there. It is very close to the rat I have in the box. Ha-ha-a-a-a-a-a-a-a! Yes, soon everything will be ready. Then the vermin we get from the old filthy uniforms of the soldiers—the vermin that crawl and used to bite so harmless. Ha-ha-ha-a-a-a-a-a-a-a! Und who ist Krupp, hein? Otto he vill kill

more with his wares—ja?"

"Mach Schnell, Herr Otto. Even I gedt idt der goose pimples."

"I go quickly, mein freunds. Ja—you wait! Deutschland uber alles! Dey vill cry for der peace and der Kaiser rules der world!"

TWENTY MINUTES went by.

Three Kraut bigwigs drove away from the spooky spot in a big high-powered Heinie hack. They carried a big box wrapped in burlap on the

back of the automobile. Otto was marketing his first batch of massacre merchandise. The jalopy headed for a Gotha drome near Metzgerweise. And just 1484 years before, Attila's low-brows swarmed along the same highway and thought they were tough.

For days following the skulduggery near Oberstein, Major Garrity's buzzards kept driving Potsdam's high flying Vons against the skyropes and giving them a fine pasting there.

Phineas kept his mental assembly



revving at top speed in an attempt to conjure up reprisals against the Frogs for the outrage in Bar-le-Duc. Lieutenant Darby meanwhile flew with the home-made bomb tied to a strut of his Spad. Darby might have been a fatalist and a Pollyanna in reverse, but he was really a darby when it came to swapping maneuvers and slugs with the best Junker pilots out of Hunland.

And while all this was going on, a bunch of Frogs flying Salmson observation crates moved in to a flat stretch of real estate near Commercy and got down to business. Phineas mentally rubbed his grievance against everything French until it was raw and needed balm, and he decided that these Frogs outside of Commercy would pay high for the outrage perpetrated by their blood brothers. One Frog was as good a target as another. Let them look out!

"A" Flight was out for the last patrol of the day. Howell, Phineas, Darby, Gillis, and the others began banging at a Kraut *Drachen* line back of the Meuse and got a boot out of watching the observers of the gas bags bail out. A quintet of Albs knifed into the sky pocket to see what was so funny and Garrity's buzzards had quite a time of it, considering that their gas was running low.

Pinkham's Spad coughed deep down in its dry throat and the Iowan swept down toward the linoleum with about enough petrol in its craw to clean a grease spot off a baby's bib. Phineas managed to land on a drome near Dommartin with a stick as dead as the mustache cup rage.

Lieutenant Pinkham got out of his office, wondered what had happened on this Yank D.H. drome. Near Squadron Headquarters, there was feverish activity. A U.S. boiler marked with a red cross insignia roared away. The ackemmas who shuffled uncertainly about the tarmac looked more scared than a senegambian who has had a forced landing in a marble orchard at midnight. One trotted up to Phineas and yelled. "You git out of here, Lootenant. Right now, as—"

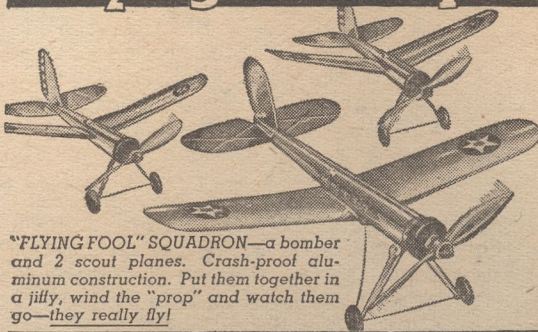
"Awright," Phineas said. "I will beat it as soon as I get some gas. But what is going on? You all look like you got a werewolf scare. And what is that big yellow piece of paper over there on that hut, huh?"

"Yeller fever, Lootenant! We got three cases of it. We are quarantined. Two pilots an' a groundhog got bit by miskeeters an' then they come down with it. You better git out—you'll git bit, maybe. It is gettin' late an' the miskeeters will come over after dark—"

"Y-Yellow f-f-fever?" Phineas howled. "W-Well, hurry up an' give me some g-gas. I thought a Frog named Pasture had killed all the germs in the world, an'—Hurry up! Don't pose like a statue, you horse-face I—I—"

Gas was poured into the Spad, and Phineas lost little time in hopping back into his office and lifting the

## "Flying Fool" Squadron GIVEN



"FLYING FOOL" SQUADRON—a bomber and 2 scout planes. Crash-proof aluminum construction. Put them together in a jiffy, wind the "prop" and watch them go—they really fly!

ship clear of terra firma.

His face was still as pale as a shark's dickey when he contacted the wheels of his bus on the dirt of Garrity's front yard. "There is an epidemic over at the D.H. outfit at Dommartin," Phineas yelled as he barged into the Operations Office. "Yellow fever!"

"I know all about it," Garrity groaned. "It is awful. No wonder they call that place across the Rhine, Germany. They are fightin' us with germs now! Soldiers have picked up propaganda dropped down over the lines. Here is one, Pinkham—take a look at it and try an' laugh! There is nothing they won't do!"

Phineas spread open the folded sheet of paper. It read:

THROW DOWN YOUR ARMS,  
ALLIED SOLDIERS!  
YOU CANNOT WIN!  
THE NEW GERMAN WEAPON WILL REAP  
A HARVEST OF CORPSES!  
THIS IS THE LAST WARNING

"The scurvy bums!" Phineas yowled.

"No telling what kind of plague will break out here," Major Garrity gulped as he pawed beads of worry water from his brow. "Leprosy, black plague, smallpox—oh, that is what they're doing. Got to spot that bug hatchery, wherever it is. Chaumont is in an awful dither. Observation planes going over sixteen hours a day starting tomorrow morning. Has to be near a bog of some kind, this mosquito factory, or whatever—brass hats been here in droves—oh, get out of here, and—"

Phineas went out feeling a little weak in the knees. Fighting against machine gun pellets and anti-aircraft scrap-iron was one thing. Battling against thousands upon thousands of little smirking germs was something else. For the first time since he had crossed the big drink, Lieutenant Pinkham became concerned about his future.

Lieutenant Darby crossed his path and grinned at him. "Thought I'd have to use up my bomb this last trip, Pinkham. The Spad caught fire, but I side-slipped the flames out. Well, I am still stickin' to that bomb. Enough T.N.T. an' stuff in it to blow up a concrete silo or two. You see, my folks don't believe in cremation, and anyway—"

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"Glad to have met you," Phineas broke in. "Now adoo again." He wanted to get rid of the shakes as well as Darby. So he acquired a motorcycle that was parked near "B" Flight's hangar and gunned it toward the open road. Sergeant Casey yelled after Pinkham, tried to tell him that he needed that mechanical bug—that there was a new gas line in the tin bathtub affixed to it and that Bump Gillis was sitting out near Revigny waiting for it. "Come back here, you big ape!" Casey roared. "I got tools in that boiler, too. That Spad has got to be fixed up so Gillis—oh, wait until I see the Old Man. I'll—"

Phineas brought the motorcycle to a stop out in the sticks in the direction of Commercy. He parked it alongside the road and then hid himself to the top rail of a Frog fence to think things out.

As he sat there emulating Rodin's "Thinker," an alien smell trickled into the events of his ample proboscis. The wind changed direction and the aroma became more potent. It interfered with Phineas' brain work, and the Boonetown patriot wondered where the abattoir or glue factory was.

His eyes broomed the dusky terrain, but he saw nothing in the shape of a Frog dwelling. "Pew!" Phineas said. "If somethin' is not dead around here, it should be. I—er—huh—" Phineas reached into an inside pocket and took out a bottle wrapped in paper. "It is a good thing I forgot to give this to Babette for her birthday. This Eau de Lilac perfume will come in handy right now."

The bottle of essence that Phineas then proceeded to sniff cut the unpleasant aroma somewhat, but it was still very much in evidence. Garrity's truant then suddenly jumped down off the fence. Not fifteen feet away from him he saw a little cloud of insects. He walked over to where the midges were having a rendezvous and discovered the source of the aforementioned obnoxious nostril needler.

Phineas held his nose and scotched down to take a gander at three defunct Frog fish.

"P—Yew-w-w-w-w! I bet they have been here all through the *guerre*. Some Frog kid playin' hooky, I bet. He dropped them when he saw the truant officer comin'. Boys, that is the worst smell I—well, if I can find me somethin' to wrap them up—there was some paper along the road back there. I—"

FIFTEEN MINUTES LATER, the piscatorial carrion was wrapped up in three separate pieces of paper and distributed in as many places in the Pinkham apparel. Phineas then tooled the mechanical bug toward Commercy, a grin bi-secting his face. His slipstream was permeated with the combined aromas of passe perch and bargain price Eau de Lilac, one battling the other.

Lieutenant Pinkham rode onto the drome of the Frog Salmson outfit just after the squadron had finished

mess. He introduced himself. One man—*Capitaine* Henri Le Massaceur—was apparently flattered by the visit of the great Lieutenant Pinkham and so appointed himself as chief host to the Yank pilot. *Le Capitaine* was frank in admitting that Phineas' after-shaving lotion, or whatever it might be, was not very soothing to his ample bugle.

"Haw-w-w-w-w! It was a present from a dammyselle," Phineas alibied. "I dropped in to see her for *un moment* this evening an' I wanted to prove I was usin' it. Now then, them crates you bums—I mean garcons—fly are some buggies. I would like to get a look at one of them. Nice place vooose have *ici*. Ugh—that smell ain't so good, is it?"

"*Non*. Firs' it smell so nize—zen eet ees smell terrific, *mon ami*," *Le Massaceur* admitted. "Ah, but what wan weel do for ze belle *mad'moiselle*, *oui*?"

The Frog Captain then took Phineas around. He showed him his own pet Salmson and told the Boonetown wonder that it was being tuned up for a special job on the morrow. The light in the hangar was thinner than one of Phineas' stock alibis and it aided and abetted the Pinkham skullduggery. When the Pinkham sleight-of-hand baffled astute citizens in the daytime, there was very little chance of *Capitaine* Le Massaceur detecting the magic after the sun had gone down.

Be that as it may, when Phineas walked out of the hangar, the Eau de Lilac smell on his person was in the ascendancy. "Voila," the Frog pilot said to Phineas. "Ze smell eet ees improve. Eet ees not now so worse, Lieutenant."

"It is all in gettin' used to it," Phineas grinned, gloating deep down inside of him. He added to himself: "I will show these Frogs how safe it is to humiliate a Pinkham. When the sun gits hot tomorrer an' the heat from the power plant starts workin' in that front office—oh, well, we will see. Now I have got to figure out how to knock off the Kraut pestilence plant. It is a very busy *guerre*!"

THERE WERE too many brass hats on the drome of the Ninth that night to allow Major Rufus Garrity to dwell upon the insubordination of his pet peeve. When Casey came into the Operations Office to complain about Phineas, the Old Man ran him out in a hurry. He was being plagued enough. The threat of a real plague being let loose in France had his spinal column in need of defrosting. His scalp kept crawling all over his pate and there were butterflies in his stomach. Brass hats assured the C.O. that the Boche death factory had to be ferreted out or an awful calamity would take place.

"Tell me something I don't know!" the Old Man howled at the Chaumont agents. "That place must be well camouflaged and maybe it'll take us three weeks to even get warm looking for it. But if they breed mosquitos

they have to be near a low place. A bog or—er—"

"That's quick thinking, Major! That's the old fight! We'll work on that theory. Starting tomorrow, we'll have the skies filled with observation crates. We'll drop some spies. We'll have Intelligence working on that angle and forget everything else. Been talking with experts on bacteria. You get typhus from cooties if they are loaded with the germs. Cholera comes from water infested with rodents carrying the germ. Krauts could take cooties from German uniforms and inoculate them—then drop them down somehow, and—"

"Ha! Ha!" Garrity laughed, and he tore tufts of hair out of his scalp. "You are a howl! I bet all your forefathers were grave diggers or grave robbers. Look—I'm shivering. I bet I have been bitten by something myself. I—er—excuse me as I must see a medico. Just make yourselves at home—have fun. Ha! Ha! I—"

A colonel exchanged glances with a major, wished he had not. "I—er—think we'd better go, Gumpert, don't you? Er—let me have the citronella if you don't mind. Can't be too careful—thought I heard a mosquito buzz—er—you wha-a-a-a? Used it *all*? That's you, Gumpert! Think of yourself first, last, and—by gad I'm shaking like a leaf! Let's get out of here."

A FROG SALMSON went over the lines the next morning with *Le Massaceur* at the controls. He carried a passenger in the rear pit who did not look like a warbird. Half way to his destination, or thereabouts, the Frog pilot began to get the color of mint jelly around the jowls. *Capitaine* Le Massaceur was getting an aroma that was no longer cut by the scent of cheap Eau de Lilac and it was too much for a human being to stand.

Over Boche linoleum, the Frog contemplated jumping overside. Nausea oozed out of his pores and his personal commissary department began to Immelmann, barrel roll, and whatnot. *Le Massaceur* pushed his stick forward and headed for terra firma. If he was going to die, he wanted a decent burial in the bosom of Mother Earth. He paid no attention to his passenger who had crawled forward to yell in his ear.

"*Sacre Bleu*, *mon Capitaine*! Where you go, *oui*? It is down into Germany you are heading! *Mon Dieu*! You forget who I am, *non*? What it is I have to do? *Mon plans*, *cochon*! How can I finish my plan? I will tell Foche an' Poincare. Peeg—*chien*! You are ze spy! *Vous*—"

"Oh-h-h-h-h-h-h!" groaned *Le Massaceur*. "Shut up *vous* big mouth. I am dyin', *mon ami*—yet I am afraid I will not die. Water is what I want—water an' I don't care if eet ees in Germany or Spain or Holland, as long as I get it the drink. Oh-h-h-h-h-h! I am so sick. I—"

"I—er—do not feel so good also," the passenger in the rear office gulped. "Such a smell! *Capitaine*—*non*! So near ze ground—you traitor to



France. *Vous snake in ze—*"

The Salmson landed and rolled to a stop. And while a Jerry welcoming committee trotted up, Le Massaceur crawled out of his pit and tumbled to the ground. When a Boche oberleutnant reached him, he was gulping water out of a very dirty looking puddle.

The Boche got the aroma that exuded from the Salmson and no mistake. After they had trussed up their prisoners, they held onto their noses and began taking an inventory of the Allied crate. They found the remains of the Frog fish in three different places, one of them being right under the cowl.

That made the Frog pilot sit up and start thinking, despite the revolution going on inside his torso. He remembered the perfume with which a certain visitor of the previous evening had been saturated. And so Le Massaceur added up two and two and yelled, "Pinkham!"

He got to his feet and clutched at a Jerry shavetail. "*Sacre!* I am a—what you call ze chump, *oui!* I ask you to do it for me ze favor. Lieutenant Pinkham he play ze trick with ze poissons—an' for zat, I and Sergeant Maginot, here, are ze prisoners of ze Boche! You drop ze word on ze airdrome near Bar-le-Duc. Hah! He weel get ze basteel an' weel nevair geet out—unless he ees smart like ze Count de Monte Cristo! Zat peeg—zat chien!"

ALL THAT DAY, Allied observation buses appeared low over German territory. When dusk fell, eagle eyed pilots shook their heads in disgust. Pictures developed in Yank dark rooms revealed nothing to Intelligence detectives. In Chaumont, aspirin was at a premium. The strumming of nerves made a kind of symphony in the Allied business office. Meanwhile, two more cases of yellow fever were reported from a drome near Luneville.

And just after sunset of that jittery day, a high flying Boche scout dropped a communique down onto the drome of the Ninth Pursuit Squadron. It finally reached the shaking digits of Major Garrity—and when he read it, he ululated like a timber wolf and ordered Phineas Pinkham dragged into his presence dead or alive.

Phineas came in vertically and wanted to know what the U.S. District Attorney had on him this time.

"Read that, you smart Alexander!" the Old Man roared. "You are getting nothing less than a firing squad for this one. That man the Frog flyer took over the lines was the one who has been working on the plans of fortifications between Germany and France. Sergeant Maginot! Now the Jerries have got him! He went over to get a look at the Front lines so that he could figure out how—oh, this is out of my hands. The Frog government—"

Phineas got weak at the knees. The Jerry billet doux read:

C.O., Ninth Pursuit:

*Danke Schoen for der Salmson und Hauptmann Le Massaceur und his passenger. To der gross Leutnant Pinkham, Le Massaceur sends der hope that der trickster vill die a very painful death. Der Frenchman was forced to land because of der nauseating smell of decaying fish that Leutnant Pinkham secreted in his plane. Der Frenchman personally makes der accusation.*

—Hauptmann von Sprotte.

"It—is—a lie," Phineas gulped. "They can't prove—"

Garrity had his nose pinched between two fingers. "No? I suppose you thig you sbell like a sachet bag right now, huh?" he bellowed. "Ad dode tell be you met a skugnk because dough skugnk could sbell so bad. You are udder arrest ad you will get shot if you dare try ad leave this drobe!"

"Yeah? An' I will if I don't," Phineas sighed. "So I am warning you—I will try and escape. Oh, the breaks I git! If I threw a rock through a winder of the only house in a jungle, I would fracture Lloyd George's skull. Huh, Maginot! That topkick couldn't never build a wall like that anyway—an' a bum like that Frog who can't stand a little smell! What luck I got! Well, if that is all, I will go to my hut."

"I will say you will, Pinkham!" Garrity thundered. "Or I'll break every bone in your—"

But Phineas tarried. "Uh—it is too bad, as I was goin' to volunteer to go out and look for the Heinie germ factory. But now I guess the plague will have to sweep the world. You could still let me go out an' die like a white man if you had a heart—but you haven't no more than a corner stone. What could anybody lose? I might spot it, an'—"

"Uh—er—say maybe—er—get out of here! Don't you try to trick me, Pinkham!" The C.O. set his jaw, tried to shake the idea out of his coco. And a long time after Phineas had gone, he battled with his saner self. Finally, the Old Man pounded his fist down on the table. He had an idea.

Not long after his tiff with Garrity, Phineas stood in the doorway of his Nissan, his mental assembly turning over with a haste spawned of utter desperation. Never had he been located more firmly behind the eight ball. He looked up at the big moon and knew that it was a perfect night to soar aloft. He wondered why Casey and a couple of ackemmas had trundled a Spad out of the hangar. It looked like Lieutenant Dombey Darby's crate. The three groundmen began tinkering with the Hisso.

Phineas went back into his hut and delved into his bag of tricks. Of late, he mused, he had been neglecting them. He selected certain objects from his collection and put them in the pockets of his flying coat. One little pasteboard package had a label on it which said: "To Scare Your Friends, Use Spegler's Spiders. Push



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Finally, he donned his flying coat, shoved helmet and goggles into his pocket, and set his big buck teeth. Outside, the Hiss turned over.

Phineas Pinkham went out of the Nissan brandishing a gun. He headed for the Spad and began firing blanks. Sergeant Casey jumped. "Run, boys!" he bellowed. "Carbuncle's gone completely nuts this t-time. R-Run for your lives! Ha-a-a-alp! Ha-a-a-alp! Turn on the siren!"

"Out of my way," Phineas trumpeted. "I am desperate an' I will shoot to kill! Nobody is goin' to disgrace the name of Pinkham! Instead I will die in a Spad—no place else!" *Crack! Crack!*

Groundmen scooted for cover. Then Phineas got aboard Darby's Spad and opened the throttle wide. The siren screamed just as the Spad rocketed across the tarmac. Sentries fired at Phineas, missed him by a mile. In the door of a hangar, Sergeant Casey and some groundhogs were grinning. "He fell for it," Casey said. "The Old Man said he'd try an' swipe any plane that was in reach. Ha! Ha! He thinks he was kiddin' us. Well, we've seen the last of him—huh?"

The Old Man, who had been watching from behind a tree, went back into his quarters and took a deep breath. "Bon voyage, you crackpot," he said. "I give you the best way out. I am nuts, but—"

PHINEAS had no definite plan in mind. His future was a gamble any way he looked at it. Unless the Frog war wall designer was brought back intact, Phineas knew he had no future south of the Rhine or across the pond. He headed for Alsace deploring his luck. As he flew, he spotted something dangling from a mid-wing strut and it did not take him long to identify it as Lieutenant Dombey Darby's insurance against a braising upstairs. Darby had strung the bomb quite near the pit.

The Spad did not take much time in getting over Germany. Phineas picked out a Kraut Alb nest just as searchlights picked him out. Shrapnel reached out for him and he wing-slapped through the old iron. Then faking a descendu against his will, Phineas plummeted down and rolled across a bumpy field just beyond the boundary of the Hun tarmac. But before his Spad was surrounded by goggle-eyed Boche, Phineas had removed the piece of lead pipe with the fuse attached from the strut and had put it in his pocket.

"Bong sour, bums," Phineas greeted. "It is not my night to howl, huh?"

"Ach!" a Von piped up. "Leutnant Pingham, ja! Such ein prize to catch!" The bummer with the tricks. *Handen hoch an' give idt to us der gun!*

The jubilant Von then took a small arm from Phineas' coat and bounced it on the ground. "Ja, like I thought. A rubber gun! Everything about der

Leutnant ist tricks, hein? Even landing here does not fool us. He comes to rescue der Frenchman, because idt ist he—Pingham—who giff him accidentally to us, nein? We take him to von Sprotte."

Von Sprotte was no elf. He had a heart as hard as the Kohinoor diamond. This Pinkham had once knocked off an old pal of his by the name of von Heinz. Immediately von Sprotte thought up an idea, and it was not pretty.

"Zo! Into der parlor walks der fly, hein? Ach, I have der idea. Zo many times you use peoples for guinea pigs, nein, Herr Pingham? Now idt ist der shoe fitting der udder foot. Ho! Ho!

## Answers

### TO QUESTIONS ON PAGE 31

- 1—The only important difference between the Hawk-75 and the P-36 is to be found in the engines. The "75" uses the 840 Wright "Cyclone," while the P-36 mounts the 1,100-h.p. Twin-Wasp.
- 2—The new Ranger inverted air-cooled-12 is used in the new Curtiss XS03C-1 observation plane.
- 3—American screw-thread measurements are different from those found in British engines.
- 4—Variable-pitch props do not always increase the speed of a plane but they do improve general efficiency. The Spitfire is said to be 7 m.p.h. faster with the wooden prop than with the steel variable-pitch prop.
- 5—The British Aircraft carrier *Ark Royal* took part in the defense against German attacking planes in a recent North Sea engagement. Many of her fighters were discharged from the deck and they drove off several of the raiders.
- 6—The new Martin-Baker fighter, extremely suitable for high production, is said to be the coming British standard fighter.
- 7—A medium bomber comes within the six-tons category. It has long range, high speed, and is suitable for either day or night duty.
- 8—There are no Americans in the present Lafayette Escadrille. The pilots are all Frenchmen.
- 9—Since the British do not now broadcast weather reports of their areas and most weather in Great Britain depends on the westerly prevailing winds, the Germans have no way of predicting weather over the British Isles previous to a planned raid.
- 10—The Scarff mounting was designed by Warrant Officer Scarff, a member of the Royal Naval Air Service.

Vait until I talk on der phone. *Der verdammt Yankee* shall be der guinea pig for Herr Otto Biehungs' little creatures offer by Oberstein!"

"Y-yeah?" Phineas gulped. "I—er—I git it! Germs, I bet! Yeller fever an'—you rats! Why this is an outrage. You can't do this t-to me. Y—"

But Phineas found out that they could—and would. In less than ten minutes after he had appeared before the Hun leader, he was tied hand and foot and was being carted to Oberstein in a Boche jalopy. Just a half hour after that, Phineas was thrust into the presence of Otto himself and was shown the rodent that was going to bite him. Phineas got the shivers when the hump-backed Teuton rubbed

his horny hands and gloated over his victim.

"H-huh, I always knew y-you bub-a-bums were not human!" stuttered Garrity's headache. "So you are the creep who sent over the mosquitos are ya?"

Phineas had his ropes loosened to permit his walking after a fashion—and now he quickly yanked the bomb concocted by Dombey Darby from inside his coat and brandished it around his head. "I will blow you all up if you put a flipper on me!" he roared. "I am desperate an' mean business. It is better than gettin' cholera, or whatever it is. Git back, as I will count one—two—three—four—"

"Ho! Ho!" a Boche behind Phineas chuckled. "Another of der tricks. First ein rubber gun, und now—" He suddenly grabbed the lead pipe from Phineas' hands and held it up for all to see. "Look, I have light der fuse und I vill now t'row dis ting. Der Yankee is very funny but too long he try to fool us. He—"

"N-no-o-o-o! I ain't kiddin'!" Phineas yelled. "That will blow—"

The fuse sputtered. Whereupon the Boche shavetail hurled it out the window. The Jerries laughed and Phineas gritted his teeth and waited. He mumbled a prayer. Then—

WHA-A-A-A-A-A-A-A-A-A-A-M—BANG-G-G-G-G-G! KER-BLOOEY! All of Oberstein seemed to blow up!

When Phineas lifted part of a house off his neck, he found that he had company—found that he was lying near the wreck of a Heinie jalopy and that the big Jerry with him looked terribly familiar. The Teuton's eyes were crossed and he was talking to himself. "Ach! Me—Ludendorff—zo far behind der front—und gets bombed yedt! Budt dere ist no plane up in der sky—"

Phineas could not understand all of the Heinie lingo but he caught the name Ludendorff. Another look at the big Heinie convinced Phineas. "Uh—er—he must of just happened along when the bomb—Haw-w-w! Darby sure knew his business. And them Huns running around don't see us yet. Boys, what a mess! Everythin' is burnin' up. Them thatched roofs sure make good kindlin'. They just don't believe me when I tell them anythin', these squareheads. Germ conscious, that is what they are. Well—er—think fast Phineas, as Sergeant Maginot—An' bugs an' rats an' cooties loaded with—yeah-h-h-h-h-h."

Von Ludendorff got his marbles back just as Phineas took something out of his pocket. The Boonetown pilot placed it on Ludendorff's big hand and pressed down. The Kraut bigwig let out a yell. "Was ist?"

Ludendorff brought his hand close to his peepers just as Phineas stamped on something on the ground. "It was one of them spiders you got," Phineas groaned. "Oh-h-h-h-h-h! A black widow! You will die if—look there is what is left of it right there. Their bite is sure dea—"

"Hein? Der black widow A-a-a-



a-ah! How comes—who are you, hein?"

"I am *Leutnant* Pinkham. I came over here to see if I couldn't get close to that bum who is hatching plagues. I brought some spiders to sick on him in case I couldn't shoot the ape. A dozen black widows. There's more around here—I guess two can play at poisons an' germs—well, you will be a goner if somebody don't give you an antidote quick. In about three hours you will git buried. Too bad—"

Von Ludendorff sunk his big dental assembly into his punctured hand—punctured by a phonograph needle Phineas had set into the head of the mechanical spider. He began to sweat. The name Pinkham bounced back and forth inside his head.

Von Ludendorff swallowed hard. "Der bite—you say *drei* hours, *mein freund*? Where is der antidote, ja? Ludendorff must not die. *Der tag* has not come. *Der Kaiser* needs—ach *Himmel!* Der antidote!"

"I got it in my head," Phineas said, raising his voice so that it could be heard above the hub-bub. "Haw-w-w-w-w! I make der bargain with you, *Feldmarshal*. You get der information on der antidote if you give me two prisoners that Hopman von Sprotte holds—*Capitain* Le Massaceur an' Sergeant Maginot. Well, I am waitin'—"

"Ja. For Ludendorff two insignificant Frenchmen. It is der bargain!"

"That hand hurts, don't it, huh? Well, it will swell up as big as a ham, then you will git kind of numb, an'—"

"Ja! Hurry up, *dumkopf!* I m-make der bargain. To *Hauptmann* Sprotte's *Staffel* at once!"

"I don't trust Germans," Phineas said frankly. "Here is what I want: The two-seater Salmson already for der air and der Frogs in it before I jot you out der antidote." Phineas' hands made fast and mysterious passes. Then he yelped, "Look out vunce! Anodder spider! Look at him running alongside your boot. Two spider bites would kill you sure, Ludendorff, an'—"

"*Himmel!* Kill it—*mach schnell!*"

Phineas brought his boot down on the crawling thing and it made a squishing sound. He sighed, for he had paid fifty cents for each of those bogus spiders. It looked as if they were paying dividends, though. And then seven husky squareheads rushed for Phineas. "Ach, there is der *Amerikaner!* Shoot him! He does not get away, *nein!* He—"

"*Stille — schwein!*" *Feldmarshal* von Ludendorff roared, holding up his hand. I go to *Staffel* Six with der *Amerikaner leutnant*. *Dumkopfs*, get me transportation at once!"

"H-hein, *Excellenz*? You mean—ja wohl! If your *Excellenz* orders idt."

"Now that is service. And how do you feel, Ludy?"

"Ach, it is sick I am. You will not fool me, *mein freund*? You have der antidote?"

"A Pinkham's word is above reproach," Phineas said loftily as a Heinie buggy rolled up in the light of

the spreading flames. "I will teach you bums to act up with vermin—this hatchery is *kaput*, nine?"

BACK AGAIN to *Staffel* Six.

*Hauptmann* von Sprotte bowed so many times to Ludendorff that Phineas thought he would wear himself out at the beltline. Von Sprotte was amazed that von Ludendorff would fall for such a Pinkham trick. The pale von Ludendorff thereupon told von Sprotte off in no gentle terms: "Upstart! I should gamble with my life, ja? It is not yours, you bald headed *schweinhund!* Der Germans fight mit vermin. Der Allies, you tink bring pastry to throw at us in return? *Leutnant* Pinkham brings der deadly spiders and one bites me. I feel it, von Sprotte, and you say it is der joke? I have a mind to make you a private, ja! *Mach schnell.* Der Salmson plane. See that *Hauptmann* Le Massaceur and Sergeant Magi—whoever he is—are released and put in der plane. You understand me, Herr Sprotte?"

"Ja wohl, your *Excellenz*. I was only thinking of—"

"What with, *dumkopf?*" Ludendorff wanted to know.

Phineas had pad and pencil ready when the captured French Salmson was taxied out onto the Hun drome. Phineas shook hands with a bewildered Le Massaceur and a more amazed Sergeant Maginot. To the latter, the miracle man from Bar-le-Duc said: "Now you can finish up your wall scheme, huh? And you, Le Massacre, had just better take a good look over this crate before we try and take it off. I don't trust no Jerries!"

"*Oui, mon Lieutenant,*" the Frog said, and he then checked up on the gas supply, the struts, and wires. He tested the power plant, found it sounded all right.

Meanwhile, the great Ludendorff sweated and fidgeted. He kept looking at his pained flipper and smacking his tongue. "*Gott in Himmel, mach schnell!* I feel der sickness—"

"Hold your pants on," Phineas said. "I am takin' no chances. Sergeant, get up on the wing and hold on tight. Le Massacre, you git in that rear pit and see if they left ammo in that gun. Then hop back into the front office, as you know how to fly them buggies. When I toss out the antidote to Ludendorff, give her the gun fer all she's got, savvy, mawn amy?"

"*Oui! Oui!* Evert'eeng she look all right, *M'sieu.*"

"Bon," Phineas grinned and got into the Salmson's rear pit. Bug-eyed Krauts watched the strange tableau. Von Sprotte, knowing something was dirty a long way from Denmark, bit his tongue so he would not use it.

The Salmson's engine roared. Phineas flung a little note pad, on which he had been scribbling, to the drome and Ludendorff made a dash for it. A little German got in the way and he was picked up and tossed a good fifteen feet by the scared Jerry *Feldmarshal*.

The Salmson lifted and reached for

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the moonlit ceiling as Ludendorff hied to the nearest illuminated spot to take a swift gander at the antidote for black widow bite. At the same time he yelled for a *Herr Doktor*. Von Sprotte stuck close to Ludendorff, and he took a look over his shoulder when the big Heinie military expert yelled, "Ach—was ist?" Von Sprotte read Phineas' scrawled writing. This is what it said:

One teaspoon oil of shark. Two teaspoons gold dust (18K). One drop orchid juice. Mix in half glass of paw-paw essence and then go soak your dome.

Doktor Pinkham M.D.

P.S.! If you was bit by a spider, then I am von Tirpitz without his spinach. Adool!

"There, what did I tell you, *hein?*" von Sprotte howled.

"You shut up, smart Alex, or it gives you a shovel in *der* trenches, von Sprotte!" Ludendorff bellowed, "Ach, I couldn't take *der* chance he was fooling, *nein!* Gott strafe everybody! If *Herr Otto Biehung* is not dead he soon will be. He started this, *ja!* Ach, let us go where ist strong, drink, *mein freund*. We will forget this night, *ja.*"

"I hope," von Sprotte groaned miserably. "*Donnervetter!*"

LATE THE NEXT AFTERNOON after Phineas had been congratulated by everybody on the Allied Front, he sat down in a corner of a Frog farmhouse and had a chat with Sergeant Maginot.

"Huh, supposin' you do build that thing, Sarge. The Krauts, if they still have a country, will build a bigger one, I bet."

"*Oui*, perhaps *mon ami*," Sergeant

Maginot said as he jotted down a note on a piece of paper. "But we build ours firs'. Eet ees not to be a wall—but a line of forts, *oui*. With quarters for *soldats* underground. *Et—*"

"Haw-w-w! An' the next big *guerre* will take place between two walls and the rest of the country won't git messed up. Maybe it is not so nutty. The army that gits tired of livin' underground like a worm first, loses, huh? They had better take a lot of checkerboards with them. Haw-w-w-w! I want to live to see that *guerre*, as—"

"You are vairy funny, *M'sieu*—like ze *maison* weeth orphans in eet burning. *Bon Jour!* You may have sav me my life—but ze imagination, you have none of her. Bah!" And *M'sieu* Maginot got up and walked away.

"An' you ain't got no sense of humor," Phineas sniffed. "You will never git no place."

## Happy Landings

(Continued from page 27)

Germany is credited, as usual, with eleventy-umpty squadrons of fighting planes with which to strike fear into the world. You can accept that part

or skip it, just as you like. Anyhow, I've always thought that the size of the Nazi air force has been greatly exaggerated, as you readers well

know from my past articles.

Despite that, from my personal point of view, the *Yearbook* is the most important volume on American aeronautics published anywhere, and if you get a copy you'll quickly agree with me.

If you don't get one, you'll still be bombarding me with a slew of queries in our All Questions Answered department—the upshot of which'll be that I'll have to dig for a great many of them in Howard Mings Aircraft *Yearbook*.

### PRACTICAL AERO ENGINEERING

SECOND of the volumes on my list is Willis L. Nye's *Practical Aeronautical Engineering*, which is published by the Aviation Press of 580 Market Street, San Francisco, Calif., at a price of \$4.00 per copy.

Author Nye, who will be remembered by our model fans for the exceptionally finely detailed three-view drawings he has contributed to F.A., is one of the grandest lads in this business. And we might add that he's so handsome he ought to be in the movies, sporting a profile that would knock Ann Sheridan for a loop.

But what we want to emphasize is that Bill Nye can certainly turn out the aero stuff. Through past contacts with him, I've picked up plenty of what I know about details of fuselage and wing construction.

Why, I got so I could spout off on aircraft design procedure, performance calculations, and the practices of aircraft structure just as though I had been working out at Lockheed for years! Anyhow, in this book Bill tells you how they do it, explaining everything in thorough fashion, and he follows up with a regiment of swell drawings and plates.

Provided you have a bit of mathematical background to "take" this book, we'd say that after you've absorbed all the dope Bill hands you, you'll be mighty well informed on air-

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You betcher goggles I'm insuring! Shoot those nine issues direct by mail. I enclose \$1.00 to pay for seven of them—the other two are my "dividends." Start with the ..... issue.

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craft design practices. And if you fumble this clear-cut course, you'd better take up stock farming instead. We say that with all due respect for stock farming in case the 4-H club tunes in on this program by mistake.

Nye's book is absolutely the best job of its kind on the market, and we might add that we've learned many an angle by simply consulting *Practical Aeronautical Engineering* when the tougher queries came our way in the monthly All Questions Answered barage. What more can we say?

Bill goes into airfoil criteria, aerodynamic factors, parasitic resistance data, stability, controls and control surfaces, propellers, engines, installation problems, landing gears, and the problems of high performance.

But we're not going to spoil Bill's business by telling you all about it. We think you get what we mean when we say it's great stuff.

**HANDBOOK OF AERO VOCATIONS**  
**OUR NEXT BOOK** is one that should be handed to every air-minded youngster entering high school, and if we had our way, they'd get it.

This is a handy little booklet—one that sells for \$.25, so nobody can grouse that it's expensive.

Walter Van Haitsma wrote it, titling it *Handbook of Aeronautical Vocations*. And Van Haitsma, we wish to point out, is a fellow who has done a lot of vocational lecturing and who for a long time was Director of Placement of the Training Division of United Air Lines. But believe us, there is none of the usual frightening "Director of Placement" bunk in this volume.

It is published and distributed by the Zeeland Record Company, of Zeeland, Mich. We know you can get it there direct, but we're not sure at this writing whether it can be purchased through ordinary book stores. However, you might try to get it locally.

The *Handbook*, of course, tells you how to get a job in aviation. It gives you tips on every job in the field—what you have to know, how to get that knowledge, and how much you can expect to earn at any particular job. It has many pages of suggestions, numbered and tabulated. And that's what we call an exceptionally fine feature; for personal advice of this

kind is invaluable when it comes to grooming a fellow for his life's work.

Advantages and disadvantages of each aero position are outlined in the volume. It advises what courses to take in high school and college. It goes into details concerning piloting and ground positions. It tells of moral and physical qualifications necessary in the industry. Experience and license requirements are also covered.

We'd say this book misses in only one particular: On page 47 it carries a list of American aeronautical magazines—but this list completely ignores the existence of **FLYING ACES**! The *Aircraft Yearbook*, mentioned earlier here, also included such a list of publications—again with good old F.A. missing. Anyway, it saddens us to know that these outfits are so asleep to the 12-year job we've done in promoting aviation.

Meanwhile, the *Handbook* mentions such guff as the book *Listen! The Wind*. We mean it's guff from the standpoint of the youths who are looking into the opportunities offered by aviation and therefore want something that's really practical meat.

Nevertheless, we hasten to repeat that the *Handbook of Aeronautical Vocations* is a "must" for you lads who are determined to get into aeronautics and who aren't stopping along the wayside to listen to the wind.

**FAMOUS PLANES AND PILOTS**  
**THE FOURTH BOOK** is Charles H. Hubbell's picture volume titled *Famous Planes and Pilots*. Put out by the Saalfeld Publishing Company, of Akron, Ohio, this work is, I believe, intended for the 5-and-10 stores, and it should be on sale there now.

The book is chock-full of pix in color of many of the latest military, commercial, private, and racing planes. In addition, it carries a number of fine wash drawings. So on the whole, this volume is something of a modern aviation record in picture form.

There is also quite a bit of text matter telling about planes and pilots. It leads off with a foreword by Major Al Williams, and accounts of the National Air Races are included. The color pictures are particularly good, for they live and move in graphic style. A fine volume for the lad who collects striking aero pictures!

## American "Hawks" Flay the Nazis!

(Continued from page 13)

Browning guns. If they had but one .50 caliber weapon they had a great edge against these enemy machines which are mostly metal in construction—for a .50-caliber slug will do more damage to metal than it will against spruce or laminated wood construction. If the French stuck true to form, they probably fitted the Hawks with two light machine guns and two Madsen cannon in the wings. That would about settle it.

Also—and the French flyers stress

this point themselves—the American machines while slower than the Messerschmitts must have proved much more maneuverable. It was not just coincidence that a few days before this 9-to-27 battle was staged German pursuit pilots complained that as compared with the French Hawk, their Messerschmitts flew "like streamlined bricks". In other words, the Nazi craft were swell on the dive—going down. But they acted like heavy trucks when the pilots tried a

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few of their aerobatics.

Armament and maneuverability are two points we of FLYING ACES have been stressing for some years now. No matter how fast or how beautifully streamlined your fighter is, it is not an efficient military weapon until it is capable of accomplishing its prime purpose—shooting down enemy planes. It can't do this on speed or beauty of line. It still must do it through A-1 maneuverability plus the trained trigger finger of a clever pilot operating first-class armament. Those super-plus miles per hour haven't yet got the bullet licked for speed.

The answer, then is that the American fighters defeated the highly-touted Messerschmitts because they are better designed for combat work. They seem to have been better armed,

too. And they were flown—to all accounts—by better pilots.

We might pause here to tell you that those same American experts we mentioned earlier unfortunately didn't stop when they said the Messerschmitt was the fastest fighter in the world. They also said it was the *most efficient*. Which goes to show you that this experting business can go too far, what with the French fighters—the fellows who are actually in there doing the job—now praising a machine from the experts' own country as having it all over the Messerschmitt. Maybe more of our so-called experts should "see America first."

And now we'll close with a gag one British airman recently pulled: "Goering's Messerschmitt has turned out to be a *Lesserschmitt* and he now wishes he had a *Besserschmitt*!"

## On the Light Plane Tarmac

(Continued from page 30)

New York. Wally has a real lesson tucked away in his letter and we are going to leave it to our readers to gather the full benefit of it—

### Light Plane Editor:

A flying instructor friend of mine was going to barnstorm a small town nearby one Sunday about a month ago. I went along to give him a hand, and residents of Rochester will no doubt recall the details of the wind and weather on that memorable September 10th.

At any rate after carrying a few passengers the wind became gusty, making it dangerous to go on with the program. We decided to go home, so leaving two other fellows to load in our sound system on a truck we took off. The field, by the way, was situated on a hill overlooking the valley.

As we took off the downdraft seemed to draw our plane toward the tree tops like a magnet draws a nail. Pilot Barney Hurlbutt managed to get the ship out of the downdraft.

Then the wind *really* began to blow. I was slammed against the belt, against the sides of the cockpit, and back again.

In order to get home we should have flown cross-wind, but the wind was much too strong to try it. Barney finally stuck the tail into the wind and opened the throttle in hopes of outflying the main storm. With full gun and this strong tail wind, the plane—a Waco-10 powered with a Curtiss OX-5 of the 1917 era—was now making between 150 and 175 m.p.h.

The wings bent and groaned, the wires screeched, and the plane rocked and tossed. On one side the wires would be taut and on the other they'd be looser than spaghetti.

About this time, I was doing a lot of deep thinking. I wondered if the wings would stay with the rest of the plane, and I wondered if that faithful old OX-5 would hold out. Thus far it hadn't seemed to have missed a "rev".

We attempted to land in a field we spotted which ran north and south (the wind was blowing from the west). But Barney didn't dare risk it. Again we stuck our nose away from the wind and flew on. Then we tried to head into the wind, by way of experimentation. But the plane seemed to stand there dead still. So we turned once again and flew on with the wind.

Then we noticed that the main storm was coming up fast!

Finally Barney caught sight of a pasture field behind a large barn. He *had* to take a chance on it. The landing was rough but soft ground eased the shock. He taxied the plane up behind the barn and cut the engine.

Quickly, we climbed out and lay flat on the wings to keep the plane from blowing away. Luckily, some young men soon appeared, and a couple of them helped us hold the plane down while others found some rope to tie her down.

We secured her fast just about one slim minute before the main storm struck. Somehow she held, so drenched and weary we went into the farmhouse. Were we tuckered out! A few cups of hot coffee, however, made us feel better, and in an hour or so the wind died down and we were able to fly home.

I did a lot more thinking afterward and was mighty glad that the plane was a good old Waco-10. I am afraid that some of these modern light planes would have had a bad time in that storm. But most important, I came to the certain conclusion that after this I would be more careful about flying in such weather.

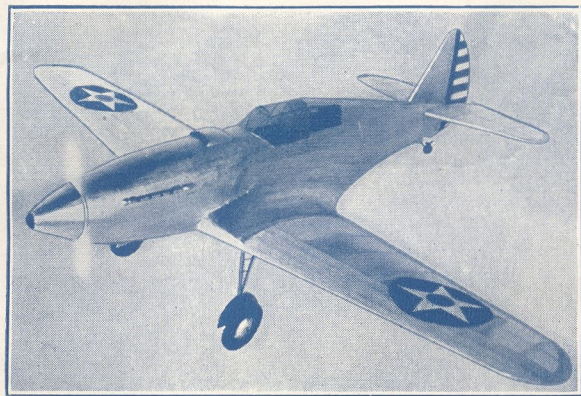
WALLACE GAGE,  
Stanley, N. Y.

That's all there is for this month. Read, mark, learn, and inwardly digest what Wally says; for there's a real sermon of safety wrapped up in his conclusion. And now, all you airsters, let's hear about *your* experiences.



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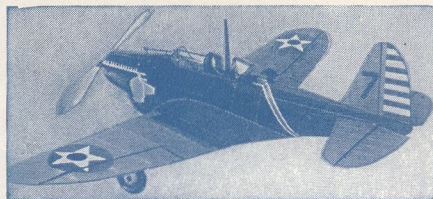
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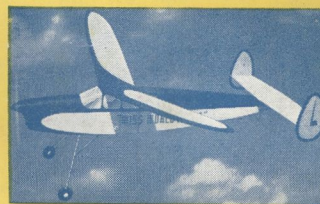
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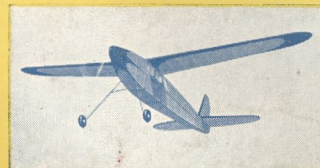
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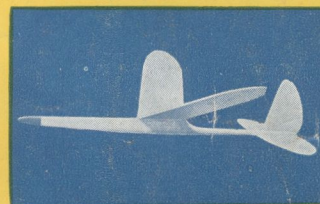
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