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**SKY FIGHTERS OF THE NORTH--THE CRATE THAT WOULDN'T COME DOWN
ACE-HIGH FICTION--PHILIP STRANGE, PHINEAS, CRASH CARRINGER
MODELS: JONES S-125, GARAMI STICK, GAS JOB--MICROFILM ARTICLE**

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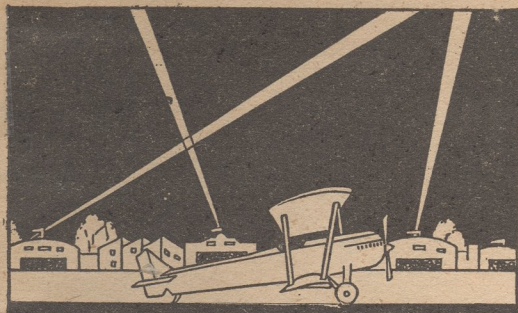
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VOLUME XXIX

APRIL, 1938

NUMBER 1

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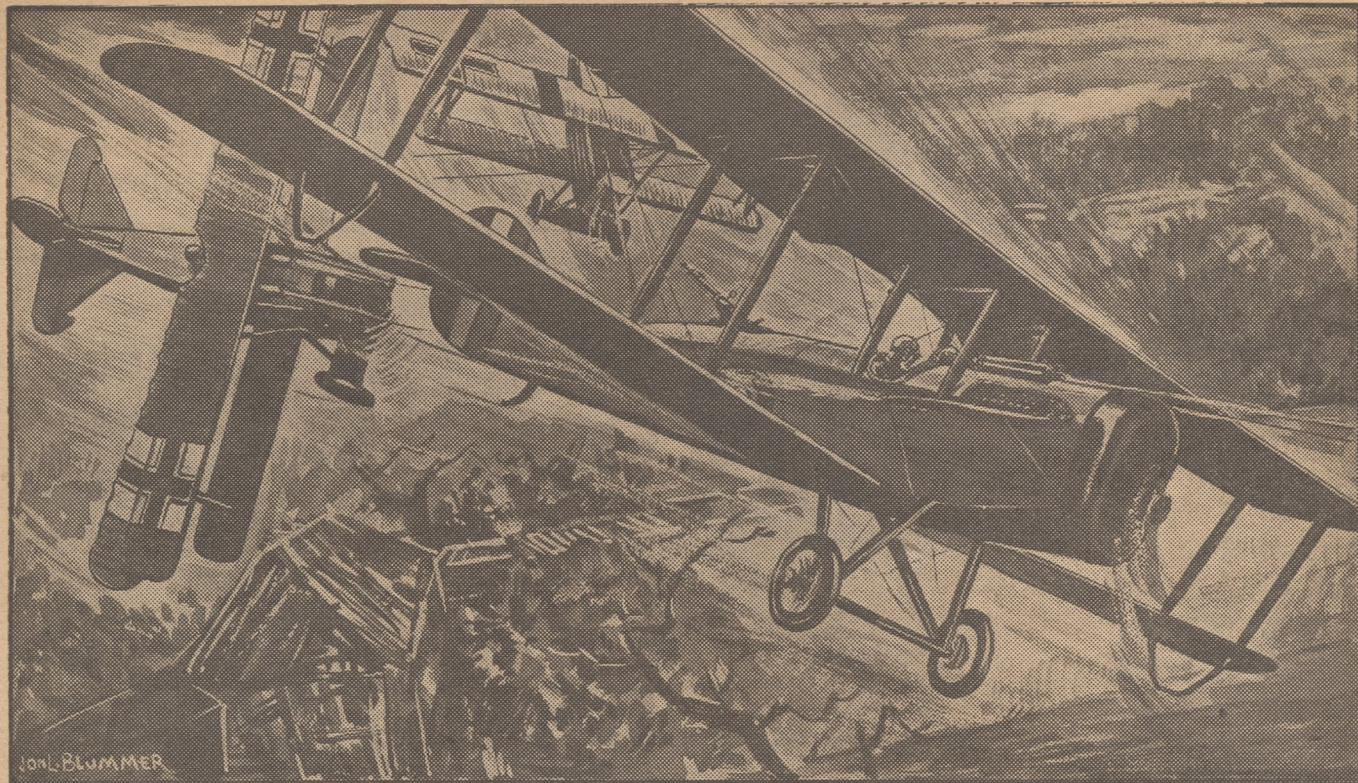
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Scourge of Oblivion

★ ★ ★

By Donald E. Keyhoe

Author of "Hell Hammers Harbin,"
"Headman Strafe," etc.

CHAPTER I

THE MAN WHO FORGOT THE WAR

WITH its Liberty motor spitting red and purple flames, the G.H.Q. Breguet roared on through the midnight sky. Captain Philip Strange, the phantom ace of G-2, stared over the cowl into the darkness, listening to the angry voice of Colonel Ira Jordan as it boomed through the Gosport tube from the rear cockpit.

"The whole thing's insane!" rasped the Intelligence chief. "An observation patrol deliberately landing in Germany—the 37th Pursuit playing drop the handkerchief with a staffel they'd sworn to wipe out—a map vanishing out of a locked safe with three G-2 men right in the room. And that new munitions dump at Chareelles—blown up by Gothas escorted by one of our own flights! I tell you everybody's gone crazy!"

"It does sound fantastic," Strange said into the tube mouthpiece. "But I still don't know the real details. The Paris office gave me no information, and you didn't give me time to ask at Chaumont."

"Sorry to rush you out again like this," muttered Jordan. "But I wanted to get away from there before I went crazy myself."

Strange looked back at the bulldog-like countenance vaguely visible in the glow from the rear-pit instruments. He felt a sudden pity. Jordan's face was hag-

gard. He looked very strained and worn by the war.

"Don't worry, Colonel," he said encouragingly. "We'll get it straightened out somehow."

Jordan gave him a twisted smile. "I'm counting on you, Strange. G.H.Q. will have my scalp if I don't get the answer. Maybe yours, too."

"They're welcome to mine," Strange said drily. "I'd like nothing better than a plain combat job for a change. But you—well, G-2 is your whole life. We'll have to get to the bottom of this puzzle. I take it the map is the most important angle."

"Yes, that's why we're heading for the G-2 station in the Bois d'Amand. The master map for tomorrow's drive was delivered early this morning. You know the place—that big dugout in the side of the hill, with a field for—"

"I remember it," Strange cut in. "The field looks like a refueling base—just one little shack in sight."

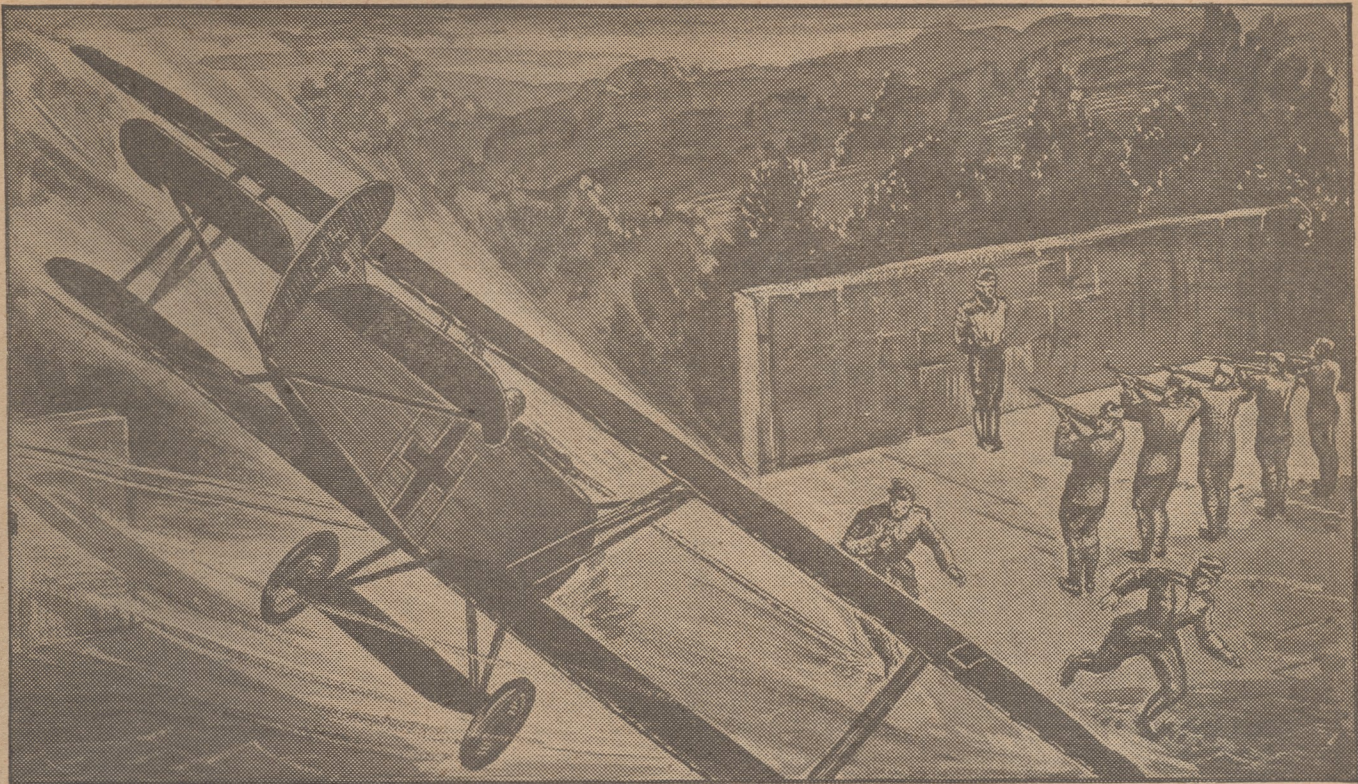
"That's the place. It's been designated as a central outpost for Fifth Corps Intelligence, and there are at least forty G-2 men and officers on duty, beside a special guard detail. Major Bain and two other officers were checking the map in the Staff room down in the dugout before sending it on to Corps H.Q. at Chareelles. They locked it in the safe when they finished because the courier pilot hadn't arrived yet. An hour later, when he came, it was gone."

"And they hadn't left the Staff room?" queried Strange.

"No. They had noon mess served in there. The room has only one exit, and the whole station personnel including the guards swear no one came out or went in there. That's the story Bain phoned in to Chaumont. He's a hard-headed fellow, as you know. But this was one time he seemed completely dazed."

"I don't blame him," Strange said ironically. "But

CAPTAIN PHILIP STRANGE ACCUSED OF TREASON!



what about these other happenings?"

"They're just as incredible. The dusk patrol of the 261st Observation Squadron was seen chasing three Fokkers back of our lines. Then ten minutes later two of the patrol ships went across—*leading* the three Fokkers!"

STRANGE listened, eyes narrowed as Jordan went on with his story.

"The two ships didn't return—they're obviously down in Germany. The other ship in the patrol hasn't been located. The case of the 37th is even worse. Everybody knows they've had their own private feud with the 133rd *Jagdstaffel* for over six months. But today seven ships from that butcher mob came over—and the 37th did nothing but *play* with them! At first, they sailed in as though they were going to tear the Krauts to pieces. But then they began waltzing all over the sky, with the Fokkers putting on a circus, chasing each other as well as the Spads—and nobody firing a shot."

"Not even at the first?" Strange asked quickly.

"They might have warmed their guns—I think that was reported," Jordan answered through the tube. "But when they got together they just put on a mock battle—or a show. One Spad fell into a spin and crashed, and another of the 37th went cruising off to the northwest and hasn't been heard of since. The rest of the flight crossed into Germany with the Fokkers and were seen to glide down toward the 133rd's field. Our gunners didn't dare fire for fear of hitting the Spads. They went over flying close together and still cavorting around."

"But here's the craziest thing of all: The 56th Pursuit was supposed to defend that new dump near Charellles. Well, just before dusk, three Gothas came over and the 56th sent up a flight. Twelve minutes later the Gothas came over the dump, with our ships escorting them! They laid their eggs, then the 56th's flight escorted them back across the lines—and now those damned pilots swear they never even saw

Just as the leading Fokker plunged toward the nervous firing squad, Strange caught the pilot in his sights, blasted a swift barrage. But then his own ship jerked under a terrific hail of lead. The other D-7's were pouncing venomously on his tail.

any Gothas! Didn't see a single one, they claim!"

Strange jerked around, staring at the little G-2 chief. "I know it sounds crazy—and it is!" grated Jordan. "I ordered them all locked up, but the first examination indicates that they're perfectly sane. They seem to think everyone else is crazy—and maybe they're right."

"Anyhow, we'll soon be at the Bois d'Amand station," replied Strange. "And I'd like to talk with those pilots as soon as possible."

The Breguet thundered on. Strange watched the distant glare of front-line artillery. In another minute he nosed down, throttling the Liberty. He was peering out, trying to discern the grayish streak of the river on the south of the Bois d'Amand field, when a tiny red arc flared across the sky.

He sat up quickly—for the arc was that of a signal rocket fired from a ship nearby. His hands moved with swift precision, and the Breguet chandelied, Liberty wide open. A blur of wings passed below and to the left, then suddenly a parachute flare lighted the heavens. Shielding his eyes, he saw a D.H. circling down toward the barren-looking field at the edge of the woods. Three Spads were darting after it, with the leader warming his guns. All three had the leaping greyhound insignia of the 37th Pursuit.

Strange rammed the stick forward, charged his guns as the Breguet roared down under the flare. Jordan's voice came fiercely through the tube to his helmet.

"Watch out, Strange! Those may be our missing pilots!"

The G-2 ace tightened his hand on the stick-triggers. The warning burst had barely blazed from his Vickers when the nearest Spad zoomed wildly and charged in, guns pounding. At the same moment the D.H. pulled up in a wobbling climb, and Strange saw that the rear cockpit was empty.

A hail of cupro-jacketed slugs smoked in toward the heavy

Without warning, that Lethean lash struck! It wreaked its wrath silently and unseen—crazed the brains of its victims, then left them oblivious of the maniacal acts they committed. Trusted G-2 agents were calmly delivering secrets into the hands of the Germans. Fighting pilots were brazenly aiding, rather than repulsing, enemy raiders. And now none other than Captain Philip Strange himself was roaring through those leaden skies—to betray his country!

Breguet, but with a lightning swerve Strange threw the two-seater away from that lethal blast. The Spad raced by, the infuriated face of its pilot glaring back for an instant. Strange snatched at the speaker-horn on his chest.

"That's a squarehead if I ever saw one! Those Spad pilots are Boche!"

The muffled clatter of the second Spad's guns punctuated his words. Tracers stabbed up at the steeply banking Breguet. An oath sounded in Strange's helmet, and he heard the rear-pit Lewises crash out a fusillade. The zooming Spad fell off, dived under the Breguet. Strange nosed down, whipped around in a tight reverse turn. Red, white, and blue cocardes swept under his sights. For a second, a revulsion at firing on his own colors held his trips slack, then he jerked them hard together.

Bullet tracks raced crookedly over the Spad's tail. The spy-pilot frantically kicked away, almost collided with his leader in a desperate attempt to escape. Strange rudered after him, saw the fighter's cockpit ringed in the sights. He tripped the Vickers again, and the eager guns thrashed out a lusty answer. Straight to the crouching figure shot the twin gun's converging fire. The German tried to throw himself aside, fell back in a slug-riddled heap as tracers smoked into his shoulders.

A HUNDRED feet below, the D.H. was aimlessly circling. Strange had a glimpse of the pilot as the man gazed up at the battling ships. His face was indistinct in the shifting light, but he seemed totally unconcerned with the bellowing planes about him. The German who had led the others flung a savage burst at the D.H., then whirled as Strange plunged after him. Before the G-2 ace could rake the pivoting Spad it was out of sight beneath him. He banked sharply to keep it away from his blind spot. Jordan was standing up, firing short bursts into the other Spad. Strange saw the fighter lurch as Jordan ripped away part of its rudder.

The stricken plane twisted to the left, and the colonel stopped firing. Strange thought the spy was finished, but with a sudden wild skid the man hurled his ship into the path of the Breguet. At the same instant the spy-leader came charging back from the right, guns blazing as he climbed.

Strange swept the stick to his belt, and the heavy two-seater stood on its tail. The crippled Spad whirled underneath, and the spy-leader's ship crashed head-on into it. Flame brighter than that of the descending sky. Strange shuddered as the echoes of that terrific crash rang in his ears. A plummeting mass of fire, the interlocked fighters pitched down to the edge of the river, throwing in sharp relief the small fuel-shack and the tree-covered hill beyond. A little crowd of men had rushed out from the hidden G-2 station. Their upturned faces were like white dots.

The D.H. was still lazily circling. Strange warily closed in, raised one hand in a signal. The man in the front pit, face partly shadowed by the upper wing, answered with a punctilious salute as calmly as though he had never been in danger. Strange looked back at Jordan, puzzled.

"Whoever he is, he's a cool customer."

"Signal him to land," snapped the G-2 chief. "I've a notion we'll learn plenty from that hombre!"

Strange reached out his arm, pointed down. But it was not until two minutes had passed that the other man seemed to catch his idea. The D.H. then dropped, swayed in too slow a glide, bounced twice, and almost swerved into the river before it came to a stop. Strange expertly dropped the Breguet onto the little field, let it roll up close to the other ship. At the farther end of the clearing the G-2 men were hurrying along under the shelter of the trees bordering the field, taking a safe but roundabout way to the scene. Strange jumped out, leaving the Liberty idling, and Colonel Jordan followed

him toward the D.H. The other man had switched off his motor, was looking around with a vacant expression. He climbed out slowly, walked a few yards from the ship, and stood gazing at the burning planes.

He was about thirty, Strange estimated. His face was molded on somewhat arrogant lines, but these were now softened by the puzzled expression with which he was regarding his surroundings. His flying-coat was partly unbuttoned, revealing immaculate olive-drab. As Strange and Jordan approached, he turned and smiled vaguely.

"Good evening, *meine Herren*," he said in a slightly guttural voice.

Jordan's jaw dropped.

"Good Heavens! He's German!"

The pilot looked at him blankly, then a hint of quick anger showed in his eyes. "Is it an offense to be a German?" he said in cold, precise English. "Or are you one of those British who think themselves superior to everyone else?"

Strange hastily intervened, hiding his astonishment at the situation.

"*Mein Kamerad*," he said in flawless German, "pay no attention to this *Englander* friend of mine—he is a trifle touched in the head regarding the fatherland. He believes the Kaiser is plotting against the peace of Europe."

"What nonsense!" said the other man. "The Moroccan incident is closed. The Kaiser himself ordered the *Panther* to leave the port of Agadir, last month. That proves his desire for peace."

A QUEER sensation ran down Strange's spine. The Agadir incident had happened in 1911—almost seven years before. And this German spoke of it as only a month past!

The pilot's gaze shifted again to the burning ships. He frowned as though trying to remember something. Strange stepped aside as Jordan jerked at his arm.

"What are you waiting for?" the Intelligence chief demanded in an undertone. "Why don't you grab him?"

"We'll learn more without violence," Strange whispered. "He's in a state of amnesia—unless he's a better actor than I think. He doesn't even know there's a war going on!"

"He's trying to trick us," Jordan said harshly.

Strange shook his head, keeping his eyes on the German. He spoke in a barely audible tone.

"He didn't have to land here—he could have escaped after the Spads were finished. And he needn't have given himself away, for he speaks perfect English. Observe his eyes when he turns around—he looks like a punch-drunk fighter. I've seen many a pug lapse back a dozen years and live half in the past and half in the present."

"Yes, and if this fellow comes back to the present he's going to go for that gun on his hip!" muttered Jordan.

The German turned as the G-2 colonel finished, and Strange saw the confused expression in his eyes.

"It is ridiculous," the pilot said haltingly, "but I—I do not recall how I came here. Perhaps—could you tell me the nearest road to Berlin?"

Jordan shoved past Strange, his jaw grimly set.

"I've had enough of this!" he roared. "Where'd you get that D.H. and why were those pilots after you?"

The German looked startled, then followed Jordan's pointing finger. His dazed expression deepened as he stared at the ship he had flown.

"An aeroplane," he muttered. "But I never saw one so enormous—" then for the first time he seemed to notice the flying-coat he wore. He looked down at it, gazed at the kits Strange and Jordan wore, then reached up and felt the helmet and goggles on his head.

"I don't understand," he said hoarsely. "Why am I

(Continued on page 54)



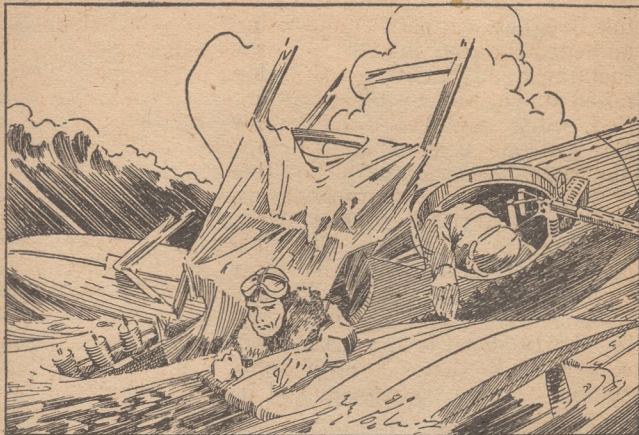
They Had What It Takes

XV—MAJOR ALEXANDER de SEVERSKY—MASTER DESIGNER

By ALDEN McWILLIAMS



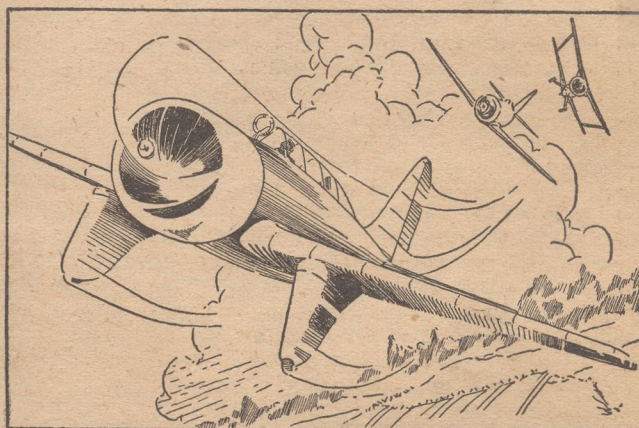
1—Alexander Procofieff de Seversky—called “Sascha” by his friends—was born at Tiflis, Russia, in June 1894. He enjoyed a good education. Then when the War broke out, he joined the Russian Naval Air Service and was stationed in the Baltic Sea area. Here, he developed a practical pontoon-ski undercarriage and won immediate recognition from his government.



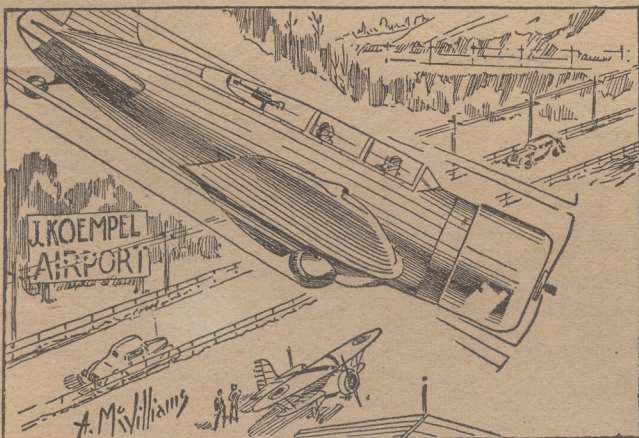
2—But Fate was not smiling. For Seversky was shot down on his first battle flight—a bombing raid over the Gulf of Riga. His observer was killed, and he himself lost his right leg in the crash. Nevertheless, Seversky came through this blow undaunted. Fitted with an artificial limb, he took to the air again and accounted for 13 enemy ships before Russia quit the War.



3—When a U.S.-bound aero mission to which he had been named was nipped in the bud by the Revolution, Seversky came on to America anyway, became a citizen in '27, and a Reserve Corps Major in '28. Then, in '31, the brilliant Russian formed the Seversky Aircraft Corporation at Farmingdale, L.I., and took up the multiple duties of president, designer, and test pilot.



4—First of the firm's jobs was the Demonstrator, an amphibian featuring a wheeled-pontoon gear. It proved its mettle by chalking up a 230-m.p.h. speed record, whereupon Seversky revamped it into landplane form and entered it in a military competition. Swivel-chair experts greeted this move with ridicule—but the sleek ship quickly won a 35-plane Army contract!



5—That plane became the Army's renowned BT-8 basic trainer. Then another Seversky—the striking P-35 pursuit—reeled off 315 m.p.h., “clicked” in similar fashion, and brought an additional government contract for 85 ships. At present, the famed designer is demonstrating still another job in South America. This is his new 300-m.p.h., 7-gun, 2-place “convoy fighter.”



6—Since the day, years ago, when the Czar presented him with a gold sword in honor of his War achievements, Seversky has won ever-increasing repute. He is celebrated not only as one of the world's half dozen top-flight aircraft designers but also for his invention of the bomb sight used by the U.S. and Britain and for his development of a device for mid-air refueling.



Sky Fighters Of the North

A REVIEW OF SWEDEN'S SMART LITTLE AIR FORCE

★ ★ ★

WE'VE knocked out reams of copy for you fellows about the "heavyweight" air powers of the world—the United States, England, France, Russia, and the rest. And considering the fact that several of the Big Shot nations appear to be about ready to fly at each others' throats, that attention has been well-deserved.

But now there've come several letters from our readers questioning us about the "lightweight" division of the world's sky fighters—thus making us realize that we've been much too neglectful of the secondary countries.

Indeed, one reader wants to know if any of the other nations "really have air forces."

You're darned right they do, brother—and we're here to tell you that a good number of them boast of mighty efficient sky-scrapping aggregations. Fact is, that when we got to studying the aero facts and figures of the less pretentious nations, we were startled by the many interesting features they displayed and wondered why many of the ideas had not been adopted by the major powers.

Some of the training systems and equipment of these smaller countries are top rank. Though the minor governments have a limited amount of money to spend, they seem to have learned how to get the most for their money. How some of them have solved climatic and geographical problems is a revelation.

AS a starter, I'm going to give you the inside story of the Swedish Royal Air Force. Here we have a comparatively small sky service made up of 235 officers, 175 non-commissioned officers, and 1,015 of other ranks. The equipment comprises 337 aircraft of which about 200 are first-line fighting jobs. This, by the way, is a very high percentage when we consider that out of a total of 2,000 so-called military aircraft in Germany, only 700 are considered first-line machines.

The figures here presented are the most recent, but by the time this feature appears in print, the strength of the Swedish Air Force may have been considerably increased; for a complete reorganization plan was studied and rec-

By David Martin

Author of "Deadlock in the Orient,"
"Can China's Air Power Stop Japan,"
etc.

With a Drawing by Arch Whitehouse

ommended by the Riksdag as far back as June 1936.

How far this plan has progressed is not known. Improvements called for in the Defense Committee's new scheme were establishment of a new Air Staff, with the Force to be administered by an Air Administration composed of: (a) The office of the Air Administration, (b) Supplies Department, (c) Commissariat of Stores Department, and (d) Building Department. In addition a Squadron Chief of the Air Force was to be named to direct and control exercises. He was to have two assistants.

The new organization would be divided into seven wings (they now have five). There would be two medium and two light-bomber wings, one fighter wing, one Army wing, and one Navy wing. Incidentally it is interesting to note how the bombers are emphasized over the fighters.

There would be an instructional center, a bombing and air-firing school, and a Military Air High School where youths could get their first grounding in aviation. The complete reorganization will take about six years, and the sum of \$3,580,000 has been set aside for aircraft, plus an additional \$10,125,000 for buildings, landing grounds, and special aircraft materials.

At present, the normal Swedish flying unit is the *Division*, which is similar to our squadron. Bombing and observation divisions contain twelve planes, while fighter divisions maintain fifteen planes. The Swedish Wing, or *Flottilj*, usually contains either two or three divisions; and two wings or more may be found in each Group, or *Eskader*.

All flying units are normally under the command of a Senior Air Officer who also commands the base stations. But during operative and tactical work, all squadrons are placed under the command of various offices of the Army or Navy. For instance, the bomber, reconnaissance, and fighter divisions come under the command of G.H.Q.; the observation and Army-Cooperation divisions come under the command of the Army branches; and the Naval co-operation units are commanded by heads of the Naval branches.

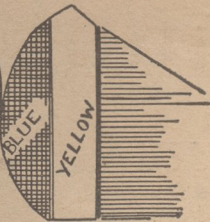
TODAY, all flying units of the Swedish Air Force are stationed at five permanent air sta-

You've heard plenty about the top-shot air powers of the world—but how about the minor countries? What have they got in the way of equipment and personnel? "Well," says Dave Martin, "many of the secondary nations boast of really fine sky arms, and some of them could show the Big Timers a thing or two." One such country is Sweden. And in this article Dave gives you the dope on the efficient air battling outfit developed by these hardy Northmen.

FACTS AND TYPES OF SWEDEN'S AIR FORCE

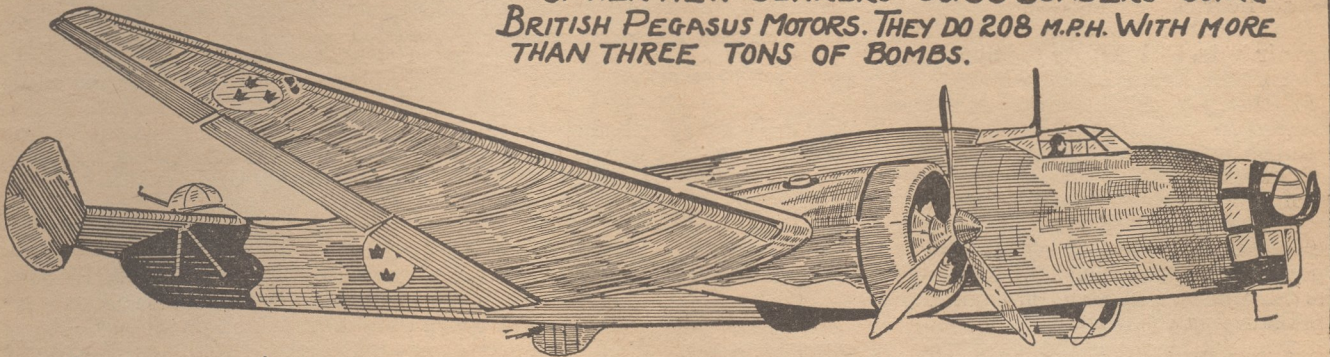


WING
INSIGNIA



RUDDER
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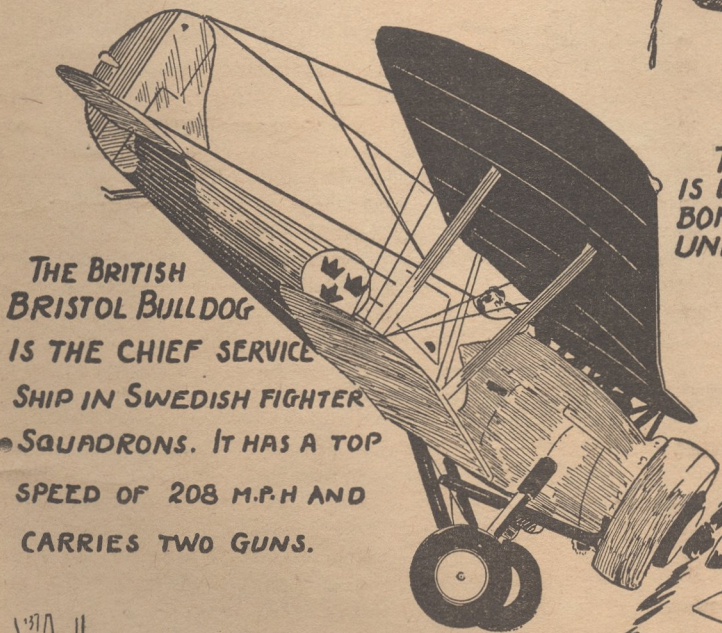
SWEDEN IS A COMPARATIVELY SMALL AIR POWER BUT SHE BOASTS OF A SPLENDID SERVICE EQUIPPED WITH THE FINEST TYPES FOR ALL BRANCHES OF THE SERVICE. ~ BELOW IS ONE OF HER NEW JUNKERS Ju.86 BOMBERS USING BRITISH PEGASUS MOTORS. THEY DO 208 M.P.H. WITH MORE THAN THREE TONS OF BOMBS.



THIS BRISTOL-POWERED HEINKEL SEAPLANE IS THE BACKBONE OF THE SWEDISH NAVAL AIR SERVICE.

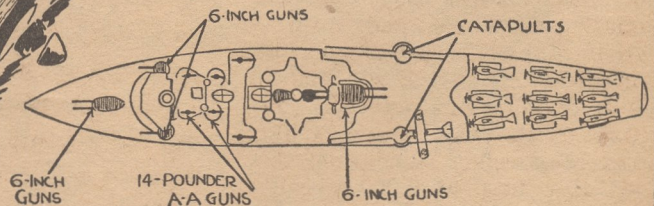


THE PEGASUS-POWERED HAWKER HART IS USED AS A HIGH-PERFORMANCE DAY-BOMBER. ~ THESE PLANES ARE BUILT UNDER LICENCE IN SWEDEN



THE BRISTOL BULLDOG IS THE CHIEF SERVICE SHIP IN SWEDISH FIGHTER SQUADRONS. IT HAS A TOP SPEED OF 208 M.P.H AND CARRIES TWO GUNS.

BELOW ~ A DECK PLAN VIEW OF SWEDEN'S UNUSUAL AIRCRAFT-CARRIER-CRUISER THE GOTLAND WHICH CARRIES ABOUT TWELVE HAWKER OSPREYS ON THE FLIGHT PLATFORM



tions, each air station normally forming an Air Corps (*Flygkar*). Number 1, located at Vasteras-Hasslo, accommodates the G.H.Q. units; Number 2 is located at Hagernas, a seaplane station where units for Naval Cooperation are based and trained; Number 3, at both Malmslatt and Karksborg, maintains units for Army Cooperation; the Number 4 Air Corps is found at the Ostersund-Froson aerodrome and seaplane station, a base for Army Cooperation units; and the Fifth, or Fly-

ing School Corps, is at Ljungbyhed Aerodrome where students and flying-school instructors are trained.

In close cooperation with the Air Board and the various departments of the service is the Air Force Aircraft Works where repairs are carried out and where, at the larger centers, complete planes are built. Virtually all planes used are foreign types built under license, and British craft and engines are most common in the

(Continued on page 79)

Hoots and Headlights

FEATURING PHINEAS IN A LARRUPIN' LAUGH FEST

IT was dark on the airdrome of the Ninth—as dark as the inside of a licorice lozenge—and Major Rufus Garrity's buzzards were asleep in their huts, oblivious to the approach of a sinister Kraut Albatros.

In the pit of the said Albatros slumped a grim, squat-bodied Kaiser *hocher* whose greenish eyes boded ill for a certain Yankee flyer who had knocked him for a row of Nisson huts six weeks before. "The Owl" was on the prowl again, and his feathers were ruffled from his high dudgeon. Yes, *Herr Hauptmann* von Heinz was boring toward the Ninth Pursuit Squadron south of Bar-le-Duc—and he knew the very hut in which Lieutenant Phineas "Carbuncle" Pinkham was pounding his ear.

"Ach, dot *Dumkopf* me he t'inks he could keep idt down, *hein?*" The Owl growled to himself. "Ho! Ho! Him I fill oop mit holes in *der* sleep yedt untill *der* gesmart Yangkee he t'inks voodpeppers has idt *der* kof-feeklotch mit. *Verdammt* Yangkee! Ja!"

Now it was said across the Rhine that von Heinz was so closely related to the owl species that the nocturnal birds were in complete harmony with him. Even so, destiny had it that a certain owl perched on the limb of a tree just behind the Pinkham hut was to double-cross *Herr Hauptmann* von Heinz. Sensing the human Owl's

By Joe Archibald

Author of "Eclipse of the Hun,"
"Cat's Spad-jamas," etc.

With Illustrations by the Author

presence, the big creature who was the real feathered McCoy lifted its shoulders and let out a vibrant and well-rounded—

HOO-O-O-O-O-O!

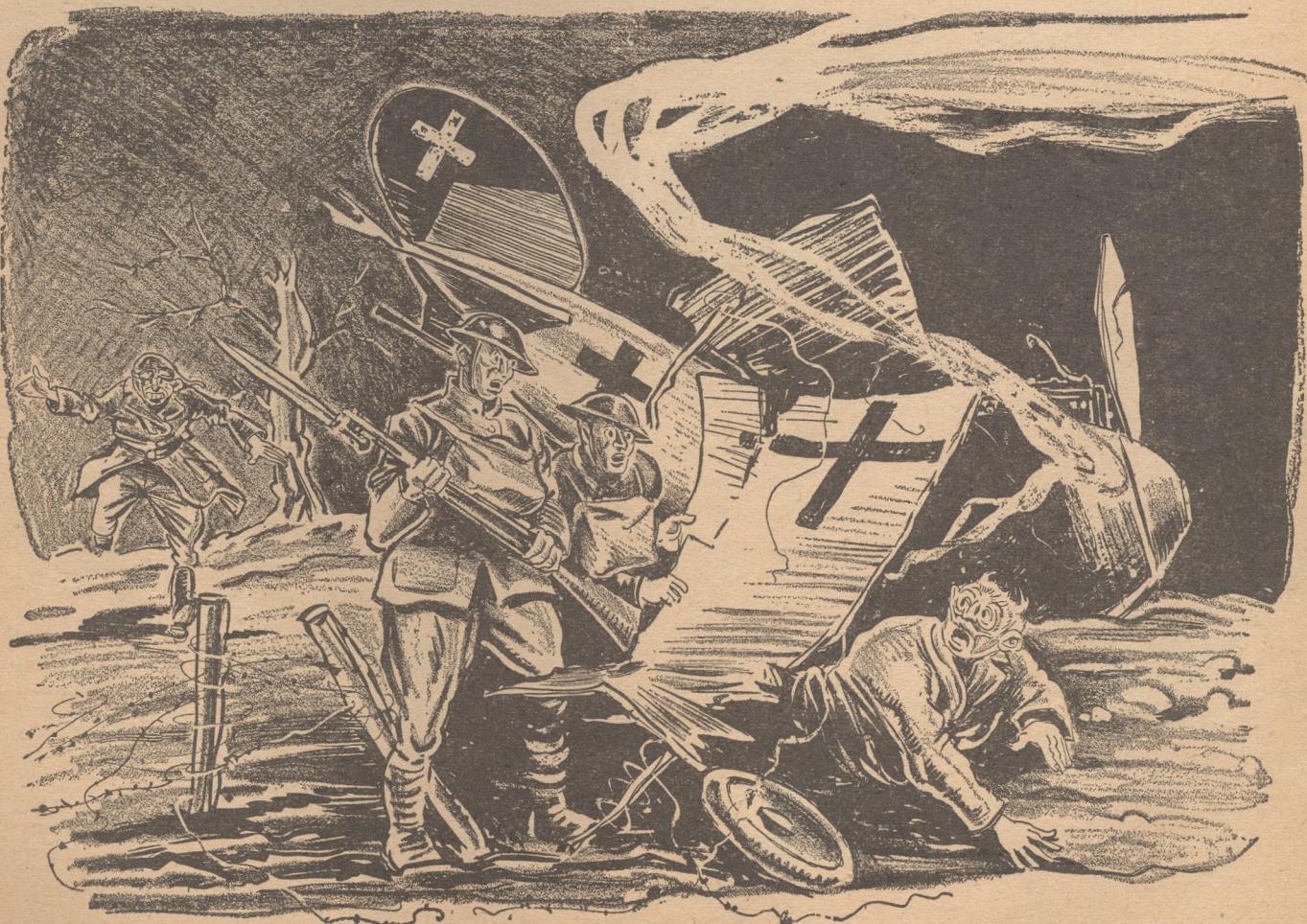
Phineas sat straight up in his bunk. "Wh-who—what?" he gulped. Then,

when he heard the bird sound off again, the miracle man from Boonetown, Iowa, leaped out of bed and grabbed a flashlight. Next he pulled Bump Gillis out of bed and dragged him outside by one leg.

"Lemme go, you crackpot!" his hutmate roared. "HA-A-ALP! MURDER!"

"That Kraut don't need any help, you bum!" Phineas snapped. "It is The Owl—he's back again! That mouse-eatin' bum! He was goin' to sneak up on me and—"

The doughty descendant of the Boonetown Pinkhams flattened without finishing his statement—for Spandaus had begun to pound. Lead skewered the hut he and Bump had so recently evacuated. And they saw von Heinz' Alb roar over it with undercarriage almost grazing the galvanized iron roof. The Kraut now zoomed for altitude, wheeled, and came screaming down again to punch more holes in the Pinkham tepee. And finally, when his Spandaus were empty, The Owl lifted his Alb by its bootstraps and knifed back into the blackness that as usual was as clear as day to his own green owlish



"Where am I vunce?" yipped The Owl as the doughs lifted a wing off his angel bones.



Von Heinz was convulsed with rage. "Mein Brudder, hein?" he howled. "Donner und Blitzen!"

peepers. And as he flew, he chuckled 'way down deep. "Nodt efen der vorm couldt be alife by der Pingham hudt," he gloated. "*Der Iron Cross I vill gedt it alzo der revard. Auf Wiedersehn, Herr Leutnant! Now I go by home und gedt idt der bombs vot I shouldt drop by der Yangkee bridges und subbly dooms. Hoch der Kaiser! Hoch der Owl!*"

PHINEAS got up from the ground slowly. Bump Gilis did likewise, feeling himself all over gingerly. "I'm goin' to the mess hall for a pitcher of water," he quavered. "I got to see where the holes are, you Iowan lug. All them slugs couldn't have missed me. Yeah, livin' with you is poison! I'm goin' to take my trunk out to a nice safe front line trench in the A. M.!"

Phineas' jaunty retort was choked back into his throat. Something banged against him and he heard an eerie flutter of wings in his lily pad ears. Feathers brushed his freckles and he let out a yelp when something that felt like a fishhook took a piece of his ear off.

It was then that he caught a glimpse of a pair of burning green eyes and quickly ducked. "H-huh!" he yipped. "More owls! I get rid of one and—Say, that was the one that warned me and it's mad because—" He broke off, grabbed the flashlight, and snapped it on. The beam hit the owl right in the glimmers, sent the nocturnal flyer back-pedaling and flapping its wings. Then it tried right rudder and Immelmanned against the lead-peppered side of Lieutenant Pinkham's hut.

The Boonetown pilot took a lusty swing with the flashlight—and the owl pancaked for keeps. "Haw-w-w-w-w!" the trickster guffawed, feeling of his wounded receiving set. "Fool with a Pinkham, will you, huh? That Heinie cousin of yours ain't got any sense either. Wait until I smack him down the next time. Boys, I will do to you! I'll take the bum into Barley Duck and stuff him for a mantel ornament back home."

By this time the Old Man was running across the field. He was trying to get his gallusses up over his shoulders. But he only got his

arms tangled up in the elastic, stepped on his own shoelaces, and took a nose dive. And there was so much mud on his face when he clambered to his feet that all he needed was a southern drawl to look like Old Black Joe.

"What's goin' on here, Pinkham?" he spluttered through a mouthful of Mother Earth. "What's the idea of prowlin' around this time of night? I'll—"

"Look at that hut!" Phineas squawked. "It wasn't hummin' birds that made it leak. Right now it would not hold sand. Me and Bump would be gettin' readied up for a bone orchard if this other owl here hadn't spotted von Heinz an' said 'hello' to him. Haw-w-w-w! I must take this owl into Barley Duck tomorrow night. Well, er—if there is a hut that is empty, me an' Bump'll finish our rest."

"I would not sleep with you ag'in if I had to stay awake for the rest of the *guerre*," Bump snorted. "Lemme git my trunk!"

ALL the next day the brass hats in Chaumont just picked at their victuals. They'd learned that The Owl was on the rampage again, had washed out a supply dump and a very important bridge across the Meuse. He had wrecked a narrow-gauge train near Fleury and had strafed Yankee billets near Triaucourt.

Eventually, one brass hat at Wing Headquarters phoned the Ninth and told Major Garrity that Lieutenant Pinkham might be a great kiddy in Bar-le-Duc but if he ever tried to lie again about batting down a Heinie he would find himself in Blois manicuring Frog real estate.

"Oh yeah?" the flying magician yipped when he got the news at mess that evening. "What am I s'posed to do, huh? Foller the Krauts down into their own backyard an' wrastle with 'em? Yeah, I thought I'd washed up The Owl—but he ain't human, that von Heinz slug. I bet he could lay an owl's egg. But I will git him yet. Nobody got away for long from the Pinkhams. Back in 1770 my Uncle Isaiah trailed an Indian all the way from the Ohio River to the salmon fisheries out on the Pacific—" But a voice stopped him:

More than one person on the Western Front was bent! Having prepared a succulent dish of stuffed owl, Chef Pinkham was bent on giving the bird to one Hauptmann von Heinz. Meanwhile, one Oscar Frump, of Waterloo, Iowa, was bent on giving the bird to Phineas. And before things went much further, one Francois LeBouche was busy sharpening his shiv. He was bent, too—bent on cutting himself a piece of throat.

"Wha-a-a-t? Are my eyes an' ears takin' me for a bug-gy ride? If it isn't Phineas Pinkham, I'm a kangaroo's rumble seat!"

Startled by the interruption, Garrity's buzzards forgot their gastronomic ritual. And Phineas Pinkham almost swallowed his knife when his eyes lit on the loud speaker. The newcomer, a skinny fellow, had a nose as long as a Spad's tail skid and it looked as if it had been acting as one not long since. Moreover, there was a trace of a mouse under his right eye.

"Oscar Frump!" Phineas gulped. "It's you, huh? What're you doin' here?"

The man called Frump let his musette bag thump to the floor. "What did you think, Pinkham? I want to help sink some battleships. Ain't this the Navy?"

"I never thought you was funny, Oscar," Phineas cracked back while the buzzards of the Ninth chuckled at his expense.

"He wuz shootin' off his mouth, huh?" Lieutenant Frump queried, looking around the mess table. "I bet he's been tellin' you lots about his various an' sundry uncles an' how the Pinkhams almost won Indian wars single-handed. Ha! Ha! He only had two great uncles an' one was hung for stealin' sheep. An' did he ever tell you about the one that tried to desert in the Civil War? That gazabo *woulda* deserted, too—only he wuz slowed up tryin' to carry a brass drum out with him. My grandfather told me about it, said they had to shoot him."

Phineas' ears were a fiery red and he choked on his bread pudding. "That's a lie!" he yipped. "He—he was just tryin' to scare the Confederates by makin' noises on his drum like guns was goin' off—an' the General didn't have no sense of humor. Oh, I will git hunk, Oscar Frump!"

"You will never catch me, Phineas Pinkham," the new addition to the Ninth grinned. "I know all about your tricks. And now tell 'em about your great grandfather—the guy who robbed stage coaches. Go on! Go on!"

Captain Howell and Lieutenant Gillis were grinning broadly—for to all appearances Phineas Pinkham was entirely deflated. Meanwhile, Oscar Frump kept pouring it on generously.

"When I heard Phineas was flyin'," he rambled on, "I sez to myself that if Pinkham can fly, even a hippopotamus can. So then I joined up, too."

"Oh yeah?" spluttered Phineas.

"Yeah," echoed Oscar. "An' say, I almost forgot somethin'. The Greek who runs the pool-room back in Boonetown said to tell you to bring back that eight ball you stole from him. I says to him: 'Pinkham would be lonesome without it as he always is behind it!' Ha! Ha!"

Phineas was indignant. "I will not sit here an' be insulted!" he said, getting up. "But I will not forget, Frump—as compared to me an elephant is an absent-minded professor. You wait, you—!"

"You won't ever git nowhere by fibbin'," Oscar chided him. "Now where will I find the C.O.? I am reporting for duty an' can't wait."

LEAVING that for somebody else to answer, Phineas left the hall, went over to "A" Flight's hangar, and got a bicycle that an ackemma had been fixing for him during leisure moments. He hung a burlap bag contain-

ing the recently deceased owl on the handlebars, then mounted and pedalled toward Bar-le-Duc, his dander still gaining altitude.

"That big-mouthed ape!" he choked out. "Maybe I did stretch a point, or maybe three, about the Pinkhams. But—of all people in the U. S. it would have to be him that—Rats!"

What was more, the scion of the Boonetown Pinkhams anticipated plenty of more misery ahead; for he knew Oscar Frump had lots of things to tell regarding Phineas' early life. Next he'd be telling about the time Phineas tried to get maple sap out of an oak tree. Phineas cussed broadly. This man had called him a romancer, and the Wing had just as good as called him a liar. The Pinkham molars sounded like a rock crusher as their owner ground them together in increasing rage. Half-way to Bar-le-Duc, twin light beams bisected the gloom. They were the dimmed headlights of a truck that drove Phineas off the road and piled him up against a fence.

"Oh, you bums!" he yelped as he dragged his bike back onto the road. "You did it on pur—huh!" A spark stirring in his latent gray matter, Phineas suddenly snapped his fingers. A scheme rotated in his brain. Then he gave the burlap bag on the handlebars of his bike an affectionate pat and continued on toward the Frog hamlet that was his destination.

In Bar-le-Duc, Phineas took the owl's remains to an old Frog taxidermist and gave him orders to make the finished product a masterpiece.

"You do eet ze *bon* job and I will breeng eet to voose a even bigger one for you to stuff heem, comprenny?" the Yank said before he went out. To himself he mumbled: "When that Kraut bum sees that, he won't be satisfied until he knocks it off, haw-w-w-w! He will keep comin' over until he does. Well," he said as he ankled toward an *estaminet*, "so much for that! Now for a snort or two and a call on Babette."

In the cafe Phineas selected a spot in a corner near a table where two brass hats were imbibing. One was a Frog who was so far along Phineas told himself he must have been drinking his cognac by the barrel. The other, a Yankee colonel, was in a commiserating mood as the pifflicated Simon Legree of Poincaré's poilus told of his cares in the bosom-pal style well-scalded citizens are wont to do.

It was evident to Phineas, as he leaned sidewise to get a better earful, that the Frog was being gnawed by the green-eyed monster.

"*Oui, Colonel, shee ees—hic—I have eet ze br'ak in ze coeur. Sacre bleu! Aussi j'ai eet ze murdair dans le coeur, oui!* In Paree ze femme she ees avec who you

t'eenk, *mon ami*? I will tell to you thees. Ze *Americain* aviator, *oui. Deux heurs* I am marrie' avec ze femme, an' zen zat ees what I have see. *Mon Dieu, mon ami*, I see rouge et blanc et bleu, *oui!* Aussi I see all ze othair couleurs an' I spreeng on ze femme robber. An' so, he heet me on ze nez an' I see eet ze *etoils* an'—hic—whan I geet on ze *pieds* he ees went an' ze femme she ees aussi went wiz him. *Mon Dieu*, eef evair I fin' zat homme—hic—I weel burn heem avec sticks lak zey do *Jeanne d'Arc*. I weel steek ze pins—hic—een thees homme wan by wan an' choke heem out of hees lungs. Ah, *nom du chien!*"

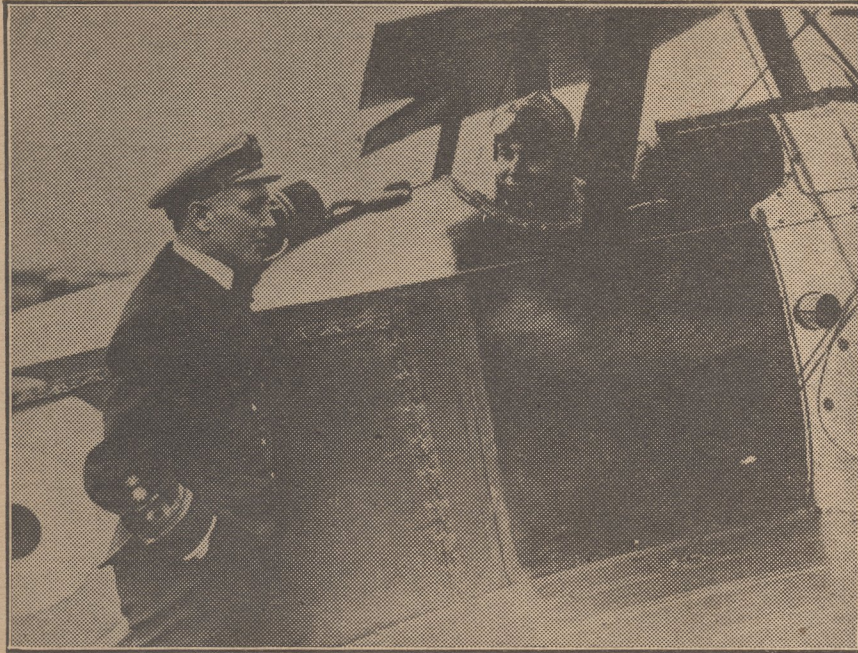
"He ish home wrecker, mawn amy," gurgled the

(Continued on page 72)

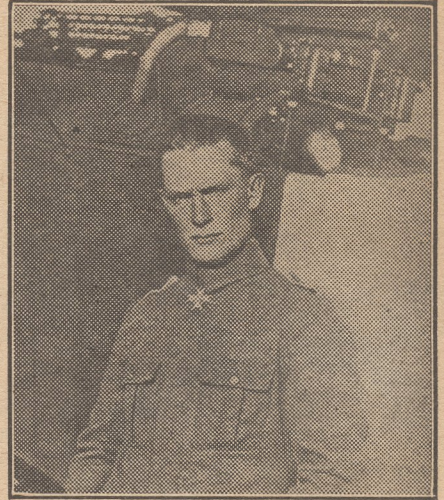


One look was enough for the Frog brass hat. "Snak' in ze grass!" he shouted. "I slit heem ze t'roat from ear to ear!"

Snapshots of the War

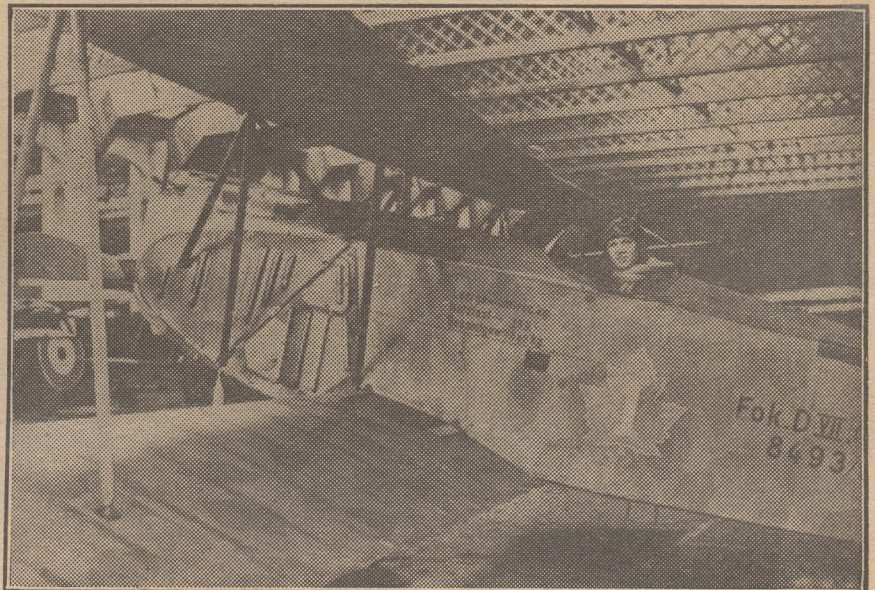


Above: An intimate study of Lieutenant-Colonel Raymond Collishaw, renowned Ace of the Royal Naval Air Service. The camera caught him as he was bidding God-speed to Flight-Leader Whealy who's about to take off in his Sopwith Camel. The compactness of the Camel is well-depicted here. That gadget mounted on the cowl in front of the cockpit is an Aldis telescopic gun sight, and the pipe protruding from the side of the fuselage is the carburetor "breather." (This and other photos on this page by W.R.R. Puglisi.)



Hermann Goering—now second only to Hitler in Nazi Germany and rumored to be in line as his successor—was a great Ace during the Big Fuss. Here we see a war-time shot of him before his Spandau-fanged Albatros fighter. Judging by his scowl, he must have been in a scrapping mood the day this film was clicked.

Right: And now we get a close-up of a captured Fokker D-7—with a young Canuck fighting pilot in the pit getting his "pitcher took" to send back to the home folks. The details of the engine cowl, wing-root connections, and camouflage mottling are brought out clearly. As indicated by the Maple Leaf insignia placed on the fuselage, a Canadian outfit "nailed" this Heinie job; and as for those lines of printing, they translate into: "Weight when empty, 700 kilograms; Carrying capacity, 180 kilograms; Total, 880 kilograms." In the English equivalent, that total would be 1,940 pounds.



Above: The stark side of war! A vicious dog-fight in the clouds—then Zzz-z-z-z-z-z-z-z! Down plummets a Fokker D-7 in flames. A group of Black Watch Highlanders have extricated the injured pilot and are giving him first aid.

Right: In contrast to the frowning Goering at the top of this page, note the smiles and laughs offered by this hearty group of R.F.C. flyers. The men are proving that they're a high spirited bunch, even though they know that in another few minutes they'll be back in the air fighting—and facing such horrors as that shown in the photo above.



This 1925 movie "still" shows the star of this story, Frank Tomack, at the time he became a fugitive from Mother Earth. Reading from right to left, the pilots are: Roy Wilson, Tomack, and the famed Art Goebel. The white-attired flyer on the auto bumper is Al Wilson. Both the Wilsons (they were not related) are now dead, Roy having spun in before a ground camera, and Al meeting his fate when he landed on top of an autogiro which was taking off below him.



The Crate That Wouldn't Come Down

★ ★ ★

MOTOR FAILURE over country so rough that by contrast the Alps would seem like prairie land; fog so dense that you could have used a marine propeller; ice three inches thick piling up on the leading edges of your wings; the ominous "rubbery" feel to the controls as a plane wallows in the gyrations of a flat spin!

These ordeals—or some hair-whitening combination of 'em—are the "makin's" of most of the rip-roaring tales told when flying men rev up their voice boxes and let loose in a hangar session.

You'll always find some bird ready to start the tall talk flowing with a spine-tingling "I remember when" story. And then he'll smilingly acknowledge a couple of politely sympathetic nods. Invariably, however, one of the gang will clear his throat and say: "Well, that was kind of a tough spot, all right—but I remember one time back in '19 when I was barnstormin' and a guy comes up who wants to take a hop. Well, you'll swear I'm lyin', but . . . etc. . . . etc. . . ."

Now if you're addicted to "hangar flying" and if you've made any sort of study of it as a competitive sport, you won't horn in with your story until you've got a line on the type of yarns the assembled skymen are bantering about; for it's always best to find out just how unscrupulous the competition is. Maybe the hangar flyers you sit in with aren't overly gifted with imaginative powers. In that case, you can stick pretty close to the truth and still make a creditable showing. And that'll give you a great satisfaction. Personally, if I can "stop" 'em at a hangar session with a story that happens to be true, I feel like a guy who's won a fight with one hand tied behind his back.

Let's hear one of those stories, you say? Well, take the one about Frank Tomack and his Ansaldo. Now there's a yarn for you. And despite the fact that it's true, it'll stand up in the fastest sort of company—

EVERYONE who has been in the flying game on the West Coast for any length of time knows Tomack.

By George Lyle

Transport Pilot and Flying Instructor

Author of "Chalk Up a Couple for the Studes!" "Jammed Controls," etc.

But darn few of 'em would recognize an Ansaldo if they met one face to face on a clear day. Still, you can't blame 'em for that, because to my knowledge there's been just the one Ansaldo around here—and

even that one has long since been kindling wood.

This bus was an Italian observation crate of World War vintage—a conventional, tandem-cockpit biplane powered with a 300-horse Fiat motor. Anyhow, the one I'm telling you about had been lying around in a crate up in Frisco from the time it had been shipped over immediately after the war until Tomack acquired it and went up to Frisco to set it up. That was in the middle twenties so, you see, it had already been in storage six or seven years.

Frank, who probably got it pretty cheaply, intended to bring it down to Los Angeles to use in motion picture work. At this time, the whole gang of us were operating from Santa Monica's Clover Field on which field Tomack intended to keep it.

At any rate, he was absent for about a week before he wired us to the effect that he had finally got her rigged up and was taking off the next day for Clover. He stated that on the way down he'd land at Bakersfield for gas and that he'd call us up from there to let us know what time he'd be in.

It was nearly four o'clock the next afternoon when we got his long distance call. He said the Ansaldo was "a vibratin' fool," and hence all his teeth were loose. But he added that she was also "a performin' fool" and that since the Fiat seemed to be kicking the prop around Okay he was coming on in.

The time of the year was Fall and it was getting dark early, but we figured there'd still be plenty of light for Tomack to land by. In those days, night flying wasn't what you'd call a popular diversion. No floods, no beacons, no border or obstruction lights—nothing. And so, when a guy got caught out after night fall and we knew he was coming in, we'd all run our cars out on the line and leave the headlights on. It helped some, too.

But if Tomack got off promptly at Bakersfield, he'd

ANOTHER SPEEDY "HANGAR FLYING" TALE

get in long before that was necessary. He had plenty of time.

MOST of the gang hung around to wait for him. We were curious about that Ansaldo. Jennies, Standards, Tommies, and an occasional DH were all we ever got to see. So a chance to look over something different was not to be passed up.

Anyway, we were all sitting in the flight office arguing about whether a fly, when he lands on a ceiling, alights out of a half-roll or on the top of a loop—when we heard Tomack coming.

We beat it outside. And sure enough, there came the Ansaldo like the proverbial bat out of the Lower Regions. Tomack wasn't slowing her, either; he zipped across the field with a roar that loosened both the nails that held the roof on Leo Nomis's hangar. It was evident that Frank had come in off the Hollywood Hills wide open and nose down.

Above the din, Art Goebel made himself heard: "What's that jughead tryin' to do? Tear the wings off that Roman jalopi?"

Frank Clarke, with one eye cocked on the now receding Ansaldo, shook his head. "Naw. It's just that up 'til now he's always sat behind a stutterin' OX. So he naturally goes a little balmy when he crawls into something with real horses in the nose. Yeah, a little balmy."

"A little?" snorted a pilot who'd just recently come up from Texas. "Why, look at him now! He's coming in down wind!"

"He isn't figuring on settin' her down—yet," explained Clarke with a grin. "Watch him!"

Now Tomack was bringing her back toward the field wide open and holding her down so low that the Ansaldo's wheels were practically rolling. Most of us knew what to expect. We'd seen him pull this stunt before.

In fact, it was Tomack's habitual approach when coming in from a cross-country jump. He'd come sizzlin' up the field with the wind on his tail, pull up vertically when he passed the head of the field—and then, from a wing-over, slip into a landing. It was a beautiful, breath-tak-

How does a fly land on a ceiling? Does he alight out of a half-roll, or on the top of a loop? Leaving that momentous mystery unsolved, the boys ran out on the field to watch Frank Tomack roar in for a landing. But they might as well have stayed in the flight office and continued their fly-ological researches—for Frank Tomack just didn't land!

ing maneuver. And Tomack could make it look so easy that you'd forget that the slightest miscalculation—either in speed or distance—meant that you'd be picking up bits of airplane and Tomack from an acre of airport

. . . . But here was the Ansaldo flashing by, and Tomack was holding her down to the last instant. Then we gasped! Did he really intend to go *under* the high tension wires? Every one of us shuddered.

No! Up he shot just a seventh of a second in time with the deepening roar of the Fiat complaining of the sharpness of the zoom. Straight up he went . . . and up . . . up until she was on the ragged edge of a whip stall. Then he kicked her off, reversing his direction. And we all watched for his next move.

Now was the time to cut his motor and sweep in on a nose-high slip. But somehow he didn't. We couldn't figure it out at all.

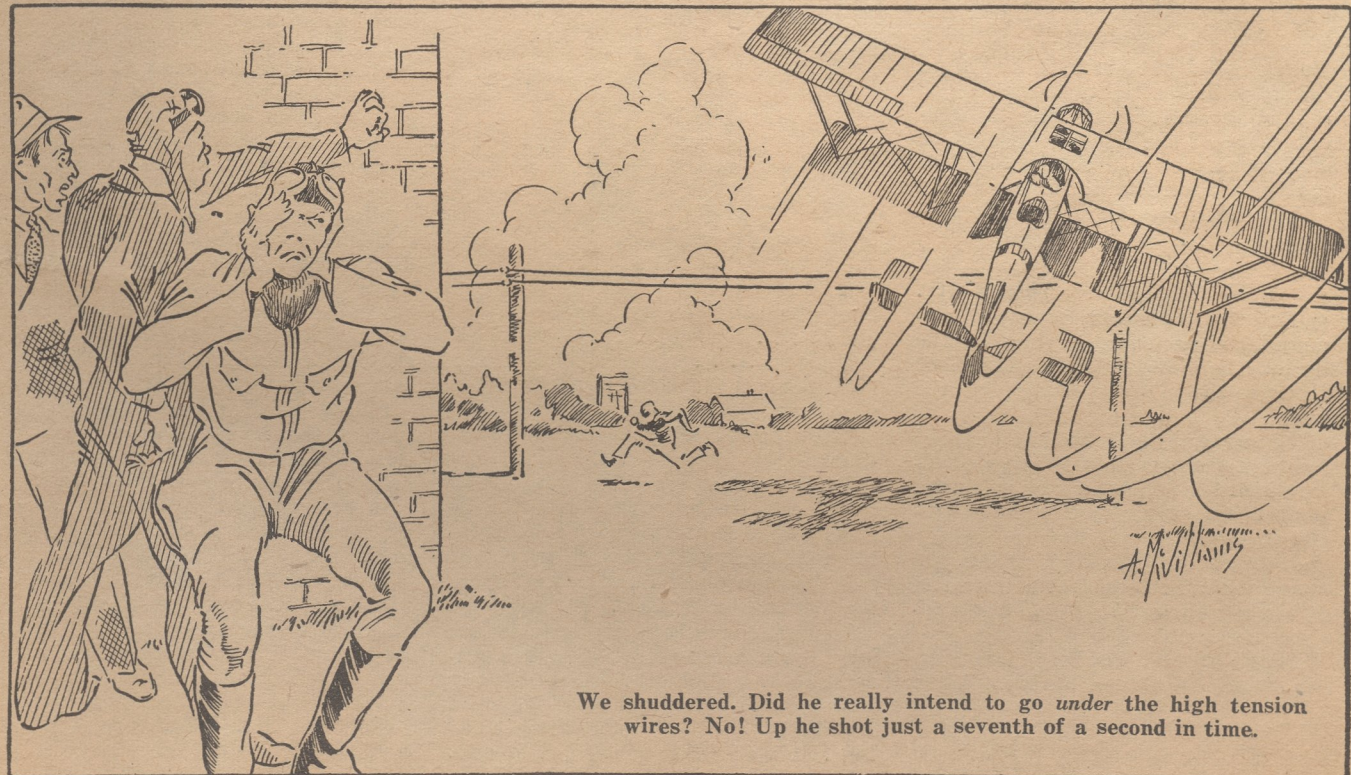
"Cut her, Frank. Cut her!" some one urged aloud. But the roar of the motor continued unabated—even turned to a whine as the Ansaldo gathered speed on the down side of the wing-over. In a split instant it was apparent that she had gained too much speed for even Tomack, renowned master of the fish-tail and stall slip, to kill.

Surprised—but not overly perturbed—we watched him jerk her level and go by us still wide open.

"He's gotta show off a little more," was Clarke's judgment.

Now, as he neared the end of the field, Tomack pulled up in a gradual climb. And the very gentleness of this maneuver puzzled us, for it disproved Clarke's "show off" theory. If Tomack was figuring on putting on a circus with the Ansaldo, it was an iron-clad cinch that he wouldn't have wasted all that velocity in a lady-like climbing turn. Nope! Not Tomack! If his intentions were to show us something, he'd have expended that speed in something spectacular, something foolhardy—something requiring the utmost precision and finesse of execution.

But this girl's-school chandelle—after picking up enough sky moxie to Immelmann—had us scratching our



We shuddered. Did he really intend to go *under* the high tension wires? No! Up he shot just a seventh of a second in time.

heads. The guy was better than a magician at keeping us guessing!

UP into the gathering darkness Tomack sent the Ansaldo. At about two thousand he levelled out and began to circle. Around and around he kept flying, never varying his altitude, the radius of his turns, nor the speed of his motor.

As for us, we stood there gaping up at him until darkness obliterated everything but the bluish pin-point of flame from his exhaust.

"Well," said the Texas pilot finally, "you guys know him—so maybe you can tell me why the heck he's messin' around up there in the dark. I've seen a lot of screwy performances in my time. But for sheer asininity this tops 'em all!"

"Yeah. We know him, all right," Clarke admitted. "But your guess is as good as ours."

"Maybe," suggested the Texan sarcastically, "he's got a merry-go-round complex. Maybe he's got eyes like an owl and sees better in the dark. Maybe—" Here he ran out of maybes.

Clarke had been leaning against the hangar squinting up into the darkness. Abruptly he snapped erect, held out a hand to me. "Gimme some nickels, George."

"What for?" I asked blankly.

"Phone calls. I wanta put in a couple. Gonna call the hospital to have an ambulance here in case he cracks up when he does come in."

"And the other call?" I prompted.

"The nut house," Clarke announced sadly. "I'm gonna have 'em send a couple strong arm guys here in case he don't crack up—for just as sure as hell he's nuts. And he might get violent."

"Nuts or not," put in Art Goebel, "we better stop kidding and get some autos on the line. At least we don't want him ploughin' into this hangar—I just finished rebuilding my Jenny."

So we rolled out our cars and lined them up with headlights shining on to the landing strip. Meanwhile the constant drone of the Fiat motor told us that Tomack was still circling. And of one thing we were sure: He was bound to come down sometime, somewhere—somehow . . .

A HALF HOUR passed, then an hour. But the situation remained unchanged, the Ansaldo circling in the inky darkness above and a bunch of flabbergasted pilots waiting on the ground.

When almost two hours had dragged by since Tomack began circling, we suddenly heard his motor cough, pick up, cough again—then sputter into stillness.

"Outta gas!" yelled Nomis. "Can you feature that? The crackpot flew around until he's gotta make a dead stick landing in the dark!"

"Nuts," grunted Clarke. "Plain nuts. You shoulda let me call the booby hatch so they—"

"Shut up!" snapped Fred Hoyt. "Listen!"

Straining our ears, we could hear

the faint, sibilant murmur of wind through interplane bracing.

Nearer . . . steadily louder . . . came the hum.

"Spiralling down," said Clarke, now tense.

"Yeah," agreed Hoyt in a flat tone. "Spiralling down."

The same fear was in all our minds—high tension wires at the end of the field! The wind, having petered out, the air was now a dead calm. He'd land fast—plenty fast. Yet he'd have to come over those wires low and slow. Otherwise he'd never get on the field.

Low and slow. Tricky business, that in the dark. A strange ship, dead air, dead motor, pitch dark—and a high line!

We kept our eyes turned upward, but it was impossible to locate the Ansaldo.

Nearer and nearer came the sound of the vibrating wires. Then, after what seemed a long time, the hum gradually became dimmer as Tomack swung wide for his approach.

"He's coming in now," cried Clarke. Hoyt cleared his throat. "Yeah. He's coming in."

THESE men—Clarke, Goebel, Nomis, and Hoyt—might razz the hide out Tomack when they were all together. They might heap on him all varieties of amiable insults. Yes, cheerfully and without prompting they frequently offered the most derogatory opinions as to each others' character, lineage, and flying ability. But when one of 'em got into a jam, the rest would worry like a mother over an only child.

Right now they were literally chewing the lining out of their mouths.

Hoyt was standing close beside me and I heard the sharp insuck of breath between his teeth as the sound of the Ansaldo's wires again changed.

Nearer, yes! But now softer and deeper. That told us that somewhere in the blackness behind those high tension



lines Tomack was flattening out his glide . . . feeling . . . groping his way down . . .

Suddenly the hum ceased altogether—gave way to the rumble of wheels.

"He's down! He made it!" exulted Clarke.

Before the words were out of his mouth the Ansaldo rolled into the illuminated area and stopped. Then from the rear cockpit the lanky figure that was Tomack vaulted and came stomping toward the hangar.

It might have been my imagination, but I could have sworn that he was surrounded by a slight bluish haze. At any rate, he was doing some of the most imaginative, utterly unprintable cussing I have ever been privileged to hear.

As he approached us we besieged him

with questions, demanded an explanation.

For a moment he stopped before us. "That blankety-blank-blank so-and-so. That . . ." He became incoherent, flapped his arms a few times, then pushed his way through us and went into the hangar where he had left his car.

In another minute—and before we could collect our wits—the car, with Tomack bareheaded at the wheel, shot out of the hangar and disappeared toward the field entrance in a swirl of dust.

We looked at one another sort of foolish like.

Clarke was the first to come out of it. He lifted his shoulders in a gesture of bafflement, then dolefully and for the eighteenth time repeated: "Nuts! Plain nuts!"

"Damn!" complained Fred Hoyt jerking his thumb in the direction of the Ansaldo which Tomack had left sitting in the middle of the field without so much as glancing back. "I guess it's up to us to put that confounded crate away."

So some one got a dolly and we shoved her into the hangar. Here we were giving her the once-over under the light when a sharp grunt came from Hoyt. He was staring into the cockpit.

"Smatter?" Clarke asked.

Hoyt ignored the query. "Get me a flashlight," he yelled to one of the greaseballs.

The flashlight was produced, and Hoyt began checking something that had caught his attention in the cockpit. He kept making funny noises to himself as he went about his inspection—something like a cross between a gurgle and a giggle.

Finally, he hopped out, dashed to the nose of the crate, unbuckled the cowl, and played his light on the motor. And then he collapsed—sat right down on the hangar floor and literally belled with laughter!

He kept it up until we thought he'd bust something. But after we threatened to douse him with a bucket of water he got himself in hand.

"The—the throttle," he gasped in explanation. "Broken! Vibrated loose! Tomack couldn't throttle down!"

"But," objected Clarke instantly, "he could have cut his switch and made a dead stick landing while it was still light."

Another spasm of laughter swept Hoyt. "You think so, huh?" he said, shaking his head weakly. "Well, go look at the mag."

Clarke picked up the flashlight and spotted the magneto as we crowded close. The Fiat engine used a dual magneto to spark its gas. Well, the right unit seemed Okay.

"The other one," cackled Hoyt getting to his feet.

Clarke shifted the light beam—then we all saw it. From the left unit of the mag a wire dangled. It, too, had vibrated loose, and it was the ignition switch wire. Anyhow, with his throttle broken in the "wide-open" position and his switch on the fritz, poor Tomack couldn't stop his engine. He had to keep

(Continued on page 63)



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 contributions which we can use here, **FLYING ACES** will pay \$1. Contributions cannot be returned. Address all letters to **WISECRACK-UPS**.

THE WINNAH

Bill: What's the matter with your brother? He looks as though he suffered a terrible shock.

Phil: He did! You see, when he got out to the airport today, he found they'd just run a gas model meet. And there was his Flying Flea wearing a blue ribbon as the most unique job in the contest!

TOO TIGHT

Instructor (very agitated): We're in a spin. Quick! Give me the controls!

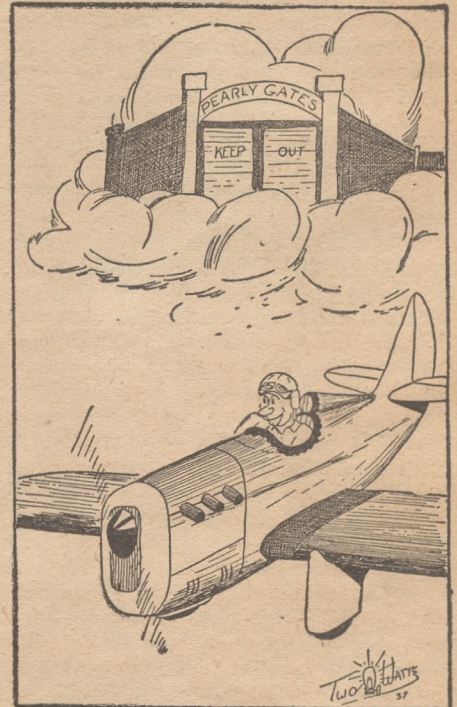
Stude (after some violent struggling): Here's the pedals and joystick—but danged if I can get these instruments off for you.

"It looks," remarked Philosophical Philo as he read of Soviet war preparations on the Manchukuan border, "as though the Japs are going to have A.N.T.'s in their pants."

NOT HARD AT ALL

Passenger (reading newspaper): Here's a man who talks of flying to the moon. Do you think he can?

Pilot: Certainly he can. Anybody can talk about flying to the moon.



Flyer (trying out plane): "The service ceiling'll do, I guess. And now if it has any speed I'll buy it."

TACTICAL ADVICE

Came the dawn. And as the pursuit ships were taxied to the line, the Flight Leader stepped forward to give his new replacements their last minute instructions.

"Now men," he bellowed, "you're about to face enemy flyers who have guns on their ships capable of sending a bullet through two feet of wood. So dammitall, *keep your heads down!*"

KICK HIM OFF!

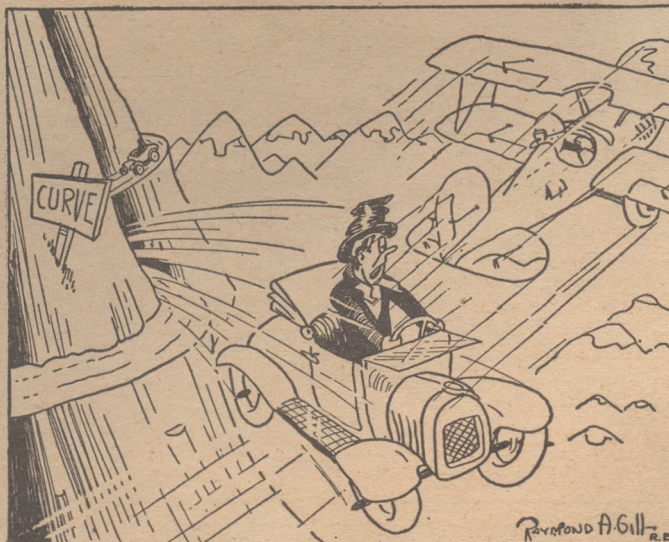
Observer (frantically): There's a German on our tail!

Green pilot: So! A stowaway, huh?

UNECONOMIC

C.O.: They tell me Sandy McPherson was killed. How did it happen?

Flight leader: Why, after the plane got over the Lines, the pilot told him to toss a hand grenade at the Heinies. Well, Sandy pulled out the pin Okay—but he couldn't stand to throw the pine-apple away.



Drunke (very indignant): "Hey, why donsha look where ya goin'?"

LOST AND FOUND

Sport flyer: Confound it! Where's my Flying Flea?

Wife (soothingly): There, there, dear! Don't take on so. Junior's taking his bath, and he has it in the tub with him.

RIGHT ON THE NUT!

Mechanic (sadly): Yeah, a gear pin fell from a plane flying overhead, hit Smith on the dome, and killed him.

Sweet young thing: What a poetic death! A bolt from the blue!

ON THE RUN

Airport manager: I hear you smacked your plane into a farmer's house. How did things come out?

Student flyer (holding the seat of his pants): The farmer with his shotgun.

Wings Over the Yangtze

By Arch Whitehouse

Author of "Coffin in the Fog," "Death Flies to Fukien," etc.

Illustrated by Alden Mc Williams

HIS name was Crash Carringer—and he looked it! No, you wouldn't call it a fitting name for a man supposed to be selling airplanes. But early in life Crash had discovered that his chances of getting anywhere in this flint-fisted world with the name of Meridith Lovelace Carringer III were too slim for comfort.

So when in 1914 his old man foisted him on the unsuspecting faculty of Kent Prep out in Ohio and sailed away to take part in the great struggle for democracy, Meridith Lovelace Carringer III decided to do something about that name of his.

Just what did he do? Well, you can find the explosive details in the '15 issue of Kent's *K. P. Yearbook*. Anyhow, as soon as Meridith Lovelace Carringer II reported going into action with the First Marching Regiment of the French Foreign Legion, his lovable offspring went to work with a vengeance on that hated monicker.

He started off by slugging the two-hundred-pound sophomore who had attempted to nick-name him "Lovey." Then he started a young riot in the frosh dormitory to emphasize the fact that his parents had selected the wrong tag for a fellow of his pugnacious personality. Finally, when several members of the school's football squad decided to file the edges off his impudence, he led his freshmen minions against them—put them to rout in the worst campus fight in Kent history.

Of course, these doings earned him an immediate call into Prexy B. M. J. Throckmorton's office.

But the dignity of the sanctum failed to impress him. Once inside, he thumped the top of the Prexy's desk with such vigor that the inkwell rose a foot in the air, hung there for a fraction of a second before Throckmorton's amazed eyes, then dropped into place again without spilling a drop.

"Kindly get out the school register!" blazed Meridith Lovelace Carringer III.

"But, Carringer? What does this mean?" demanded the president.

"Get out the register—and a big black pen, Mr. Throckmorton. I'm changing my name!" young Carringer barked.

"Return to your dormitory at once, Carringer! I'll see you after—"

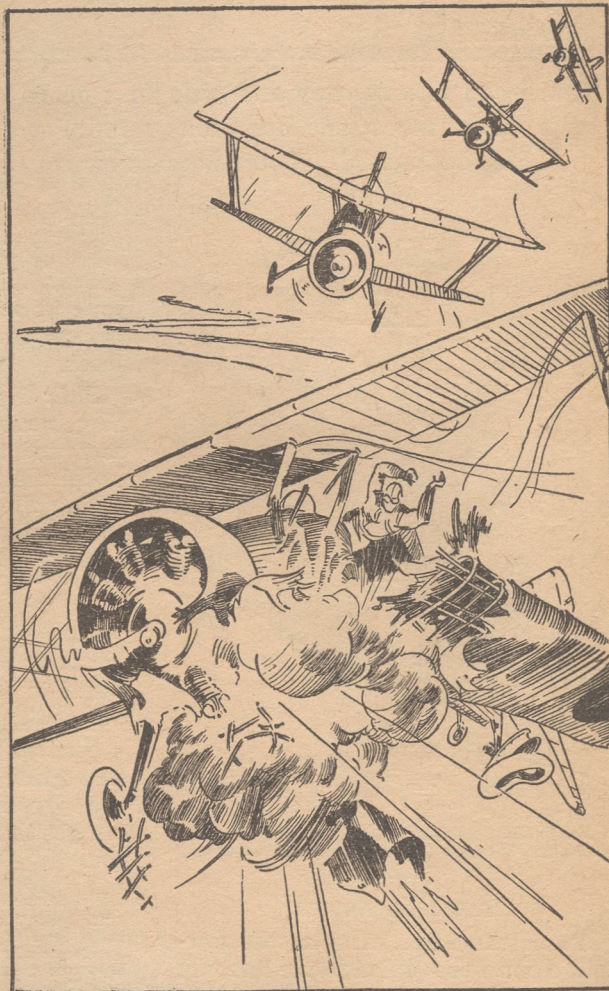
WHAM! Once again the inkwell took on flying speed.

"I'm changing my name, I tell you!" cried the unruly frosh. "This Meridith Lovelace stuff is out. From now on, I'm *Crash Carringer*!"

And the inkwell got it again.

It was lucky for the irate student that Prexy Throckmorton was a swell guy at heart. They used to say he understood boys—he understood Meridith Lovelace Carringer III, at any rate. Indeed, they had a lot in common, though the rambunctious Crash Carringer never knew what it was at the time.

It was a mystery to Crash why old Throckmorton called a general assembly of the school that night. But he did. And he staged it with much pomp and ceremony. Prexy Throckmorton even took the trouble to dig up an old Druid ceremonial rite and had the history prof draw up a suitable parchment heralding in precise English



Back upon the flailing fighters Crash hurtled his Hellion with every gun pounding out a hymn of death. Directly there came a low thud, a blinding explosion—and the leading Tatikawa disintegrated in mid-air!

the fact that Meridith Lovelace Carringer III was henceforth to be known as Crash Carringer.

It is history now how Crash's old man "went west" with the Lafayette. Thereupon, his willful son had to drop out of Kent Prep because no one came forward to pay his tuition.

It was at this time that Crash Carringer decided he had to find out what it was that had drawn his old man into the flying game. He was, of course, too young to get into the war, but by the time the early 1920's were on the books, Crash Carringer had learned to fly and was one of the flaming spirits of the Gates (Ajar) Flying Circus. Where or how he had learned to fly, no one seemed to know. Apparently, he picked up a little here, a little there.

Anyhow, he had fought seventeen professional bouts as a welterweight to get enough money to buy a ship of his own. In this process of pocket book rejuvenation, heavier and more experienced battlers had completed the facial renovation to fit his name. There was a puffy splotch across one of his eyebrows, a badly cut lip had been neglected leaving him with a perpetual snarl, his nose was flattened near the tip and the bridge car-

ACE SKY YARN INTRODUCING CRASH CARRINGER

ried a load of bloated gristle at a lopsided angle.

THIS, then, was the Crash Carringer who was now flying north from Singapore—the man who was living up to an intrepid name while attempting to sell American fighting planes in Asia. This was the toughest man ever to fly on a U. S. passport. This was a man who carried in his heart bitterness—and a threat—for a certain Oriental.

This was Crash Carringer!

For two days now, Carringer had been roaring north. He had hurried out of the Straits Settlements with four Gauntlet fighters of the R.A.F. hot on his tail. There had been, all told, a little matter of illegal registration, a fight in a Sinkawang Street bar, and a sheaf of telegrams to Nanking which hadn't been paid for.

But Crash Carringer had escaped with his Hale Hellion demonstrator job—a new pusher-type fighter the Hale firm had been trying to sell to the warring factions in the Far East. Crash had had a lot of luck, but it had all been bad. He had tried to kid the Japs into taking a few hundred of them during the days when the Orient was at peace. But—well, there was a man named Kimihi Matsukata who had gummed that one up.

Matsukata—who happened to be a Major in the Japanese Air Service—could have done plenty for Carringer. Indeed, it was Carringer who had taught him to fly. Crash had been among a group of American pilots

To Crash Carringer, formalities didn't mean a whoop in Hoboken. Back in his prep days he led with his fist—and got away with it. And when hell broke loose in China, he led with his sky-guns—and got away with that, too! Yes, Crash was the toughest hombre ever to fly on a Washington ticket. But even Crash himself never knew the real secret of his stormy life—until Jap bombs silenced the one man who envied his name!

who had volunteered to teach the sons of Nippon the art of taking a single-seater off the ground and bringing it back again.

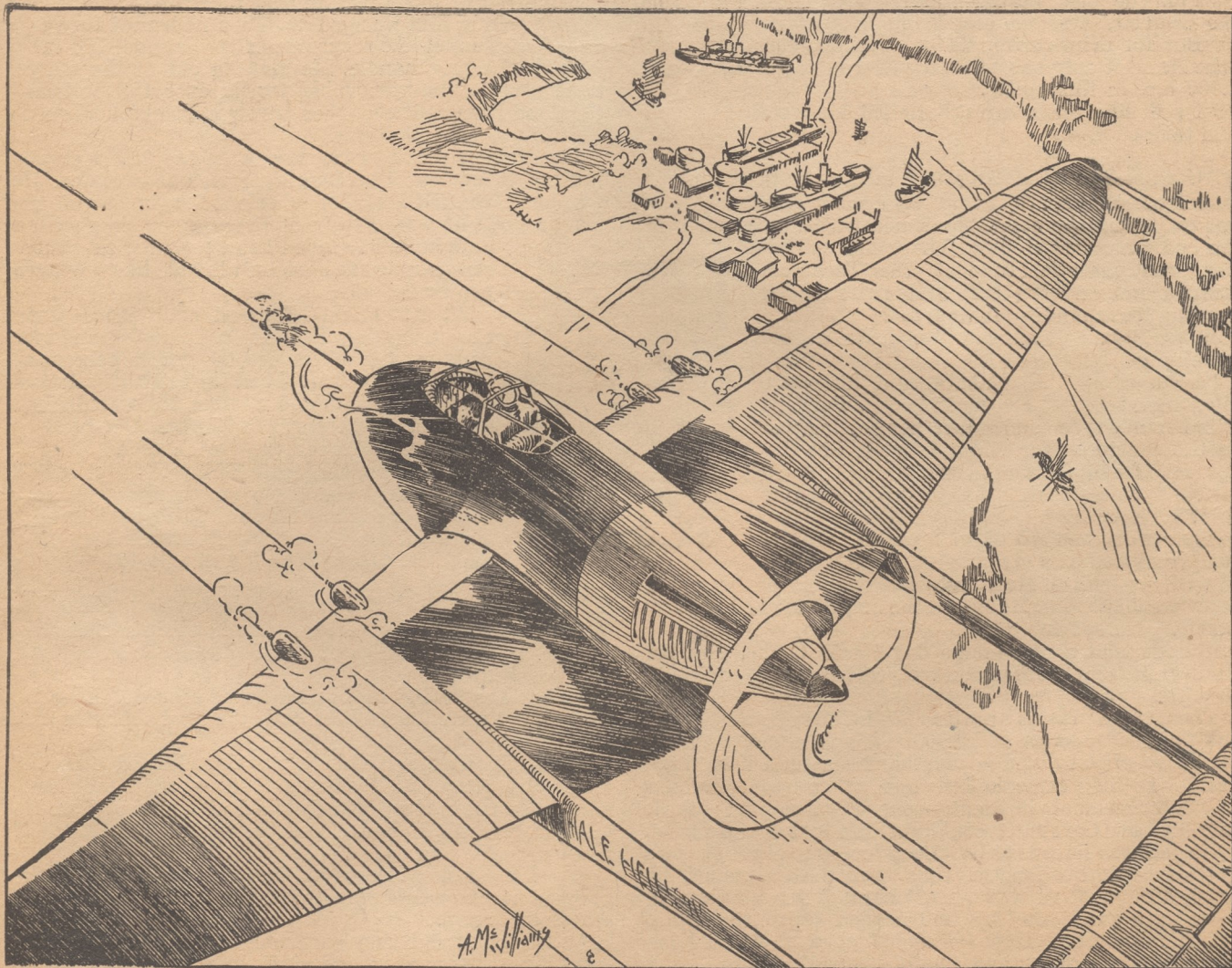
"You're probably the punkest pile-driver who ever got into a crate," Crash smilingly told Matsukata one day. "But stick with it, fellow—you'll get the hang of it."

Unfortunately, however, the Jap had no sense of humor. He bristled, raised his fist to strike. And so Crash had to plant one on his chin. That ended any hopes Crash might have had of selling the Skibo government; for while Matsukata was a poor

pilot at first, he did stick to it until he learned how to turn out a pretty creditable performance. In fact he stuck to it until his opinion carried weight in the Nipponese air service.

Carringer didn't find that out until the Hale Hellion was first put through its paces before the Japanese Technical Board. It was an unusual machine for Nipponese; but in the hands of Crash, this Allison-powered job was superb. And she looked every inch the fighter she was. With four .50-caliber guns in the wings and a Swiss 37 mm. cannon mounted in the nose, she was probably the most advanced piece of military craft ever put out.

The Technical Board exhibited great interest after Crash's show, then requested that one of their own crack pilots be given a chance to fly the ship in competition against one of their new Tatikawa biplane fighters.



Crash was not so keen about that, but there was nothing he could do. And when they produced Major Kimihi Matsukata to take over the Hellion, he was utterly disgusted.

"If this guy is so good," snarled Crash to Colonel Yokoyama, a fellow who looked like a Billikin in uniform, "Why not let me fly the Hellion against your Tatikawa?"

"Ah, but we know what *you* can do, Mister Carringer," the puffy Colonel intoned. "What we want to know is what our best pilots can do with your Hellion. Now, if Major Matsukata can outfly his colleague in the Tatikawa, we most surely will be interested in purchasing a certain number. Indeed, I might say a goodly number—if it performs as well in Japanese hands. You understand, of course."

Crash understood, all right. He'd seen the glint in Matsukata's eyes, and he knew the Jap remembered the day, five years before, when Crash had flattened him on the Ojima Aerodrome.

"Look here, Matsukata," Crash spoke up when the Jap was in the cockpit getting the details of the controls. "I know you can make a monkey of that Tatikawa in this job. You can do your government a good turn by convincing them that right here they've got the best ship of its type in the world."

"I like the French Hanriot," smiled Matsukata without deigning to look up.

"You mean the H-110.C1? Why, they quit making that job two years ago!"

"Yes, but you see I—I, Major Matsukata—like the Hanriot. Incidentally, I do not care to converse further with you, Mr. Carringer. I recall with distinctness a statement you made before my flying mates at Ojima."

"All right. But you must admit you *were* pretty awful in those days. They tell me you have improved, and I'm glad to hear it," continued Crash, still hoping.

"I am the finest fighter pilot in Japan—and I still like the Hanriot," was the hissed reply.

"But for cripes sake, Matsukata," argued Carringer, "the Hanriot only has a 600 Hisso. You've got more than 1,000 h.p. in this boiler."

"I still like the Hanriot," smiled Matsukata. "And I will take off now."

CRASH CARRINGER still fumed, as he headed north from Singapore, about that show Matsukata had put on. From the start, the Tatikawa pounced all over the badly-handled Hellion. The whole exhibition was pathetic. In fact, the Technical Board members left before Matsukata landed—and a lousy landing it was, too.

"Okay," said Carringer, "leave the engine running."

"I am sorry," Matsukata said his voice oily, "but I found her most heavy. Perhaps it is her newness that makes her so sluggish on the controls. Her climb is poor. She did not act like a fighter to me."

"No?" said Crash. "Well, how do you like this?"

There was the flash of a fist curling around with the speed of a piston. And when it landed with a smash on Matsukata's bony chin, the Jap never knew what hit him. He hit on the broad side of his back, exactly five feet away.

"I'll do that again—some day," said Crash. And he climbed into the Hellion and took off before anyone could stop him.

Then, to add insult to injury, he hoiked up, caught the still-flying Tatikawa at 1,500 feet, and actually forced the Skibo pilot to land without firing a shot. Two more Tatikawas then came to interfere, whereupon occurred an "international incident"—one of the kind which only a Crash Carringer could get into and out of again.

He declared later that he'd been forced to shoot the two Tatikawas down; for they had fired first. Anyhow, he finished them off with two short bursts from his cannon, then did a quick flip turn and headed across the China Sea for Shanghai. How he eluded pursuit, worked his way down the coast, and finally hopped over to Luzon was a story in itself.

Once he was in the Philippines, however, a few friends helped him to get down to Borneo. There he got an order for six Hellions from the Dutch East Indies government. And then, flush with confidence and nerve, he went across the Java Sea to Singapore and tried to sell a few more to the British.

But things were too hot for him by that time, hence he had to get out, head north again, and take a chance on making a deal with the Chinese.

FOR two days, then, Crash Carringer had had ample time to consider the error of his ways as he hurtled across French Indo-China, across the Gulf of Tonkin, and on through to Canton. There, he found no one with authority to purchase, and he was advised to attempt to get through to Nanking and find General Kai-shek.

That meant another flight of a thousand miles, but Cantonese officials promised to arrange landing privileges and service for him wherever possible.

"You must, of course, take full responsibility for the risk," they informed him with a sly smile. "You understand that the Japanese are in full control of Shanghai now and have pushed out along the Yangtze as far as Wuhu. It is more than likely that you will encounter Japanese air patrols as far west as Chihchow."

"Can I rely on that?" grinned Crash as he climbed back into the Hellion.

"I think you can," the Chinese replied, still smiling.

They gave him a map of the area, and he drew a pencil line north from Canton to Kanchow, then let the lead point wander along the Kan River which trickled into Poyang lake. From there he pushed the pencil north until it reached the bend of the Yangtze at Hukow, and with a final cheerful flourish he curved a line above the Yangtze and let it stop at a point between Taiping and Nanking.

"That ought to do it," he said to himself as the big Allison behind him warmed up. Then he leaned forward, jerked the funnel-like magazine of the cannon, and drew back the loading handle. He glanced out at the wings, made certain the removable panels over the outboard guns had been replaced, then threw a cheerful salute to the Chinese control officer.

The Hellion was now roaring down the field virtually fighting to get off. But Carringer was the master. He held her close and kept her wheels a few inches off the ground until he was certain of the engine. Then with a deft hoik, he ripped her up, and with a monstrous roar she shot for altitude like a winged projectile.

At 2,000 feet he eased off, headed along the straggling Peh which lapped at the rice paddies, and set his throttle for 65 percent of his engine power. Then he settled back and studied the map and a letter of credit he had drawn on the American Express Company at Shanghai to cover the Dutch order.

"I only hope I locate Chiang," he chuckled to himself. "The gravy on six Hellions is no chicken feed, and I'll sure paint that Bund a beautiful scarlet ten minutes after they open the office. And with a Chinese sale, too—Boy!"

IN two hours he had landed at Kangchow, refuelled, had his papers checked, and was heading north again in spite of the warnings of the Chinese officers camped on the aerodrome.

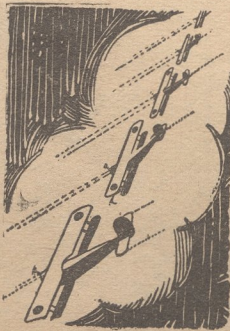
"What the devil," he bawled as he climbed in again. "I'm flying a Hellion! What have they got that can stop me?"

The Hellion screamed away again, climbed over the knife-edge passes of Wu Kung Shan where treacherous air eddies fingered up and clutched at his wing-tips. He climbed her still higher, closed the top to afford himself more warmth, and flailed on.

His mind was working as fast as the Allison as he planned how he would display the Hellion for the Chinese Air Service men.

"With that dough they got from the Cantonese government," he computed, "they could stand two hundred of

(Continued on page 66)



Tackle "Problem 19"

THE STIRRING STORY BEHIND THE COVER PAINTING

* * *

EVENTS which evidence the menace of war in the Pacific will be staged this March when the United States Navy carries out what is technically known as "Problem 19."

While war games are regular practice in all navies, the secrecy surrounding this year's program is unusual. Already eyebrows are being lifted both here and abroad. Indeed, the subject has been brought up in our Senate, and many questions have been asked by ranking government officials. But regardless, the Navy is going ahead with full intentions of carrying out the details of Problem 19 in its own way.

None but official observers will be allowed to accompany the Fleet. No newspapermen, commentators, or professional writers will be offered berths aboard the dreadnaughts as has been the practice in the past; no military or naval officials of friendly nations will be invited; and those who have made applications for permission to attend have been courteously turned down.

What, you ask, is this potent Fleet Problem 19? Why are certain foreign nations becoming so upset about it? And what supposedly-sinister strategems could be woven into a program of naval war games to arouse such a round of objections?

The fact is that only our highest Navy officials are acquainted with the real details of Problem 19. The Fleet will leave San Diego under sealed orders—and not until it is at a certain designated point will the various squadron leaders open the envelopes which contain their orders. At that point, the Fleet will be divided into a Red and a Blue force, and each side will carry out a series of maneuvers in an attempt to "cripple" or "destroy" the other. Beyond these rudimentary points, nothing has been divulged.

One portion of the fleet will, of course, simulate the probable movements of an enemy force. Very likely this will entail a "raid" somewhere along the shores of Southern California. Such an "assault" would no doubt include a planned landing by trained troops. The incorporation of this test in the Problem 19 menu would be understandable, since our government is certainly not ignoring the recent mysterious incidents along the Southern California coastline, where Japanese fishing fleets have seen it convenient to anchor and where Japanese divers have made many so-called scientific investigations of the ocean floor.

OUR cover this month shows one phase of the probable activity of the defending force. An aircraft carrier, well ahead of the main battle force, is depicted sending off patrols of Boeing F4B-4's to take part in the search for the "enemy raiders". And in the distance steams the battleship force commanded by the U.S.S. *Pennsylvania* flying the Admiral's flag.

Sky scouting units, comprising two-seat Vought Cor-

sairs, will also be discharged from the carrier decks and from the catapults of the heavy cruisers to carry out the detail work of observation. The fighters will protect them.

There are many, of course, who prophesy that Problem 19 will be staged farther north, the idea being that an enemy fleet might first fake a move toward the south via Guam and Hawaii, but then would divide, to send its stronger portion to attack from the north after first setting up its own temporary supply bases along the Aleutians and down the coast of Alaska. But whether this would be wise on the enemy's part, is a question. The move itself might be at least partially successful, but our theoretical enemy would have to consider the fact that any move made from the north would involve the Dominion of Canada and by this token the British Empire. Taking on both the great English-speaking powers at once would be no joke.

As for a war in the Pacific, we have no precedent by which to judge. There are many who believe that Japan, if successful in China and not too harassed by Russia, could get in many telling blows against us during the first eight or nine months of such a scrap; for we would have the Devil's own time protecting our holdings on the Far-East side of the Pacific.

And as for Problem 19, we must remember that the broad battleground of the Pacific may hold problems that all the war games ever staged have not uncovered. It may develop that a great navy, strong in capital ships, may be easy meat for a smaller, efficient Navy selecting its own fighting areas. In fact, the problems uncovered at Jutland in 1916 have never been wholly solved; and the powerful British fleet, although it drove the German High Seas fleet back to its base, is generally considered to have taken a technical beating. Today, naval experts are widely divided on the value of gun-power as com-

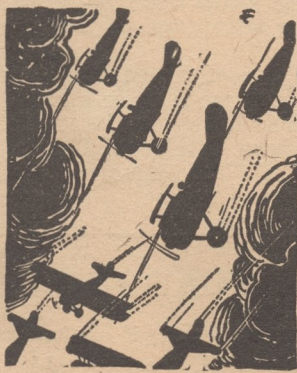
pared to mobility and information. What saved the German High Seas fleet in the Jutland action was a combination of poor visibility, good information gained by scouting zeppelins—and luck.

Who knows? What happened at Jutland might happen in the Pacific. Granted, the U. S. Navy is bigger and stronger. But it would be on the defensive at the opening of hostilities, and the job of defending a coastline that stretches for a distance of about 2,000 miles is no cinch. Presuming that our defenses were successfully carried out in such a war, what if our Navy decided to carry the conflict to the enemy territory? It's doubtful if our navigators are "up" on the soundings, channels, and nautical details of the treacherous waters surrounding the Japanese empire. Anyhow, an assault of that kind wouldn't be a joy ride.

One of the most important features of our Fleet

(Continued on page 63)

Over the broad reaches of the Pacific, the U.S. Navy is about to stage a sensational secret sham battle. And only our highest war officials know the real details of the startling strategems to be tested.



Wanted! 20,000 Pilots!

READERS! Here at last is some truly encouraging news! For a definite movement is now on foot to offer general flight training for the thousands of youths in this country who have longed to "take to the air."

Yes, after years of dilly-dallying, the necessity of our catching up with the leading European nations—which have progressed so far in the field of civilian flying—is finally being constructively recognized by American aeronautical officialdom. And if the training scheme is developed as is hoped, reserve officers from both our Army and Navy air services will take an active part in the civilian program.

We of FLYING ACES Magazine have been advocating such a movement during our entire ten years of publication, and we are gratified indeed to note that something definite is finally taking form.

A conservative estimate shows that at least 20,000 additional pilots are needed in the United States. Even including *all* of our pilots—our Regular Army and Army Reserve men, the flyers of the Navy, Marine Corps and Coast Guard, and our commercial transport and private pilots—our total number of licensed and even unlicensed pilots hardly approaches 30,000!

And this in a foremost nation with a population of 130,000,000—where the Wrights made the first successful airplane flight thirty-eight long years ago! We've been slow, very slow, in not taking advantage of that start.

It is true that aviation as such has advanced—that planes and flight equipment have been made safer and more comfortable, that aviation aids have been introduced and that flying fields have been developed. But have all these striking advances "sold" the American public on private flying? Unfortunately no!

A national civilian air training program! The youth of the country has long appealed for such a movement—and now, at last, steps are being taken to achieve it! For our N.A.A. has launched its National Air Youth Program. And America is finally recognizing the full truth of the statement—The nation that flies is the nation that progresses.

THE country that flies is the country that progresses! For by flying, man conquers time and space—and by that conquest he promotes his civilization. America, then, must be more than air-minded—it must be a nation of people who take an active part in aeronautics.

That we are progressing toward this goal is evidenced in the reports of a recent youth air movement meeting held as part of the First National Aeronautic Planning Conference at Cleveland.

Among the chief speakers at this meeting were Major General Oscar Westover, chief of the Army Air Corps; Major General Frank M. Andrews, of the GHQ Air Force, and Rear Admiral Arthur B. Cook, chief of the Bureau of Naval Aeronautics.

Bernarr McFadden, publisher and airplane pilot, spoke strongly of the need for Government sponsorship. He stated that America must launch a broad air training scheme, then warned of dire consequences if the plan lacked wideawake promotion from Washington.

And Colonel Melvin Maas, Minnesota Congressman and president of the Aviation Reserve section of the U.S. Marine Corps, urged Federal support of private flying clubs.

In accordance with these and many other representations calling for heartier government interest in and support of civilian aeronautics, the Planning Conference drafted important proposals. As we go to press, the full details of these proposals have not been disclosed.

But it is indicated that the Conference is seeking to initiate a youth air program of practical aeronautical activity to begin in our elementary schools and continue through college. We hardly need to state that FLYING ACES Magazine heartily advocates such a program.

Thousands of fellows in this country would take to the air if given half a chance. So we're hoping that the "Powers That Be" will dope out a practical scheme that'll give 'em that chance. If they do, America will get her 20,000 pilots in no time!

All Questions Answered

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

George McLeod, Rochester, N.H.:
—I do not believe any of the British-made Hawkers were ever sent to Spain. As both the Curtiss P-6-E and the ordinary Hawker Fury are now practically obsolete, I see no reason to make any comparison between them.

Joseph Omiline, Yonkers, N. Y.:
—Sorry, but none of your questions can be answered here. Planes are usually purchased in group lots under a contract which also includes a certain amount of spare parts. Thus it is pretty hard to figure the actual

cost of a single plane, but I am sure most of the companies you mention would be glad to quote you a price if you were really interested in purchasing one. Wing guns are aimed by aiming the whole ship, just as are the fixed guns in the nose of a plane.

Warren Liken, Sebawaing, Mich.:
—The Army pilot who told you his Boeing P-26 would only do 188 was either kidding you or answering your question according to orders from his superiors—which perhaps gives you some idea of the fun we have trying to get any real informa-

tion on service ships. However, the Boeing company has stated that they will do 235—or better. I'm sorry, but I do not know anything about the model planes you sent along in that picture cut from *Life*.

Bill Fitz Patrick, West New York:
—The top speed of the Gotha was 72 m.p.h. at 12,000 feet. I believe the Army Flying School at Darmstadt was Germany's largest air training base during the war, but my information is not official. Von Richthofen was 25 years of age when he was killed.

Elvin Evans, Smackover, Ark.:
—I'm sorry, but the Ryan company is another of those outfits which does not publicize its prices. The top speed of the Ryan S-C with the Menasco C4S engine is 150 m.p.h.

Strange to relate, its top speed fitted with a 145 h.p. Warner Scarab engine is the same. If you write to Ryan at Lindbergh Field, San Diego, they will let you know what a Ryan S-C costs. I have no records of the terminal velocity speeds of the ships you mention.

Sylvia B. Lawrence, Montclair:—
FLYING ACES, as you'll note on our cover, is in its tenth year. Our first issue was put out in November 1928.

Lawrence J. Urdang, Brooklyn:—
We have carried details on many model-building books in this magazine for the past year or so. Hamilton's revised *Complete Model Aircraft Manual* is, I judge, the sort of volume you're after.

George E. Brown, Meriden, Conn.:—
No, I do not think your idea of the tail gun is nutty at all. Indeed there is much merit in it. But unfortunately you will have considerable difficulty in putting it over with the men who have the say. In the case of the British ships you mention, which have their fins and rudders set well up the fuselage, it could be done, of course. But I do not believe it has been attempted. They are as hard to convince over there as we are over here. As a matter of fact, the idea was first broached back in 1916, but the big shots who didn't have to fly frowned on it.

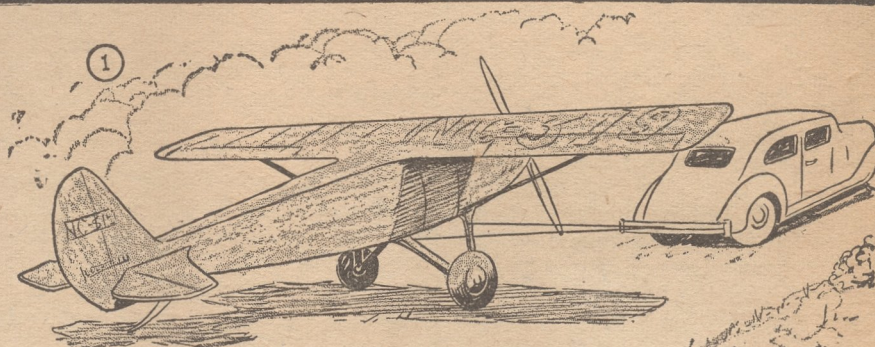
Reginald Weston, Montreal, Canada:—
Your argument concerning the amount of lift above and below an airfoil will go on for a long time, I'm afraid. Theories in vogue up until a short time ago had it that three-fifths of the lift was obtained from a vacuum supposed to be created by the flow of the slip-stream over the upper camber of the wing and the remaining two-fifths underneath. This theory used to be taught in all flying schools. But later it became the target for many arguments because too many unanswerable points came up when it was depended upon in actual practice. I suggest you seek out a late book on aerodynamics if you wish to go deeper into the subject. Space does not permit a long-winded discussion here.

Patsy Lentano, Brooklyn:—
Sorry, but I do not believe any of the model makers have put out a six-inch model of the Wright Brothers' first biplane.

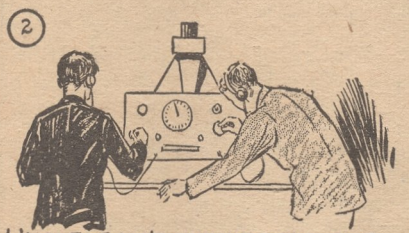
G. S. Brown, Brighton, England:—
The Colonel Cody to whom you refer was not "Buffalo Bill." Colonel Sam-

PILOTOPICS

By ROY HUMPHRIES



THE TRAILER BUG BIT THIS PILOT!



UNCLE SAM'S NEW EAGLE EYE...



DON'T OPEN A BOTTLE OF CHAMPAGNE IN AN AIRPLANE



A FLYER WITH HIS HANDS FULL!

Roy Humphries

Stories Back of the Above Pictures

1—YOU CAN'T use a plane for a trailer—any more than you can use a trailer for a plane! Ercolo Crampillo, young student pilot of Newark, N. J., found that out recently when he tried to haul his training plane over the highway. The protruding wings of his sky bus quickly jammed up the rush hour traffic, whereupon the sad Ercolo had to dismantle his craft and transport it portion by portion.

The trials of trailing a trainer!

2—A DEVICE said to be capable of spotting an enemy plane within a radius of 20 miles is now being tested by our War Department. Official secrecy veils the details of this startling A-A apparatus. It is understood, however, that its operation involves the detection of infra-red rays thrown off by the heat of the approaching craft's motor.

How about baffling that gadget with a dry-ice engine?

3—WE dominate Captain Clayton C. Jerome, of the Marine Corps, as America's busiest skyman. At one and the same time, he performs the duties of U. S. air and naval attaché to Colombia, Venezuela, Panama, Costa Rica, Honduras (catch your breath!) El Salvador, Guatemala, and Nicaragua. Eight nations in all!

He oughta have a rocket ship to make his calls.

4—AS Clark Gable sadly discovered during a recent South American air tour, champagne's joys are for the earth-bound—not for those who wing among the clouds. For with too much pressure inside and too little outside, each bottle emulates Old Faithful Geyser the instant the cork's out.

Which is a real pain instead of a champagne!

uel Franklin Cody was an American who became a British subject. He performed noteworthy deeds in the air prior to the Great War and was finally killed while flying in August of 1913. The "Cathedral" plane was a giant biplane.

Russell Watson, Brisbane, Australia:—The top speed of the Fairey Battle is 257 m.p.h. The Kronfeld "Drone" is a powered glider which originally used a Douglas motorcycle engine. It is now powered with the Ava flat-four two-stroke engine. We have never seen any performance figures on the "Pterodactyl." I believe the Westland P.V.6 was a "private venture" job and the "Wallace" an adaptation from earlier Westland G.P. types.

Leo Walsh, Portland, Ore.:—It seems to me that our advertisers have included rubber lubricants in their lists many times, I understand that plain glycerine is very good. Another lubricant for this purpose is a mixture of Ivory Soap shavings boiled into a little water to make a thick mixture and to which is added an equal amount of glycerine.

Airman X, West Millford, N.J.:—Yes, a Macchi-Castoldi seaplane has traveled more than 440 m.p.h. for the world's record. If you still don't believe me, write and ask the Aeronautics Branch, Department of Commerce, Washington, D.C.

Helen Berres, Minneapolis:—Our government does not teach girls to fly because those taught in government schools are expected to become military airmen. I agree with you that a certain number of women might be given training in order to fill responsible flight positions in event of an emergency. But no one has yet convinced the "powers that be" that the idea would work.

W. R. Harvey, Sutton, Surrey, England:—The giant plane built for Russia by the Martin Company of this country, is primarily a passenger ship. But military uses of the huge craft are quite possible. I believe they have purchased that one to learn how American firms build a plane of that type. They might use it eventually on an airline run between Russia and the United States. As to your other question, all I can say is that since that Northrop fight-

er arrived in England a few years ago, British military craft manufacturers have shown a distinct leaning toward the monoplane. Prior to that, practically every type was built in biplane form. There are no records of the number of American military planes now in England, but as far as I know there is not one modern British military plane in the United States.

Albert Spencer, Columbus, Ohio:—The United States seems to be the only country that goes in for particular color schemes for service craft. Other nations apparently rely only on their international markings. You

And Now We'll Ask You a Few

- 1—What new Lockheed can quickly be converted into a bomber?
- 2—What is the Abrams "Explorer"?
- 3—What is the new Douglas TBD-1?
- 4—What modern plane uses two different types of engines?
- 5—Who was Papa Dorme?
- 6—What engine is used in the new Gwinn "Aircar"?
- 7—State the difference between the Porterfield "Zephyr" and the Porterfield-35.
- 8—For what duty was the Vought V-150 designed?
- 9—What do the initials "P.Z.L." mean?
- 10—What is a horizontally-opposed engine?

(Answers on page 80)

see, here we have two distinct services, Army and Navy; and it simplifies things to keep their color schemes distinctive. Abroad, most services are unified, and they just use ordinary dural color. Great Britain, however, is beginning to devise a series of camouflage designs on certain basic types instead of keeping their ships dural or silver, in hue.

Milton Brawer, Paterson, N.J.:—Your request for a list of all aeronautical manufacturers and the schools in this country would take too much time to compile. I suggest that you ask the Aeronautics Branch, Department of Commerce, Washington, D.C., or get a copy of the *Aircraft Yearbook* from your nearest library. I should imagine they have that volume in your Paterson library.

Don A. Bakewell, Lowell, Mass.:—I'm glad you liked that character, Tank, in the Coffin Kirk story. We

hope to do more with him later on. Almost any country could build a seaplane to race the Italian Macchi-Castoldi, but it would have to be a government proposition. No individual could afford to foot the heavy experimental costs. We are considering a new series on the air forces of the various countries.

Fred Radford, Canton, Ohio:—The sample of aluminum sheet you sent me seems suitable for a gas model plane—if you can fasten it to the framework securely and with as little addition of weight as possible. This is a very important point, and I question whether you could do it. I am afraid I cannot advise you, without considerable research, on the matter of your Baby Cyclone idea.

A Friend, Pittsburgh:—I am sorry, but you are quite wrong in your criticism concerning our October issue racing plane cover. The left wing is pushed *down* by the airflow striking its aileron, which must be *up*. The right wing, which is *up*, has been lifted by the airstream striking the right aileron which is *down*. Anyhow, think it over—you'll find I'm right.

Paul Cramer, Sioux City:—The probable trouble with your 10-inch propeller is that you may have made a mistaking in boring your shaft hole. You see, a slight mistake of this sort in a small prop would hardly make any difference, but when you get longer blades the trouble is augmented proportionately. Better check your blades again and test the position of your shaft hole. You might even try leaving a larger portion of central boss to act as a fly-wheel until you get your propeller running smooth.

Eugene D. Manley, Houston, Texas:—There are at present five aircraft carriers in the U. S. Navy. The new *Enterprise* is now being completed. The *Saratoga* can carry about 120 planes but only about 70 are aboard in peace time. As Frank Hawks' plane *Time Flies* crashed before she was put to a real speed test, there is no way of knowing whether she was faster than Howard Hughes' racing ship. The Boeing YB-17 was originally known as the 299 bomber. The Empire flying boat uses four 790 h.p. engines and the *China Clipper* uses twin-Wasp engines which

AMERICA'S BATTLE PLANES AREN'T WORTH A TINKER'S DAM

—unless we've got skilled flyers to man them. And *today* our country faces a serious shortage of fighting pilots! The gravity of this menacing situation is revealed by General Westover, Eddie Rickenbacker, Casey Jones, and Major Fred Lord in our smashing feature article, "We Must Train Airmen For America's Defense!" You'll find it in—

THE GREAT MAY FLYING ACES

are rated at 830 h.p. But certain models are supercharged to well over 1,000 h.p. The PB-2A uses the Curtiss Conqueror engine. The Armstrong-Whitworth *Whitley* is larger than the Martin bomber.

A. C. Wright, North Troy, Vermont:—There are a few plans available by which a Chevrolet motor may be changed into an inverted job for use on an ice-scooter. But I believe the cost of the changes would be considerable—unless you can do most of the work yourself. We have no such plans here, but you might contact the Chevrolet Motor Car company and see if they have any such plans.

Joe Selikoff, Brooklyn, N. Y.:—The identification of your pictures is as follows: (1) Cannot tell, picture too indistinct; but it is a Marine Corps plane and bears the Marine insignia; (2) Vultee F-2; (3) Douglas O-25-C, I believe, but can't be certain; (4) Burnelli UB-14

with 2 Hornet engines; (5) the same ship on the ground; (6) Belanca seaplane bomber. The Vultee V-2 you mention is an attack bomber. The Burnelli was supposed to have a top speed of 220 m.p.h.

Charles Bratres, Castle Rock, Wash.:—I know of no smoothskin Ford-Stout tri-motored planes. The new Taylorcraft plane is a high wing monoplane with a Plastecel enclosed cockpit. It costs \$1,495 and can be bought with a down payment of \$495. Mounting the A-40 Continental motor, it has a top speed of 91 m.p.h., lands at 35, and cruises at 80. When superchargers are placed outside the motor nacelle, it means that is the most convenient method of fitting it to that particular type engine. Unfortunately, this type of fitting sometimes affects the streamline beauty of the plane.

Eugene Hodgdon, Concord, N. H.:—The reason pursuits and other types of military planes are equipped with two

calibers in machine guns is because under present conditions the pilot may be facing targets which require varying striking power in his weapons. For instance, if he is fighting what he knows to be an all-metal plane, he will use the .50 caliber guns; while if he is ground-strafting enemy troops, the .30 caliber weapons are sufficient.

Jack Hannan, Sydney, Australia:—Sorry, but I have no record of war-time prop numbers, so I am unable to help you out much on those propellers. However, the first is probably from an old Farman using a Renault engine, while the second may be from a Wolseley "Viper" S.E.5.

Walter Caffrey, Paterson, New Jersey:—I should think that your complaint concerning the "Secret List Ships" argument ought to be sent to the Officer Commanding, Materiel Division, Wright Field, Dayton, Ohio. But I really don't know what that officer can do about it—unless he is the man responsible for taking the planes in question off the secret list and allowing the manufacturer to export them.

BY ARCH WHITEHOUSE

The Airmail Pals

HERE, aero ink-slingers, is a South African lad who has the right idea about this pen pal proposition. With him letter writing isn't merely a means of passing the time and being able to brag that he's just received a letter from a chap on an overseas tarmac; instead it's his way of improving his education and enlarging his perspective.

We're talking about John Kruger, who lives in Vrede, South Africa. And this is what John says:

"Here in far off *Suid Afrika*, I am desirous of writing to an American. I have just finished high school, am 18 years old, and I want to broaden my outlook by corresponding with people of various viewpoints on life. I'm keenly interested in politics, both local and international.

"I suppose that to an American politics means an interest in the antics of those two U.S. party critters, the Donkey and the Elephant. So it would stand to reason that I'm a lover of animals, too. I *am*! And my major hobby is breeding pigeons!"

And now here's Paul Anderson, a Minneapolis skyster who has piled up quite a few hours with his own airplane and glider. Paul told us he wanted to contact one particular type of chap. And strangely enough, the very next letter in the pile was from exactly the right lad—Art Beaumont, of Buenos Aires.

Art is connected with an American airline operating throughout South America, speaks and writes both Spanish and English, and is just the same age as Paul—which is 24.

From Keith Robey, a pen pusher in Sydney, Australia, comes a letter asking for an American pal interested in commercial aviation. Keith sends up some good dope regarding aeronautics down in the big camel-humped continent:

"I live near Sydney's Mascot Aerodrome," he writes, "from where our air service extends to every point in our Commonwealth. Australia, you know, is rapidly becoming air-minded, and every day the available service is being increased. We have mostly British aircraft here, of course, but of late a number of American ships have been imported—four Electras, four Douglas DC-2's and a DC-3, four Stinson tri-motors and some Reliants, plus a number of Cessnas and Taylor Cubs."

And now we come to a snappy note from Tommy Wilson, of Cincinnati—a message that's all dolled up with a stack of really neat little aero-action sketches! Says Tommy:

"Model building's my favorite hobby, and I'm mighty interested in aviation in general. I like to read, to draw, and to figure out military tactics, too. And when I get going strong with my new pal, I'll knock off all my letters on the typewriter."

Bill Philbrook, of Red Bluff, California, is the chap we coupled up with Tommy. Bill's a good letter producer, too. But he'd better look out for the California Chamber of Commerce—for he admits in his letter that it rains out there in the State of the Golden Sun! That confession, say we, seems like sacrilege! But—Ssh-sh! Maybe Bill is a spy for the Florida Chamber of Commerce.

—THE RIGHT HONORABLE PAL DISTRIBUTOR

HOW TO GET AN AIRMAIL PAL

FIRST, write a letter just as if you were writing to your new pal—the kind of letter which tells your age, particular interests in aviation, your hobbies, et cetera. (If you wish, you may include a separate sheet of paper telling us, in a general way, what kind of a pal you seek.) Next, send this letter to Airmail Pals, care FLYING ACES, 67 West 44th St., New York City. And be sure to enclose a stamped, self-addressed envelope.

Now, when your letter arrives, we select a Pal for you from our batch of letters—the sort of Airmail Pal your letter indicates you want—and we mail his letter to you in the stamped envelope you send us, and we mail your letter to him. Then you're all set! Of course, if you want additional Pals, just write us again.

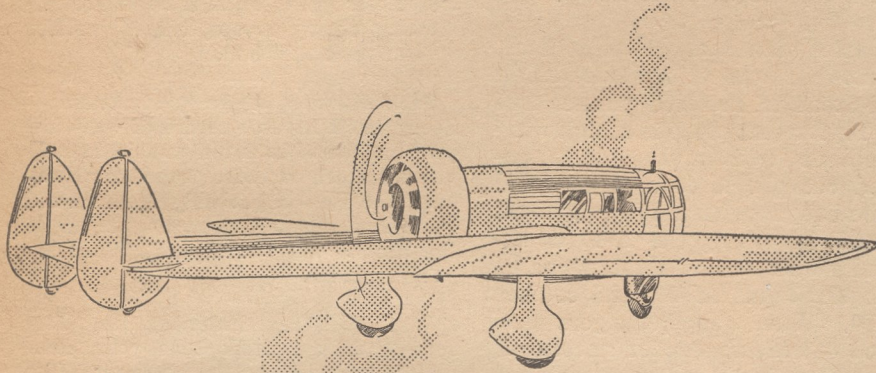
REGARDING FOREIGN PEN PALS

IN case you do not reside in the United States, write a pen pal letter as above—but do not enclose a stamped, self-addressed envelope or send any money for stamps. Your pal letter will be forwarded to an American correspondent, following which you need only wait for his reply.

If you are an American who wants a foreign 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 foreign pal you seek. Enclose a self-addressed, stamped envelope. A foreign writer's letter will be sent to you, then you may begin writing him direct from your own home. Foreign airmail pals are cared for in this fashion because foreign stamps sent in from other countries cannot be used in the United States to forward letters to Canada or across the seas.

Those of you who seek foreign pals will be given American correspondents whenever the supply is exhausted. Please note also that we cannot supply you with foreign pals in non-English speaking countries where FLYING ACES is not distributed.

Modern Planes Album



ABRAMS EXPLORER

ABRAMS "EXPLORER"

THIS strange craft has been designed by Talbert Abrams, of Abrams' Aerial Surveys, for aerial photography and mapping work. It has been in the course of development for some time, and there are many who believe that this type of craft is destined to win an important place in the military field.

Almost entirely built of glass panels, the ship's unusual cockpit pro-

vides many angles of vision and camera scope. Moreover, the ship has a rapid climb, high cruising speed, fuel capacity for about eight hours, a supercharged engine, and oxygen equipment for the crew.

The "Explorer," as it is known, is a mid-wing pusher monoplane powered with a Wright J-6-9 E, 330-h.p. engine. It has been stressed, however, to take an engine of 450 h.p. We also understand that subsequent mod-

els will carry 1000-h.p. engines.

The body, or gondola, as it is known in a ship of this type, is constructed on welded steel tubing and covered with stressed steel-alloy skin. The full cantilever wing is of monospar steel tube construction, while monocoque dural construction is used for the booms.

The gondola is so close to the ground that no steps are required to enter the cabin. Doors are provided on each side opening directly into the pilot and camera-man seats, respectively. A "door within a door" enables the cameraman to take photographs at oblique and forward angles without opening the outer door. In addition a hermetically-sealed mapping hole is built into the floor of the gondola.

Air-tightness of the cabin for supercharging at high altitudes is provided by sealing in the various safety glass windows.

The "Explorer" has a maximum speed of 185 m.p.h., cruises at 150, climbs 1,300 feet per minute, and has a service ceiling of 19,000 feet. Another interesting feature of the ship is the adaptation of the tricycle undercarriage.

SPARTAN "ZEUS"

HERE'S a new plane being built by the Spartan Aircraft Company of Tulsa, as a general-purpose craft—a type of craft that's somewhat new in this country but is often found abroad. In general, it is a ship that can be used for a wide range of purposes, from advanced training all the way to high-altitude fighting.

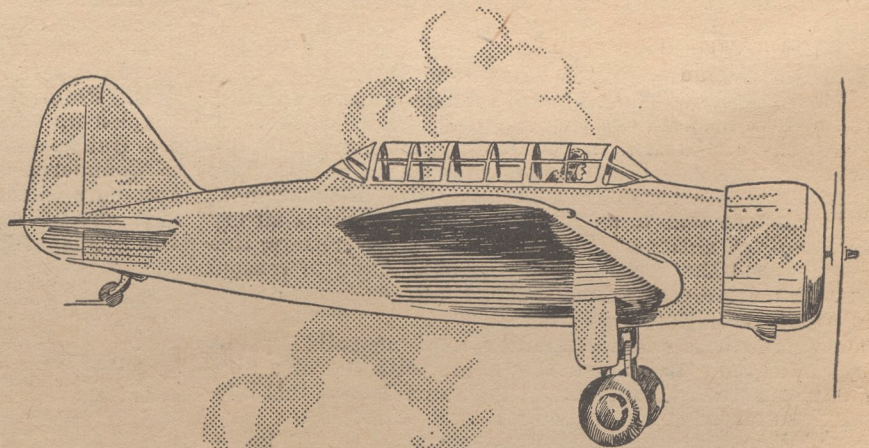
This Spartan "Zeus" is a two-seater in the low-wing cantilever category. It is almost entirely an all-metal job, only the rudder and elevators being covered with fabric. The fuselage, which is oval in section, is built up on steel tubing and covered with Alclad dural sheet.

The cockpit seats two in tandem and it is covered with a sliding transparent hatch. There is one fixed machine gun mounted near the wing root and another fitted on a flexible mounting in the rear cockpit. An Army A-3 bomb rack may be attached under each wing enabling the craft to carry ten 25-lb bombs. There are provisions inside for a radio and camera, and other equipment includes an electric generator and battery as well as avigation and retract-

able landing lights.

The power plant is the Pratt & Whitney 550 h.p. Wasp which is equipped with a Hamilton-Standard controllable-pitch airscrew. The "Zeus" boasts a top speed of 225 m.p.h., a cruising speed of 210, and a landing speed of 64 m.p.h. with flaps down.

Fuel tanks are carried in the center section, and the 110 gallons carried give the ship a range of 680 miles. The undercarriage, which re-



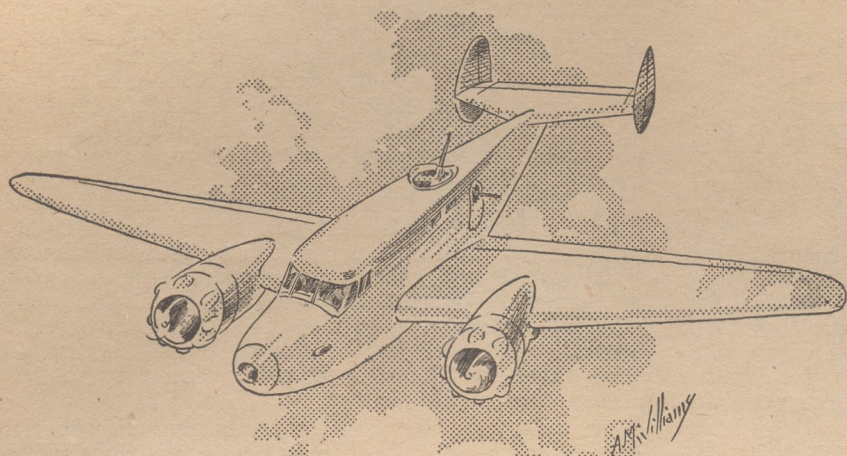
SPARTAN ZEUS

tracts, uses the single-leg cantilever struts equipped with Cleveland air-hydraulic shock-absorbers. The legs are mounted at the ends of the center-section spar and retract inwardly into the lower surface of the center-section. The gear is operated electrically, but a hand-gear is included for use in case of emergency.

A close study of the "Zeus" gives one the impression that it is best fitted for advanced training, rather than for active service duty.

FOUR MORE SLEEK CRAFT FOR YOUR SCRAPBOOK

Attention, aircraft fans! We've got a mighty striking collection of ships for you here this month—an aerial photography job, a general-purpose military skyster, a light bomber, and even a radio-controlled plane! They are, respectively, the Abrams "Explorer," the Spartan "Zeus," the Beechcraft Light Bomber, and Britain's sensational pilot-less Airspeed "Queen Bee."



BEECHCRAFT LIGHT BOMBER

BEECHCRAFT LIGHT BOMBER
MORE AND MORE manufacturers of commercial aircraft are turning their attention to military jobs. This point is particularly evident in this country where we find that many firms long identified with the commercial field are now showing a decided interest in bombing plane designs.

Some time ago we showed the revamped Barkley-Grow transport in

these pages; and now we find out that the Beechcraft company of Wichita, Kansas, intends to invade the light bomber field with a military ship based on their 18-A twin-engined six-passenger monoplane.

Now that bombers are becoming the most important arm of the Air Service (see Happy Landings), it is natural that there will be specific types for specific work. As for this Beechcraft, very little publicity has

been given out; but it is obvious that this job is most suitable for short-range coast defense work.

In general, the ship retains the same lines as the 18-A except for the addition of a rotating nose turret and a streamlined rotating gun turret set in the rear portion of the fuselage. It is presumed that the crew will consist of about three, or possibly four, men. And light bombs will be carried in interior racks and released by a bombardier who will assume a prone position on the cabin floor aft of the control pit.

No details of the actual armament have been given out, but in all probability about four .50-caliber Brownie guns will be carried.

The ship is a low-wing cantilever monoplane and its center-section is integral with the fuselage. The outer panels of the wings are tapered, while their main structure consists of a single-beam tubular spar which is spliced to a duralumin girder half way out to the wing-tips.

As a transport, the 18-A has a cruising speed of about 195 m.p.h., but the speeds of this Military version have not been divulged.

AIRSPPEED "QUEEN BEE"

WHILE much has been written about this radio-controlled target ship used by the British Fleet Air Arm, few realize how many of these planes have been made—and shot down in actual target practice.

As for shooting them down, we were astonished to learn that in a recent gunnery drill, British Navy A-A men had the opportunity of shooting down four a day over a period of about a week! These target "Queen Bees" were discharged from cruiser catapults, following which most of them were destroyed with an average of four A-A shots at a height of about 4,000 feet.

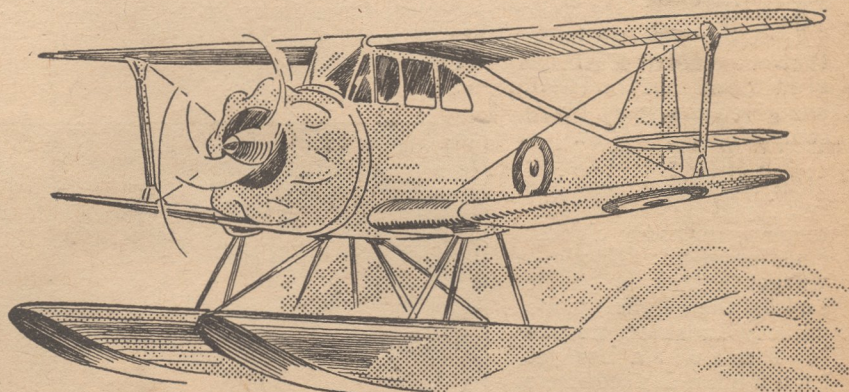
What, asks the world, is the secret of this Airspeed ship which is so skillfully controlled from a small radio box no more than a foot wide and three feet in height?

Actually, the plane is an Airspeed single-engined biplane using the Armstrong-Siddeley "Cheetah" engine. A cabin job equipped with either wheels or twin floats, its cockpit equipment is normal, except for the secret control system by which handlers on the ground fly it off,

maneuver it through normal flight positions, and bring it back for a landing again.

One recently got away from its radio control, flew on for a distance of about twenty miles—and executed a perfect landing on the water near the battleship *Southampton*. On one occasion, too, a "Queen Bee" was sent up at night, spotted with a searchlight beam, flown through various maneuvers, and finally was shot down by Navy gunners.

In some cases, the "Queen Bee" has



AIRSPPEED QUEEN BEE

been put into steep dives on the Navy gunners to simulate the effect of dive bombing. In every test, however, the new multiple pom-pom anti-aircraft guns have been used to shoot the "Bees" out of the sky.

Since it's a "Hush-Hush" job, very little is known about this baffling "Bee" outside of the R.A.F., but they have been flying the human-controlled version since 1930. Indeed, you can buy the latest model for about \$7,500—but don't expect to find it equipped with the radio box!

On the Light Plane Tarmac

THEY STILL HAVEN'T GOT THE ANSWER

TOMMY FLIRTS WITH FATE

WHAT'S the sport craft news this month? Well, let's sit right down here and give our "dope file" the once over. And let's hope that we find some indication of real progress in the domestic light plane field—for it's certainly true that America's aviation future depends primarily on a meaningful advance in the private flying field. Anyhow, the current dispatches tell us—

That Mr. Piper will continue to turn out about 700 Cubs a year—and sell them.

That a new sport-model Cub will soon be produced, and later a special coupe job with side-by-side seating to compete, we take it, with the Taylorcraft which already offers this arrangement.

That the Aero Club of Oregon has built a \$100,000 clubhouse at Portland, featuring a lounge, office, swimming pool, dining room, dance floor, athletic hall, and the like.

That 1,500 Continental aircraft engines are to be delivered to the Cub firm for 1938 requirements—450 more than last year.

That the International Federation of Aeronautics (the F.A.I.) has decided to award an annual gold medal to the pilot who, in its opinion, has made the most outstanding contribution to world progress in sport flying. Each member country will be allowed to nominate one airman for the honor.

THERE you are, fellows—typical news items indicating that we have plenty of good planes to fly; that one club, at least, has the requisite jack to do it up brown; and that the F.A.I. has given the sport flyers something to shoot at.

But there's still no indication that any one has yet doped out a satisfactory answer to the biggest question of all: "How can we get a flock of people into the light plane game?" In short, no one in America has yet launched a concrete scheme that'll induce the public to take up sport flying in the same way they took up highway touring when Mr. Ford sprung the Model T on the auto market.

Considering the lack of sport flying news, one naturally wonders where all our light planes made by Mr. Piper, Mr. Taylor, and the rest of the crowd, go. True, a lot of them are sent abroad. You run into Cubs, Aeroncas, Ryans, and Taylorcraft all over the world. Across the seas, they advertise them in

newspapers and magazines like we advertise Fords and Chevrolets.

Over here, though, we base our air-mindedness on the fact that Mr. Boeing has built a hot-shot four-engined bomber, and Mr. Seversky a pursuit that'll do better than 300 m.p.h. We brag about Pan-American, United, T.W.A., and the rest—but we do our 300-mile vacation jaunts in a closed car averaging 25 m.p.h. over roads choked with cars, wrecks, and traffic cops. Sure, we're air-minded—as long as it's the other guy who does the flying!

Meanwhile, the foreign aero publications have to print the news of their light-plane clubs in small type in order to get it all in each week (yes, their aviation activity is strong enough to support several *weekly* magazines). Contrast this with the fact that we of F.A. have hung out a bait of two bucks to inveigle our sport flyers to tell us their experiences—because our clubs haven't developed to the point where they publicize their ventures on their own.

It's quite true that a lot of people patronize our air-lines. But few of them ever indicate even the slightest desire to go up front and find out what makes the air-plane tick. Thousands of our people haunt our airports, too. But haunting seems to be the end of it. Certainly darned few of 'em fly. What's more, we know of dozens of people who purchase new cars of the \$1500 class every other year. They drive from New York to Miami each winter and out to Yellowstone Park in the summer. But when we ask 'em why they don't buy planes and fly, they pour out a flock of old wives' tale excuses—and you realize that you're talking to people who never recovered from the Nineteenth Century, whether they were alive then or not.

Perhaps you think we're cranks on the subject. But when you're as interested as we are in promoting private flying, it "gets" you. Why, there are five flying fields—including the great Newark Airport—virtually within gun-shot of our typewriter; but we've only seen one light job go over in the last eighteen months!

Hi, there, Mr. Piper and Mr. Taylor! What do *you* people figure the trouble is?

TOMMY FLIRTS WITH FATE

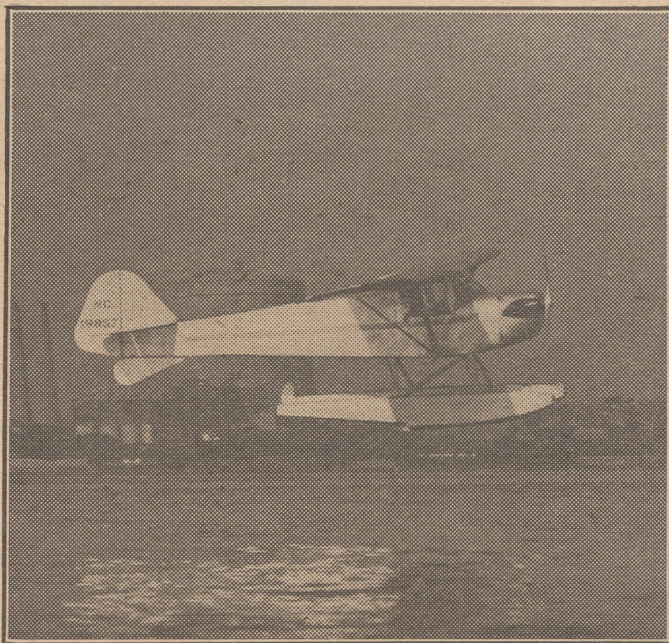
AND now we draw out a blank check and type in: "Pay \$2.00 to the order of Thomas Givens, Jr." For Tommy, who by the way is a Graham, Texas, lad, is the fellow who authored this month's light plane letter. We might add that he is the owner of a bicycle repair shop, so we can presume that he is a throw-back to the good old Wright and Curtiss days.

The floor's yours, Tommy.

Light Plane Editor:

Here's a hot one that maybe some of your readers will get a kick out of.

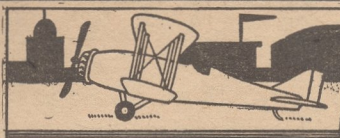
We were in the habit of tying a Curtiss-Wright Junior to a fence post on a nearby field. But one day a freak storm suddenly struck with a bang, broke it loose, and wrecked it. Anyhow, three of us boys
(Continued on page 62)



This striking flying shot shows one of the new 1938 Taylorcraft models in a test hop at Alliance, Ohio. Twin floats and a special tail for water use are featured. Incidentally, the firm's new de luxe ships include streamlined wheels and a wide range of instruments. Moreover, the buyer can name his paint job.

HAPPY LANDINGS

BY ARCH WHITEHOUSE



Big News—And They Buried It!

WE who are in this business of writing aviation features are often asked where we get our information. True, there are such standard sources as the Army Air Corps, the Navy Department, the aero associations, the transport lines, and the commercial manufacturers.

But that's not half the story. For if you're out to get the real inside dope on what's what in aviation, you've got to check one source against another and one expert against another.

Take, for instance, the case of the commercial aircraft makers. They'll tell you how good their ships are—publicity, of course. But if their busses "have bugs," you'll have to find that out elsewhere. We never learn from the manufacturer, for example, that the new Javelin-Five has shown a tendency to spin when the tank is empty. Nor do they tell how a pilot flying a Gogetum-Seven may have trouble keeping his ailerons on during a tight spiral.

As a matter of fact, we get our best tips and ideas through our personal contacts with men who are closely connected with the industry—fellows both here and abroad who are in the forefront of aero progress. But now—and this is the subject of our article—we'll let you in on another source which we'll bet never occurred to you. We mean the dry, long-winded reports by the aero top-notchers which our newspaper editors bury back in the "Classified," failing to realize that hot news is hidden in them.

This dead-looking copy usually carries some such dreary head as, "Congress Weighs Air Bloc," or "Procurement Program Announced"—but ten-to-one, that's where you'll find real "pay dirt." Instead of eye-popping titles, this stuff will carry a lot of gab about budgets, three-year plans, and committee appointments. But just dig into it, laddies. More often than not, you'll come up with something juicy before you've covered half a dozen paragraphs.

The other day, for instance, I let my eyes wander down a particularly dry-looking annual report of Major General Frank M. Andrews, head of the General Headquarters Air Force. There was nothing in the headline intended to lure anyone into reading it. But I "stayed with it" anyhow—and what do you think I found?

Well, fellows, far down that monotonous column I found the Major General saying:

Two outstanding accomplishments that have made 1937 noteworthy for the G.H.Q. Air Force are: First, the clarification of, and the substantial progress toward, the perfection of the Air Base system; and second, the

successful service test, and universal acceptance of, the Boeing B-17 as . . .

And now get this!

. . . the prototype of the future basic element of our Army Air Force—the heavy load, long endurance, high speed, multi-engined bomber.

Wow!

AS far as I can make out, no editor caught the drift of that. No copyreader realized that this was the official announcement of a telling blow being dealt to three of the main branches of aviation.

Do you get it? The basic element of the Army Air Force is to be the four-engined bomber! After a year of intense experimentation, practice, and training, they have discovered that the four-engined bomber is capable of carrying out the combined duties of pursuit, attack, observation, and bombing! In other words, pursuit, attack, and observation jobs are to be relegated to the back seat.

Major General Andrews went even further:

One short year ago, the four-engined bomber was under fire all around. It was believed to be "too much airplane," unnecessarily large, costly, and complex. But during the past year, the G.H.Q. Air Force personnel have proved beyond question—by thousands of hours in all weather and the dropping of thousands of bombs at maneuvering and stationary targets—that the four-engined, heavy-load, high performance bombardment airplane is not only valuable but necessary if the Air Force is to execute the role that will fall to it in the event of war. Moreover, the trend is toward still larger bombers of equal and better performance. And within a short time, I am certain, the Boeing B-17 bomber will be considered a small airplane.

We repeat: The four-engined bomber will soon be the basic element of the Air Force—and that's the word of the man who knows. Incidentally, we prophesied this in FLYING ACES as early as two years ago—and got the razzberry from some of our readers as a result. Or shouldn't we bring that up?

But what is this "G.H.Q. Air Force" business, you ask? And how come they upset all the dope?

Well, the G.H.Q. Air Force was formed in March, 1935, to become the actual head organization of the Army Air Corps. Prior to that, all our battle bird units were administered primarily as peace-time outfits, each sufficient unto itself. In short, there was

(Continued on page 78)

Flying Aces Club News

Who? What? When? Where? Why? How? These are the six basic questions that every reporter knows should be answered in all good news stories. And when it comes to writing up the activities of F.A.C. units throughout the country, your Keepers of the Log usually answer them all. So here's our selection for this month, fellows—and maybe your name is listed among the "who's!"

By Clint Randall

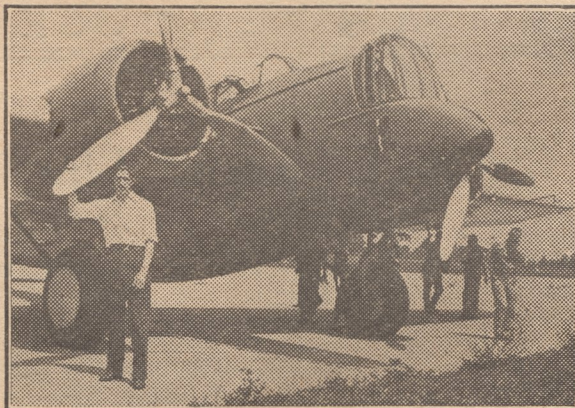
National Adjutant, Flying Aces Club

HELP WANTED! Seems like every Club member everywhere wants to get in touch with every other club member everywhere else. And it's a swell idea, too, fellows! But I'm especially pleased to receive so many letters from F.A. cloud hoppers who want to contact other flight fans in their own sections.

Here's Jack Lange, for instance, of Woodland Heights, Oil City, Pa. Jack says that in his immediate vicinity there aren't too many model-minded lads, but he's sure that there are plenty in the town. And since he has a handy meeting place and lots of tools above his garage—and a coal stove for heating purposes, he'd like to have Oil City modelers get together with him for F.A.C. meetings. Drop him a note, fellows, at P.O. Box 56.

And from Saginaw, Mich., comes a call for model fans to contact Bill Hurley, a modeler with three years of experience and a hangar holding the twenty-five ships that he's built. One of the ships is a Stinson Airliner of five-foot span, with a record of more than 100 successful flights. And Bill wants to hear from other Saginaw modelers who're interested in starting a Saginaw F.A.C. Squadron. Contact him through Clint, fellows.

A Pennsylvania lad whose work has been a starter for modeling activities in his vicinity is F.A.C. Pilot Sam Matthews, who last wrote from Camp Red Cloud, at Silver Lake, Brackney, Pa. Sam, who is 12 years old, has been a model enthusiast since he was seven. A couple of years ago, he



Snapped at the Detroit Nationals last year, F.A.C. member Len Wiczorek, who stands about five-feet-eight, gives you an idea of the spread of those three-bladed props on the Army's Martin bombers. Len lives at Niagara Falls, N. Y., and is an active model builder. And very modestly we quote his statement that "from five years' reading of F.A., I've decided that it's the greatest mag of the air."

and a pal were about the only modelers in his town of 20,000 people.

But he contacted fellows all around town and invited them to share in a field on his folks' property, which made a swell "airport" for model flying. He also ran several articles on model airplanes in the local newspapers and put up modeling posters all around the town. And now, as a result of his pioneering, there are at least 200 "established" modelers in the district! Excellent work, Sam—and by the way, write to me as soon as you see this notice.

And now we have *The Bat*—another strange flying critter to add to our Flying Aces Club Zoo. *The Bat's* real name is Ed Duncan, and he lives in Jamaica, L.I., N.Y. Ed has done quite a pile of batting around, and he writes:

"I have carried my F.A.C. membership card to Ireland, England, France, Germany, Italy, Cuba, Hawaii, Australia, Panama, Bermuda, Scotland, and Norway. And while visiting these most interesting places, I continued to build airplane models in my spare time. And these same models are hanging in my den to remind me—now that I'm laid up—of my adventures at sea and in foreign lands."

Ed wants to form a "Lost Squadron" of F.A.C.'s, to consist of other members who are similarly unable to knock around as freely as they'd like to. So address your letter to him in care of Clint Randall, and I'll see that he gets it.

Now here's something else of interest, fellows. What was the name of that arsenal that made German guns during the World War? Spandau? Right! And believe it or not, we have a new F.A.C. whose name is—*Spandau!* Yep—Irwin Spandau, of Sunnyside, L.I., N.Y.

Henry Kelley, skipper of F.A.C.'s Flight A in Belchertown, Mass., recently sent in a swell report of the activities of individual members of the flight. All the fellows, it seems, have made models lately. Ernie Gay fashioned out a neat Aeronca, and Bob Jackson built a China Clipper and a Sea Hawk bomber. Hank himself made a Miles Hawk, Fokker D-8, a Seversky 19, and a Boeing F4B4.

Ed Camp completed a Curtiss Hawk, and Ray Kinmouth finished a Douglas transport. And another Flight A member whose name his skip-

(Continued on page 64)



Representing the oldest model club in Ireland and the only one in the Irish Free State are the F.A.C. members shown in these two pictures! Major Brian Murphy, commanding Ireland Squadron No. 1, F.A.C., is shown in the small shot at the left. And below are pictured the six members of the junior section of Flight C. Standing, from left to right, they are: W. Bowen, T. Sinclair, Bob Stammers (flight commander) and R. Unwin. Kneeling are members Fetherstone and Colman. We're pleased indeed to be able to print these pictures of one of our pioneer F.A.C. units.



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. Edward Rickenbacker
Al Williams	Colonel W. A. Bishop
Col. Seaton	Major G. A. Vaughn, Jr.
Major von Schleich	Willy Coppens
Lieut.-Col. Pinsard	General Balbo
G. M. Bellanca	Walter H. Beech
Capt. B. Sergievsky	Frankie Thomas
John K. Northrop	Dwane L. Wallace
Colonel Roscoe Turner	Josef Veltjens
Charles W. A. Scott	Frank Hawks
Richard C. DuPont	Donald W. Douglas
Mal. A. W. Stevens	Major C. C. Mosely
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 (sixpence overseas).



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. The coupon begins where it says "Win Your Wings." Canadians send International Reply Coupon for 15c. British and other overseas readers send coin or coupon for one shilling. Only one pair of either kind of wings to a member. If yours are lost, send 25c for new ones (one shilling overseas). [48]

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 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 the Club's professional artists have ever 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 NEW 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.

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 all of them unless this rule is heeded by all members who write.

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 monthly 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 the Club News pages in our magazine.

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 members.

Stationery and Pennants

Due to popular request, we have ordered a new supply of F.A.C. stationery and official F.A.C. (paper) pennants. The stationery is of high quality with the Flying Aces Club letterhead attractively hand-lettered, and the price is amazingly low—100 sheets, postpaid for 25c. The attractive pennants (with glue on the back) sell at 6 for 10c or 20 for 25c.

We also have a new supply of swell silk embroidered insignia for cap and sweater. They're available at 35c per pair, or 25c for the sweater emblem and 15c for the smaller one for the cap.

April 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 [48]

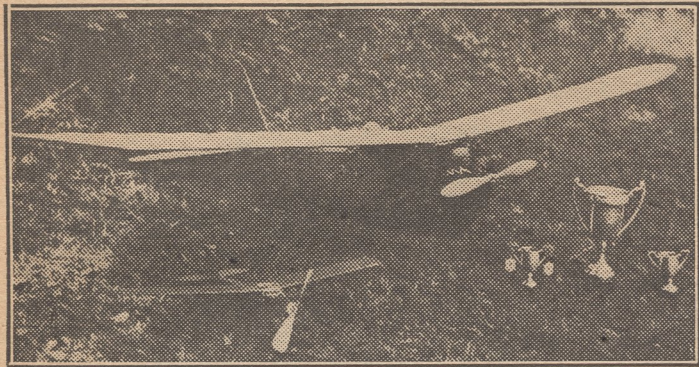
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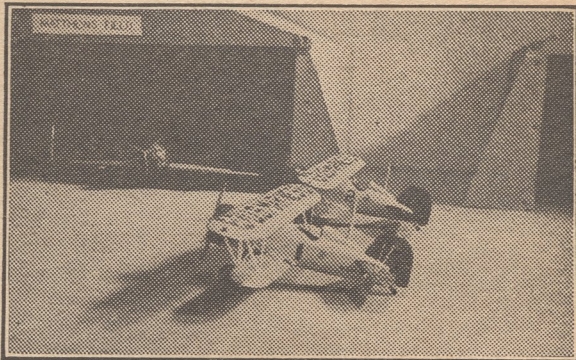
Mail this application, enclosing a self-addressed, stamped envelope. Canadians send International Reply Coupon worth 5c. Overseas readers send a similar coupon worth sixpence.

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

With the Model Builders



Not only can George A. Neil, of Huntington, L. I., N. Y., claim that he's a swell modeler—but he can prove it! For this shot shows some of the trophies George's ships have captured during recent months, together with his new gas model and a Cessna flying scale. The big cup was presented by the Islip Chamber of Commerce.

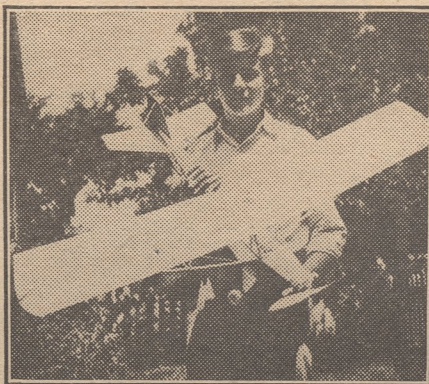
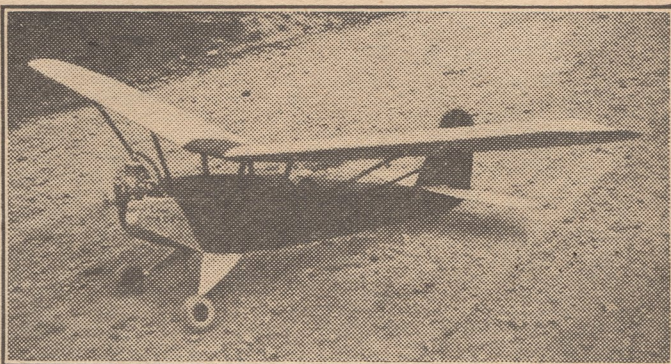


From down along the Panama Canal, young Bob Blake sends us this nifty shot of a brace of Boeing F4B4 models parked before beaver-board hangars. We'd call this a mighty swell layout, wouldn't you? Incidentally, Bob works a lot with his model-building pal, Francis Criste.

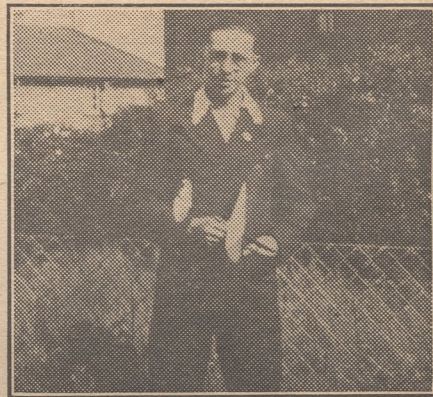


Martin bombers seem to be quite popular among modelers nowadays. And here's George Hecht, of the Bronx, N. Y., showing you his half-inch scale job. Looks like a nice piece of work! On the ground in front of George is his DH-4 made from a Cleveland kit. Both ships, George tells us, have movable controls.

Right: Powered with a Bunch Mighty Midget, this 78" span gas job was built by Joe LaBerge, an F.A.C. member living at Sudbury, Ont., Canada. A member of Sudbury's "Three Model Musketeers" and also an airplane pilot, Joe built the first gas model in his section of the country. Stan Jordan, Joe's airmail pal in Dayton, Ohio, sent the shot to us.

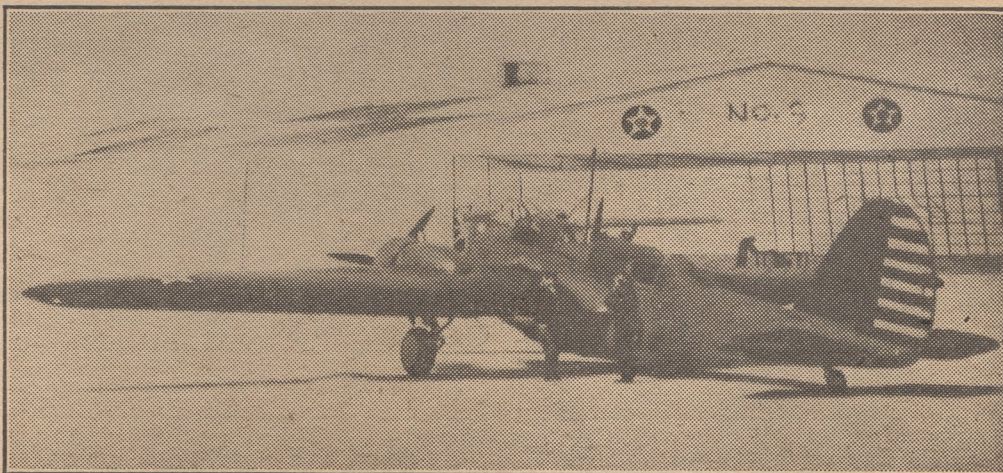


Reporting from Pontiac, Mich., Bob Edwards writes that the 52" Taylor Cub which he's holding in this picture is certainly a great flyer. "And you can always depend," he says, "on a perfect three-pointer when she comes in for a landing." The model was made from a Comet kit.



Here's Bill Frobisher, of Guilford, England, with a favorite glider. An F.A.C. member, Bill's a pioneer modeler in Guilford, and when he first went there to live a few months ago, he had to persuade a "shopkeeper" to stock model airplane supplies.

Before starting work on this detailed model of the Martin B-10B bomber, George Schoenberger, of New York City, made three thorough inspections of a full-size ship. He made photographs and sketches and took accurate measurements. And his finished model has bomb racks, movable controls, manual and electric wheel-retracting controls, complete instrument board—and a gun mounting and model radio set in the rear cockpit, too. With those natural-looking figures in front of the ship and the painted hangar in the rear, George's set-up is certainly realistic.



Tackle This T-Beam Gas Job

MANY gas modelers with limited working space have found that the larger power jobs are difficult to handle. Here, therefore, is a neat ship with a wing-span of but 54", that is rugged, simple, dependable. Wing-span is 300 sq. in.

The fuselage is of T-beam construction, which makes a body that is strong, yet light. The longerons are cut to shape from sheet balsa and the T formed by gluing in the upper and lower ribs. Round off, then sand the job.

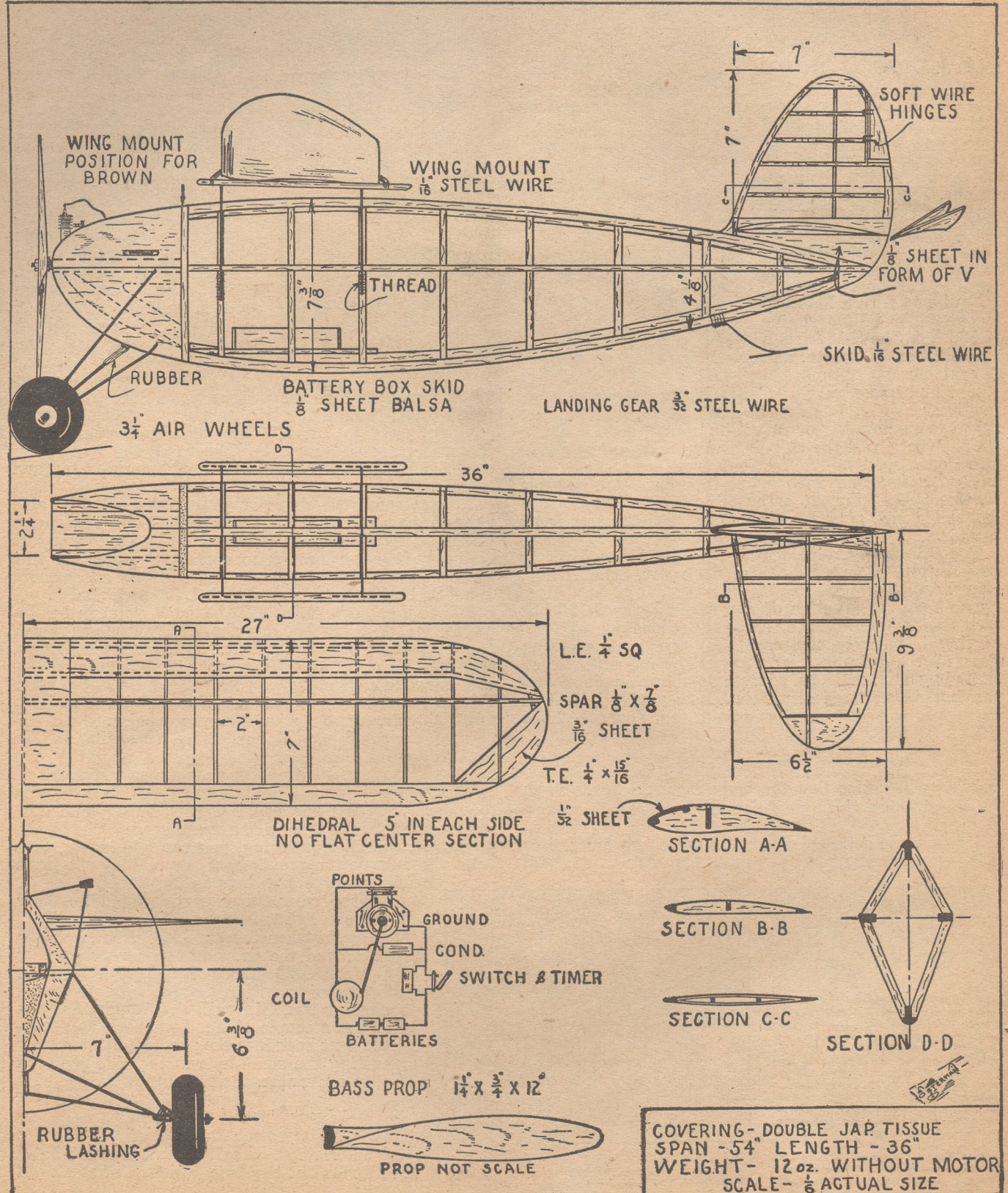
Make the nose of hard $\frac{1}{8}$ " sheet balsa, and the bottom of solid, hollowed out.

The ship may be powered with any motor, but one of the

lighter ones may be advisable. If you wish to use a Brown Jr., move the wing and motor mount to the indicated position. This will necessitate the addition of an extra upright strut in rear of the mount. Weight may be added to the tail if the center of gravity is still too high.

The wing requires about 5 degrees incidence; the tail about 2. Adjust the tail and wing as needed in your particular ship.

Flying instructions are as usual. Fly the ship at a field with tall grass to help out in a crash. Don't power-fly the ship until you've gained a good glide.



Build the Jones S-125

One of the most attractive arrivals on the American light plane tarmac, the Jones S-125 is "the berries" for the rushing businessman or the private pilot. She's a two-seater with dual controls, will hit a top speed of 151 m.p.h., and will come down to an easy three-pointer at 46 m.p.h. Of course, we can't all own an S-125 right away—but we can build a mighty realistic flying model of the ship from the simplified plans and instructions given in this article.

By Louis Garami

TO the steadily growing number of light sports planes in America, the Jones S-125 is one of the most striking additions. This two-seater is a low-wing monoplane of exceptionally clean design, and its high performance places it right at the head of its class.

Equipped with a Menasco four-cylinder in-line engine of 125 h.p., the S-125 has a top speed of 151 m.p.h. and a cruising speed of 136 m.p.h. And in contrast with these speeds, the ship lands relatively slowly. For despite the fact that no landing flaps are employed, the craft "sits down" at 46 m.p.h.

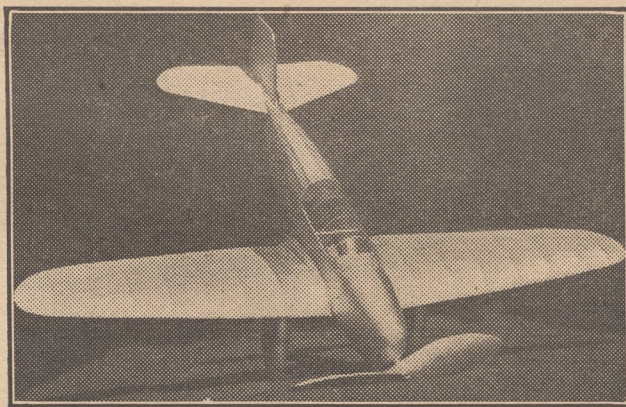
Construction of the ship is strong and sturdy, being based on a steel tubing fuselage, cantilever wings, and husky landing gear with metal fairings. Dual controls are standard equipment on the ship, a feature that makes it feasible for flying schools to use the S-125 as a basic trainer.

The ship is built, incidentally, by the Jones Aircraft Corporation, Schenectady County Airport, Schenectady, New York.

The body construction of our model Jones S-125 has been decidedly simplified, and the tedious job of fillet carving is entirely eliminated. However, the pleasing lines of the original ship haven't been lost or even altered by our omissions, as a single glance at the accompanying picture will show. And now you've looked at the snaps, let's get to work and build *your* Jones S-125.

CONSTRUCTION OF BODY

YOU will notice that the body sides are made from sheet balsa, through which type of design we hope to speed up construction and do away with the crooked bodies that sometimes result from built-up sides. But it is very important to use two sheets of balsa of equal



No, fellows—this model of the Jones S-125 isn't heading through the earth for China. She's merely posing on her nose to let you see her neat lines and general constructional features. The real ship, by the way, is equipped with dual controls.

strength and thickness for these "sheeted" sides.

Get the softest balsa you can (size 2" by 36" by 1/16") and cut out the two sides carefully (Plates 1 and 4). Pin them together and sandpaper their edges lightly to get both pieces exactly alike. And now the actual construction should be started by beveling the tail ends slightly and cementing the sides together at that point.

Next the top and bottom square crossbraces of 1/8" sq. stock should be added, starting at the back and working toward the front.

Continue by cutting out all the formers with a sharp razor blade. Soft sheet balsa, 1/16" thick, is used for this purpose. Note that Formers 3 and 7 (Plates 1 and 4) have the usual notches, while the others are without cuts. Cement all the formers in place, and then attach the middle stringers on top and bottom.

Now compare the shape of your model with the side view on the plans. If there is any break in the even curve of the stringers you can push them down into the soft formers wherever needed to correct the trouble. The space between the windshield and cowl, at Formers 1 and 2 (Plate 1), is covered with 1/32" sheet balsa.

Since all cabin formers are the same, you can bend a piece of 1/4" wide bamboo into shape above the gas range, and slice three pieces out of it. Then push the pointed ends into the fuselage sides, cement them, and later cover them with celluloid.

Next make the hollowed out nose (Plates 1 and 3), preferably from two blocks of very soft balsa. The thickness of the walls should be decided according to the grade of wood used, since the required weight of the nose—two ounces—balances the plane perfectly.

When the nose plug (Plates 1 and 2) has been carved to shape, add the black paper engine details, and glue small eyelets to the front and rear to serve as bearings. And while the glue is drying, you can add a few more balsa shavings to the growing pile by making the prop, following the drawings on Plate 1.

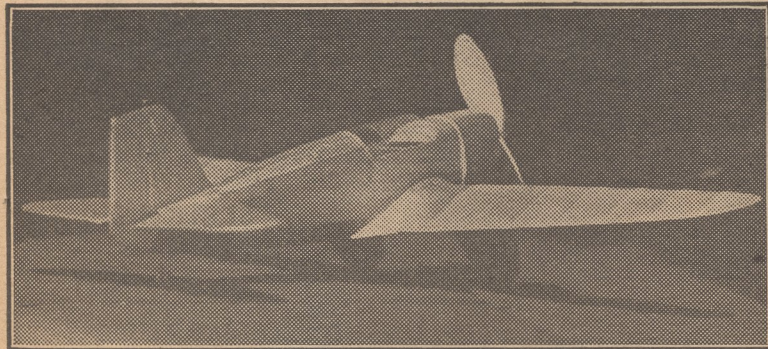
All the carved out parts should be clear doped, after first being sanded smooth. Sand them again when the dope has dried.

Next bend the propshaft and rear hook to shape from .028 piano wire. Anchor the rear hook firmly in position, using plenty of cement. The motor shaft is pushed through the nose block and a couple of small washers, and finally it is bent back into the prop. Finish the body by cutting the small hole in the side near the rear, to allow access to the rear hook.

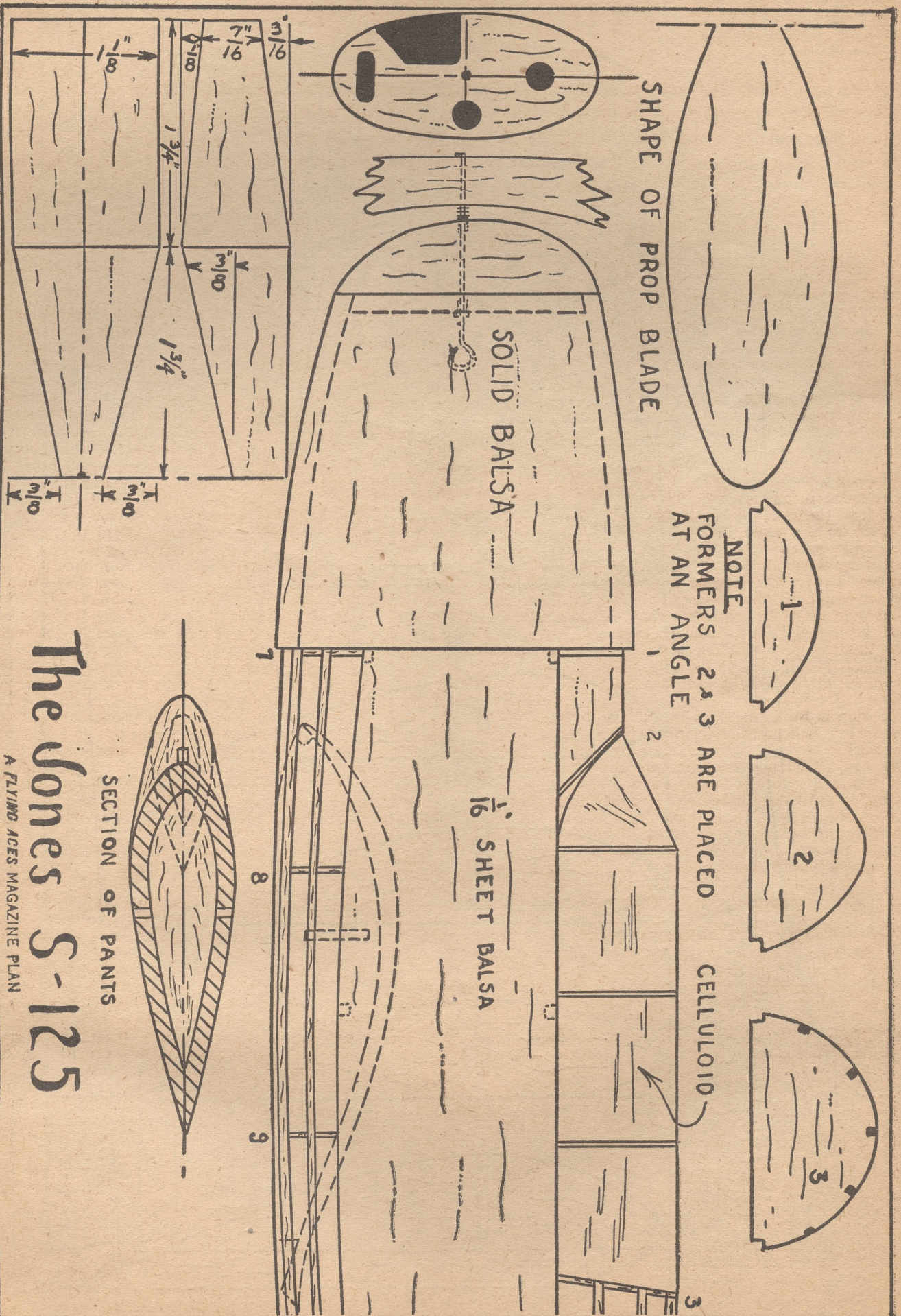
WINGS, TAIL, AND ASSEMBLY

CUT OUT two each of the eight ribs shown on Plate 2. Use 1/16" thick sheet balsa for all ribs but the first, which is of stock 1/4".

(Continued on page 79)

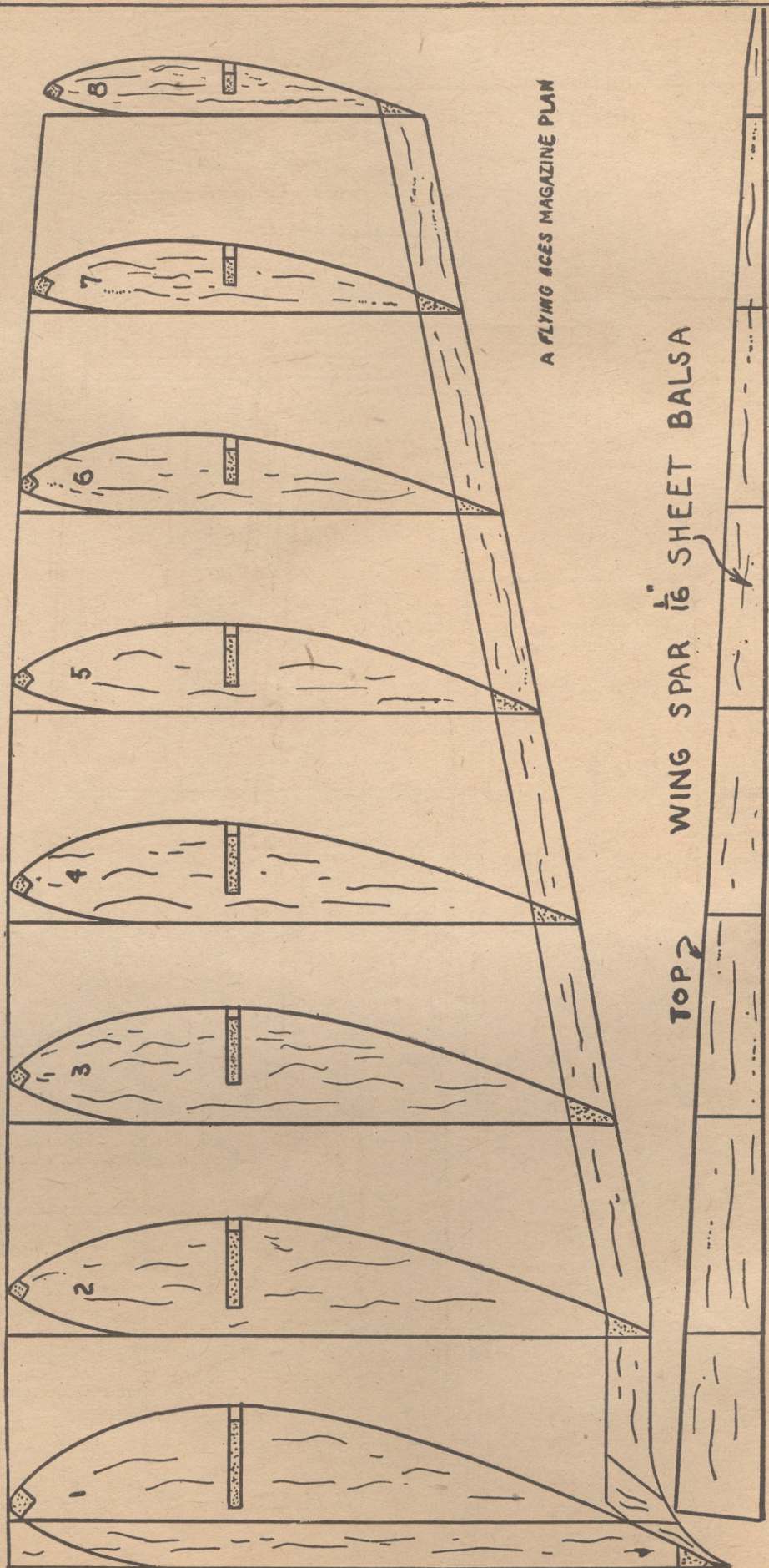


Here's another swell shot of Garami's S-125 model. It shows you the taper of the wing and the type of tail surfaces. If you'll use ordinary care and follow these pictures and plans closely while you work, you can build a similar ship that'll give you excellent flying results.



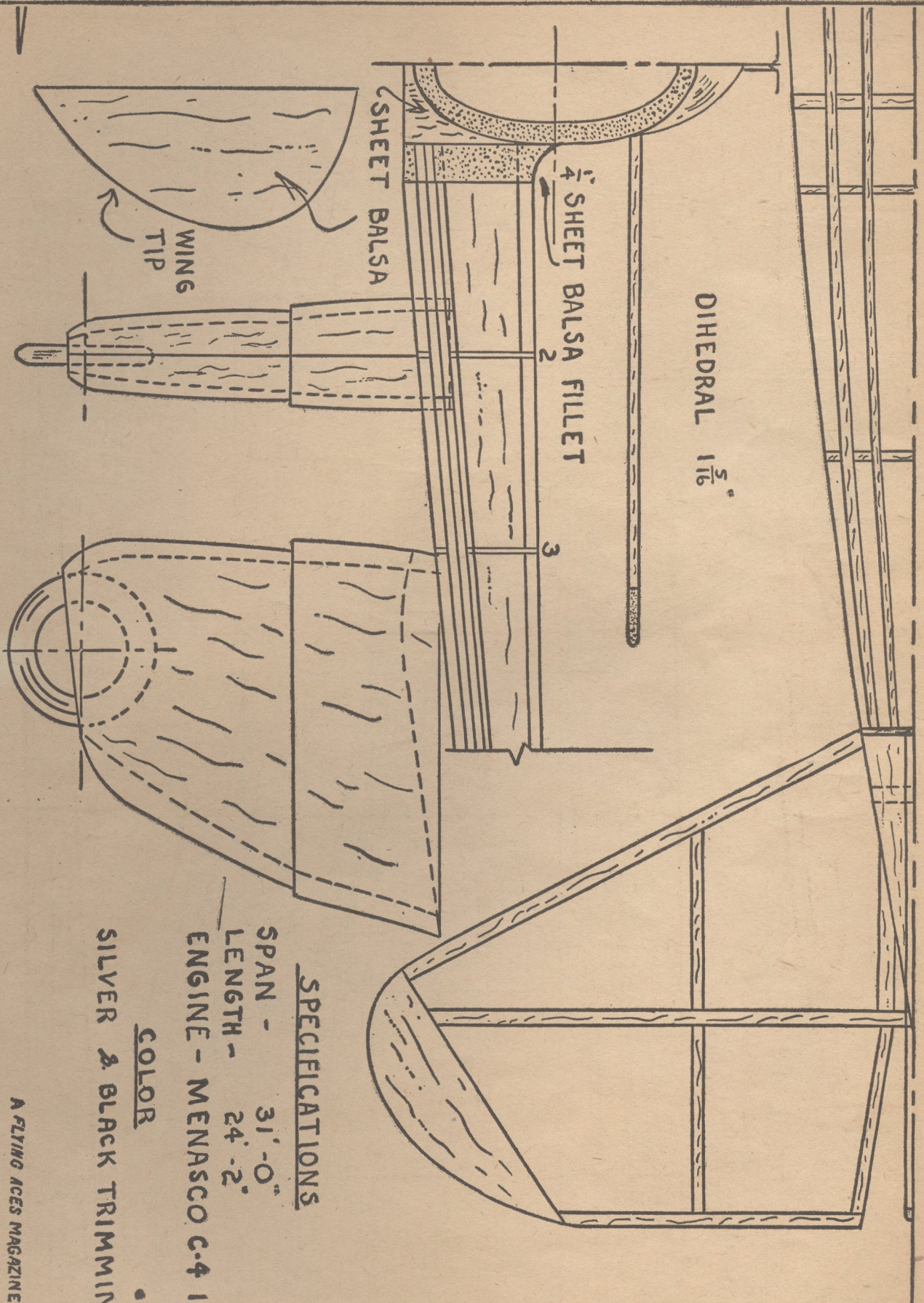
NOTE

NO. 1 IS THE FILLET RIB
AND IS SHAPED AS SHOWN
IN FRONT VIEW



A FLYING ACES MAGAZINE PLAN

TOP WING SPAR 1/8" SHEET BALSA



SPECIFICATIONS

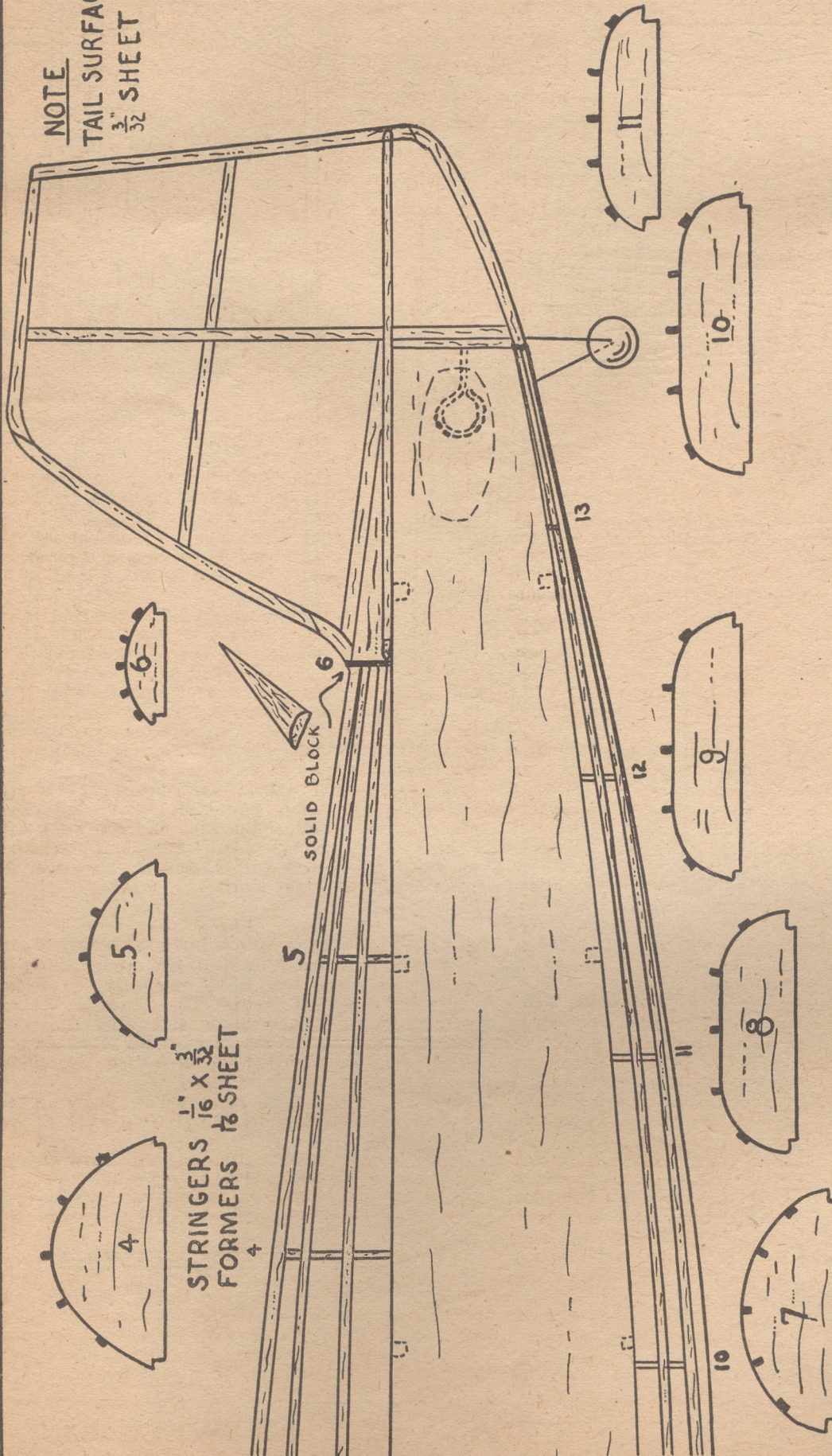
SPAN - 31'-0"
 LENGTH - 24'-2"
 ENGINE - MENASCO C-4 125 H.P.

COLOR

SILVER & BLACK TRIMMINGS

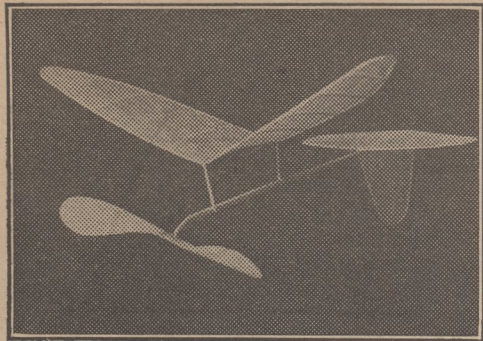
A FLYING ACES MAGAZINE PLAN

NOTE
TAIL SURFACES
 $\frac{3}{32}$ SHEET



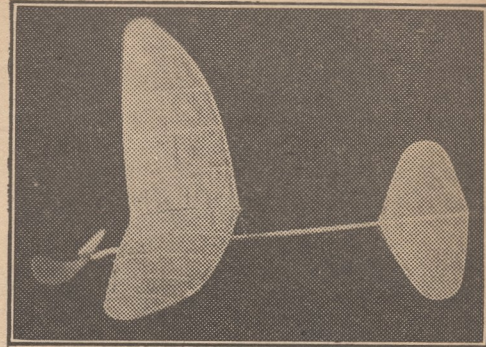
A FLYING ACES Magazine Plan

Light as a floating feather and just as harmless, this baby indoor model can be made in less than four hours' time. Note the extremely simple details of the stick, prop, wing, and tail.



When the wintry winds wail without and the modeler attempts to "strut his stuff" in the house, china closets and chandeliers usually conspire to spoil his fun. But now you needn't worry about that, fellows! For no matter how small the available space, you can always fly our—

No painting! No doping! The wing and tail surfaces of this swell Garami stick job are merely sleek frameworks of balsa and tissue. Consult these photographs freely while making your model.



"Phone Booth Special"

By Louis Garami

MODEL AIRPLANES are not reputed to be endowed with brains. But here's one, which, in the opinion of a lady acquaintance of ours, most certainly is possessed of an ample amount of cerebral sensibilities. For, when she saw the plane flying in perfect tight circles in an area hardly larger than the confines of a telephone booth, she exclaimed in absolute amazement:

"But how does it know when to turn?" And she it was, incidentally, who suggested that the craft might be called the *Phone Booth Special*. For she pointed out the plane's possibilities as a means of recreation while waiting for a number. "Lot's better than 'doodling'!" the lady enthused.

Ownership of this swell little indoor job is less than four hours away, if your balsa's handy and your razor blades are sharp. In fact, the original one was built in just two hours! And was test-flown in the kitchen where she almost became an ingredient of the Hungarian goulash which the excellent *frau* was then making under difficulties.

Weighing only 1/50th of an ounce, our *PBS* can bounce off even the finest chinaware without wrecking either party to the collision. So up an' at it, fans. And the slogan is—More fun per fly-power!

CONSTRUCTION

THE stick is made from very soft 3/32" square balsa. Note that the rear half tapers toward the tail to make it lighter. The nose turns down like a beak, and for the bearing we use a small piece of aluminum tubing. This is cemented several times, a procedure that should be followed with all metal-to-balsa contacts. The rear hook is bent from .014 wire and glued into the stick at the designated place.

For the propeller, we use 1/32" soft sheet balsa. Copy the blank from the drawing and cut it out with a razor blade. Now soak the prop blank in hot water for a few seconds, and pin the blades down to a solid block of wood measuring about 2" by 7", just as the sketch shows in the plan. After the blank is pinned down you can adjust it in such a way that the hub will be perpendicular to the board. To speed up the drying process, place the whole thing on a radiator for about 10 minutes. After it has dried, smooth it out with fine sandpaper.

The propeller hub is protected by a small piece of

sheet aluminum which is drilled and bent into a channel, then glued to the hub. Put the prop shaft through, bend the shaft over, and cement the two together. The surface outlines for the wing and tail can all be bent at the same time on a fairly hot soldering iron or similar round metal object. Do not heat the metal too much, or it may injure the wood.

The wing is made of two halves joined at the middle. The nine ribs are first cut the same size, then shortened at the trailing edge when being inserted to allow a uniform airfoil.

The tail surfaces are merely bent balsa outlines without ribs. The rudder should be offset about 1/4" to the left to make the plane circle in that direction.

For covering, use superfine tissue. Apply the dope only to the outlines, and be careful not to break the frail framework in the procedure. Since the surfaces cannot be tightened with water or dope, apply the paper as smoothly as possible. The tail assembly is covered after the frame has been glued to the stick.

A single strand of 1/32" rubber will give the best results—anything more powerful might even yank the stick right from under the wing and run away with it!

Balance the plane on a knife edge, and mark the spot at which it balances with a pencil. The center of the wing should be right above this point.

FLYING

OUR *Phone Booth Special* gives the best performance if it is adjusted to fly in left circles about 6 feet in diameter. She will make much larger or smaller circles, of course, if desired. The stabilizer, the rudder and the left wing are the usual units to adjust when things go wrong. The rear part of the stick can be bent in all directions, and if it should snap, a drop of cement would quickly heal the damage.

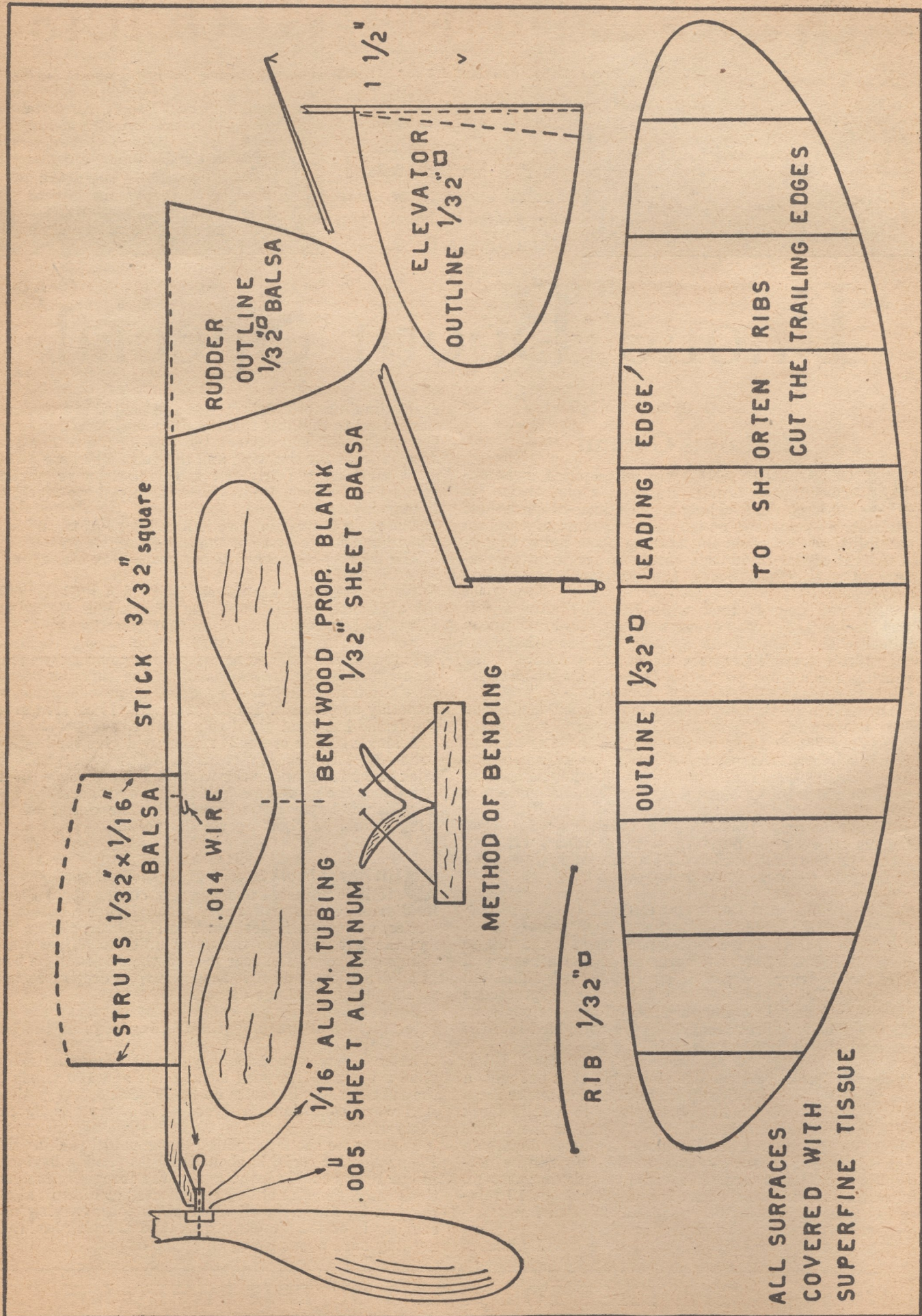
Stalling and diving is corrected by changing the elevator setting or warping the trailing edge of the left wing.

After a few experiments, you will know this model "like a book." With good adjustment and 150 winds of the rubber she will easily do 30-50 seconds every time. And when conditions are good—! But try the *Special* yourself.

Perhaps we should say here that a model such as this *Phone Booth Special* is about the best plane a beginner in our hobby could tackle. For as the foregoing instructions show, there's nothing complicated or difficult about the job. In line with all other stick jobs, carving and shaping is of the simplest kind. And there's absolutely nothing hard about flying this type of ship.

TURN THE PAGE FOR PLANS OF THIS SWELL JOB

PLANS FOR OUR "PHONE BOOTH SPECIAL"



News of the Modelers

SOUTHERN CALIFORNIA CONTEST

A STRIKING crowd estimated to contain more than eight thousand people turned out to see the recent winter contest held by the Gas Model Airplane Association of Southern California at Los Angeles. The two thousand automobiles which were parked about the GMAASC's own "gas model airport" made the affair look like another Nationals all over again.

Registering from all parts of California, 223 contestants participated, and a total of twenty-seven hundred feet of "pits" was laid out at one end of the field for preparing and repairing their ships. More than fifty officials handled various assignments.

Since the rules called for a wing-loading of twelve inches to the square foot—such loading to be built into the ships—competition was very keen and on an even basis. Each ship was given two flights, with motor run limited to thirty-five seconds. The best hop was considered, and one point per second of flight was allowed. Altogether, three hundred and seven official flights were recorded, the first one leaving the line at 8.00 A.M. and the last one shortly after 2.00 P.M.

There was plenty of excitement. And on one occasion, two ships crashed together in flight, Henry Stiglmeier's entry in that particular crash being a complete washout.

Eighty dollars in cash, three trophies, and ninety merchandise prizes were awarded to successful contestants. The first five winners were: J. P. Young, Lemoore, Calif.; Raymond Brashear, Long Beach; Ray M. Snow, Fresno; Don Cummings, Los Angeles, and John Berg, Los Angeles.

Subscriptions to FLYING ACES Magazine, together with F.A. aviator's positive identification bracelets, were awarded to: George Neonis, Los Angeles; Theodore Dykzeul, Bellflower, and Bill Bradbeck, Compton.

The winning ship, flown by J. P. Young, was an Ohlsson-powered plane with a span of five feet. Designed by Young, the craft weighs 3¼ pounds and has logged more than 200 flights.

Largest ship in the meet was Ray Brashear's original design craft that finished second. Its span is 8' 5" and it weighs 7 lbs 5 oz. It is equipped with lights for night flying, and has made 46 night flights. And on one occasion it has carried an automatic movie camera weighing nearly two pounds.

Of great interest is the fact that although the GMAASC's First Aid station was open throughout the meet, not a single scratch was treated! And due to the rigid flight regulations, very few ships went out of the field.

The next big contest of the GMAASC, incidentally, is scheduled for June 12,

and club officials are preparing to welcome more than 500 ships. "It'll make the Nationals," they say, "look like a one-ring circus!"

BOSTON MEETS ANNOUNCED

BIGGER and better contests are announced for its more than 5000 members by the Jordan Marsh-Boston Traveler Junior Aviation League, of Boston. The schedule for the first half of 1938 has already been made up, and official sanction has come from the National Aeronautic Association for the meets, so any new marks which are set by the junior flyers will constitute national records.

The grand prizes towards which Leaguers are working are all-expense trips to the Nationals in Detroit next July. In addition, transportation will be furnished those who place in runner-up positions.

It is expected that almost a dozen Boston flyers will represent the J.A.L. at the National battle. To determine the winners of these trips, the Jordan-Traveler point system has been in operation during the past fall season and will continue through the June contests. High-point winners will receive trips.

Scheduled for the Irvington Street South Armory in the Back Bay section

of Boston are indoor meets on the following dates: March 5 and 19, April 2 and 16, May 7 and 21. All modelers in the vicinity are cordially invited to fly with League members at these sessions, which last from 10 a.m. to 1 p.m.

The first outdoor meets will be run off at Smith Playground, Allston (Boston), from 10 a.m. to 1 p.m. on the following dates: April 30 and May 14.

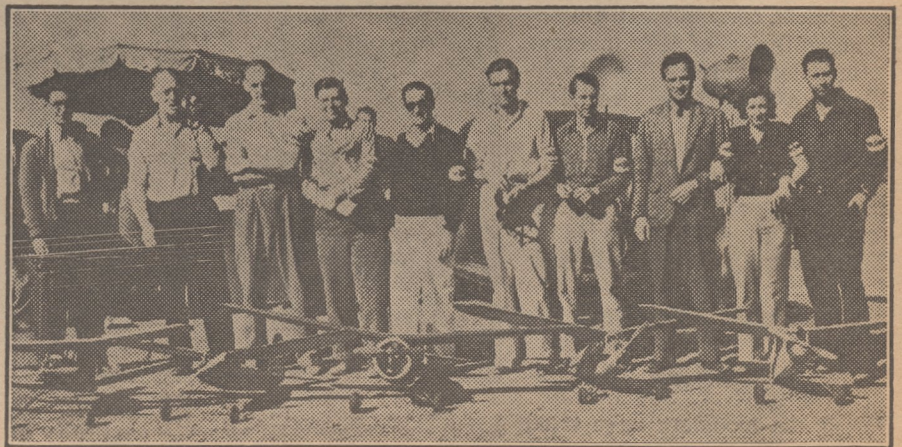
TOLEDO TOURNAMENT

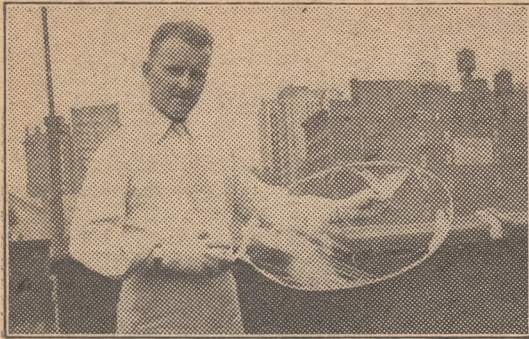
SPONSORED by the Toledo, Ohio, Squadron of 20,000 Junior Aviators, an indoor model airplane contest was recently held in the Toledo Civic Auditorium.

Cleason Wagner, a sixteen-year-old lad who has entered practically every model contest held in the vicinity within the past two years and hadn't won a single prize, came out tops in this event, his sleek rubber job flashing down the 88-foot course at a clocked speed of 42.8 m.p.h. Cleason's prize was a round-trip flight between Toledo and Cleveland aboard a swell United Air Lines Mainliner. Harold Swan, district manager of United at Dayton, presented this prize.

Charles Kozina and Donald Buchele came in second and third, respectively, (Continued on page 63)

Right: Snapped at the Midwestern States Gas Model Meet of the Chicago Aeronauts, this picture shows a part of the crowd in the vicinity of the registration desk. And a right merry scene it is, too! Below: Here are some of the officials in the Southern California gas meet reported elsewhere on this page. Left to right, they are: Mr. Baker, H. E. Fredrickson, Harold Ball, Grant Carder, Frank B. Knapton (field committee chairman) Tom Trulson (GMAASC's president) Earl Harp (vice president) Dan Bunch (Bunch Model Company) Peggu Snyder (Modelcraft Company) Irwin Ohlsson (Ohlsson Miniatures).





"Thirty—love!" But pardon us—it's not a tennis racket that Dibby Thomson is holding here. It's the wire frame on which microfilm is dried, with a broken sheet to show how the job shouldn't be done.

We've Got Something Here, Lads!

Yes sir, fellows! Microfilm for model covering is a branch of our hobby that's been somewhat neglected. And as a result, many fine contest jobs that might have become famous have merely been listed among the "also flowns." But in this swell article by Dibby Thomson, you're given all the lowdown on using this unusual, transparent sheeting. And if you'll follow

Dibby's hints on your next indoor model, well—

You'll have something there, too!

Microfilm for Models

By D. B. "Dibby" Thomson

AS a practical covering material for model airplanes, the use of microfilm is said to have been discovered by a college student some years ago. But although microfilm models have won many important meets since, the general use of the product is still somewhat limited.

However, where microfilm *has* been adopted by a painstaking modeler for contest purposes, it invariably has aided him in winning nearly all contests in which his model has been flown. Proof of this is easily found. Look at the winners' lists of the Junior Birdmen indoor contests for the past couple of years. And remember, also, that it was with a micro-covered model that Wally Simmers, of Chicago, won the Stout trophy at the 1937 Detroit Nationals.

It was with a microfilm job, too, that Winston Mackley, of New Zealand, established a startling New Zealand record for R.O.W. models.

Microfilm has two main advantages that commend it to the sincere modeler. First, it is light in weight, being eight times lighter than modelers' tissue paper. And second, it is transparent, enabling the judges and other modelers to note the condition and craftsmanship of the inside of wings and fuselages, etc.

Why, then, hasn't microfilm become more popular among modelers? I believe it is because most modelers have the mistaken idea that covering with microfilm is an extremely difficult job. Granted, it *is* harder to use than tissue paper. But its use is most certainly within the capabilities of any average modeler who is willing to devote a little time and effort to experiments with a few sheets.

You'll be "good" if you can make a good sheet of microfilm on the first or second attempt, but the story will soon change. Try making a few sheets according to the following instructions, and you'll soon get the "hang" of it, figuratively and literally.

Some modelers have tried

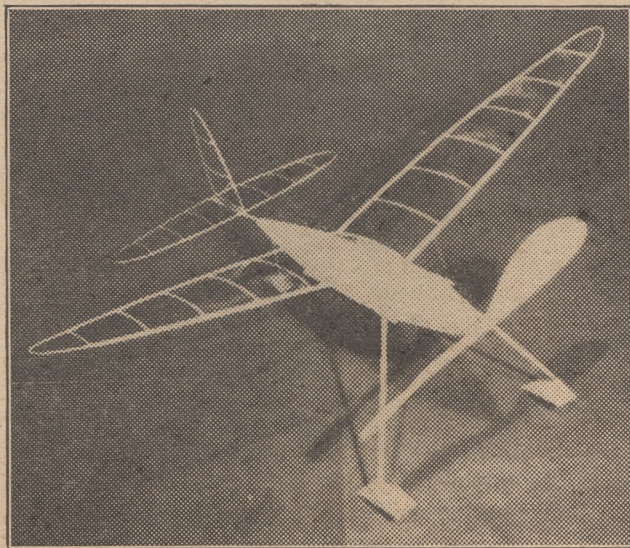
microfilm and have dropped the idea because in their respective endeavors to save a few cents, they have followed formulae for making the microfilm liquid at home. Invariably, the ingredients haven't been mixed properly and have resulted in liquids that fail to give satisfactory results.

So, save time, money and temper by buying your microfilm solution in convenient cans from any model dealer. A twenty-five cent can will last a long time if you are careful to keep the can tightly closed.

Of course, if you feel that you *must* attempt to make your own microfilm solution, a formula consisting of three parts of collodion and one part of liquid ether will prove to be best. Both ingredients are available at drug-stores. *Both ingredients—and especially the ether—are highly inflammable, so handle them in a garage or other out-building where there is absolutely no flame.*

ASSUMING, however, that you have secured a can of solution from your dealer, let's go about the job of preparing the material.

The first step is to secure some galvanized wire of about 1/4" dia. Bend it to make a frame about 20" long and 8" wide. (See photos). Twist the wire at one end of the frame to form a handle.



Although only the wing and tail surfaces of this New Zealand model are covered with microfilm, the ship recently established a new Anzac R.O.W. record of nearly 3 1/2 minutes. It was built by Winston Mackley.

Having made the frame, run about three inches of lukewarm water into a tub or tray large enough to accommodate the wire frame. Be sure that there is no soap residue in the water. Now put the frame in the tub with the handle protruding above the surface of the water, and allow the water to come to *complete rest*.

Have the window and door of the room open while making microfilm sheets, because air is necessary to make them "set." When the water is absolutely motionless, drop six to ten drops of the microfilm solution onto its surface. Due to the surface tension of the water, the microfilm drops will be drawn out so

that they soon cover a fairly large area of the water in the form of a fine film.

Allow this film to "dry" on the surface of the water for about 10 minutes before attempting to lift it from the tub.

To remove the microfilm sheet from the water, lift the frame very slowly by means of the handle. Tilt the frame as you lift, to allow the water to run off. This must be done gently and slowly, or the weight of the water will tear the sheet.

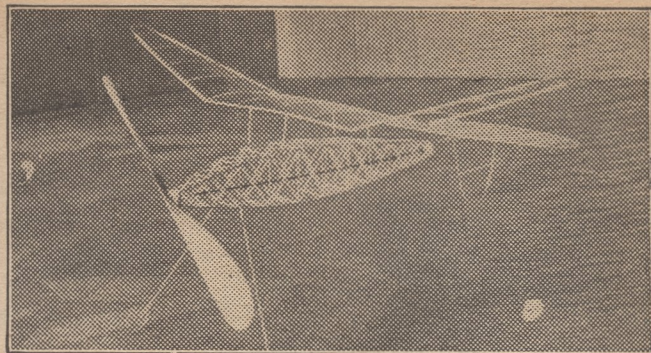
When the frame has been removed entirely from the water, wet your fingers and keep them wet while you work, and push back the excess sheet that drapes over the side of the frame. You will thus have a clear sheet within the confines of the frame. Let the sheet dry on the frame by hanging it up in a safe place by means of the handle.

TO APPLY the completed microfilm sheet to your model, first brush all parts to be covered with rubber cement and allow it to dry. Then remove the microfilm from the wire frame by running the point of a pin—which has been exposed to a flame—along the sheet where it contacts the frame.

Attach it to the wing, rudder, elevator, or other model parts, using saliva as an adhesive and following the same general methods as you would in covering a model with tissue paper. (If you prefer, you can attach it merely with the saliva or diluted rubber cement. A combination of these as described above, however, seems to get the best results).

Although a model covered with plain microfilm instead of tissue

When we first gave this picture the Double-O, we thought young Thomson was wearing a halo. What it really turned out to be, though, was a perfect sheet of microfilm.



is a pleasing enough sight. Canadian modelers have gone one step farther. They have produced colored microfilm, by mixing a small amount of colored dope with the microfilm solution. The amount of dope necessary is largely a matter of experimentation. It depends on the quantity of microfilm solution you are using and the quality of the pigmented dope.

However, until you have successfully made several sheets of plain microfilm, the writer advises that you forego the coloring process.

Before attempting to apply a microfilm sheet to a fully completed model, it would be best for you to practice on an old spare wing or other part from some model that has cracked up. You will soon acquire enough skill to try it out on your completed models.

Confine your use of microfilm to the wing and tail surfaces of stick models until you have successfully covered at least half a dozen jobs. Some lads have been successful in covering built-up fuselage and even props with microfilm, but these are tasks that require quite a bit of skill, and you'll surely be discouraged if you tackle 'em too soon. Remember that practice makes perfect!

With this all-microfilm covered contest job, Herb Greenberg, of New Jersey, has set up a whole stack of indoor records in the Greater New York area. Note how the transparent covering permits the judges to check the interior construction of the model. Some modelers, incidentally, even cover the prop with microfilm.

What Do You Say?

YOU KIDDIN' US, PAL?

Editor, FLYING ACES:

Say! With all these cracks being made about super-super ships, I think it's 'bout time I offered my suggestions. Now *my* best idea is really a new one! For the ship I have in mind is most definitely an out-of-the-ordinary one—it's *wingless*! Just think of the reduced wind resistance on a ship of this type! And all I have to worry about is how to keep it up.

After I've figured that out, I'm going to go a little further and design a retractable fuselage for it. Who says we can't go faster than 575 m.p.h.? Haw-w-w—as Phineas would say—I'm a riot, ain't I? But you won't print this letter anyway. (*Editor's note—who says we won't?*)

To get down to the more serious part of modeling, though. Like many other experts, I have conducted numerous experiments with models. And do you know what? I have learned that if a model dives into *terra firma* at full speed, the result

is usually considerable damage. I've found out, too, that if an absent-minded modeler forgets to install a landing gear the result is usually a scraped fuselage.

And speaking of scrapes—I know one crack-brained modeler who put 10,000 turns in his model with a winder, and when he looked to see if the rubber wasn't 'most used up he found the empenage was pulled so far forward that it was in front of the prop—making his ship into an old Wright Biplane.

I know another chap who flies a radio-controlled job. One day when it was aloft, the receiver in the ship tuned in on the Kolossal Krime Klue Klub Broadcast. And just as the crook threw the charming lady out of the window darned if the model airplane didn't head right for the spot and rescue her!

Now it is surely time for me to sign off.

GEORGE SCHINDLER, JR.
Carnegie, Pa.

EXCELLENT "MOTH" FLIGHT

Editor, FLYING ACES:

In the August edition of FLYING ACES, there were plans to Herb Spatz's F.A. *Moth*. I built the ship and it flies very satisfactorily. The other day I was flying it, and a careful check showed that the model flew at a speed of 40.5 m.p.h. on just two strands of rubber. And I am going to try and beat even this record!

I am a steady reader of FLYING ACES, and I send this information because I thought you would like to know what one of the models offered in your magazine and made by a reader would do in the line of speed.

My age is fifteen.

HARLAN RIEDESEL,
Kansas City, Mo.

(This is your corner, buzzards. 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—Editor).

Try the "Trenton Terror"

By Mickey DeAngelis

Drawings by Bill Giblin

SIMPLE DESIGN coupled with topnotch performance and low cost of construction are the keynotes of our *Trenton Terror*. And the fact that at least ten *Terrors* have been built in Trenton during the past few months (up to the time of writing) is proof enough that the ship is both practical and popular.

That "low cost" feature is one reason for its popularity, of course. For the *Terror* can be built and even equipped with airwheels for an expenditure of but little more than \$4.00. Obviously, this doesn't include the engine—but you *might* figure on a medicine dropperful of gas within that price!

The ship has performed very well indeed at a round half-dozen large contests in the East. And in the recent Metropolitan Gas Model Meet at Seversky Field, Long Island, the stable performance of the plane astonished spectators and contestants alike. For other models were cracking up right and left in the very high wind that marked the day—while the *Trenton Terror* flew calmly on!

And at a State Recreation Festival at Roosevelt Park, N.J., a short time ago, the *Trenton Terror* was staging an exhibition flight from a small island in a lake to the "mainland." From a swell take-off, all went well! But the motor conked out while the ship was right above the water—and she made what the old fiction writers used to call a "volplaning dive" to a perfect three-pointer on the drink!

The airwheels served efficiently as pontoons, and when we—Barney Onofri, who had built the original model from my plans, and myself—had retrieved it, we shook the water off and sent the ship up again. But by that

"How much will it cost? And how will the finished job perform?" Questions such as these always come to mind when a chap's planning to build a gas model. And in the case of the "Trenton Terror" he'll receive mighty satisfying answers. For the entire constructional cost of the craft, minus the engine, shouldn't run more than four dollars. And as for performance, well—just follow the accompanying instructions to the letter, and you'll have a record-breaker!

time the *Terror* herself was terrorized—for she flew out of sight and hasn't been seen since.

Which brings us to the moral of our story, Never fly your *Trenton Terror*—or any other favorite model—without first firmly affixing your name and address in a conspicuous place.

CONSTRUCTION

THE first step in constructing any type of model is to become familiar with the construction data and drawings.

Scale up the fuselage sides from Plates 1 and 4, and then lay out the two sides. Build over the white outlines only—the solid black lines show the V-type turtle deck which is added after the fuselage sides have been assembled. The entire fuselage is constructed of $\frac{1}{4}$ " sq.

hard balsa, and plenty of cement is used on every joint. A straight pin should also be inserted through every joint to further reinforce the structure.

The battery track (Plate 1) is merely a balsa runway to which the battery box (Plate 2) is bolted. By moving the batteries backward or forward the ship can be adjusted for nose or tail heaviness as may be required.

The V-type turtle deck is made by first running a $\frac{1}{4}$ " square balsa strip edgewise from the center of the top rear cross-piece of the cabin to the center of the last cross-piece on the rear of the fuselage. The additional cross-pieces are then run as shown from the edges of the fuselage to this strip to form the triangular shaped turtle deck, as shown in black on Plate 1.

The door is made of $\frac{1}{8}$ " balsa sheet with a linen or cotton hinge, and a piece of wire for a lock. This door makes it very easy to change batteries, adjust balance, or check wiring.

The landing gear (Plate 4) is bent from $\frac{1}{8}$ " dia. spring steel wire. Use soft brass wire to hold it together while soldering. You *must* have plenty of heat on your work to make a good soldering job.

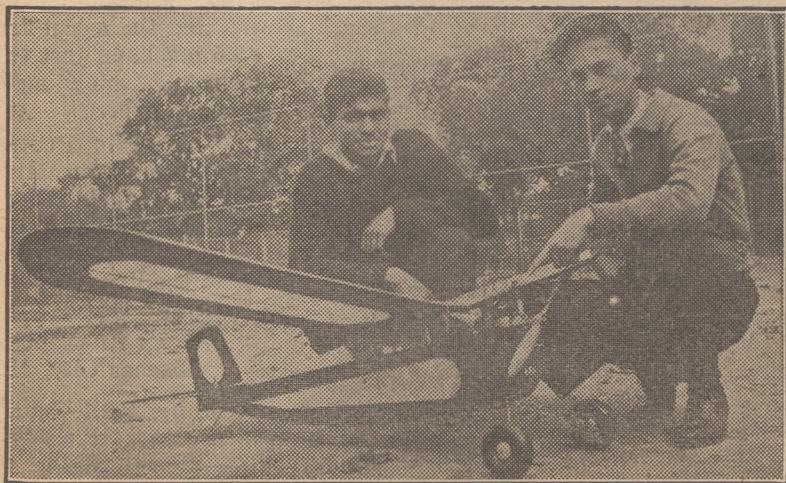
The landing gear is held onto the fuselage cross-pieces with $\frac{1}{8}$ " flat rubber.

MOTOR MOUNT

MAKE the "Y" motor mount panel and cement it to the cross-pieces as shown in Plate 1. This takes advantage of the $\frac{1}{8}$ " down-thrust already built into the fuselage. The "Y" panel is cut from $\frac{1}{4}$ " sheet plywood 3" wide by $4\frac{1}{2}$ " long. It forms a flooring to which the motor is anchored. This is Trenton's "one-bolt removable motor mount," a type that is instantly removable for adjustment.

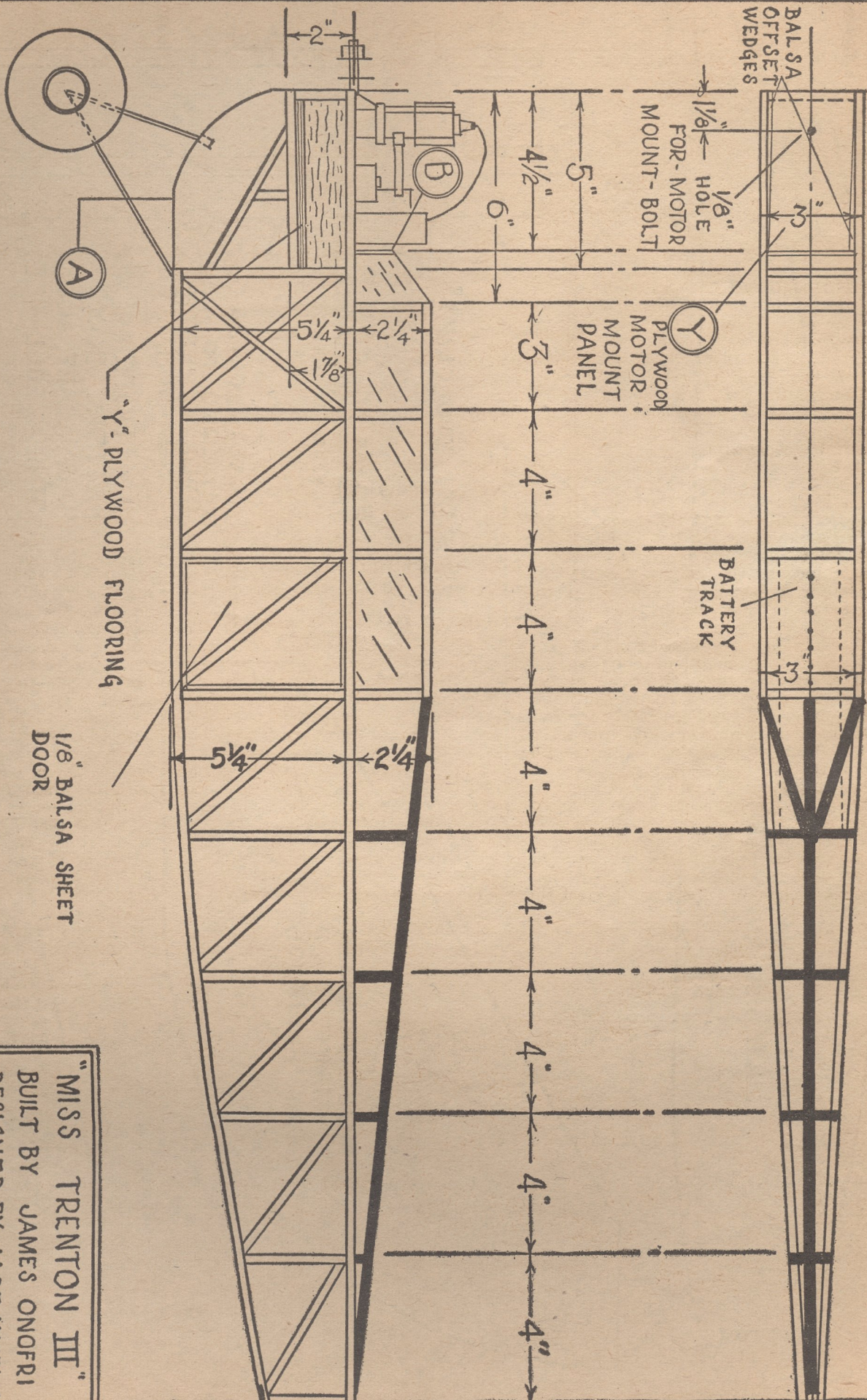
The plywood panel, which is glued to the bottom of the motor mount skids, will give easily in a very hard crackup. This method has been in use for a year by Trenton builders and not one motor or crankshaft has been damaged in that time.

(Continued on page 77)

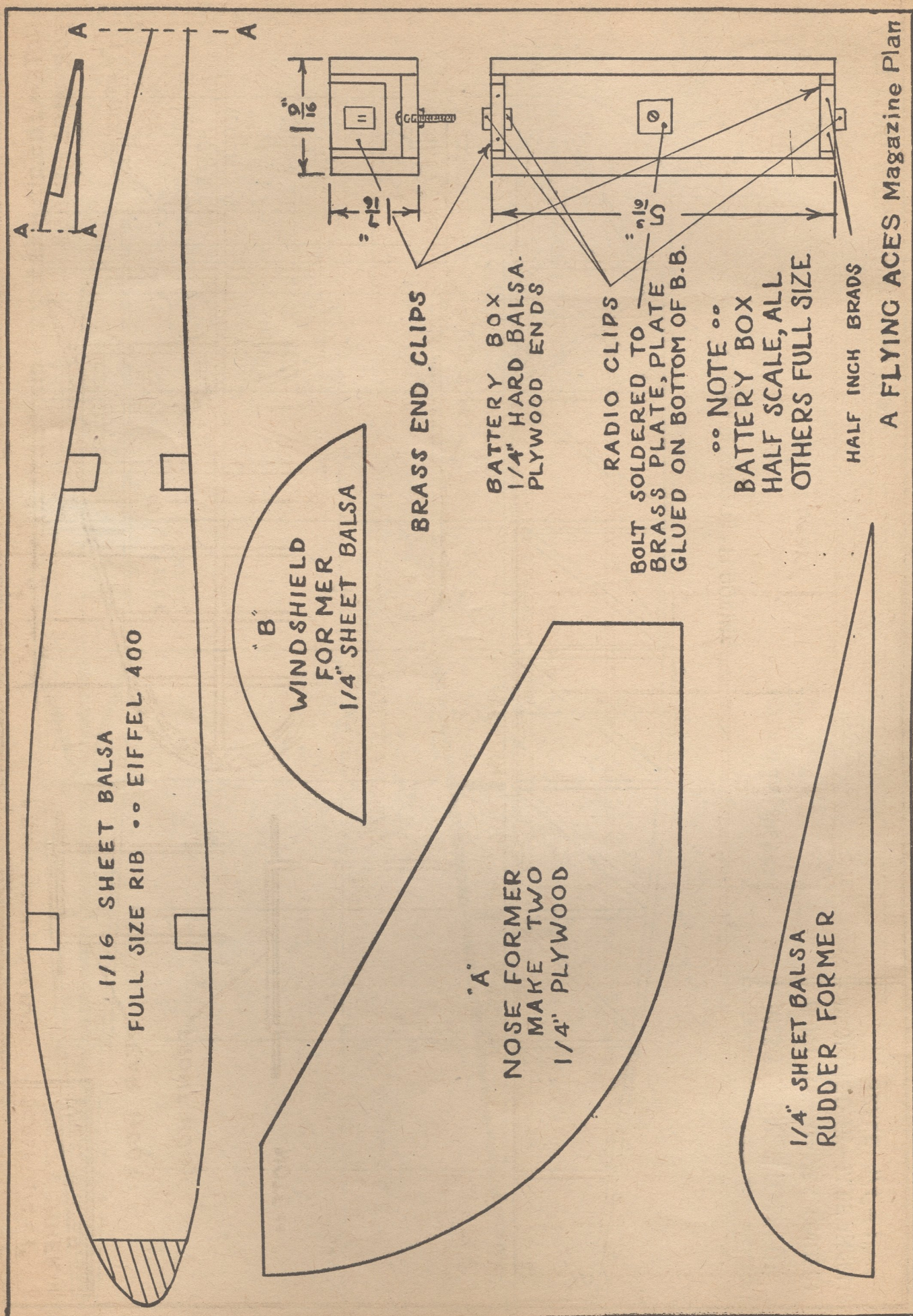


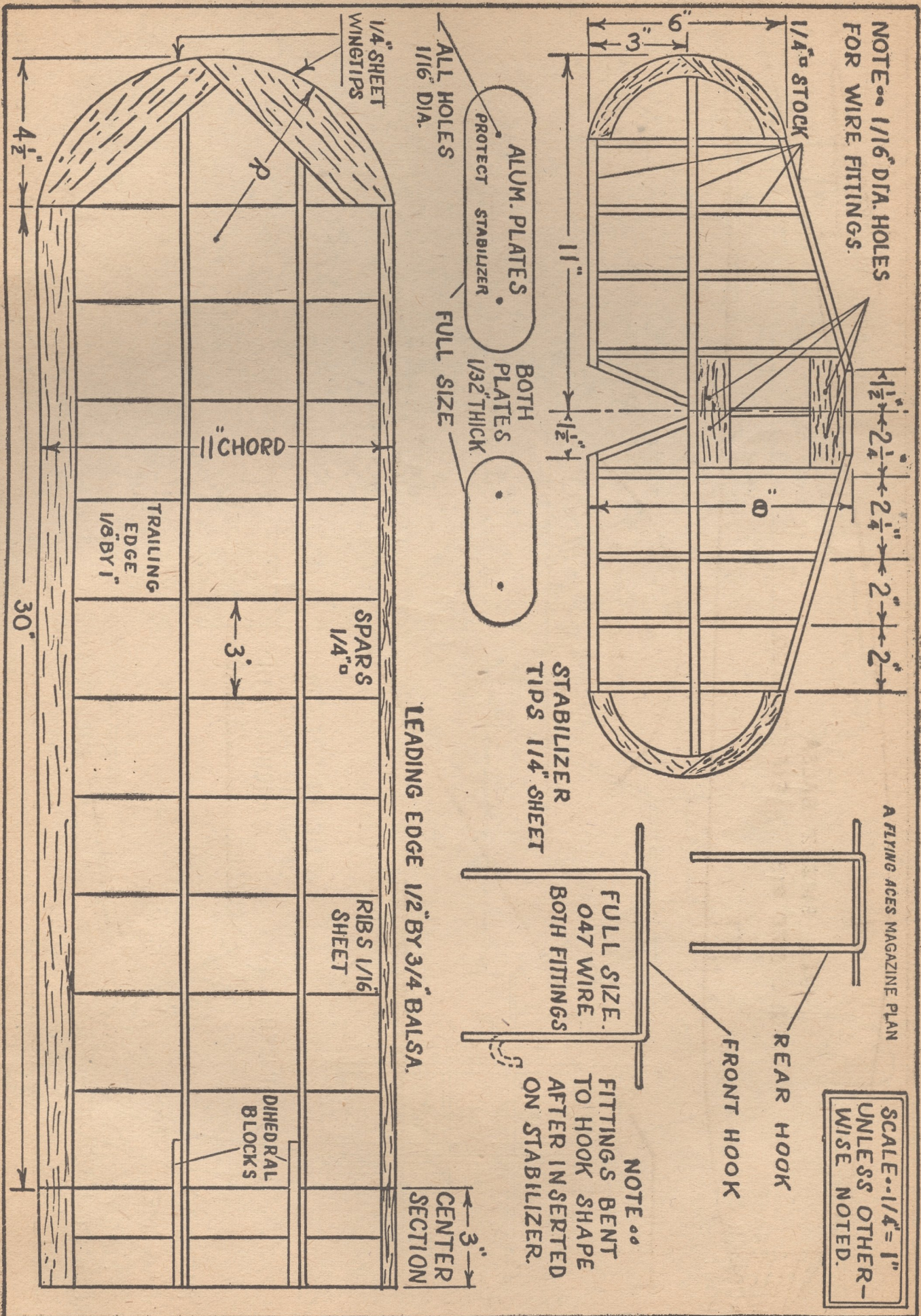
Introducing Miss Trenton III—better known as the "Trenton Terror"—with Barney Onofri, its builder, and Mickey DeAngelis, its designer. Sturdy and stable and with easily adjustable controls, this ship was making quite a reputation in the East before the travel bug bit her and she failed to return from an exhibition flight.

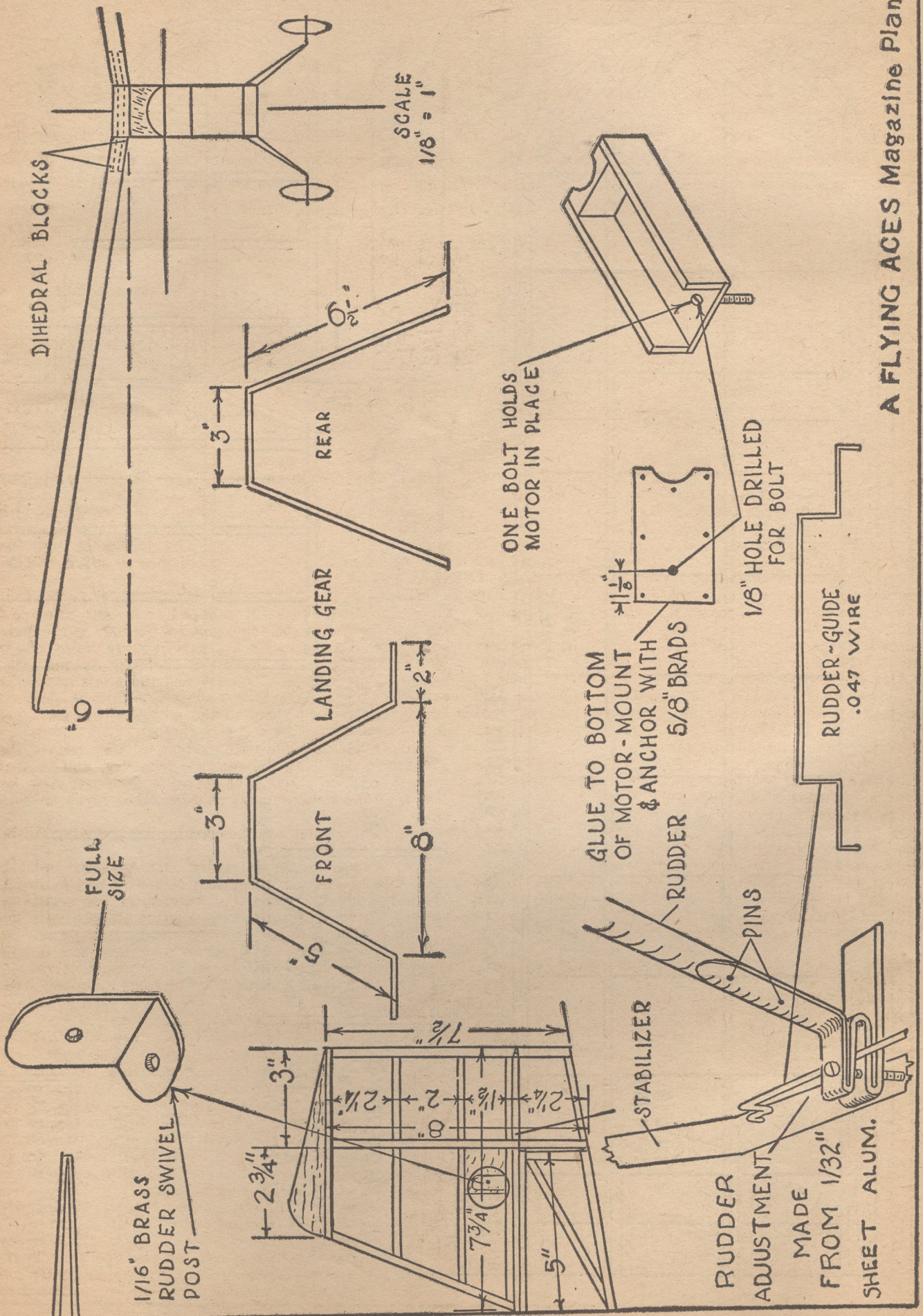
A FLYING ACES Magazine Plan



"MISS TRENTON III"
BUILT BY JAMES ONOFRI
DESIGNED BY-M. DE ANGELIS
SCALE 1/4"=1"







Make the Boeing

Sub-Stratosphere Ship

Among the great planes of sky-history-to-come will be the Boeing 307, a twenty-one ton transport designed to hurtle through the rare upper air. The first of these huge craft is now under construction in the Boeing shops at Seattle. But from the manufacturer's own plans on file in the U.S. Patent Office, our alert Nick Limber has developed this swell solid model.

By Nick Limber

DESIGNED to carry thirty-two passengers and a crew of four through the rarefied regions that form the upper limits of our troposphere, the new Boeing 307—now under development in the Boeing company's shops at Seattle—could never be classed as “just another airliner.” For the eventual completion and placing into service of this great ship will be man's first major step toward the commercial conquest of the upper air—and, perhaps toward the conquest of space itself!

While but little information has been released concerning the expected performance of the ship, certain design specifications have been made available and will be found on the accompanying Plate 2. The ship itself, the engineers say, will be fitted with an absolutely airtight cabin in which a constant pressure will be maintained regardless of the air pressure outside.

Powered by four huge Wright G-100 Cyclone engines, the 307 will have a total rating of 4,400 h.p. at take-off.

And now let's examine the drawings and prepare to build our solid model of this distinctive ship. The data for these drawings, incidentally, were taken from plans filed with the U.S. Patent Office, when application was made for patents on the ship's design.

On the next two pages you'll find a side-elevation of the ship. To construct the fuselage, trace this outline onto a balsa block measuring $9\frac{1}{2}$ " by $1\frac{1}{2}$ " by $1\frac{1}{2}$ ". Cut away the excess balsa, then trace the top view from Plate 2 onto one of the sides, and trim away the surplus wood here, too. Work carefully throughout, for your $1\frac{1}{2}$ " square doesn't leave much room for waste.

Now shape the body, and pay close attention to the various cross-sections while you work. You need a sharp knife and sandpaper for this part of the job. For the final smoothing, use No. 00 sandpaper. And now your



Since our model of this Boeing high flyer is built with its landing gear retracted, it "hasn't got a leg to stand on." So a simple wire base, such as that shown here, will be found an effective means of mounting your miniature ship for display.

307's fuselage is shaped, you're ready to build the—

TAIL ASSEMBLY AND WING

BOTH the rudder and stabilizer are carved from $\frac{1}{8}$ " sheet balsa. Trace the outlines from the diagrams onto the stock, and after cutting away the excess, use sandpaper to work out final streamline shape.

Cement the tail to the fuselage, making certain that the rudder is perfectly vertical and the stabilizer perfectly horizontal.

Make the wing in two pieces, each measuring $6\frac{1}{8}$ " by $2\frac{3}{4}$ " by $\frac{7}{16}$ ".

After roughly tapering each piece in accordance with the top and front views, refer to the sectional diagrams and shape the airfoil section. With a knife, cut away the surplus balsa, and then use sandpaper to obtain the desired airfoil.

When both panels have been completed, make the four engine nacelles. These are shaped from soft balsa and are constructed in the same general manner as the fuselage. The outer nacelles are carved from balsa blocks $\frac{5}{8}$ " sq. by 2", while the inner ones are shaped from blocks $\frac{5}{8}$ " sq. by $2\frac{1}{2}$ ". The nacelles and cowls are easily cut in one piece. After the nacelles have been shaped, cut out the slots to fit them to the wings. These slots are shown in sections GG and HH on Plate 1.

Smooth out the slots with sandpaper, then cement the nacelles to the wing halves. Let them dry, and cement the wings to the fuselage as shown in the front view. Be sure that the same amount of dihedral is given on both sides.

After the cement has hardened, fillet the wing to the fuselage with plastic wood.

Such details as the retracted landing gear and tail wheel are made from scrap and cemented to the model. We might mention here that because of the necessary secrecy surrounding the construction of the original Boeing 307, no details on the extended landing gear are available. So in order to keep the model as true to scale as possible, we followed the Patent Office plans and used the retracted landing gear.

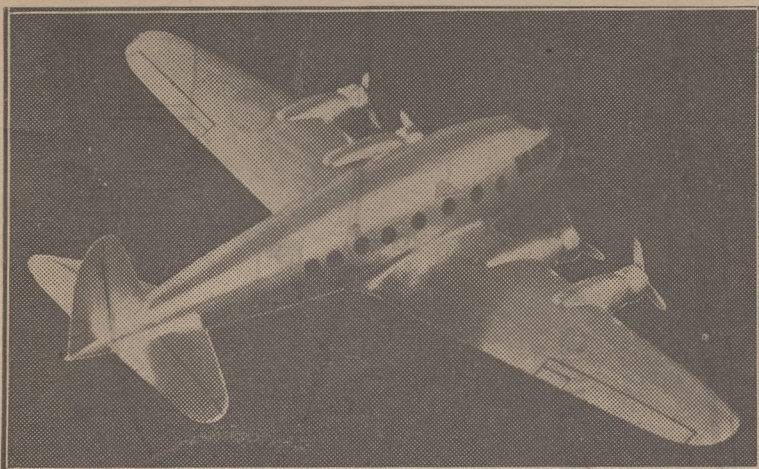
COLORING THE MODEL

SILVER is the chief color of our 307 since the original ship will be of all-metal construction. The landing gear and the front of each engine cowlings should be painted black.

When painting the model, sandpaper it smooth after each coat. The first coats must be thin. When the finish finally suits you, cut the windows of the ship from black paper and cement them to the fuselage as shown in the drawings. Use only mucilage to hold the windows to the body, for if cement is used it will spoil the silver finish.

Now pin the propellers to the nacelles. Ready made metal props are best for the model's appearance, but if you cannot conveniently get them you can make your own of cardboard or wood. Paint them silver.

(Continued on page 77)



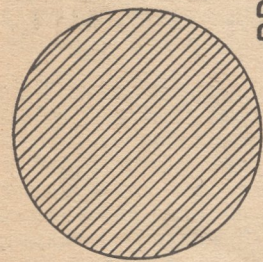
Common aluminum paint—applied several times between smooth sandings—produced this nifty finish on Nick Limber's solid model of the Boeing 307. The additional details were added with India ink and black paper. Spiffy as it is, this is really an easy model to make.

BOEING 307

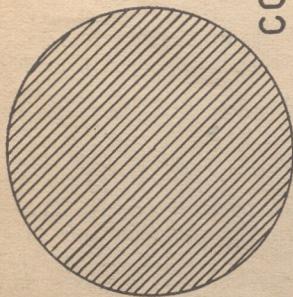
SUB-STRATO SHIP

8 1/2"

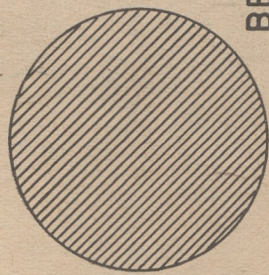
NICK LIMBER



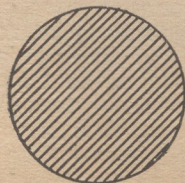
DD



CC



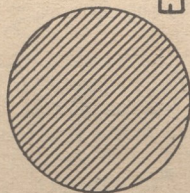
BB



AA



FF



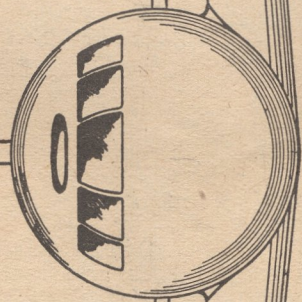
EE



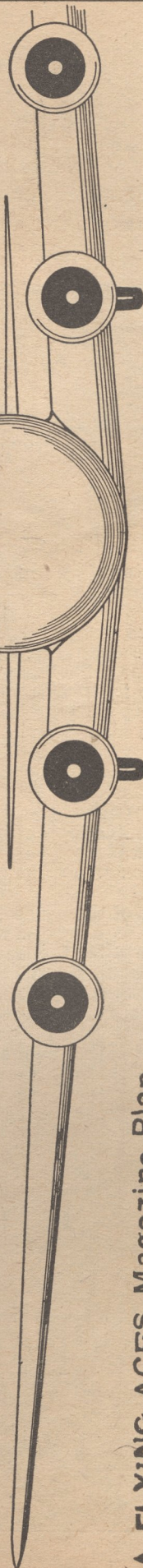
GG



HH

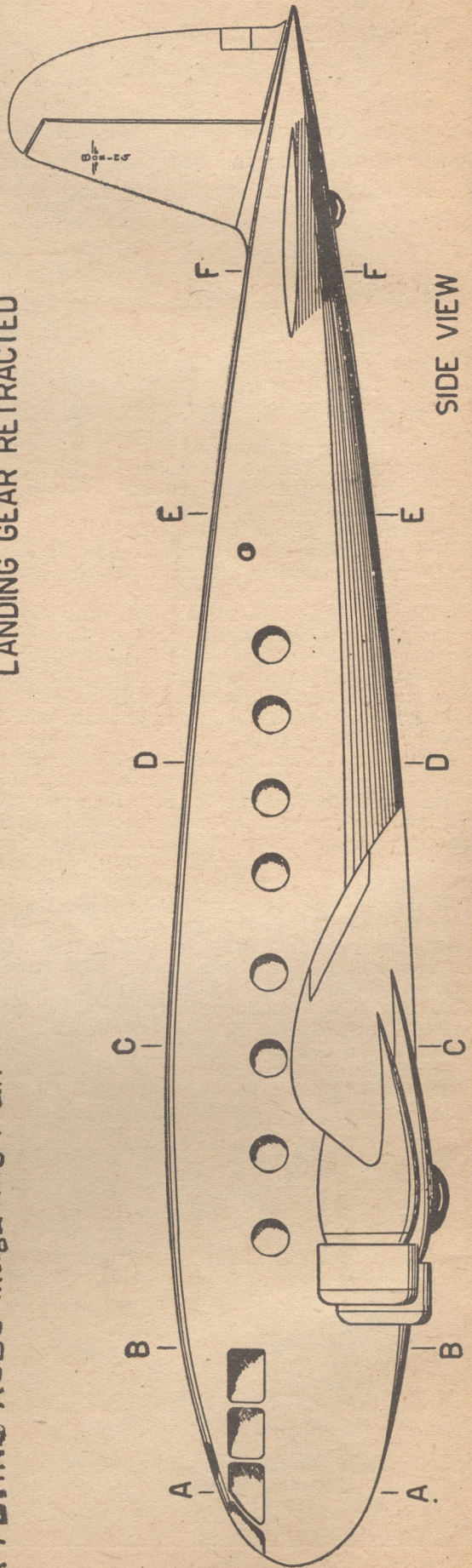


FRONT VIEW

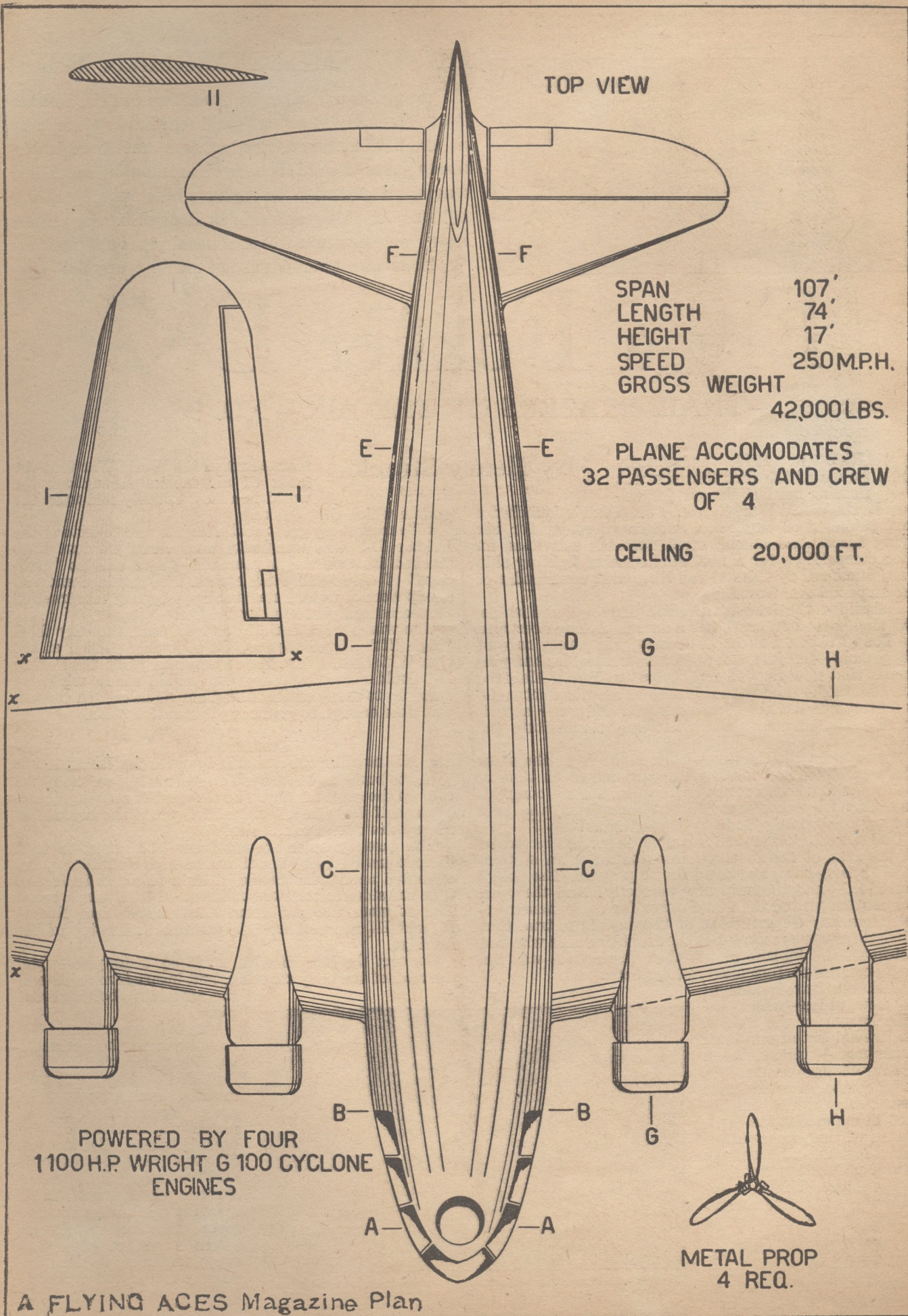


LANDING GEAR RETRACTED

A FLYING ACES Magazine Plan

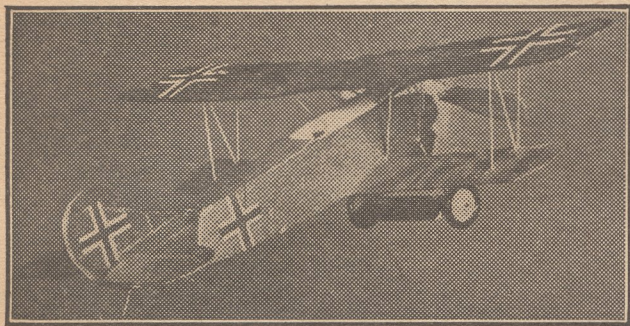


SIDE VIEW



A FLYING ACES Magazine Plan

Henry Struck's model of the Fokker D-7 is shown here as a full-sized ship might have appeared at the climbing start of one of those tricky turns made famous by Max Immelman in his Fokker monoplane. The D-7, a much more maneuverable ship than most other German wartime planes, paved the way toward practical mass formations in aerial combat.



MOST FAMOUS GERMAN SHIP!

The recognition granted by Americans to the Fokker D-7 as Germany's leading World War battle plane is by no means ill-deserved. For had this craft been in the bloody game prior to those few final months, the Allied song of victory might never have been sung. Read the full story of this great ship in Henry Struck's article below, and then take his fine model plans and instructions into your workshop and prepare to—

Fly a Fokker D-7

TRAIL BLAZERS OF THE AIR—NO. 9

EARLY in 1918, undoubtedly aware of the fact that she was nearing her last chances for victory in the World War, Germany desperately launched a vast program of expansion and improvement for her flying force. And among other feverish activities, an open competition for a new single-seater fighting ship was announced by General von Hoepfner, commander of the Imperial Air Force.

Naturally, the leading aircraft firms entered ships, and among the new craft was a unique biplane developed by Tony Fokker. Fokker, it seemed, was pretty sure of his ground—for just a few months before, he had presented that now-famous red "tripe" to Baron Manfred von Richthofen, and with this ship as an introduction he had been able to chat with the Baron and other experienced action-airmen about what might constitute the ideal pursuit ship.

So, armed with this knowledge right from the skies of war, Fokker had taken great care and much time in the design and construction of his entry for the competition. But when construction was completed, the ship showed an alarming tendency toward spins!

Undaunted, Fokker and a couple of mechanics sawed off the rear of the fuselage, inserted an extra section, added a larger fin, and tried the ship again. The "bug" was killed—and the ship flew perfectly! And the open competition proved the new Fokker far more maneuverable than any German ship of the day. It is true that other ships were *faster*—but the front line aces who had test-flown the biplane stated their preference was for peppy combat performance rather than speed.

With the introduction of the new ships—which became known as the Fokker D-7, the subject of our Trail Blazer model this month—a definite change occurred in aerial combat tactics. Mass formations were emphasized, as opposed to the earlier days of the war when individual air duels formed the greater part of sky fighting.

This change took place because the easier maneuverability of the new ships made it possible for flyers who were not "born birdmen" to handle their crates in closer quarters. And so satisfactory were these new group tactics of the Ger-

By Henry Struck

man Army in the World War that the basis of air tactics throughout the world is almost entirely laid upon the

system which they devised.

Like most truly great achievements, the keynote of the Fokker D-7 was simplicity, and clean, efficient lines marked its external appearance—there was no "birdcage" of wires and thick struts. The fuselage and tail group were of welded steel tubing, a type of construction pioneered and perfected by Fokker.

The wings were entirely of wood, and the very thick "high lift" airfoil tapered off to a thin section at the tips. With the 160 h.p. Mercedes power plant, the Fokker D-7 could make a speed of 120 m.p.h. which, while not quite up to many of the Allied ships she met in combat, was close enough to give her pilots satisfaction.

CONSTRUCTION

AND now for our model D-7, which you'll find simple to build, and sturdy. The scale is $\frac{1}{2}$ " on the model to 1' on the original ship. The three-view drawing (Plate 1) is half the size of the model, while the layouts on Plate 2 are drawn to full size.

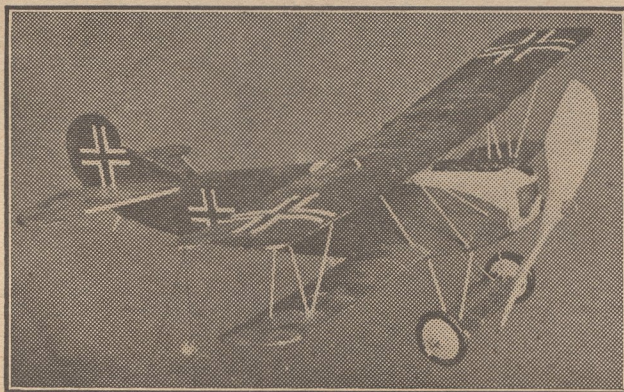
The fuselage sides are cut from $\frac{1}{32}$ " sheet balsa to the pattern on Plate 2. Stiffener strips of $\frac{1}{16}$ " sq. are cemented across the inside of each blank as indicated. Glue the sides to the nose bulkhead of $\frac{3}{16}$ " sheet balsa. The formers are cut from $\frac{1}{16}$ " sheet, and Nos. I, II, and III are cemented in position at the top of the fuselage.

Connect the bottom with $\frac{1}{16}$ " sq. cross pieces, pull the rear of the body together, and insert former IV and the remaining bottom cross piece.

The bottom section of the nose back to the rearmost landing gear strut is filled in with $\frac{1}{8}$ " sheet, the grain running crosswise to the body. Round this off to match the contour of the nose bulkhead. The top of the fuselage is covered with $\frac{1}{32}$ " sheet, and a wedge shaped sheet, not quite reaching the fuselage sides, covers the turtle back as shown in the three-view. Cut away the cowlings for the dummy motor and cockpit.

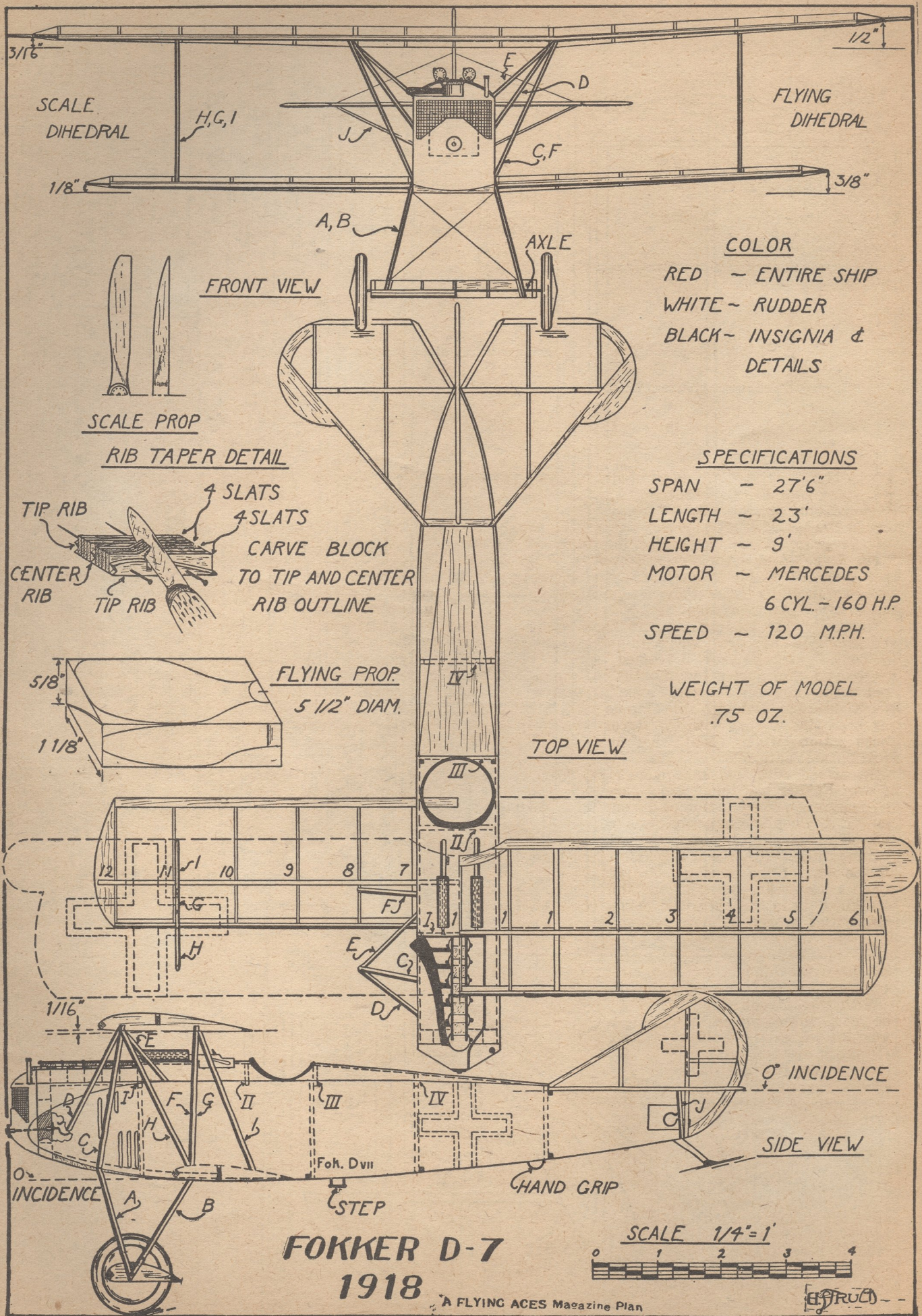
The nose plug is a block $\frac{1}{2}$ " by $1\frac{1}{4}$ " by $1\frac{3}{8}$ " carved

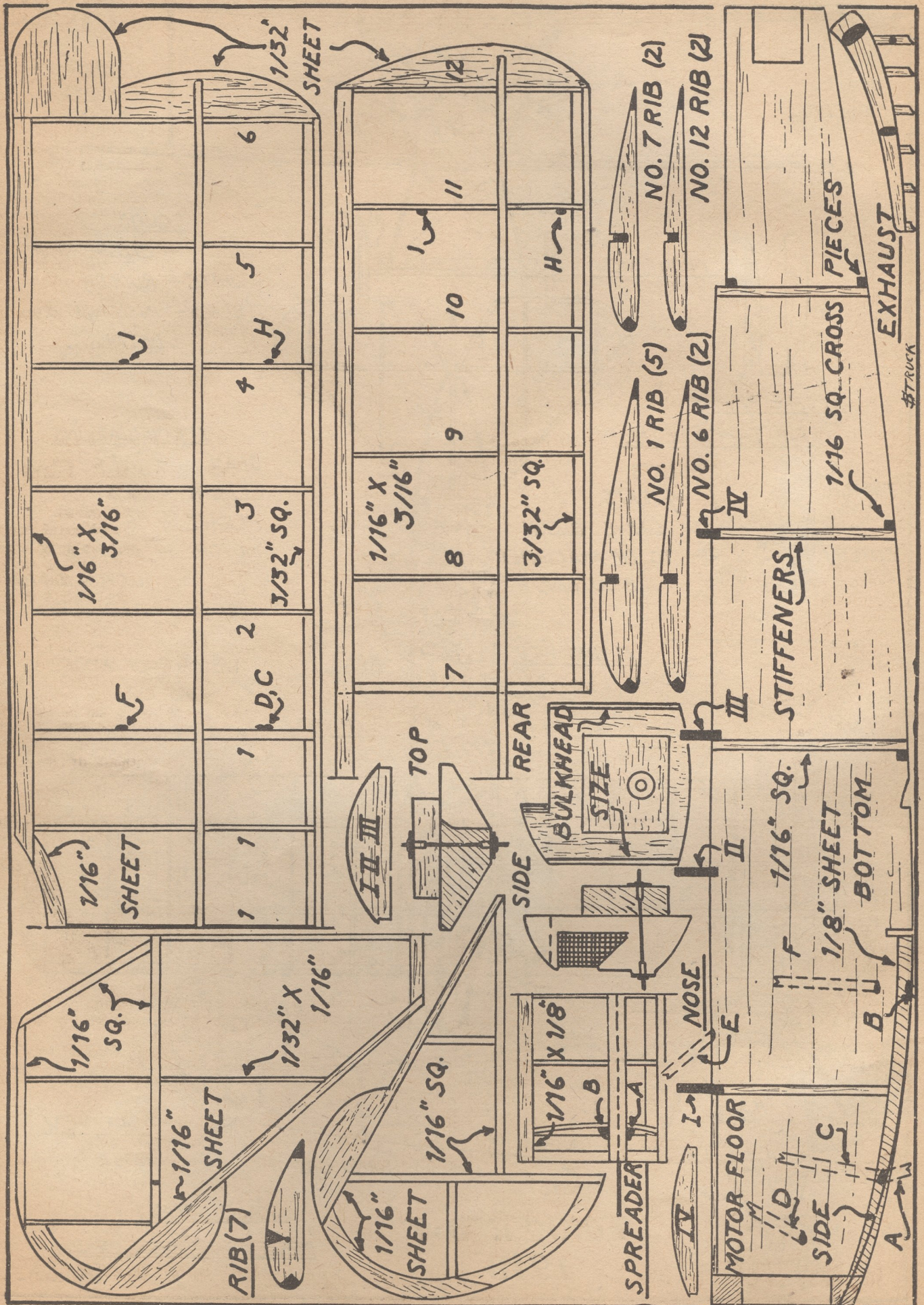
(Continued on page 64)



Straight-sided black crosses, such as are shown on the model above, marked the D-7 biplanes as late World War craft. Maltese crosses were used only on the earlier German ships. How to reproduce the realistic detail that Henry Struck shows in this model is fully explained in the accompanying text.

FLY A FOKKER D-7—Plate 1





Logging the Model Market

ONCE again we find ourselves on the model "front," with news dispatches bombarding us from the attack lines of various manufacturers. The first note is of particular interest to gas modelers, since under rules of the new N.A.A. gas model division, gas model flights in contests and at approved flying fields will be subject to limitations of engine run. And this initial note describes an automatic timer which is distributed by:

Ellman and Zuckerman. In answer to numerous requests by gas modelers, this firm announces a series of automatic ignition switches. Originally designed to operate mechanical games, the unit is now available in slightly different form and will maintain a closed circuit, depending upon the size used, for periods ranging from 15 seconds to 7 minutes.

The switch is powered with a heavy piano-wire spring and is equipped with insulated contacts and mounting bracket. All essential parts are rust-proofed. Without covering, the unit weighs 2½ ounces.

Avion Model Aircraft and Supply Co. Avion Model Aircraft designers have announced the completion of a de luxe prefabricated 10-foot gas model known as the *Oriole*. This unique ship opens the gas model field to modelers of quite limited experience, since it is prefabricated and needs only to be assembled and covered.

The craft weighs slightly more than 8 lbs. and is designed for any 1/3 h.p. engine. The ready-made parts include a cast aluminum streamlined tailwheel fork ready to install, and landing gear completely shaped and threaded. The use of balsa is practically eliminated,

and the ship is built almost as a full sized airplane.

Wing panel and tail units in the completed ship are removable for easier transportation. Minus the engine, the complete kit for this prefabricated ship is sold for \$29.50.

New Cyclone Aircraft Co. Conceived many years ago, New Cyclone's *Thunder Bird* 6 foot gas model has recently been released in kit form. The kit contains pneumatic air wheels, finished prop, and a complete supply of materials, including colored dope, cement, and ready-cut ribs.

The drawings cover every detail in construction of the ship and installation of the engine in any desired position. They also include a wiring diagram allowing for the use of a timing switch.

Complete with a Mighty Midget motor the kit retails at \$14.95. Without the motor it can be purchased for \$4.95.

International Models Co. In addition to a new "Tru-Detail" flying scale model of the Grumman SF-1, this company has developed two gasoline engines, one a water-cooled and the other an air-cooled unit.

The water-cooled job is known as the "Water NimpH" and is suitable for speed boats or flying scale models that feature radiators. Mounted on an aluminum stand and complete with spark plug, coil, condenser, and fuel tank, the unit sells for \$16.50.

The air-cooled motor is known as the "Intermote." It resembles the "Water NimpH" except that fins replace the water jacket. The "Intermote" retails at \$15.00 and is designed to fly any 3 to 8 foot gas model.

Characteristics of both units are as follows: Bore, 51/64"; stroke, 53/64";

r.p.m., from 320 to 11,966, according to prop or fly wheel used; h.p., 0.190 (certified).

The new flying scale model Grumman SF-1 kit, now released by International, is true-to-scale, the model having a span of 21½". The kit is priced at \$2.50.

It includes a wood prop, seventy ribs, all finished and notched, and 230 finished parts of balsa, paulownia wood and metal. Struts are cut to size and streamlined and rudder and elevator surfaces are formed, and all other parts that might offer difficulty in construction are completed for the builder.

—NICK LIMBER

(Readers desiring further information on any of the items described in this department are invited to write direct to FLYING ACES Magazine, mentioning the name of the firm and the items in which they are interested.)

Workbench Tips

CORRUGATED COVERING

TO get that corrugated metal covering effect for your solid or other display models is really quite a simple job. Take a heavy sheet of tinfoil and lay it on a blotter. Then comb it with a common pocket comb, pressing down through the foil into the blotter and drawing the comb in one direction only. Use the comb almost parallel with the tinfoil to keep from injuring the metal.

And now you have the corrugated covering. To apply it to the model, first cover the balsa surface with a thick layer of cement. Then carefully lay the tinfoil in place without drawing out the corrugations.

DON FUQUA.

LINED UP ON THE RUNWAY for the

NEXT SMASHING NUMBER OF FLYING ACES



SPECIAL—"We Must Train Airmen For America's Defense!"—a striking article bringing you the vigorous views of General Westover, Eddie Rickenbacker, Casey Jones, and Major Fred Lord.

FICTION—Richard Knight in an action-packed Mediterranean sky-fighting yarn.
"Haunted Clippers"—the latest bang-up "Griffon" novelet.
And "Kraut Fishing"—another rip-roaring "Phineas" sky tangle.

Fact Articles—"Our Newest Weapon—The Black Ray," by Lieut. H. Latane Lewis II.
"Highlights of Chicago's International Air Show."

Model Building—A swell Aeronca K flyer featuring a three-way landing gear—wheels, pontoons, and skis.

Another midget gas job—the three-foot "Mighty Mite."
Struck's latest "Trail Blazer"—the World War Jenny.
An ace stick model, and other top-flight specials.

In May FLYING ACES

On Sale March 27th

Scourge of Oblivion

(Continued from page 4)

dressed like this? And this uniform. It is not mine—" He stopped short, a sheepish grin on his face. "Ach, it is another of Karl's tricks, *nein*? He drugged my wine again—and had you play this trick on me. Is it not so?"

Strange saw the haunted look in the man's eyes. Keeping Jordan silent with a hurried glance, he said:

"Ja, it was Karl's idea. I told him he was going too far. But come along, there's a house nearby and we'll wait there until Karl comes."

The German nodded confusedly, stopped again and looked at the burning planes. Strange seized the chance for a quick whisper to Colonel Jordan.

"I'm going to keep up the game and see what I can learn. Bain and some of the others will be here in a minute. Tell them he's a new man in G-2, that he was to have picked up an agent over in Germany and those Boche jumped him in captured Spads."

Jordan shot a nervous glance at the German. "Be careful," he said to Strange in a low voice, "he may be playing some deep game."

The G-2 ace shook his head. "I think not. I believe this is the same thing which happened to the 37th's pilots and those others today." He motioned toward the Breguet. "You'd better ask Bain to have his mechanics start that ship and taxi it under the trees—also the D.H. I'll walk into the dugout with our mysterious Boche."

"All right," said Jordan. "I'll meet you there in a few minutes."

Strange went over to the German, touched his arm. The pilot started like a man awaking from a dream.

"Ach, it is you!" he said in a tone of relief. "I have had the most peculiar feeling that I am in danger—that some one intends to kill me."

"Let's go into the house I mentioned," said Strange. "You'll feel better soon—it is probably the effect of the drug."

CHAPTER II

RED ROCKET

THEY started across the field, which was still brightly lit from the glare of the burning ships. The German looked over his shoulder, frowned in the vacant manner Strange had first noted.

"There is something about that fire which makes me shiver. What is it that is burning? It does not seem to be a house."

Strange hid a grimace as he thought of the pilots who were being cremated in the inferno.

"It is a kind of ceremonial pyre—part of your initiation into the society," he answered hurriedly to allay the German's suspicions.

"Society? But I do not underst—"

"Your friend Karl thought it would be a good idea," Strange interrupted, carrying out the scheme he had evolved to explain the dugout and the uniformed

men. "He has had in mind making you a member. But the *Kommandant* did not pass on your name until yesterday."

The other man moved his head dazedly. Strange took his arm, guiding him under the trees to the path which led to the dugout. When he removed his hand, a few moments later, he slipped the German's pistol from his holster and dropped it into the pocket of his own flying-coat. The pilot did not notice.

When they reached the dugout, an Intelligence sergeant and two sentries halted them. Strange knew the non-com, and after parrying the sergeant's eager queries about the fight he led the German down the concrete steps to the Staff room deep underground.

The pilot looked around in astonishment as they passed through the communications room, where officers and non-coms were working on late reports. Here, and in the map-room, one or two G-2 officers tried to halt Strange to learn the details of the fight which had been reported from above. But he pushed by them with a hasty excuse. Then after closing the Staff room door, he gestured for the Boche pilot to sit down. The man was staring around uneasily.

"*Mein Herr*, what is this place? What are those men doing out there?"

"This is the headquarters of the secret society," Strange told him. He went on, inventing swiftly, "Now that you are to be a member, I can tell you it is a secret organization to aid the Empire in time of war. We gather information—"

The German's face lighted up.

"Now I understand. This is part of the *Nachrichtendienst*—our Secret Service. Karl hinted several times I was to enter it when I was a little older. But these uniforms—I have never seen any like these in the Fatherland."

"This is a special type, just adopted," lied Strange, thankful that their leather coats hid the U. S. Army insignia. "To the public, we are only reserve officers on temporary duty."

"Then I have already been transferred from the Hussars?" exclaimed the German.

Before Strange could answer, the door opened and Colonel Jordan entered followed by Major Bain. The Intelligence major was a man above medium height, lean of figure, with a bony face and a huge nose. He had a cast in one eye, making it seem to focus in a different direction from the other, and the smirk of his thin lips added to this somehow sinister effect. He closed the door, glowered at the German.

"I explained," Jordan said rapidly to Strange. "I thought it best he should know."

"Who is this man?" the German said curtly. He met Bain's gaze with a quick resentment. "Why do you stare at me?"

"Because I'm wise to you, Heinie!" snapped Bain. "Maybe you can fool our smart Captain Strange, but not me!"

"My name is not Heinie," the German

said icily. "I am *Uber-Leutnant* Franz Richter, of His Majesty's Hussars."

A tense silence fell. And for an instant the three G-2 men looked at each other in amazement.

"Franz Richter!" Bain said in a stunned voice. "We try to spot him for almost a year—and he walks into our hands!"

Strange watched the German's face. It still had that look of confusion, but an expression of alarm was creeping into it.

"What does this crazy *Engländer* mean?" Richter demanded. "And what is he doing in the headquarters of the *Nachrichtendienst*?"

Without answer, Strange took off his flying-coat. The German's eyes dilated at sight of the silver letters "U. S." on Strange's collar.

"*Amerikaner!*" he whispered. A slow pallor crept into his cheeks. "What—what lunacy is this?"

"None!" Strange said gravely. "This is 1918—and our countries are at war!"

RICHTER sucked in his breath with a sharp hiss. Like a flash all the vacant expression was gone and consternation leaped into his eyes. He jumped back, quivering like a wild animal at bay. Then, with a desperate effort, he managed a smile.

"I—I didn't quite hear that," he mumbled in English. "Would you mind repeating?"

Strange felt a sudden admiration for the trapped man.

"A brave effort, *Herr Major*," he said in German. "I can appreciate the shock of finding yourself here without being able to remember the intervening period—without even knowing how much you've given away."

Richter's face was ghastly. But he still smiled.

"Sorry, captain—I don't understand German. My job was only to land a spy over there—not to—" his voice trailed off as he saw the look in the eyes of the G-2 ace.

"You've already identified yourself, Major Richter," Strange told him. "I've heard of you since you took over Karl von Zenden's work—" he broke off, looked swiftly at Jordan. "When is von Zenden to be executed?"

"At dawn—the sentence was approved yesterday." Jordan's bulldog face took on a look of excitement. "You think this was an attempt to save him?"

"It must have been—I didn't think Germany would let their master-spy die if they could help it. From what *Herr Richter* said in that daze, they must have been close friends as far back as 1911, when von Zenden was known mainly as a vaudeville impersonator—the 'Man of a Thousand Faces.' Von Zenden must have been working for the *Nachrichtendienst* even then—before he and I met on the stage in America."

"You're probably right, Strange," Jordan began.

Richter's face filled with a new rage,

as he heard the G-2 ace's name.

"Strange!" he snarled. "So you're the *Schweinhund* who captured Karl!"

He lunged forward, but the G-2 ace caught his arm and held him back against the wall.

"You may as well be sensible, *Herr* Major. There are forty men or more between this room and the exit. You could not escape."

"Let me handle him," snapped Bain. He picked up the prisoner's gun, pressed a button on the conference table. A lanky corporal entered.

"Get another man and take this spy out of here," growled Bain. "Tell Lieutenant Loomis to search him and report back."

As the door closed on the prisoner and his guards, Strange turned quickly to Colonel Jordan.

"Where is von Zenden to be executed?"

"In the courtyard of the old French prison at Broys," said the G-2 chief. "The execution is set for dawn."

"It must be postponed," Strange said quickly.

"Impossible," retorted Jordan. "What reason could I give General Pershing?"

"Tell him you'll get him the answer to that mysterious business today. Richter obviously knows the secret—and it must be connected with a plan to save von Zenden."

"How do you make that out?" interjected Major Bain.

"Whatever happened to the 37th's pilots—and the others—has evidently happened to Richter," Strange replied. "A mistake, of course. But it explains why those Germans in the Spads were trying to kill him. They were afraid he would give away the secret while he was in that state, or when he first came out of it. Why, what's the matter?"

Bain looked uneasily at Colonel Jordan.

"I was going to tell you this, Colonel—but I haven't had time since you landed—"

"Well, out with it!" rapped Jordan.

"There's a space of half an hour or more I can't remember, about noon today," Bain said reluctantly. "I didn't think of it until later—just thought I'd closed my eyes for a few seconds while Loomis was talking—that was after mess was served in here—"

"A drug!" exclaimed Jordan. "The food was drugged. That's how they got the map—everyone in the place must have been asleep."

Bain shook his head dubiously.

"I wasn't asleep, sir. I didn't wake up exactly—it was the sort of a feeling you get when your mind wanders for a minute and you come back to yourself all of a sudden."

STRANGE was listening intently to the major's halting recital. "Can you remember anything unusual during the time before then, or later?"

Bain eyed him with irritation, for they had never been friends.

"I'm coming to that. Either just before—or right after—and I can't be sure which it was—I got a hazy idea I heard a kind of whispering sound."

"Where did it seem to come from?"

demanding Colonel Jordan excitedly.

"I don't know," Bain said helplessly. "Loomis heard it, too—I asked him just before you landed. He had some kind of fade-out the same as I did—said he remembered day-dreaming about a girl he knew back in the States. The rest of the outfit has been acting funny, too. And it's a good bet they're keeping mum, each one of them afraid—"

A sharp rap at the door interrupted him. Strange opened it and a sandy-haired lieutenant appeared, behind him an enlisted man with a large package.

"Don't tell me you found that on him, Loomis?" Jordan said with dry humor.

"No, sir," answered the lieutenant. "I had this man search the D.H. while I went through the prisoner's clothes. I'll make a detailed search of his shoes and other hiding-places, but I thought you'd want to see this right away."

He held out a folded paper. Jordan spread it on the table, gave an exclamation.

"It's a sketch of Broys Prison and the road that runs alongside it. See what's in that package."

"Ten to one it's a uniform and a make-up kit," ventured Strange. Loomis opened the bundle, stared.

"You hit it on the head, sir. It's an Air Service captain's uniform—and there's the kit."

"Tie them up again and put the package back in the D.H.," directed Strange.

"What's the idea?" Bain cut in gruffly.

Strange waited until Loomis and the enlisted man had left.

"I'm going to fly the D.H. there, and we may need to carry through the plan far enough to make von Zenden reveal the secret. I'll wager he knows the entire scheme—with enough money you can usually find a guard who'll sneak messages back and forth."

"Von Zenden will never talk," Jordan said glumly. "I've had men prying at him all this time, and the French have made repeated attempts to get



him to reveal certain information. He just sits there with that mocking smile and keeps mum."

"I've a hunch he'll talk this time," said Strange. He glanced at Bain. "Major, would you ask your men to check over the D.H. and start the motor as soon as possible?"

"In other words, it's too important for me to hear," sneered Bain. "But I suppose I ought to be flattered to be a messenger boy for the great Captain Strange."

"I didn't mean that," said Strange. "Why not phone the order to—" but Bain was gone, slamming the door behind him.

"Never mind him," grunted Jordan. "What's your idea?"

"I'll make up to pass for Richter. It's fairly evident he was planning to land

on that road which goes by the main gate of the prison. There'll be some kind of attack to save von Zenden, and I want it to go through far enough so the Germans will tip their hand. You can call Broys and arrange for special defenses and men to be hidden outside the wall so there'll be no chance of von Zenden's really escaping—poor devil."

JORDAN'S brows went up. "I never expected you to be sorry for him after all the grief he's caused you. He came near sending you 'west' several times."

Strange slowly nodded. "Yes, we've been bitter enemies. It's not any maudlin sympathy I feel—he's a dangerous German agent and he's sent plenty of Allied soldiers to their deaths. But the man has a kind of grim code—and a brilliant brain. As an adversary, I shall miss him."

"Humph!" said Jordan. "Here's one man that won't. But you'd better get under way. It's two hundred and forty miles to Broys, and if the wind is still from the south you won't have very much of a margin. It's only three hours till dawn."

"I don't want to get there too soon," replied Strange. "It would excite suspicion, and they'll have some one watching."

He took the sketch of the prison grounds, shook hands with Jordan, and went out. When he reached the exit, he saw that the flames from the burned planes had died to flickering embers. Men were checking over the D.H. and in a few minutes the engine was started. He felt under his coat, made sure that his special make-up kit was ready in its place in the lining. Major Bain watched him sullenly as he climbed into the cockpit.

Strange revved up the motor, idled it, taxied out when the chocks had been pulled away. With only the dying glow of the burned ships to guide him, he sent the two-seater thundering down the field and into the air. The ship was at a thousand feet, and he was setting it on the course to Broys when from the corner of his eye he caught a brief crimson flash.

He turned around in his seat, saw a rocket fade after its streaking passage across the sky. Charging the guns, he tautly waited, expecting an attack, but no ships appeared. He climbed steeply until the D.H. flew in Stygian blackness.

CHAPTER III

DEATH AT DAWN

THE false dawn had come and faded, and now a rosy flush showed on the eastern horizon as the D.H. rumbled on toward Broys. Captain Strange, huddled down out of the bitter-cold air, was thankful he had already completed the task of making up his face to pass for Richter, for he was flying at twelve thousand feet and the chill night had left him half-frozen.

Broys was still twenty miles to the south, hidden in the slow-fading gloom,

when to the east and below him Strange caught the passage of two or three planes. Abruptly alert, he leaned over the side of the cockpit, then recognized the ships as Fokker D-7's. He held his altitude, eased back the throttle to drop a trifle behind. The Fokkers were swinging in a wide circle to approach Broyes from the west.

Ten minutes passed as Strange carefully stalked the German fighters. The pilots gave no evidence that they had seen the D.H., but he had no fear on that score. Even if they saw it, they would undoubtedly think he was Richter.

The horizon to the east became a clear outline, with a bright pink glow on the clouds above it. Strange thought grimly of the prisoner who even now must be taking that brief march from his cell to the firing-squad. Then suddenly his hand tightened on the stick. The Fokkers had spread out, were going down in a long power-glide, their wings silhouetted against the eastern sky. He nosed down behind them, brows drawn in an anxious frown. This was not what he had expected. Even to carry out his scheme, he could not let those Fokkers succeed in a strafe of the prison.

The town of Broyes loomed from the receding shadows, and there to the south he saw the gloomy old prison. Smoke shot from the leading Fokker's stacks as the pilot gunned his half-throttled Mercedes. His mates followed his example. Strange cast a desperately hopeful glance about the sky, but he could see no other ships. Perhaps he had been wrong—it might be a different plan.

He rammed the throttle full open, and the Liberty took the gas with a throaty bellow. The prison was less than a mile away as he clamped his trips together. The Vickers spat red, stopped. He fiercely jerked back the charging levers, and this time the cold guns crashed out a steady burst.

The Fokker on the right zoomed wildly, and the second went into a split-turn, guns blazing across at the D.H. Strange crouched over the stick, eyes fixed on the leader, who was still plunging toward the prison courtyard.

From the half-shadows of the courtyard a grim scene became visible—a man with bandaged eyes standing against a wall, and a firing squad with raised rifles. But now officers and prison guards were fleeing for shelter as the first Fokker pitched down at them.

Strange caught the German's tail in his sights, blasted a swift barrage. The Fokker leaped skyward, fabric streaming from its flippers, and the other D-7's plunged in venomously at Strange. He whipped the two-seater into a vertical bank, raked the twisting ship on his right. A torrent of Spandau slugs gouged at his left wing. He booted the rudder, hurled the D.H. out of the tracer stream. The ship he had riddled was swaying down drunkenly, oily smoke pouring from under the cowl. A huge tongue of fire shot back through the plume of smoke, and the Fokker was lost in flames.

A machine-gun winked up feverishly from down in the prison courtyard, and firing-squad rifles cracked, not at

the man with bandaged eyes but at the scurrying planes above. The G-2 ace grinned crookedly—half of the bullets from below were gouging his wings as well as the pursuing Fokkers. He pulled up, whirled the two-seater in a furious renversement. The force of his turn tore the bundle loose from where it had been fastened in the rear seat. He saw it fall toward the prison, but he had no time to see where it landed. The remaining Fokkers were racing in savagely.

HIS abrupt reverse had caused both of them to overshoot. He nosed down for a half-second, jerked the stick back, and came about in a tight half-split. The nearest German kicked away from his spouting guns, but the second lanced in from the other side with Spandaus flaming. Boche lead drilled the turtle-back, tore stuffing from the crash-down, caught the sharp crack and the smell of phosphorous bullets whizzing above his head.

Still huddled low, he jerked the throttle. The tracer blast veered sharply. He sprang up, hit the throttle, and saw the pilot darting away to the left. He thought for a second the German was fleeing the concerted fire of two Hotchkiss guns below, then he saw that the other D-7 was also banking away. A shadow fitted between the D.H. and the red disk of the sun, which had peeped above the horizon. Strange spun around, saw a Spad curving down over the prison courtyard. Beyond it were four other Spads, shiny and new-looking in the early daylight. All five ships bore the insignia of the special G.H.Q. squadron.

A sharp suspicion ran through his brain as the first Spad glided above the prison wall. He flung a hasty glance at the other fighters. One was swinging in beside him, another diving in front of him. His fingers fumbled for the trips, then suddenly relaxed. What was he worrying about? Von Zenden was still a prisoner . . . he could see the man down there in the courtyard . . . two or three men were guarding him . . . And the Spads—what was it he was afraid of? Something about . . . how shiny they were . . . but it didn't matter . . . any more . . .

The sudden silence was what brought his thoughts back into focus. He blinked, then with a dazed alarm shoved the stick forward. The Liberty had stopped, and the ship was wobbling, almost stalled. Awkwardly, he turned on the reserve tank—taking a minute for the simple task. The Liberty coughed, sputtered, and finally picked up to normal speed. He was drawing the stick back when over the nose he saw Charels.

The recognition of the Fifth Corps Headquarters town was like a blow between the eyes. Strange goggled at it until the scream of the wings reminded him that the ship was diving with power on. He leveled out, stared blankly over the side.

It was Charels—unmistakably. And Charels was two hundred miles from Broyes! How in the name of Heaven . . . ?

A cold chill came over him as he gazed at the clock. It was almost seven. Incredulously, he looked around the sky. The sun was well on its way into the heavens, mocking him with its bright glare. He stared back at the clock, then looked around the ship. There were gashes in the wings which had not been there before—rips from gun-bursts. A strut was almost cut in two, and his own gun-belts were nearly finished.

Two hours in the air—and not the slightest recollection of what had happened in that time. Except for that blank spot in his mind, he felt no ill effects. But to have flown two hours—He turned swiftly to make sure there was no one in the rear cockpit, that there had not been a landing and some action he could not recall.

The pit was empty, but as he whirled he saw a lone Spad riding his tail. Instinctively, he swerved, and the Spad pilot at once followed through, climbing a trifle higher. Strange turned back to the controls, but kept the fighter spotted in the half-shattered mirror on his cowl. The Spad bore G.H.Q. insignia—just as those five ships had done, at Broyes. He had suspected them of something, and as he circled above the Charels courier-field he began to recall fragments of that suspicion.

Newly-painted Spads! The Germans could easily have repainted the captured ships of the 37th. There was something else—but he could not remember now. One thing was fairly certain. That pilot in the solitary Spad was a Boche—but why hadn't the man shot him down?

He shook his head, still fighting the blank interlude. The best solution was to force the Spad down, drag the answer from the pilot. It would have to be a quick trick with those depleted belts. He retarded the spark-knob, and the Liberty growled and barked in angry protest. The Spad pilot throttled his engine to keep in position, and in a flash Strange threw spark and throttle full open, then spun the D.H. on its wing-tips.

THE Spad pilot tried frantically to hold his place on the D.H.'s tail, but the sudden maneuver had left him in the open. Strange loosed a brief burst through the fighter's wings, jabbed his left hand in a signal for the pilot to land. The other man kicked around in a skidding turn, guns smoking. His tracers barely missed the D.H. Its speed lost, the fighter fell off and started to spin. The pilot caught it, but Strange closed in behind. The other man tried a hurried chandelle, but Strange cut him off with another burst close to the wings. He was slacking his fingers on the trips, watching the other man, when the Liberty began to miss.

With a muttered oath, Strange pushed the stick forward. The engine sputtered for a few moments, died. Evidently the reserve tank had been almost empty. He looked around quickly, saw the Spad dropping onto the two-seater's tail. He dropped the right wing, let the heavy ship howl down in a fast forward slip. The D.H. moaned over the courier-ship hangar, straightened out, and landed. Relief changed to

astonishment as Strange saw the Spad also level out and land. He let the D.H. roll toward the line, where a crowd was rapidly growing.

The first person he saw as he climbed out was Major Bain. The Intelligence major was the center of a small group of officers junior to him, and all of them seemed to be hanging on his words. Bain now made a gesture for the others to keep back, then he strode toward the D.H. His gargoyle face was dark with emotion, and he glared at Strange with unmistakable venom.

"You damned traitor!" he said harshly. "Where have you hidden von Zenden?"

Strange looked at him in astonishment.

"What are you talking about? I never saw him except from the air."

"That's a lie!" rasped Bain. His hand was on the butt of his .45, and the gun was already half out of the holster. "You've fooled Jordan and the rest of the Brass Hats—but I've finally got the goods on you!"

The approach of the Spad almost drowned the last words. Bain beckoned peremptorily to the pilot, and the man jumped out without switching off his engine. With a shock, Strange recognized a G.H.Q. lieutenant named Radford.

"Where did you first spot Captain Strange?" Bain demanded bluntly.

Radford gaped at Strange's made-up face. Bain scowled.

"He's disguised—but it's Strange, all right." He looked sourly at the G-2 ace. "Colonel Jordan told me the scheme you said you were going to try. I thought there was something fishy about it then—even before we found all the lines were dead."

"You're making a bad mistake, Major," said Strange. "If you'll let me explain—"

"Shut up!" thundered Bain. He stabbed his finger at Radford. "All right, let's have it."

Radford gulped, looked appealingly at Strange.

"All I know is that we got word from Charellles to go to Broyes and watch out for Boche ships. When we got there, everybody seemed to have gone crazy. They were running around in the courtyard, and out on the road—and there'd been a fight. I could see men on the ground—"

"I've heard all that," snapped Bain. "Where'd you see this D.H. first?"

"About half an hour ago, on almost a straight course from Broyes to here."

"Which is also the shortest line to the Front," Bain said harshly. "Well, let's have the details!"

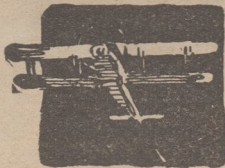
"I was watching for the ship—you see, somebody at Broyes signaled us the number, asked us to bring the ship down if we saw it." Radford wet his lips nervously. "I don't know why they wanted it down—"

"Because this fine captain of ours saved a German spy from being shot!" fumed Bain. "He dropped a uniform and some other stuff inside the courtyard and somehow managed to get von Zenden away—we don't know exactly how."

"Von Zenden?" Radford said, wide-eyed. "Karl von Zenden—the impersonator?"

"Right," Bain said, with a glare at Strange. "And it's too bad you didn't spot him before he landed von Zenden somewhere—which he must have done."

"He couldn't have had much time," said Radford. "I doped out the shortest distance to the front myself—that's why I was heading this way. I supposed it was some Boche prisoner who had escaped and would be making for Germany. I kept my motor full out and then I saw this ship. I saw the rear pit was empty, so I eased alongside. This man just waved to me and didn't pay any attention when I signaled him to land. I



dropped back and clipped his wings with a few shots. He didn't even change his course. I—well, I wasn't going to shoot him down in cold blood. I was trying to decide what to do when he pulled that sudden attack."

"I thought you were a Boche pilot in a stolen ship," Strange interrupted.

"You'll have to do better than that," Bain said contemptuously. "I've enough evidence to stand you before a firing-squad right now."

STRANGE looked toward the line, saw there was no one there who knew him. The drone of the idling Hispano had kept Bain's words from reaching the group, but he knew that the major had probably told them part of the story. A sergeant and two armed soldiers stood there, significantly waiting.

"I'll give you one minute to tell what you've done with von Zenden," Bain spat out.

"I don't know where he is," Strange replied calmly. "I had a peculiar experience, similar to the one you had."

He explained, with Radford looking more and more amazed and the scornful smirk on Bain's face getting more sour each minute.

"So you just went to sleep—didn't see a thing," Bain mimicked him when he finished. "All right, I'll find a way to make you talk."

He turned to summon the guard, but Strange spoke up sharply.

"Remember this, Major—when you put me under arrest it'll be up to you to prove me guilty. And if a court-martial finds you've acted through spite you'll be through in this man's army."

Bain's ugly face turned an angry color, but Strange went on without giving him a chance to speak.

"Use your head. I was the one who captured von Zenden. Why would I do that if I were working for Germany?"

"All I know is that you worked it to get him free!" raged Bain. "That business at the Bois d'Amand station—you had it framed with Richter to land there."

"Why?" snapped Strange.

"He was going to pretend he was from Chaumont—but he made a mistake and gave himself away before Colonel Jordan. Then you had him fake that amnesia idea. I'll bet you know where that map went, and how it got out of the safe, too."

"Wait a minute," Strange said coolly. "Is Colonel Jordan still at the Bois d'Amand place?"

"Yes—as far as I know," Bain replied sullenly. "He had me drive here to phone the orders to Chaumont when we found all the wires were dead. I suppose you didn't know they were cut?"

Before Strange could answer, another Spad with G.H.Q. insignia came roaring down to the field. It fishtailed, landed smartly, and stopped a hundred feet from the D.H. The pilot swung the ship around, climbed out, and walked briskly toward the line. Strange, after a cursory glance as the Spad stopped, had turned back to Bain. Suddenly he saw Radford's eyes pop. He looked back swiftly, stood paralyzed with amazement.

He was gazing upon a second Captain Strange!

CHAPTER IV

THE SPY OF A THOUSAND FACES

BAIN gave a strangled curse, jerked Strange back of the D.H. He rammied his .45 into the G-2 ace's ribs, hissed a savage admonition.

"Keep back here out of sight! And give me that gat!"

He jerked Strange's gun from his holster, shoved it under his breeches belt and holstered his own gun. Strange saw him duck past the wing of the two-seater and hurry to intercept the newcomer.

"Hold on!" Bain said gruffly. "Where have you been?"

"Oh, it's you, Major Bain," said the other man in a pleasant voice. Strange, peering cautiously under the wing of the D.H., watched with fascination. The man's face was almost a perfect duplicate of his own. Not only that but his walk, the movement of his hands, were the same. It was like seeing his reflection in a mirror suddenly go into an act of its own.

"Where'd you come from?" Bain insisted.

The imposter calmly lit a cigarette.

"Chaumont," he said. "I decided to check in there after von Zenden escaped. Thought they might have some news—but no luck."

Strange saw the man look carelessly at Radford, who was still struggling with an expression of stupefaction. Several of the officers on the line were edging closer.

"No news, eh?" Bain said in an ugly tone. "Well, I've some news—bad news! Put up your hands!"

The imposter looked at him blankly, gazed down at the gun Bain had snatched from under his belt.

"Major, have you lost your mind?"

"Come over here!" Bain said thickly. He motioned the other man around the wing of the D.H. "If you're Captain

Strange—who the devil is this?"

The other man looked at Strange's made-up face, then shrugged.

"How should I know? What has he to do with me?"

"Because he's the real Captain Strange!" snarled Bain.

No dismay showed on the imposter's face, only a pitying smile, quickly erased.

"Of course, major—I see now. It is Captain Strange." He turned his head, spoke hurriedly to Radford. "Get some men here—Bain's completely out of his head!"

A portly captain and the guard sergeant were both near enough to hear. They exchanged a quick glance. Bain saw it, flew into an apoplectic fury.

"You fools! I'm as sane as you are! I'll show you—" he leaped at Strange, snatched out a handkerchief, and began to paw fiercely at the G-2 ace's make-up.

Strange gave him a violent push.

"Look out!" he shouted. "Von Zenden's escaping!"

Bain spun around, but the imposter ducked under the wing of the D.H. and raced for his ship. With a savage imprecation, the major plunged after him, leveling his .45. A shot roared, missed. Von Zenden jumped aside, whirled, and fired all in an instant. Bain's gun fell from his shattered wrist. Strange dived at the weapon, but the portly captain blocked his aim in a wild attempt at escape. The fleeing Prussian reached his Spad, vaulted into the pit just as guns began to crack from several directions. The fighter hurtled forward under full motor. Strange scrambled to his feet, dashed around the D.H. to where Radford's ship was still idling. A muffled shout followed him.

"Stop him, you idiots! He's a traitor, I tell you!"

A pistol barked, and the slug made a black hole near the cowl of the ship. Strange flung himself inside, shoved the throttle partly open. The Spad almost went on its nose, but he jerked the stick back and the fighter roared away amid a flurry of wildly aimed shots.

His face was hard as he realized that by his action he had branded himself. He was a fugitive—apparently fleeing from justice. And the alarm would soon be flashing over the entire Front. But it was the only way he knew he could prove the truth and learn the secret of the mysterious "blacking out."

He saw von Zenden pull up in a daring zoom and climb away to the north. He followed, Hispano thundering. The D.H. had no fuel, and it would take a minute or two to start any of the courier or Corps defense ships. By the time they could get into the air, von Zenden would be out of sight. It had to be a battle between them alone.

WITH his eyes riveted on the Prussian's ship, he swiftly went over the events of the last few minutes. It was obvious that some one in von Zenden's organization had slipped up, or the Prussian would never have landed at Chareilles while the man he was impersonating was at the same place. The motive for the role was not hard to find.

As Captain Strange, von Zenden normally would have been able to gain access to G-2 offices anywhere in France—and to Intelligence offices of the French and British armies as well. It was not the first time he had tried such a trick.

A brief admiration lit Strange's eyes as he thought of how coolly the Prussian had met Bain's accusation. The man seemed to have no nerves at all.

The Prussian changed course, held an altitude of a thousand feet, then swerved again, this time to the north-east. Strange matched each move, trying to estimate the spy's purpose. Von Zenden had kept on the shortest course



to the front until Chareilles was some distance behind, but now he was swinging deeper into Allied territory. They passed above a minor rail-head, andarchie blazed away at both ships for a minute or two. Von Zenden zigzagged, alternately climbing and losing altitude, but so briefly each time that Strange gained only a few hundred feet by plowing straight through.

As the shell-bursts fell behind, the Prussian began to climb steeply. Strange's eyes gleamed as he found that his ship gained altitude faster. In a few minutes he would be high enough to close in on the other man. He looked back. There were no ships following. Either they had not been started in time or they were heading straight to the Front. The sound-rangers might pick up the two Spads, but the system was none too accurate, especially with so many other ships in the air.

His altimeter showed 8700 feet when he noticed that von Zenden had ceased to climb. He leveled out, began to gain on the Prussian. Von Zenden looked back, nosed down almost to a dive. Strange followed, motor bellowing, wires screaming like banshees. Subconsciously he had watched the ground, and he knew they were now over the heavily wooded area between Chareilles and the Moselle. The Bois d'Amand was only a few miles distant, but off to the north.

Strange jerked his stick, tracked through as von Zenden chandelled violently out of his dive. The Spad's wings groaned, but the ship held together. The Prussian reversed, came back with guns blazing. Strange whipped into a tight bank, held his fire as he saw his ship slowly lessen the gap. Then an idea sprang to life in his mind, and deliberately he sent a burst past von Zenden's right wing.

The spy whirled to the left. Strange dropped back a hundred feet, climbing a trifle. The turn had sent von Zenden in the direction of the Bois d'Amand station. If he could force the Prussian down there, he could deliver his prisoner to Colonel Jordan and clear himself at one stroke.

He saw von Zenden stare back at him, then the Prussian's ship banked sharply eastward. Strange tripped his Vickers, ruddered to keep from hitting a vital

point on the stolen Spad. Von Zenden skidded away from the tracers, then his ship lurched wildly and went into a spin. Strange circled down warily, expecting a trick. The Spad came out of its dizzy whirl at five thousand feet, wobbled again, went into a slow glide, its propeller barely turning over.

Strange closed in, Hispano at half-throttle. The Prussian's engine was dead; apparently a bullet had hit it in that last burst. In a battle over the Front, with no great issue at stake, he would have let the other man go. But here he had no choice. He tripped the guns, herded the crippled fighter in a circle toward the field in the Bois d'Amand.

After one more attempt to dart away, von Zenden seemed to resign himself to his fate. He looked back, and the ships were so close that Strange could see the sardonic smile on the man's face. It was still made up, and it was as though he mocked himself in a mirror. It called to Strange's mind his own make-up, and he locked the stick between his knees, opened the tiny hidden pocket in the lining of his flying-coat. Taking out his emergency kit, made flat so that it would not bulge the coat, he swiftly removed all traces of the greaseless paints and shadowing that had represented him as Richter.

STILL keeping his eye on von Zenden, he put the kit back in place as quickly as possible. The two ships were now within a mile of the clearing. Strange edged in, ready if the spy tried to dodge away and land across the river or stall down in the woods where he might have a chance for escape. The Prussian looked back at him, then shrugged and nosed down for a landing. Strange followed, let his Spad roll in behind the other ship. They stopped about fifty yards from the trees, and not far from the path to the dugout. There were only two men in sight, and Strange surmised that the alarm had not reached this station. He switched off the engine, jumped out quickly, .45 in hand. Von Zenden slowly descended, raised his hands in token of surrender.

"You seem bad luck for me, my dear Captain," he said.

Strange watched the Prussian's eyes.

"Yes, Karl, I'm afraid your reprieve will be brief. Very brief, if you try to draw that gun."

Von Zenden smiled. "Surely you know me better than that, *mein Freund*. If there had been even one bullet left, I would have risked a shot over the tail as I landed."

"Perhaps." Strange nodded to the two mechanics, who were standing open-mouthed, staring from him to von Zenden. "One of you take his pistol—come up from behind and be careful."

The Prussian languidly eyed the gaping ackemmas.

"I'm afraid they are confused, my dear Strange, by our apparent likeness." Gingerly, he lifted the gun by his fingertips and tossed it to the ground. "Now you can tell us apart. The man with the gun is the one to obey."

One of the mechanics retrieved the pistol, examined the empty magazine.

"He probably has another gun under his coat," said Strange. "But we'll search him after we get into the dugout. Colonel Jordan is still here, I suppose?"

"Yes, sir," mumbled the mechanic who had picked up the gun.

The G-2 ace gestured toward the path. "If you don't mind," he said to von Zenden.

"Not at all," replied the Prussian. "I've been intending to drop in and look over this place. I might as well do it now—before other duties take me away."

Strange eyed him with dry amusement.

"I admire your courage, Karl. But you may as well give up hope."

"I will make you a wager," said the Prussian. "Five minutes after you have presented me to your colonel, I shall be free."

Strange's eyes narrowed slightly.

"Whatever you're up to, don't try it. I'll only have to shoot you. And I'd rather leave that to the firing-squad."

Von Zenden looked over his shoulder. "Strange, I'm afraid you're what you Americans call a 'softy.' Now, I shall not hesitate a moment to shoot you—when the time comes."

Strange laughed in spite of himself. "I'll try to see that the time doesn't come, then."

THEY passed along under the trees to the entrance of the dugout, then went down the steps to the lower level. A group of officers in the first room looked up with startled exclamations. The G-2 ace spoke without taking his eyes from the Prussian.

"It's all right—I've simply captured von Zenden, and he happened to be made up as me."

Von Zenden gave an ironic chuckle. "No, gentlemen," he said, "don't be alarmed—we are only playing a little game of wits."

An orderly threw open the door to the Staff room at Strange's command, and the two men entered. Strange closed the door, looked past his prisoner. Colonel Jordan and two other officers were seated at the conference table. The G-2 chief looked up, paled as he saw two Captain Stranges before him. One of the officers jumped up.

"Everything's all right, Colonel," Strange said quickly. "This is von Zenden—as you've probably guessed."

Jordan stared at him with an odd expression. Strange thought he read accusation in that glance.

"I know what you've heard—but I can explain that very shortly."

"I've heard nothing," Jordan said harshly. "They haven't connected our wires yet."

"Then I'll tell you." Strange made as brief a report as possible, wincing as he saw no relaxation in the hardness of Jordan's gaze.

"Incredible," the G-2 colonel muttered when he had finished. "Two hours without any memory—but then Bain said he had a similar experience."

"That's what I was coming to," Strange said eagerly. "I've an idea how it happened—the only way it could have happened. I was all right until that

Spad crossed in front of me. It was silhouetted against the dawn, and I thought I saw faint mirage lines—I supposed they were from the sun, as it was starting to rise. Right after that I stopped thinking about anything—until I came to, over Chareelles."

"Well, what's the answer?" demanded Jordan.

"It must be some kind of invisible gas that affects the brain and causes a temporary amnesia. That Spad probably had a tube extending from its tail, though I didn't see any. Or they may have used small outlets in the wings. The Fokkers from the 133rd *Jagdstaffel* could have had the same kind of device and that would explain what occurred to the 37th, and those other outfits."

"It sounds like a good guess," Jordan mumbled.

Von Zenden looked sardonically at the G-2 ace. "And is that all you learned, my friend?"

"That's enough," said Strange. "We can easily work out a defense—now that we know what to look for."

Von Zenden eyed him with a smiling mockery.

"I'm afraid not. And by the way, my dear Strange, you will see by the clock that my five minutes are almost up."

Strange smiled back, with a tolerant amusement.

"Correct. I'm ready to watch your disappearing act."

"No, I merely said I would be free. And I am. Take a look around you."

Strange stiffened, for there was no jest in the Prussian's voice now. He stepped to one side, cast a swift glance toward the door. Three men had silently entered, one of them Franz Richter.

Philip Strange found himself staring into the muzzles of three automatics!

CHAPTER V

TRAPPED

FOR fully ten seconds no one moved, or spoke. Then von Zenden laughed softly.

"That stunned look cuts me to the heart, Captain. I could almost pity you—you were so sure, so blind."

Richter took Strange's gun, covered him while another spy made a quick search for other weapons.

Strange slowly pivoted, looked at Colonel Jordan. The G-2 chief spread his hands with an agonized helplessness.

"I've been a prisoner all this time. A minute ago some one phoned down from above that you had von Zenden, but didn't know the place had been seized. They said they'd kill me if I didn't keep still when you came in. Even at that, I'd have warned you, if it would have done any good."

"Then the whole place is in their hands?" Strange said huskily.

"Everything," Jordan said in a miserable voice. "I know now what happened before—they released some of that gas down the ventilator intake in the woods. I remember feeling dizzy. I opened my eyes—it seemed just a second later—and here they were, with all our men captured."

"You see, *mein Freund*," von Zenden

said silkily to Strange, "we needed a headquarters for operations in your lines, during this counter-drive of ours. What was simpler than to sit in with the Chief of G-2, who would be getting all vital information? So we arranged to borrow your key map, knowing the loss would bring him here. I didn't expect you, however—my agents reported you were on furlough. And Richter was temporarily in the amnesia state the same as your friends when my men took over this place, so he couldn't warn them about you and the D.H. affair. Incidentally, you gave me quite a start at Chareelles—when I realized it was you and not Richter."

Strange had recovered his composure.

"Clever work, Karl—and I've had a much-needed jolt. I'll remember it—even after you're under six feet of ground."

At this there was an angry growl from Richter and the group of spies who had crowded about the doorway from the other room. But von Zenden silenced them imperatively.

"All but Franz get back to your posts! Every scrap of information in this station must be examined thoroughly." He turned back to Strange. "A few minutes ago you advised me to give up hope. I return the advice. This plan is mistake-proof. I had plenty of time to work on it in your estimable prison. As far as Chaumont and Fifth Corps know, Colonel Jordan is remaining here of his own volition to supervise Intelligence work in the drive. I flatter myself I can imitate his voice well enough to hold the necessary telephone conversations. The Breguet which you left here is to be fitted at once with one of the gassing devices which you so accurately deduced. With a large tank fastened in the rear seat, it will be sufficient to take care of any number of planes that might come here. But I do not expect any visitors except a few courier pilots—and we can handle them singly as they arrive. Meantime, we shall go ahead transacting your routine, with the enforced help of some station personnel when needed—until it is time to strike."

"He's right, Strange," Jordan groaned. "They've got it all sewed up. Look at those maps on the wall."

Strange wheeled. The stolen map hung there, and beside it a similar map of the Boche lines showing jump-off points, attack areas, gun locations, and other details of the counter-offensive.

"What would you give to be able to deliver that map to your G.H.Q.?" mocked the Prussian. "Never mind, they will know all the details within a short time. Their zero-hour is forty minutes before sunrise tomorrow. But ours is set for just ten minutes ahead of that. It will be a very peaceful attack. Our troops will simply walk through your lines—and the reserves will take care of the prisoners."

"It won't work," Strange said grimly, battling his own fears. "You can't gas a whole army with that stuff."

"With enough ships, yes. But we need only a lane of a few miles, here at your strongest point." The Prussian indicated a salient on the American map. "When that is opened, our shock troops

can go through and turn your flanks with ease. From the first-line trenches to your supply lines the whole area will be paralyzed—and if you think there will be any resistance, remember what happened to you this morning. I could have shot you down easily when I took off in one of the stolen Spads after the prison-guard was gassed. But unfortunately I thought you were really Richter—that he had been gassed by mistake and didn't know what he was doing."

STRANGE looked at him shrewdly.

"It must be easy to protect against this gas," he said. "You'd have been like the others, if you weren't protected. And all you had was a bandage to slip over your nose and mouth. I suppose it had been chemically treated."

Von Zenden's sardonic smile faded. "What of it? That knowledge will not save your troops—there will not be any apparent need for putting on masks, since the gas is invisible. I grant you the secret will not keep—they may order masks worn after tomorrow at the very first sight of a low-flying plane. But we will go far enough in this drive to crush your attack and give heart to Berlin for continuing the struggle."

Strange did not answer. Von Zenden motioned to Richter and the man who had sat alongside Colonel Jordan.

"Franz, you and Grotte take these two and lock them up securely. There must be a cell somewhere."

Richter nodded. "There is one up on the next level, just down the steps from the guard-room. They'll be safe there."

"One moment," said the Prussian. He came forward, looked sharply at Strange. "Either this *Teufel* is doing an excellent bit of work in disguising his feelings, or else he is up to something. He looks gloomy, but not gloomy enough for a man without hope."

"Would you like to have me weep?" Strange said politely.

"That settles it," von Zenden snapped. He spoke in an undertone to Richter, and his aide went out, returned with four khaki-clad spies. Colonel Jordan was marched out, then two of the biggest men seized Strange and tripped him. As he tumbled to the floor, two more men appeared, carrying an aluminum tank to which was attached a long, flexible tube. At the other end of the tube was an ordinary German gas-mask, but the tube was fastened to the intake. One of the men jammed the mask down over Strange's face. The G-2 ace struggled desperately, but the rest of the men jumped forward and held him down.

"Be sure none of it leaks out into the room," von Zenden said nervously. "Grotte, help hold the mask tight. I'll give him enough to silence his impudence."

There was a sudden hiss, and something like compressed air blew into Strange's face. It had no odor, only a faint dampness as the liquid gas swiftly vaporized. For a fraction of a second, Strange fought against the hissing stream which poured into his nostrils and mouth. Then a weird, floating sensation took hold of him. His senses whirled, and like a light abruptly put

out he toppled into unconsciousness

WHEN his reason returned, his first conscious impression was of nausea. It began to pass, and then a voice spoke in a whisper close to him.

"He's coming out of it, thank Heaven!"

Dimly, he recognized Jordan's voice. He opened his eyes, focussed them after a moment of dizziness. A dim light shone down into the lockup-room, and beyond the G-2 chief he saw the dour face of Major Bain. There was another man sitting on the floor. His face was bruised, but after a second Strange recognized Lieutenant Radford.

"Take it easy," warned Jordan, as the G-2 ace tried to sit up. "They gave you a stiff dose, the dirty rats!"

Strange moved his head, waited until the floating sensation was gone, then slowly pulled himself up to sit against the wall.

"I see we have visitors," he said thickly.

Major Bain scowled. "Go ahead, rub it in! But you walked into it the same as I did."

Strange peered out through the barred door, frowned thoughtfully. "They must have put up a curtain on those stairs, or we could see the entrance."

"It's dark—that's why you can't see up there," Jordan said dully. "You've been out almost eighteen hours."

Strange looked at him in consternation. "Then the drive must be about to begin!"

"In less than an hour," the colonel said hopelessly. He lifted his strap-watch. "The Boche jump-off starts in fifty-four minutes—and those stolen ships will be leaving the 133rd's field to gas our lines in exactly half an hour."

"We've got to do something!" Strange said tautly. "I had a plan before they put me out—if I could only remember—"

"It wouldn't do any good now," Bain said in a sour tone. "They're all set. I heard von Zenden giving orders to some



one as they went up the steps a few minutes ago. He's sending the Breguet up to gas Corps H.Q. at Charellles."

"How did you get here?" Strange asked quickly.

"Radford flew me here in a two-seater. I had a hunch you might come here. They captured us as soon as we landed."

"At least I gave that Hun named Grotte something to remember," Radford cut in.

Strange gave a muttered exclamation, looked around the floor, then snatched up his flying-coat on which his head had been pillowed.

"What's the idea?" said Bain.

"I just remembered." Strange felt inside the coat, jerked the secret pocket

open. His eyes lit up as he pulled out the makeup kit.

"What good will that do now?" grunted Jordan.

"It may give us a break. Do you know how many guards are up at the entrance?"

"Two," said Bain, before Jordan could speak. "I heard them talking. And one of them has been down here every once in a while to see how you were. I think von Zenden told him to check up."

He stopped abruptly as voices sounded from below. The door at the bottom of the steps had been opened, and a confused medley of switchboard buzzers, voices, and telegraph relays came up the stairway. Then the door closed, and Richter's somewhat arrogant accents were audible.

"We can't fail, *Dumkopf*. What could stop us now?"

"What if the wind changed and blew the gas back on our own men?" another Boche said uneasily.

"Idiot! The latest report on wind-direction will be phoned back from the front-line trenches to the 133rd. In another hour our troops will be pouring through the Front. What a picture that will be—the stupefied Yankees gaping at them with their minds off picking daisies."

Richter's voice had grown louder, then diminished as the two men passed by the level of the lockup-room and reached the dugout entrance. Strange swiftly opened his kit when he was sure Richter was not coming into the narrow passage in front of the cell. He took out a pair of small scissors, a tube of red make-up paint, and a flat bottle of spirit-gum. Then he spun around to Jordan.

"What are you doing?" demanded the G-2 chief as he hastily smeared some of the red paint on one finger.

"We've got to put on an act—pretend I've partly recovered my senses but it's left me with a homicidal mania. They won't want you killed—you're too valuable a prisoner."

"What's that going to get us?" broke in Bain.

WITHOUT answering, the G-2 ace made a crimson stream down the side of Jordan's face, rubbed a bloody-looking smear along his own throat.

"I'm going to pretend I've been stabbed with these scissors—they can think it's suicide or that one of you did it in self-defense. Anything to get them down here and that door open. If they think I'm dead and Colonel Jordan perhaps dying they won't be so careful. This spirit-gum will blind a man if he gets it in his eyes."

"I get the idea," Bain said tensely. "But even if we get out of here—"

"You and Colonel Jordan run for the woods—try to get far enough so they won't catch you—and then locate one of our wires. You can try to tap a code warning to Charellles and Chaumont."

"It'll never work, Strange!" Jordan broke in. "By the time we found a wire in the dark, the drive would be on."

"We'll have two other chances," Strange said in a tight whisper. "Rad-

ford—you try to grab a ship. And I'll do the same."

The sputter of an engine, not far from the entrance to the dugout, made all four of them jump. Strange jerked the stopper from the spirit-gum bottle, seized the scissors.

"Yell!" he said hastily. "Quick—before they get that motor revving up too loud!"

Jordan let out a roar, and Bain and Radford hurriedly joined in. A guttural voice sounded in alarm from the top of the steps.

"Grotte! Something's wrong in the prisoners' cell!"

"It's Richter!" Strange muttered. "Colonel—drop there by the wall—you're unconscious—"

He had no time for further instructions, for he could hear boots clattering down the steps. He flung himself down, head twisted so that the light shone down on the horrible looking splotch on his throat and on his hand and the dripping scissors.

"Look out, Radford!" Bain yelled wildly. "Strange will kill you, too—he's gone mad!"

Radford's cry would have convinced almost anyone. Strange broke in with a strangled groan.

"He's stabbed himself!" shouted Bain. "*Gott im Himmel!*" came Richter's frantic voice. "Karl will have me shot—he wanted them both to deliver to the Kaiser!"

Through slitted eyes, Strange saw the legs of three men outside the barred room. He recognized Grotte's uneasy tone.

"Be careful, *Herr Richter*—it may be they try to fool us."

"Numbskull!" cried Richter. "Look at that gash—the man has cut his throat!"

A key jangled, and the door swung open.

"Cover the others," Richter said hoarsely. "Grotte, help me carry the colonel outside—I think he is still living."

The guard who had dashed down with the two officer-spies was standing a few feet from Strange. The G-2 ace kept his eyes almost closed, watching as Jordan was lifted and taken into the passage. The bottle of spirit-gum was clenched in his left hand, his thumb over the opening.

Richter and Grotte were laying Jordan down when the guard suddenly bent over Strange. In a flash, Strange hurled the contents of the bottle up into the man's face. The German cried out in a choked voice, staggered back. Strange leaped to his feet, but Bain had already snatched the guard's pistol from his hand. There was a crunch, and the butt of the gun thumped against the man's skull. Grotte whirled as the guard's muffled cry reached his ears. His face went ashen as he saw Strange hurtle toward him. He jumped back, pawing frenziedly for his gun, but Strange crashed a furious blow to his chin and he sprawled back in a heap.

Richter had started to kneel beside Jordan. As Grotte spun about, the senior man tried to spring up. But Jordan's hands shot out and caught him by the neck. With a frantic effort, Richter clawed one of the colonel's hands away,

but before he could draw his gun Strange snatched it from his holster.

"I've got him, Colonel! Take Grotte's pistol."

Out on the field, a Liberty motor roared to a louder pitch as some one revved it up. Richter cast a desperate look down the stairs toward the closed door.

"No use trying it!" Strange clipped at him. "They'd never hear you anyway."

He forced the raging German back into the cell, and locked the door. Jordan, with Grotte's gun in his hand, was starting up the steps to the ground-level. Strange sprang after him, Radford and Bain close behind. They were almost at the top when a flashlight stabbed a thin beam down the stairway.

"*Herr Oberst!*" the remaining guard shouted wildly. "The prisoners have broken loose!"

CHAPTER VI

CRISIS OF OBLIVION

JORDAN'S GUN and the guard's blazed almost simultaneously. A bullet chipped concrete back of Strange. He pumped a shot at the half-lifted pistol in the German's hand, but it was not needed. The gun fell from the man's fingers even as the second bullet crashed from Strange's gun, and he sagged forward. His crumpled body went tumbling down the steps.

The door at the bottom flew open, and three or four spies appeared. Strange triggered two quick shots, and Bain dropped one of the men in his tracks. Jordan and Radford were already outside. Strange dashed after them, saw some one racing toward the dugout. It was dark, and the man's figure was only a blur in the gloom; but suddenly he halted, and a gun spat flame. Above the blazing muzzle was revealed the undisguised face of von Zenden.

Jordan fired, but his shot went wild. The Prussian whirled and ran like a deer for the idling Breguet. Strange drilled a shot after him, aiming low. Von Zenden leaped aside, dashed into the deeper shadow of the trees at the edge of the clearing.

"Go ahead, Colonel—the wires!" Strange shouted at Jordan. Bain and Radford had disappeared, but he knew the young pilot was running for one of the other ships.

He raced to the side of the Breguet, clambered onto the wing. The bark of a gun sounded faintly from behind him. He dropped into the front seat, threw a swift look back. Men were pouring up from the dugout. Two pistols flamed while he turned. He ducked as the wind-screen splintered before him, then seized the stick and throttle. The Breguet's wheels were blocked, but he slammed the rudder hard to the left and opened the Liberty. The ship lurched, slid back, lunged again and this time hurdled the chocks. One of the spies was running madly toward the ship, ahead of the others. His pistol was smoking and Strange knew at that range he would not miss again. With a savage boot at the rudder, he threw the tail of

the ship sidewise. The stabilizer struck the German and knocked him flat. The next instant the ship was a hundred feet away, gaining speed swiftly.

The red flashes of the spies' guns were quickly lost behind. Strange leaned out, trying to see the river bank toward which he was racing. The sky was just beginning to gray. He zoomed at the last moment, and the stream swept beneath. Back on the field, a flare made a smoky orange glow in the darkness. He thought he saw another ship rocketing down the clearing. He pulled the Breguet around into a steep turn, hurled it almost due East.

It was twelve minutes' flight to the 133rd *Jagdstaffel*, and even now those German pilots would be making ready for their deadly mission in the captured American planes. There was no time to gain altitude. He kept at a thousand feet, Liberty booming with the throttle shoved against the quadrant stop. Twelve minutes . . . that meant it was up to him and him alone. Even if Jordan and Bain found a wire, they could hardly flash word to all the front-line positions in time. They might not even be believed. And it would be the same for Radford, even if the youngster reached Chareilles in the quickest possible time.

The lines about his mouth hardened. He stared ahead, slitting his eyes against the wind. The big guns were blazing fiercely in a drum barrage to rake the opposite trenches before the jump-off. Their vivid flashes lit up the ground in a hundred spots. The Front was only a few minutes farther—a jagged line marked by the wild flare of star-shells and the shimmering pin-points of fire from a thousand rifles which were like fireflies in the gloom.

The clock on the instrument board showed nine minutes more to the take-off time for the Germans. Perspiration stood out on Strange's uncovered forehead. If those gas-planes got into the air, he was licked. They would not be flying formation but would be spreading in a dozen directions to cover the key-points.

He eased the stick forward, and the Breguet's wings took on a new, fierce song of speed. It meant plunging across the chaos of No-Man's-Land at a dangerously low height—but it would give him another minute.

A SUDDEN FEAR struck him. What if the spies at the dugout flashed word to the 133rd to take off before he could get there. Von Zenden would easily guess his purpose. But no—there was no radio transmitter at the station, only a receiving set. Radio messages went through Chareilles and were relayed by the telegraph line. Not even von Zenden would dare send an open warning along that wire. And the men at the Chareilles station would never transmit any message veiled in a code they did not know.

The Front seemed to leap up at the Breguet. A star-shell broke into blinding radiance close by, and as he raced on he saw men in coal-scuttle helmets staring up from the German trenches. They did not fire, and he knew they must

have been warned to expect captured Allied planes flying close overhead.

He was almost past the third-line trenches, when a muffled pattering made him whirl in his seat. Tracers were probing at the tail, and he could feel the stick jump as the slugs tore through the flippers. He zoomed, kicked around to blast the attacker. It was a Spad with G.H.Q. markings, and he instantly remembered the number on its side. It was the ship von Zenden had flown!

A rocket streaked up from a flare-pistol down in the rear-line trench. It burst close to the Spad, and Strange saw the Prussian throw one hand before his face to shut out the glare.

The fingers of the G-2 ace snapped the trips together. His cowl-guns snarled, crashed a torrent of lead through the tilting wings of the fighter. Von Zenden reversed, whirled off to the right. With a tight turn, Strange threw the Breguet back on its course.

As the ship leveled out, he looked hastily around the cockpit for the release valve of the gas-device. In his hurried escape, he had glimpsed a huge tank fastened solidly in the rear pit, but he could see no release gear. He turned, then discovered a looped wire cable dangling down into the seat. It led to a valve at the rear of the tank.

A crimson rocket—like the one that had been sent up when he headed for Broyes—abruptly lit the graying sky above him. He jerked around, then realized that the signal had been fired by the Prussian in the mad hope of warning the German pilots. Almost at once, he saw a searchlight pick a bright path up the sky, trying to find the two ships. Strange swerved, pushed the stick down. Two miles ahead, where the searchlight beam came up from the ground, he could see a line of flares. His heart leaped as he saw a ship dart out into the flickering light.

The first of the stolen Spads! With a silent prayer he pitched the nose down and dived. His hand was fumbling for the looped cable when like a thunderbolt von Zenden's ship came streaking down from the heavens. Diving in from the front, the Prussian charged for the heavier ship, his Vickers fiercely blazing.

Strange hauled the stick back and tripped his guns, but the Spad came hurtling on. He caught his breath. Was von Zenden trying to crash him out of the skies?

A split-second more, the two planes

charged at each other. Face like granite, Strange held his guns full on, watching the whirling disk of the Prussian's propeller. With a violent kick, von Zenden threw the fighter aside, just as Strange plunged down underneath.

Three hundred feet below, the first gas-ship was racing across the German drome. A storm of machine-gun fire burst from ground-guns as Strange's Breguet came thundering down. Glass flew from a shattered compass, and warm blood flowed down the G-2 ace's shoulder from a sudden gash. Lined up, already moving, a score of captured Allied planes showed in the wavering light of the flares.

A bright, smoking line lanced past the Breguet's left wing. Strange snatched the looped cable, jammed the stick down. Another burst from von Zenden's guns ripped through the two-seater's wings as the Prussian fought to the last to save his precious scheme.

Thirty feet above the ground, the Breguet howled out of its dive. Frantically, Strange now jerked the looped cord.

Above the roar of the Liberty came a faint, sinister hiss, like a whisper of many voices. The Breguet screamed across the drome, and not until it came to the farthest border did Strange pull back on the stick. A hundred feet above the ground, he banked and stared earthward.

Against the flares, faint mirage lines were dancing, barely visible in the glow. Above the field, the first gas-ship was slowly, aimlessly circling, while below panic-stricken ground-men ran in all directions. Two of the gas-planes had collided and were blazing. Another had ground-looped into a hangar, and the rest were motionless, save for their whirling props.

Grimly, the G-2 ace plunged back across the field. Some of them might be pretending—waiting a chance to take off and complete their mission. The Breguet roared above the massed ships. From three or four cockpits, pilots looked up, their faces curiously blank in the light of the flares. The rest did not even glance up.

With the release still open, Strange banked and sent the two-seater across the hangars and barracks and above the road where frightened mechanics were fleeing. From a single gun-emplacement, tracers sparkled up into the lightning sky. But as the Breguet passed above, they too ceased.

Slowly, Strange let the looped cable

slip through his hand. By the grace of Fate he had been in time! No German troops would walk through the Yank lines this day. Bombers would later wreck the Boche field, and most of the spies at the dugout station would soon be trapped.

HE was climbing fast when he saw von Zenden's Spad. It was swinging slowly above the drome in gradually widening circles. He sheered away, fingers warily near his trips.

The Prussian's ship leveled out, flew diagonally across his path. Strange felt a queer shiver go over him as he saw the master-spy ringed in his Vickers sights. One touch on his trips, and von Zenden would be gone!

He ruddered aside, drew closer to the Spad. It was straightened out, flying away from the Front. In the gray light, Strange saw the Prussian gazing straight ahead. He edged in until they were flying wing to wing. Slowly, von Zenden turned his head. A faint surprise replaced the blank look on his face. But there was no recognition of an enemy.

For several moments, Strange watched the master-spy. Then to test his adversary, he lifted his hand in what might have been a salute. A dreamy smile, untinged with mockery, came to the Prussian's lips. He raised his right hand in answer.

Strange touched his throttle, and the Breguet slid back. The effect of the gas into which von Zenden had accidentally flown would soon be over. He would wake from that seemingly pleasant dream—and become again a grim and dangerous foe. Yet, the practical thing would be to remove the spy for good and all.

Without touching his trips, Strange followed the Spad, awaiting von Zenden's awakening. He could not bring himself to fire cold-bloodedly upon the Prussian while he was in his present helpless state.

Abruptly, a clatter sounded from his cowl and the Breguet's engine, weakened by the terrific hammering of Maxim lead it had sustained over the Lines, died out with grating cough.

As Philip Strange spiraled his crippled ship toward a clearing below, von Zenden's Spad drew away, flew into the East, into another dawn.

The trace of a grin lit the G-2 ace's face. "I guess you were right, Karl," he told himself. "I'm just—a softy."

On the Light Plane Tarmac

(Continued from page 26)

managed to repair it during the following three weeks—after jerking the "N.C." off it, since none of us was a licensed mechanic at the time.

Some time later, the owner of the job was practicing forced landings in a field of wheat stubble—and before he was through, he had the misfortune of hitting the ground against the grain, or something. Result: The axle broke and the right wheel folded up to the strut and locked.

When I heard that our sky charge was again sadly huddling out on the field, I decided it wouldn't be wise to leave it out overnight and risk having it tagged by a storm again. So the same three of us went out after it.

Our inspection over, we spent thirty minutes cranking before we got the motor going. Then I crawled into the pit of the plane and warmed her up. One of the boys—his name is Wheat, though we all call him "Whaleoil"—

held up the unsupported right wing while I poured the coal to 'er. Then he ran alongside, still holding 'er up, while I taxied the crippled job.

But just then the realization came to me that I was going too fast. I should have stopped, but it was too late. Whaleoil had to let loose of the wing and—*Good gravy! I was in the air!*

Boy, was I sweating! Luckily, I knew how to fly. But I'd never handled a crate in the dark—and here I was up

in the sky with a *one-wheeled* bus. Wow!

Well, if Fate had my number up, then she did. Anyway, I headed the plane for the airport, circled, cut the gun—and waited for the field to come

up to me. And I expected to wipe up the whole airport.

But nothing like that happened! After I leveled off and drew back the stick, the bus landed as easy as pie. She

didn't even ground-loop!

I still don't believe it. But meanwhile I'm saying, "Never again!"

THOMAS GIVENS, JR.
Graham, Texas

The Crate That Wouldn't Come Down

(Continued from page 14)

flying, darkness or no darkness, until he ran out of gas. There was no possible way of getting that bus down otherwise!

Now, forced landings are fairly common experiences—but I claim that being *marooned* in the air is something decidedly out of the ordinary. So does Tomack. And to this day, despite the

fact that he's a gentleman, no one utters the word "Ansaldo" in his presence. That is, they don't when any ladies are closer than one (1) mile!

Author's note: Modern planes have gas shut-off valves located in the cockpit, hence present-day pilots never need worry about finding themselves in Tom-

ack's predicament: for even though a flyer's throttle and ignition switch might go haywire, a pull at the aforementioned fuel valve would cut off the gas supply and the motor would die in a minute or so. However, in the Ansaldo, and many other ships of that vintage, the flow of gas could only be stopped when the plane was on the ground.

Our Warbirds Tackle "Problem 19"

(Continued from page 19)

games will be the work of the Navy aircraft squadrons. If they can carry out their all-important patrol, scouting, and fighting duties successfully, much of the question will be solved.

Are our patrol planes suitable for this work? Are our means of communi-

cation efficient—will they stand up during Fleet action? Are our carriers worth the millions of dollars that have been spent on them?

Thus far, in ordinary routine problems, the carriers have more than held their own, and our Navy airmen have

shown that they are on their toes.

Truly, Fleet Problem 19 will be the greatest test devised by naval strategists, and not only we, but also those across the seas, will be anxious to know the results.

Let's go, Navy!

News of the Modelers

(Continued from page 39)

in the speed event, and each was awarded a certificate good for a one-year subscription to FLYING ACES Magazine and an F.A. aviator's positive identification bracelet. And Bob Eby received a similar certificate when his paper-covered endurance job flew for just short of four minutes.

There was plenty of interest and excitement in the various events, and the record crowd of onlookers was generous with its appreciative applause. Charles Tracy, Junior Aviation editor of the *Toledo News-Bee*, was in charge of the affair.

PORT HURON SCHOOL CONTEST

RESULTS of the recent Port Huron (Mich.) High School Aeronautics Association contest, held in the High School gym, are as follows:

Flying scale: George La Vere, F.A.C. member, first place; Keith Fraser-Lee, also an F.A.C. member, second place. A 50" Taylor Cub kit donated by a Port Huron dealer was La Vere's prize.

R.O.G. Class B fuselage event: Keith Fraser-Lee, first place. Controlled stunt flights: Charles Marigold, first place; Robert Fraser-Lee second.

Besides holding many model airplane meets, the P.H.H.S.A.A. is calling public attention to the hobby of its members through frequent window displays. A recent exhibition was held in Mac-Taggart's Book Store, Port Huron, in which twenty-two models were displayed.

The models ranged in size from a tiny indoor glider made by Ralph Herber to a 50" Taylor Cub built jointly by the Fraser-Lee brothers. A flying "Dipper" model, made by Irving Kreutzger from

a kit manufactured by the Comet Model Airplane Co., attracted much favorable attention. Irving, incidentally, has only been building models a short time.

TEST CONNECTICUT GAS BAN

DESIROUS of testing the recent Connecticut ban on gas model airplanes, members of the Waterbury Gas Model Association recently challenged the ban by holding an open gas model contest. After a few flights had been completed, members of the Connecticut State Police and the State Aviation Department announced themselves and served Eric Schmeer, an Association member, with a summons to appear in court at Watertown, Conn., on a charge of violating the state's aviation laws.

The Waterbury association immediately engaged counsel and prepared to fight the case in Common Pleas Court. Finally, however, the State Aviation Commissioner adopted the N.A.A.'s gas model regulations for the state, and at the time of going to press it is expected that the test case against Schmeer will be dropped.

FLYING ACES heartily congratulates the Waterbury Gas Model Association for its courage and success in thus bringing a mighty unfair regulation to the attention of the State of Connecticut.

MODEL GROUP PUBLICATIONS

LANDING on our desk at regular intervals is a series of excellent publications issued by model clubs and similar associations throughout the country. Perhaps the newest one is *Arpiem* (r.p.m.—get it?) edited by Phil Zecchitella at 397 Fifteenth Avenue,

Newark, N. J. *Arpiem*, a neat little gas modelers' monthly, is available without charge to members of accredited gas model groups who ask their dealers for it.

The Landing Field, official weekly organ of the Wachusett Model Aero Club of Fitchburg, Mass., is another interesting sheet. Mimeographed, it not only carries news of the club, but is attractively illustrated and contains many swell modelers' kinks. Walter Pierce is editor.

Also from Massachusetts comes the *L.M.A.C. News*, a mimeographed monthly edited by Francis E. Lachance for the Lawrence Model Airplane Club. And still a third sheet from Massachusetts is the weekly *Wing Overs* of the Jordan-Marsh-Boston Traveler Junior Aviation League, of Boston. Al Lewis occupies the editorial sanctum of this live publication, which we've been observing for many months. Al, you're doing a splendid job! And we also like your *Gaskets*, official publication of the Boston Gas Model Society.

AMAC OF AKRON

AN INTERESTING PROGRAM including many contests has been prepared for the coming winter by the activities committee of the Akron Model Aircraft Club, according to news notes received by FLYING ACES from Pershing Kaufman, president of the Akron organization.

Organized about two years ago, the AMAC—as the group is known in Akron—has been represented in

so many local, regional and national contests that its secretary has lost all count of the number.

Meetings are held every Tuesday at North High School, usually under the direction of Paul H. Zimmerman,

faculty advisor. Club members wear a sweater emblem of black chenille wings outlined with white.

Officers of the club, besides President Kaufman, are Archie Hunt, secretary, and Theodore Ayres,

treasurer. Members include Ed Voorhees, Wes Peters, Glenn Matz, Bob Heusel, Charles Amburgey, Ken-ny Schwerdtfeger, Roy Hunt, and Elwood Maxim. Interested modelers are invited to join the club.

Fly a Fokker D-7

(Continued from page 50)

and sanded to meet the fuselage lines smoothly. Drill a hole at a slight downward angle and cement bearings of washers with bushings inserted.

Dummy cylinders and the exhaust pipe are shaped of suitable scraps of balsa and are then cemented to a flooring of 1/32" sheet fitted between the top edges of the fuselage sides. A door is cut at the rear of the body as shown, and a motor hook of .028 piano wire solidly cemented therein.

The landing gear consists of V's made from 3/64" by 1/16" streamlined bamboo struts. The upper ends are pointed and cemented into the fuselage bottom. The small spreader wing between the wheels is built up of 7 ribs, a 1/8" sq. leading edge, and a 1/16" by 1/8" trailing edge. When dry, this frame is attached to a triangular spar bearing an axle of .028 wire and which (the spar) has already been cemented in the apex of the landing gear V's. Mount a pair of 1 1/4" balsa wheels with thin tires, and we're ready to begin work on the—

WINGS AND TAIL

THE taper of the wings naturally requires ribs of different sizes. Toward this end we have developed the following simple system. Cut out the tip and center ribs as shown on Plate 2. Then arrange a block of 1/32" sheet balsa slats and the shaped ribs, as shown in the rib taper detail sketch on Plate 1. With knife and sandpaper, using the finished ribs as templates, shape the wood into a tapered block. Spar slots are now cut, and you have a set of perfect taper ribs. Since there is no taper in the center section, five No. 1 ribs are required.

The trailing edges (1/16" by 3/16" balsa) are pinned to a soft board. Ce-

ment the end ribs against them. Pin the leading edge (3/32" sq. stock) to the nose of these ribs, after which the remainder of the ribs may be slipped into place.

Add tips of 1/32" sheet and a spar of 1/16" sheet which is tapered from 3/16" at the center to 3/32" at the ends. Note that the spar and trailing edge of the lower wing are continuous and fit into slots at the bottom of the fuselage sides.

The tail group is flat in section, and is simply constructed of 1/16" sheet and 1/16" sq. balsa.

COVERING AND ASSEMBLY

SANDPAPER the entire framework evenly, removing any bumps that might prevent a perfect finish. A simple yet striking coloring is the basic color scheme on von Richthofen's famous "Jagdstaffel One"—all red with white rudder and insignia outline. The various white bands and other designs that marked the individual members of this squadron may be selected from the many photos of Fokkers that have been published.

Cover all exposed parts of the fuselage and the airfoil surfaces with colored tissue. Apply it in separate sections at the tips and other curved places.

All wing struts are of 3/64" by 1/16" streamlined bamboo. Struts C are pointed, then cemented into the bottom of the fuselage just above landing gear struts A. They are then braced with the short struts D and E. A single pair of struts, F, also support the upper wing.

Mount the upper wing panel, allowing the struts to project slightly into the wing on the outside of the No. 1 ribs, to provide ample surface for a strong joint. Check the alignment and the 1/16"

incidence of the wing. The bottom wing and the elevator are cemented directly to the fuselage at zero incidence.

The entire model may now be sprayed with water and doped lightly to tighten the tissue. Keep an eye on all surfaces and correct any tendency to warp before the tissue is dry. The interplane struts G, H, and I, are now cemented in the given order to the outside of the No. 4 ribs and the inside of the No. 11 ribs. Two thin bamboo struts, J, brace the stabilizer.

PROPELLER AND FLYING

CARVE the prop from a medium hard block 5/8" by 1 1/8" by 5 1/2". After finishing with fine sandpaper, dope the prop for strength and smoothness. The prop shaft, formed of .028 piano wire, is passed through the nose plug and prop and embedded in the hub, with a couple of washers included for bearings.

Four strands of 3/32" flat brown rubber are required to fly a D-7 model weighing .75 oz., and four strands of 1/8" flat brown rubber are needed for a heavier job. The model should be adjusted with clay so that it balances level at a point 1" from the leading edge of the upper wing.

Minor adjustments can be made by warping the elevators up slightly in case of a glide that is too steep, or warping them downward to correct a tendency to stall. Adjust the model to fly in fairly tight right circles, and then lubricate the rubber and wind it with a winder for flights that will make this ship one of your favorites.

Details not needed on a flying model—such as steps, hand grips, radiator, guns, and the like—are shown on the three-view plan and can be easily made up from balsa scraps and pins.

Flying Aces Club News

(Continued from page 28)

per forgot to give, is working on a Nieuport of some kind. Carl Simmons is a new member of the Flight, which holds regular meetings each Monday.

SOME of you may recall that Doug Allen, the late National Adjutant of the Flying Aces Club, used to write occasionally about Ace George Cull, an F.A.C. member in San Francisco. George was stricken with infantile paralysis some seven years ago.

Inspired to mental sharpness, however, by his inability to perform physical work, George started studies toward aeronautical engineering. And as an allied hobby, he began to make model airplanes. Well, his ships won prizes for

him in contests all over the country. And George was looking forward to the day when he could design a real ship that would be safe and dependable to the highest possible degree.

We lost track of him, though, and it wasn't until a newspaper clipping from the San Francisco *Chronicle* came to our desk that we heard about him again. And in that clipping, at the head of an article occupying most of a page, was the picture of a young chap wearing an F.A.C. Ace's star being initiated by the pilot into the mysteries of the "office" of a Douglas DC-3 transport. And this young chap was none other than our old pal George Cull!

It seems that the executives of United

Air Lines had learned about George's success in the modeling game, and they had also learned that he was turning out these excellent jobs even though he'd never even seen a big ship close up! So—proving that even big commercial outfits have a real heart—they immediately saw to it that George Cull not only was allowed to inspect one of their ships, but they also gave him the first airplane ride of his life. Pretty swell of United, eh? And now, more than ever before, George vows that aeronautical engineering is to be his life work!

Incidentally, George initiated into honorary membership in the Flying Aces Club none other than Arrigo Bal-

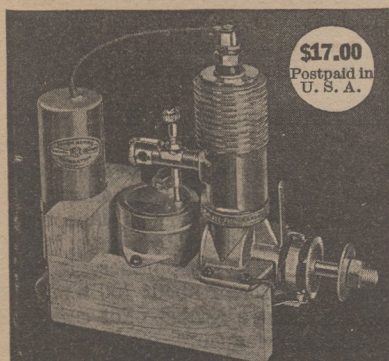
(Continued on page 66)

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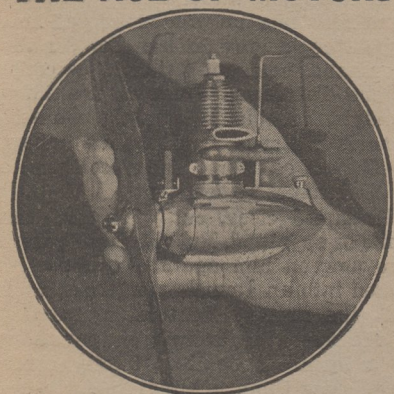


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Motor weight, bare, 6½ oz. 1/5 H.P.
Height 4¾ inches. Length 5¾ inches.
R.P.M. range 1200 to 10,000

Guaranteed performance. Both models have many refinements. Special fuel filter to prevent stalling on steep climb. Two-piece fuel tank is easy to clean. Special coil and spark plug give top performance.

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1/5 H.P. 15/16 Stroke
800 to 8,000 R.P.M. 7/8 Bore

Special non-fouling timer, oilite wear-resisting bearing and super high efficiency coil. We're Authorized Distributors—you get a **DOUBLE GUARANTEE**

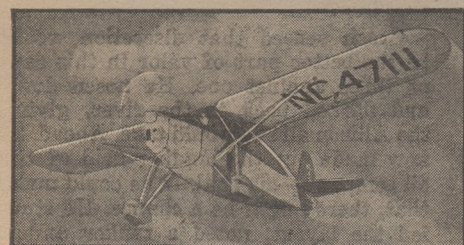
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Tapered, drilled and cut out blanks for each engine 35c postpaid.



FAIRCHILD DELUXE RANGER "24"

Span, 6' 8¾", Chord, 12-9/16", Length, 58". Excellent flyer. Plenty of wing surface gives wonderful gliding angle. Kit contains cut-to-shape ribs, formers, etc., all liquids (including colors), FULL SIZE blue prints, sheet alum., switch, screws, bolts, formed motor-mount, etc. A truly outstanding kit with M & M Air Wheels, for only **\$10.00**
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The NEW "WARRIOR"

COMPLETE PRICE POSTPAID
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FACTORY TESTED ASSEMBLED MOUNTED

- PISTON RINGS—Two accurately ground and fitted rings with aluminum piston, assure easy starting and lasting compression.
- RADIAL MOUNTING—No heavy mount needed. Soldered gas line no rubber tube. Can be inverted.
- ADJUSTABLE SPARK ADVANCE—Handy instant locking extension; tempered steel point spring; tungsten adjustable points.
- NEEDLE VALVE EXTENSION—Correct fuel mixture quickly and positively controlled. Note lockspring.
- STEEL CYLINDER; ALUMINUM CRANK CASE
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"WARRIOR" SPECIFICATIONS
1/5 h.p. at 5500 R.P.M. Height 4½" Bore ¾". Stroke 13/16" Engine with tank, 6½ oz. Sold only as pictured, assembled and tested.

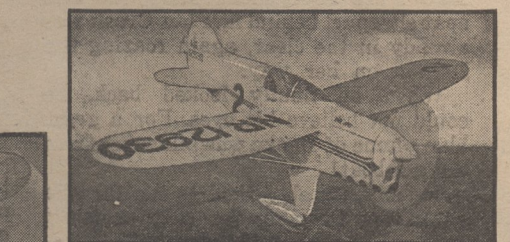
FREE TIMER OFFER DOES NOT APPLY TO THIS ENGINE YOU GET A POLK'S PERFECT PITCH PROP INSTEAD

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Worth **\$1.75** When Ordered Separately
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ART CHESTER'S (Jeep)

Span, 71½". Length, 56½"
Our most recent success! An ideal flying gas model of Art Chester's classy racer. Kit complete with ready-cut ribs, formers, wheel pants, formed motor-mounts, all liquids, switches, bolts, screws, M & M Air Wheels, etc. Priced at **\$12.00**
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SEND STAMP (5c) FOR THE MOST COMPLETE GAS MODEL CATALOG IN THE FIELD

LEGITIMATE DEALERS WRITE FOR DISCOUNTS

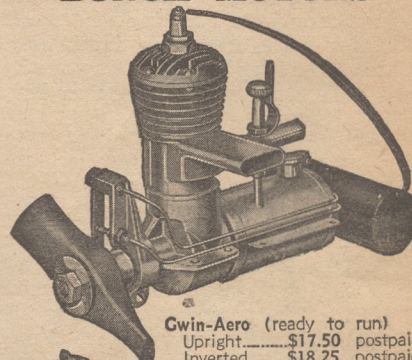
CONDOR MIDGET \$18.50



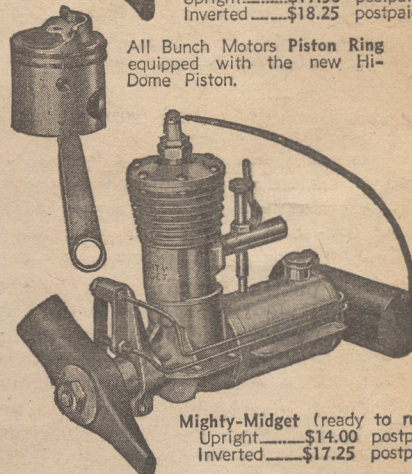
King of the Midgets

REALLY a small engine for 1 to 3 lb. ships of 3 ft. wingspan and over. Bore and stroke 9/16. Wt. 3¾ oz. develops up to 1/8 h.p.
Send stamp for specifications

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Gwin-Aero (ready to run)
Upright.....\$17.50 postpaid
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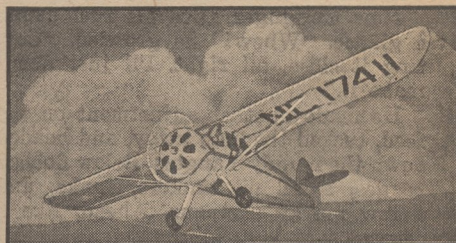
All Bunch Motors Piston Ring equipped with the new Hi-Dome Piston.

Mighty-Midget (ready to run)
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Inverted.....\$17.25 postpaid

Bunch Motor Kits. Save money and order the Mighty-Midget or Gwin-Aero Kit that suits your purpose. All parts machine finished and taken directly from our assembly line. We guarantee factory-built performance when you follow enclosed step-by-step instruction manual.

Upright Engine Kits: Inverted Engine Kits:
Mighty-Midget .. \$ 9.85 Mighty-Midget .. \$10.10
Gwin-Aero \$11.35 Gwin-Aero \$11.60

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The LUSCOMBE PHANTOM

Span, 6' 4", Chord, 11¼", Length, 51"
All the latest improvements tend to make this an outstanding kit. Kit contains all formers, ribs, wing-tips, etc., cut to correct shape. All liquids (including colors), sheet alum., switch, screws, bolts, formed motor-mount, etc. Price, including M & M Air Wheels only.....**\$14.00**
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SECOND FLOOR, COR. 7TH AVE.

—THEY ADVERTISE—LET'S PATRONIZE—

boni, the "flying sky junkman," about whose unique business **FLYING ACES** ran a feature article in the May 1937 issue. Glad to welcome you into our outfit, Arrigo!

And now we just have time to hop up the West Coast to La Conner, Washington, to see what Jack Markle has to say. Jack's another chap who's planning to become an aeronautical engineer, and he's preparing for it right now by heavy studying in high school and lots of model making at home.

Wings Over the Yangtze

(Continued from page 18)

these babies. Now, if I can only figure out some way to give them a show," he soliloquized. "What I *would* like would be to get that guy Matsukata and his Tatikawa over Nanking where General Chiang would have a front seat. I'd shoot that Jap's struts away one by one—and then wrap him up in his own guy wires."

But as the miles sped behind him and he approached and passed the lake of Poyang, no clear solution to his problem came to him. He knew that he was selling an unusual job, and so far the Chinese had had a tough enough time getting used to the modern tractor biplanes. The prospects of selling them a pusher, and hoping to assure them that it was simple to fly, was too much to expect—without a break.

In America, some 9,000 miles behind him, was a man who had sunk every penny he had into the Hellion. Another poor fellow had burned himself out designing the craft. Two more had plunged from 20,000 feet in terminal velocity dives to prove its worth. And besides that, several hundred skilled workers awaited the signal that would put the machinery in the almost silent Hale factory into action again—several hundred men, with as many more hungry mouths to feed, who were relying on a man named Carringer.

Crash consulted his map again, poked a horny finger on the scarlet square that marked a landing ground built by an American oil company. That, he hoped, would be his final stop before attempting to contact the head of the Chinese air service in Nanking. The scarlet square was twenty-eight miles up the river from Nanking.

Now Carringer gave his fuel gauge a glance. "Whew!" he growled. "Cutting it close, all right. I'll just about make it."

He made another adjustment on the feed, tucked the map away, and headed down the muddy Yangtze. Below flobbered barges, small oil tankers, junks, and a few murky sampans. Ahead, like a crusted sore, lay Chihchow.

Carringer watched his gas gauge again, tried to check his mileage. He had covered about 800 miles, roughly speaking, and he was nearing the end of his fuel range. It didn't look as though—

BR-RR-OOM! CRASH!

Something exploded above his head. He stared up, saw two yellowish-white

He recently finished a convertible flying-display model of a Curtiss Goshawk. It's "got everything" Jack says, "with movable controls, torpedo toggles that work, a complete instrument board with glass dials, landing lights and aviation lights, pneumatic wheels, landing hook, dummy motor, camera-gun, bombs, torpedo, gunsights, all 'scale' wires, swivel tailwheel, complete authentic naval insignia, and many other details."

And so long until next month, skysters!

splotches of smoke.

CR-RUMP!

Crash threw the Hellion all over the sky, darted it first to the right, then back to the left, and climbed like mad.

Again thundering explosions burst out all around him.

Crash glanced out of his cockpit, whipped the Hellion over again, then noticed the bulgy outline of a Japanese river gunboat on the river below. Three jets of stick-like flame flashed from a stern turret and again A-A shells smashed all about him.

With another glance at the fuel gauge, Crash nosed over, drew back the handle of his cannon control, and slammed down at the tall-funneled river vessel. Ignoring all consideration of diplomacy or international incidents, he hammered the Hellion at the gunboat, drew a wicked bead on the vessel. The cannon chugged and coughed and the Hellion seemed to stagger against the recoil, but Crash kept her at it.

His salvo of 37 mm. shells smacked into the metal surfaces of the gunboat's bridge and forward turret. A short stub mast shivered and fell across the bridge. Then a burst of flame spat up from the fore-castle. As a blanket of machine gun fire answered him, Crash zoomed hard and showed only the twin rudders of the Hellion's tail. Two more A-A shells rang out and spat shrapnel behind him but Crash was already in the clear, again roaring the Hellion on her way.

When he finally looked back, he could not believe his eyes. For a great blue plume of smoke was billowing from the gunboat!

Quickly, Crash jerked at the throttle again, set the ship for easy cruising, and hummed along the river with hardly two hundred feet between his retracted wheels and the bamboo sails of the junks below.

Then, as he contemplated the burning gunboat, the full realization of his act swept over him. For fully a minute he sat staring, the full picture of the whole affair blotting out all vision of the crawling Yangtze that marked his course below.

"Wow!" he gasped. "What the devil happened then?"

He again peered back at the curling plume of blue-black smoke. "I actually set fire to that Jap gun barge," he muttered. "Now if I could only have staged

that for old Chiang Kai-shek!"

But his elation was short-lived. Before he could settle himself for the last ten miles of his trip to the oil company field, a formation of Japanese Tatikawa fighters came down on him out of the sunlight above.

Crash Carringer let out a smothered oath, rammed his throttle forward, and ripped the Hellion into a steep climb.

THE Tatikawa fighter is a product of the old Ishikawajima firm of Tokyo, and in spite of its somewhat obsolete lines, it has all the control and sturdiness of the modern biplane fighter. Boasting short stubby wings, it can turn inside most monoplanes. It uses a Japanese motor of about 700 h.p., and in the hands of a skilled pilot can be a very efficient weapon.

Crash Carringer found that out in about twenty seconds — for before he could set his controls for speed and action again, the four biplane fighters with their cherry-red noses were pecking at him from all angles. Crash, uncertain what to do at first, contented himself with attempting to run for it.

He knew he was running on borrowed fuel-time now and wondered how long he could stay in the air. On the other hand, he figured that if he could get the Tatikawas closer to Nanking, he might be able to give the Chinese authorities a show that would augment his chances of selling some Hellions to the Nationalist government.

He darted clear, cut wide, and ran a mile or so inland. But the Jap fighters were now on him again. Abruptly, he yanked into an Immelmann. Then back upon the flailing fighters he hurtled his Hellion with every gun pounding out a hymn of death. Directly there came a low thud, a blinding explosion—and the leading Tatikawa disintegrated in mid-air!

But the other Nipponese warbirds were not to be put off easily. The second ship quickly took the leader's place. Then a scream of lead passed over Crash's cockpit and a short burst pecked a crazy design in his wing-tip.

The Yank swore from the bottom of his stomach, hoiked again, flashed a wing-over, and tried to get his cannon on the Jap. But there was no chance; for the Tatikawa turned sharply inside him.

Crash sensed that discretion would be the better part of valor in this case of three against one. He nosed down and flashed back to the river, giving the Allison all she would take. Ahead, he now made out the landing field of the oil company—his goal. If he could make that, there might be a chance. He studied the layout, noted a tanker and a freighter flobbering at the wharfs, two or three junks swaying in the river beyond, and a—yes, an American gunboat in midstream!

But the Jap planes were gaining on Crash now. They had made the most of their height and were coming down at a sharp angle. He was forced to turn sharply and cut inland again, when two of them tried to get him with converging bursts.

The Allison was spluttering now, and Crash had to swing back toward the field. He cursed under his breath, realized that to observers below, he was not putting up much of a scrap.

He gave her all he had now, hoiked for a little height, banked hard, and pulled every gun trigger on board. The 37 mm. cannon rattled and the four Brownings screamed.

The three Tatikawas barked full into his barrage, their own guns replying madly. Crash watched everything, took every chance offered, slammed through the lot, and grinned when all three zoomed to get out of his way. Then the Allison sucked the last drop of gas from the tanks—and he had to accept the inevitable.

With a glance over his shoulder, Crash S-turned, nosed down, and set his flaps for a landing on the oil-field. The Tatikawas tried to curl back at him, but one of them side-slipped too hard, and the pilot had to jerk his stick to save her. In doing so he ripped a wing away that had been badly peppered, and the ship wound down in a pathetic spin and buried itself eight feet deep in a marsh. There was a flash of flame, a billow of smoke. What was left was incinerated into a blackened nothingness.

But Crash was not in the clear yet. He had to play safe to get his fighter down in the limited confines of the small field; he had to give the landing all his attention. The two remaining Japs tried their best to finish him, but their morale had been broken. They both shot in with pitiful attempts to nail the Hellion, but their efforts were more in the line of a final gesture than the attempts for a kill.

Crash fishtailed over the short runway, let his wheels down, rolled in, sensing all the time that he was being watched by the motley crowd near the storage tanks banked up near the river edge.

Crash sat there in the cockpit, watched the remaining Tatikawas climb again and flash off toward the east.

"Now the fun will begin," he grinned.

APPLEBY, manager of the oil company, came out slowly. He seemed not quite certain just what line he should take. Crash was now wandering about his ship inspecting the damage.

"Can I get some fuel here?" called Crash.

"I guess so. But what's the idea?"

"I'm Carringer. Did you get a wire on me from Canton?"

"I know you're Carringer," grinned Appleby, coming up and shaking hands. "You certainly wrote your name all over the sky today, eh?"

"You hear about it?"

"About the Sushi—the Jap gunboat? Sure, they're screaming blue murder about it along the river. We picked up a couple of their messages. There'll be hell to pay about it."

"They fired on me, first," argued Crash.

"Sure. And for that matter they probably fired on you last," said Appleby. "Anyhow, I just saw you fighting up above here. I saw that one ship spin

in. But I figured he had pulled his own wings off."

"Yeah, after I put a few slugs in it. I got another of 'em back up the river, too."

"Oh, boy! Won't this stir things up plenty! Not that we need it. Things have been hot here for the last two months. This will about finish it."

"Oh, well, anything for a change," muttered Crash. "And now can I get some gas so I can get out of here?"

"If you got the dough."

"I got enough—but it's nothing to what I will have if I can put on a demonstration for Chiang Kai-shek and sell the Chinese a flock of these busses."

"Well," grinned Appleby, "I'll get some of the coolies to drag her over for you. By the way, there's an old pal of yours here. That is, he's out on the Lunay—that U. S. river gunboat out there in the river."

"An old pal of mine?" queried Crash

"Yes, this old devil must be a pal of yours. He thinks you're the greatest guy he ever had at his school. His name's Professor Throckmorton. I think he's the head master at some Ohio academy."

"Old Throckmorton? Prexy Throckmorton?" cried Crash.

"Yeah. We had to go and get him away from some old ruins just north of Luchow since the fighting was getting hot around there. When he heard you were on your way up here, he said he hoped he'd see you before they moved him down to Shanghai."

"Well, you picked the one guy out of this world who was once a real friend to me," grinned Crash, his memory flashing back to that unbelievable night in the Kent Prep gymnasium. "I got to see him."

"Instead, you'd better get this boiler filled up and beat it out of here as fast as she'll turn over," advised the oil company manager. "There's plenty of Jap troops in this area and they'll be looking for you within an hour. The Chinese have had to go down to Hankow, you know. I don't like the idea of your getting gas here, because of the risk. But there's not much I can do about it now."

"I'm seeing old Throckmorton first," snapped Crash. "You leave those Japs to me after I get some juice aboard."

Appleby wagged his head and studied the sky while a gang of coolies went to work filling the Hellion's tanks from the fueling pylon. Crash superintended and checked everything. He also reloaded the cannon and saw that the machine gun belts were well filled.

THOUGH Appleby tried his best to persuade Crash to get away and seek the comparative security of the Nationalist headquarters at Hankow, Carringer would not hear of leaving until he had seen the old professor.

"I may never see the poor guy again," argued Crash. "They'll take him down the river, shove him on a Dollar Line boat—and he'll be right back where he started, wondering whatever happened to his pet prep school headache."

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know these Skibos," warned Appleby, his face a weary mask of hopelessness brought on by months of fear and worry. "But if you must see that prof, you can get a sampan down at the foot of our wharf. One of the coolies will run you over. The *Lunay* is out there in the middle of the river waiting to convoy a couple of tankers down the river tonight."

"Don't worry," came back Crash. "If the Japs get to you, your picture will go in the newsreels and maybe you'll get a vaudeville contract."

"I don't want a vaudeville contract. I want you to lam out of here with that flying armory of yours—that's all."

"I'll be seein' ya," taunted Crash.

"I'm afraid so," wailed Appleby, shooing the coolies back to work.

Crash sauntered through the lanes of oil tanks and found the narrow wharf. There was a sampan there and a couple of greasy coolies lying on grass mats. He stepped down the planked gangway and roused them with a spray of silver coins.

"Come on, plenty chop-chop—over there, the *Lunay*!" he ordered.

The coolies scrambled into life, retrieved the coins he had tossed, and leaped to their work. In a few minutes they had the sampan out in mid-stream and were sculling him toward the U. S. Navy river gunboat that swung lazily at anchor.

A deck-hand came forward, threw them a line. And soon the sampan was swinging against the side of the gunboat which was not much more than a revamped ferry boat of low draft armed with a couple of oily three-inchers and half a dozen clacky Lewis guns. Still, it carried the colors and represented the dignity and authority of the United States.

Once aboard, Crash ordered the coolies to stand by, whereupon they pulled clear of the vessel and made their way through the swirling yellow water to a buoy nearby and tied up. The flyer then turned to the quarter and inquired for Professor Throckmorton.

The Chief Petty Officer, a stocky gent with a two weeks' growth of beard, gave Crash a dirty look, spat over the rail, and jerked his thumb over his shoulder: "He's in there with the rest of 'em. And I'd say more funny guys get up here than you'll find at Dinty Moore's." He was eyeing Crash disdainfully.

"Bet you were here first," gagged Crash, "and don't ever comb that beard out. No tellin' what may pop out."

"Well," came the reply, "if you'd been working the hours we have during the past half month, you'd have gathered some chin foliage, too. In fact, a little face fungus wouldn't harm that mug of yours, either. Why don't you take it down to the galley and boil it?"

"Well," answered Crash, "after you've seen a little *real* action, maybe you yourself won't be so ravishingly beautiful. Even so, I'll bet your mother drowned the wrong one."

"On your way, greaseball," the C.P. O. spat in disgust. "Phooey, what a war!" he added. "All we do is pick up newsreel nuts, play host to professors

who stick pins in cock-roaches, and wet-nurse oil tankers up and down the Yangtze. Work, work, work—without anything exciting ever happening."

"You'll probably be the first one overboard when it does," cracked back Crash as he started along the deck to an open door amidships.

INSIDE, he found a motley group huddled on benches, Army cots, and gun-room settees. He peered about in the half light, finally spotted a narrow-shouldered little man reclining on a stack of mattresses deeply engrossed in a book. His hair was thin and silvery and his face was somewhat drawn.

Ignoring the ring of inquiring eyes that turned to him as he crossed the salon, Crash strode up, gripped the little professor by one shoulder, and twisted him around sharply.

"Prexy Throckmorton!" boomed Carringer.

The professor dropped the book, gasped, and put up both hands in a gesture of defense. He blinked with eyes that would not believe what they were seeing.

"Don't you know me, you old coot?" roared Crash, his voice thundering off the metal panels of the small salon. "I'm Carringer — Crash Carringer. What the devil are you doing out here?"

"Carringer? . . . Carringer?" the little professor finally managed to gasp. "Why—I would never have known you. You . . . you look—"

"Sure, I know. I look like something you see after a bad night. But I'm Carringer just the same. When I fought, I didn't duck often enough, so this is what they left me for a dial."

"But Carringer! I'm so glad to see you! I heard you were coming through here, you know."

"Sure. It seems as though everyone in China knew I was—"

"One Japanese gunboat! A couple of Japanese Army planes! That mess ought to assure you of some sort of a reception, Carringer," an authoritative voice suddenly broke in.

Crash turned, faced a U. S. Navy officer—a man with a lean face and small piercing sea-blue eyes.

"I'm Lieutenant-Commander Newnes. I'm in command here, and I'm afraid you have placed yourself outside the bounds of any protection I may offer you."

"That's all right, Commander," grinned Crash, "I'll take my chances. I won't stay aboard long. I just wanted to say 'hello' to my old prep school prexy. I'll be leaving in a few minutes."

"You understand my position, of course," continued the commander. "We are only up here to convoy tankers and evacuate American citizens who have been unavoidably caught in the war area. But you seem to have made it your business to take up arms and engage the Japanese. That *Sushi* business back there, you know, will create no end of trouble."

"Aw, what the devil! They fired on me first," replied the irrepressible airman.

"But you have no right to be in this

war zone with a military plane carrying no license markings."

"Yeah, but I want to get up to Hankow and sell old Kai-shek a few hundred of them. There's several hundred guys back home waiting for me to get the order. When I get it, they eat again. If I don't—well, back on relief, I guess."

A brief smile lit the flinty face of the Lieutenant-Commander. "I'm sorry," he answered, "but I shall have to ask you to leave in fifteen minutes. I don't want to get into a tangle with the Japs—if they come and ask for you."

"Fifteen minutes will be plenty, eh, Prexy?" boomed Crash.

"I imagine it will have to be enough," muttered Professor Throckmorton with a sigh of disappointment.

THE members of the passenger group hovered around for a few minutes and two American newspapermen jotted down some notes on Crash's experiences. A newsreel man sat on the floor, reloading his portable camera, then rolled over and went to sleep. Crash looked at his wrist watch, realized that he had but a few minutes more to stay.

"So it's old Prexy Throckmorton out here in China, eh?" he said as he turned back to the Professor. "But what are you doing out here?"

"Oh, it's my sabbatical year, you know, and I thought I'd take a run out here. It's something I've always wanted to do. I was staying with a Buddhist priest and looking over some ruins when they came and ordered me to get out. I suppose things are serious?"

"Well, they're getting warmer all the time. You can't tell what will happen."

"You mean, you can't since you broke into the picture," laughed the Professor. "You know, Carringer, I can't remember seeing you since the . . . since the night—"

"Since the night I changed my name?" beamed Crash. "That was a large evening, wasn't it?"

"I'll never forget it."

"You know, Prexy," said Crash reflectively as he lit a big black cigar, "I have often wondered why you did that—why you didn't just toss me out, neck and crop."

"I'll tell you some day," said Throckmorton, staring with unseeing eyes out the small square window. "I'll tell you—if you'll do me a favor sometime."

"Sure. What is it?"

"When you get back to the United States—if you ever do—I want you to promise to pay a visit to Kent Prep. I want you to come out and talk to our boys. Your story would be so different from that told by the business men who usually address our assemblies."

"I guess it would," laughed Crash. "Yes, it sure would!"

Professor Throckmorton continued: "You see, I'd like the students—especially those who enjoy fat allowances and who have ample incomes awaiting them through inheritance—to learn first hand what the other fellow is up against. I mean fellows without funds, who couldn't complete their education, and who had to buck adversity with their two fighting hands—a man like you."

Yes, I want them to know what a real fighting man is; and you, Crash, represent courage and self reliance to me. Your spirit has always meant a lot to me—a lot to me personally.” There was now a trace of a tear in the old educator’s eyes. “You’ve done things in the face of great odds,” he concluded.

“You mean with a great odd face,” said Crash quietly. “But, Prexy, some of the things I’ve done would hardly constitute good examples for up-and-coming youngsters. Why, I’m wanted in Tokyo—and I’m not wanted aboard the *Lunay*. What’s more, the British authorities at Singapore would like to—interview me. And there are several debts that I—” He broke off. “Anyhow, you don’t know *half* the story.”

“Maybe I don’t,” came back the Professor. “But there are plenty of meaningful things those students could learn from your story. You’re free! You live life more fully! Take me, Crash. I have to wait seven years for a vacation, and . . . and then they have to send a gunboat up the Yangtze to bring me back, because with all my education, my so-called culture, I’m not able to take care of myself.”

“Well, replied Crash, “I grant I wasn’t cut out to be a prof. But remember that many educators get around and do things today, and I know a lot of ’em who are no slouches with their fists. Anyhow, don’t forget that you can call on the protection of the flag flying above this tub. I can’t. For you heard what the Commander just said—I’m on the outside. Some day I’m going to wish I could lie back and let the government protect me. Some day I’m going to get into a devil of a jam.”

“Yes, but your name is Crash Carringer. That’ll ‘get you places,’ as the saying goes.”

Crash brightened a bit. “Do you know, Prexy,” he said, “you just put your finger on the moving force in my screwball life. It’s that ‘Crash Carringer’ business. Suppose I had never changed my name. Suppose,” and Crash dropped his voice, “I had left it Meridith Lovelace Carringer, III? What a lousy chance I would have stood trying to get anywhere with that.”

“Yes, that’s what I have been trying to tell you.”

“Which reminds me,” said Crash, “that there’s something I want to know: Why did you play ball with me that night? Why did you let me—a spoiled kid—get away with it?”

“Well,” answered Professor Throckmorton, “I knew you would never get anywhere with that name—so I let you change it. And the day you return to Kent Prep and tell your story to the school—yes, face and all,” smiled the Professor, “I’ll tell them, and tell you, *exactly* why I did it. After I tell them, I’ll never live it down, of course, and I suppose the school will get completely out of hand. But I’ll do it!”

BUT Crash Carringer had now turned with a start. For the baffling hum of a formation of airplanes had caught his ear. He stared out of the cabin win-

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dow, then ran toward the door on the other side.

Six gleaming Tatikawa biplanes were diving toward the river from the south-east!

Crash drew his eyes into gleaming slits. They looked like the air vents on a gun breech. He sensed at once what was about to happen. And his watch told him he had but one minute to stay.

Some one crashed past him, tore out to the deck. It was the news-reel man with his camera. He ran along the deck and huddled near the bearded C.P.O. who was standing behind a steel shield. For a second or two, Crash was rooted to the spot, then he saw something that made him utter an oath—and a man’s name. For he had noted that the lead Tatikawa had nosed down steeper and then given a slight upward jerk before it actually pulled out of its dive.

“Matsukata!” Crash Carringer snarled.

Two black projectiles flashed out of the lower-wing racks of the Tatikawa and sped downward.

“Duck, everyone!” bellowed Carringer. “They’re bombing the gunboat!”

As he spoke, two bombs hit the water with a hissing chug and almost instantly a tremendous explosion belched up from the river bed. A towering pillar of water climbed high into the sky and the *Lunay* rolled dangerously.

“Matsukata!” flamed Crash Carringer again. “You’re the only guy I ever knew who jerks your bombs off. You did it five years ago as a student—you’re still doing it.”

There was a tremendous crash somewhere on the other side of the river gunboat. A panel of metal went flying across the salon and men screamed.

“Jap-jerker!” screamed Crash, his great fists balled over his head. “You can’t wait to get rid of ’em. Never made a really clean hit in your life . . . always short. And you’ll pull your wings off one of these—”

But Carringer’s raving was drowned

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out by the rattle of gunfire. The C.P.O. was manning the fore gun and the news-reel man was grinding out the damning evidence of the outrage.

BR-ROOM! CRASH!

Two more bombs found the gunboat, and a sheet of flame now enveloped the cabin behind Carringer. The concussion knocked Crash flat on his face but he crawled to his hands and knees and went back inside.

"Prexy! Prexy!" he yelled. "Where are you, Prexy?"

He made his way over two men who were groveling on the carpeted floor. A door blew out, went slamming across the salon, and bashed up against a glass-fronted closet.

"Prexy!" screamed Carringer above the clatter of glass.

Finally Crash found Professor Throckmorton. He lay flat on his back across the corner of a ripped mattress. A trickle of blood was marking a jagged line from the corner of his mouth, and his face was white.

Crash lifted him up, helped him get his breath.

"Where is your wound?" shouted Crash.

"I don't know . . . Carringer. My legs . . . I can't feel my legs."

Crash tried to lift him higher, but his hand only found a wet sticky mass at the small of Throckmorton's back.

"Prexy! Prexy! We'll get you out of this. Hang on!"

"No . . . can't hang on . . . Crash . . . can't hang on . . . too late. I . . . didn't change my name . . . you know, Crash."

"What do you mean?" cried Carringer. "You had courage . . . Crash. You knew what you wanted . . . and you weren't afraid. You changed your name . . . and I . . . I didn't."

"I don't quite get it."

"Can't you understand, Crash? I'm Professor B. M. J. Throckmorton . . . and . . . and I always have been." The old professor was trying to smile now. "You see . . . I didn't change my name . . . like you did. And it's . . . too late now, Crash."

Crash Carringer, the two-fisted fighter, found his eyes growing moist. Then two more bombs hit the gunboat well forward, and as the smoky cabin shuddered under the concussion, he hugged the wounded man to him.

"But I still don't get it, Prexy," he cried.

The professor went on:

"I . . . I went through life with the name Blaisdell Marjoribanks Joselyn Throckmorton, Crash. Now you know why I never amounted to anything but . . . but a seedy old gaffer."

"Blaisdell . . . Marjoribanks . . . Joselyn . . . Throckmorton," repeated Crash Carringer slowly in a husky choked tone. "Holy Moses, what a game guy!"

"Not . . . not game enough to change it, Crash . . . like you. But remember . . . I still want you to go back and explain to the boys."

"I sure will. But what I'll tell 'em is how a game guy died," said Crash. Reverently, he lay the now limp body back

on the bloody mattress. Then he arose and brought his hand up into a crisp salute.

"Now for you, Mister Matsukata," snarled Crash, striding back to the deck. Then, without a second's thought, he hurled himself over the rail of the *Lunay* and struck out across the bomb churned waters of the Yangtze toward the bobbing sampan.

"Wait a minute, you blasted beggars. Wait for a man who wants to fight!" he cried as he saw the Chinese preparing to scull away.

With strong steady strokes he worked his way to the sampan just as the frightened coolies were releasing, with fear-stiffened fingers, the last knot of the rope. He climbed aboard and drove the coolies to expend every ounce of energy in a furious dash for the shore.

ABOVE, the six Tatikawa fighters were still circling the *Lunay*, and one lone machine gun still continued to rattle away from the deck of the ill-fated gun-boat. Then, as the sampan reached the greasy wharf, Crash saw the fighting planes re-form and turn back inland again.

"I'll get you, Matsukata, if I have to put the Hellion clean through you," barked Crash.

Appleby and a group of oily workers now came running through the tank lanes, white and breathless.

"What happened out there?" the manager cried, staring up at the disappearing Tatikawas. "Why did those Japs bomb the *Lunay*? Did they mistake it for a Chinese gunboat?"

"Mistake?" bellowed Crash. "Hell no! Look at the flag stretched out from the bridge to the radio cabin. They got the Stars and Stripes at the masthead, too."

"But cripes! They wouldn't bomb an American gunboat," argued the oil-field manager.

"No? Well they did—and they finished off about ten people on board, too. She'll sink in a few minutes. You'd better get boats out and help them get off."

"That's an idea. But what are you going to do?"

"I'm going up and sit over the *Lunay*. I'll see that they don't try it again."

"Again? You don't think they'll come back, do you? I tell you it must have been a mistake."

"Yeah? Well, if that was a mistake, then you're shipping *eau de cologne* down the river in those tankers of yours and propellers grow on trees," spat Crash. "Anyhow, I'm going to see that those Japs don't get away with anything more. And if that guy Matsukata shows his face I'll—I'll sell a couple of hundred Hellions to the Chinese government!"

THE next ten minutes were bedlam about the oil field. Crash, roaring like a bull, drove coolies and other workers into a frenzy of mad action getting boats launched and sending assistance to the *Lunay* which was now drifting helplessly down the river. She now had a decided list, and those on the wharf and others aboard the tankers sensed

that she could not stay afloat much longer.

Sampans, cutters, and motor boats braved the swirling waters of the yellow Yangtze and sped to the rescue. Two life boats were lowered from the *Lunay*, and bare-armed seamen were to be seen struggling to get the wounded to the marshy shore beyond.

Crash Carringer finally paused to catch his breath. Then suddenly he listened intently—and started running toward the Hellion. He'd heard a tell-tale hum.

Crash clambered in fast, checked the controls and kicked the starter. The Allison opened with a bellow and the Hellion stiffened for the take-off. He let her warm only a minute or two, meanwhile checking his gun triggers. Then he jerked the cowl top forward and let her have it. The Hellion sprang away and Crash was raising his undercarriage before she was over the boundary of the landing field. He swung her over hard in a climbing turn—and swept smack into the returning formation of Tatikawa fighters!

The whole thing happened so fast that not even the quick-action hair-trigger mind of Crash Carringer could react to it. He simply sat there without making a voluntary move—and the Hellion slammed straight through the formation, missing a collision only by inches.

What happened after that made the headlines!

Crash immediately spotted Matsukata by the markings on his engine cowl. And the Nipponese was nosing down again at the *Lunay*! Crash let out an oath and whipped over after him with two fighters on his own tail. He snapped a short salvo at the diving Tatikawa, but Matsukata was again jerking as he released his bombs, and the shots went under his tail and chugged into the Yangtze.

Crash tried again without regard for the two streams of lead that were spattering down upon him from behind and rattling against his tail-booms. He ignored them, gave the Hellion a new burst of speed, and roared after Matsukata, who was now circling over the oil field.

The two Tatikawa fighters behind again splashed lead upon Crash, this time forcing him to pull out fast and allowing Matsukata to take another crack at the gunboat below.

"But you'll get it, Matsukata," roared Crash, turning fast into the clear. "You'll get it!"

He rolled, flipped on his back, nosed down, and went hell-for-leather at Matsukata's fighter. The Jap had poised again for a third dive on the gunboat.

As the Tatikawa began its steep descent, the Hellion held a following position dead over her. The Jap steadied himself, directed his fighter dead on the funnels of the listing *Lunay*. Crash watched him carefully, then reached for his cannon control lever.

The Tatikawa was now plummeting like a streak. But Crash was quick-eyed. He sensed the Jap's first pull at the bomb toggles, and he instantly drew back on his stick to compensate for Matsukata's instinctive jerk.

BUT just as he was about to pull his cannon trigger, the Tatikawa broke up in mid-air! Matsukata had done his Jap-jerk once too often! The two wing sections of his ship fluttered away, and the stripped fuselage carrying the helpless Jap pilot plunged on down and smashed into the superstructure of the *Lunay*.

For a second, Crash was unable to believe his eyes.

He saw the wreckage hit, explode, and spew itself all over the ancient gunboat. Then the realization that he had been denied all chance to even the score with his rival swept through him like a burning acid.

He bellowed as he pulled the Hellion out of the vertical dive with but feet to spare. "You . . . You . . ."

But he could find no words strong enough to express his feelings. There was nothing to do but accept the inevitable and take it out on the rest. So with a mighty zoom Crash cometed back toward the remaining raiders.

He wheeled over on one wing-tip, evaded a torrent of lead, kicked his rudder hard, and sent a snap-shot burst of .50 caliber stuff at the first Tatikawa he approached. The burst fanned through the Oriental's tail, crept up the fuselage, and finished up in the middle of his back. The Nipponese went forward on his stick.

Crash then steadied his ship, selected his next victim, and planted a five-shell burst of 37 mm. stuff full in the fighter's engine. There was a rending explosion—and the Tatikawa seemed to stand still like a canvasback halted by a choke-bore. It hung in mid-air, trembled, then slowly fell off into a ragged flat-spin, throwing parts away as it went down.

Two enraged Tatikawa flyers now lurched at Crash, but their efforts did not carry enough punch. They tried to converge their fire but missed their timing. Crash wheeled, sprayed both of them with all his guns—and split them wide.

Once he had pulled away, he sensed that the rest were reorganizing for a compact retreat. They wheeled into a three-ship triangle, turned, and raced down the river.

Crash took one look below. He saw that the *Lunay* was blazing fiercely on one side. A number of boats from the tankers and the oil field wharf were alongside doing their best to get the crew and passengers away.

With the triumphant roar of a madman, Crash settled back for the chase. He let the retreating planes hold their position for about ten miles. Then, once he was within sight of the outskirts of Nanking, he went to work on them with a vengeance.

In three minutes, and with but three lengthy cannon bursts, the remaining Tatikawas went down. Two of these dropped into the river before the astonished gaze of China's First Route Army. The third bashed itself to bits on a railroad bridge on the Jap side of the lines and blocked the progress of the Japanese ammunition trains.

Then, and then only, did Crash Car-ringer relax. With a shout that almost lifted the cover from the cockpit of the

Hellion, he zoomed up into a dramatic climb, headed north-west, and circled the city twice. Then he turned south-west and with a gleam of anticipation set the cordite-scarred nose of his Hale Hellion toward Hankow, the new seat of the Chinese National government.

"Chiang Kai-shek, here I come!" he sang blithely off key.

THE lean Chinese Commander-in-Chief greeted Crash in the dreary building that now housed his staff. He was tired and showed the strain of the war. But he had a kindly smile for the American aviator.

"I am glad to welcome you, Mr. Car-ringer," he said. "The news of your exploit down the river reached me a short time ago. And I have already sent my country's sympathies for the incident concerning the *Lunay* to Washington. You, of course, can tell me more about it."

Crash accepted a cigar, gnawed the end off and lit it. Then he sat down and in short lucid sentences told the story of the *Lunay* exploit. The Commander-in-Chief jotted down notes, nodded at intervals, and finally said: "But you do not mean to say that you destroyed the whole flight—single-handed?"

"They're all scattered along the Yangtze. You can check for yourself," emphasized Crash. "And it was the Hale Hellion that did it."

"But that is unbelievable. You are—you are not a trained Army pilot, are you?"

"No—not exactly. But that only goes to show you what *anyone* can do with the Hale Hellion. It's got real performance, is easy to fly, and it carries armament topping anything the Japanese have."

"You are a remarkable man, Mr. Car-ringer. You must be charged with some unknown spirit, some unnamed tradition—some ideal—to have accomplished so much!"

"Look here, General," said Crash getting up. "Let's talk man to man. I'm an airplane salesman, and I'm selling the Hale Hellion. I knew I had to do something to prove the value of our ship. And there was no better opportunity than the avenging of my unfortunate compatriots aboard the *Lunay*."

Crash paused. Then he went on:

"But there is more to the story than that. Every shot I fired, every turn I made, every bead I drew on those Tatikawas—every thing I did—was primarily for a guy named Blaisdell Majoribanks Joselyn Throckmorton!"

The little General stared at Crash as though he were looking at a lunatic. He tried to repeat the name: "Blaisdell Majori . . . Majori . . . er" But then he gave it up.

"Throckmorton," went on Crash, "was the fellow who *really* downed those Tatikawas—but he'll never know it. He died aboard the *Lunay*. And, General, when you get your first shipment of Hale Hellions, I want you to put on a Throckmorton memorial flight over the Yangtze."

Chiang Kai-shek was mystified. For a moment he said nothing. Finally, however, he spoke:

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"You mean I can buy some of those ships?"

"Of course," answered Crash. "The factory back in America is waiting for a flash from me. They're all set to go to work on 'em, General."

"Could we get a hundred of them, do you think?" asked Chiang.

"Better make it two hundred, sir," smiled Crash. "We can do a better pro-

duction on that number and we could also give you a better price. In the meantime, I can be giving your pilots a short training course in flying the finest ship that'll ever see action in Chinese skies. Now, what do you say?"

"Show me the dotted line, as you Americans say," replied the General. And he reached over to shake Crash's hand.

But Crash Carringer was staring off

into space. "It's Okay, Prexy!" he whispered half aloud in a reverent tone.

"Eh?" gulped the General. "I did not quite hear what you said."

Crash started, then regained his composure. "Sorry, General," he said. "I guess I was day-dreaming. He dug into his pockets. "But, sir—here are the contract papers."

And with a smile, the General reached for his pen.

Hoots and Headlights

(Continued from page 10)

American brass hat, nodding so emphatically that he almost fell off his chair. "Francois, voose and me is friendsh, wee! If I ever shee dirty—hic—dog I'll tell voose. Me, I get sore, too."

"I have ze picture of ze femme—hic," sobbed the Frog brass hat as he dripped tears into his glass. He fumbled around his chest until by accident his fingers hit

the right pocket and he pulled out his watch. But just as he got the case of the time piece open, the picture he sought popped out and was caught by a draft and spun through the dimly lighted ozone of the *estaminet*. The Frog made a grab for it, but it pancaked to the floor several feet out of his reach.

"Ah, *sacre!* ze picture fly away jus'

lak ze femme. Now—hic—I have nosseeng to theenk of her weeth. Ah, *mon ami*, pleez find eet for me ze picture. *Mon petit Juliette—hic—toujours vous run away from Francois, hon? Vous etes ze timer—twice, oui!*"

"Two-timer voose mean, mawn amy," the Yankee colonel corrected the Frog as he pawed the floor on all fours. "Looks like—hic—it alleyed out of ze window, palshy walshy. Letsh quit."

The Frog officer finally nodded and got up unsteadily. "Me I look for thees Americain flyair anyhoo 'teel ze days from dooms—hic. I have eet ze knife for to cut ze t'roat from theese ear—hic—to thees ear for thees Americain, *mon ami*. *Oui!* He have steal ze femme de moi an' heet ze nez de moi—so—" He made a very significant gesture in the region of his throat to illustrate his intentions, then wrapped his arm around his drinking companion's shoulders. Together the two followed a very crooked course to the door while Phineas Pinkham watched out of the corner of his eye.

When they were out of sight, the Yankee jokemaster reached down and picked up something from under his boot. It was an oval picture of a very comely French girl. And when Phineas turned it over he read: "*Mon soldat cheri—Je t'aime.*"

"She must be a great kiddier," Phineas grinned. "But oo-la-la! What lamps you got, Juliette! The bum that poked that Frog brass hat in the chops got himself something nice. But as for her goin' with him—well, that's dames for ya! Fickle like Cleopatra! But why didn't I give this picture back to the Frog, huh? I musta had a subconscious reason for keepin' it."

Phineas went out and strolled toward Babette's domicile—but he never reached his destination. That was because he found a khaki-hued car standing out in front of a darkened Frog bakery.

The Boonetown pilot heard a series of prodigious snores. He looked around him as he leaned against the hood. Nobody was near, and when the heavy sleeper in the car didn't wake up, Phineas went to work with a screw driver and a pair of pliers which he had produced from his trench coat pocket. Metallic sounds broke the Bar-le-Duc stillness for a little while, then the Yankee plotter ambled away, the skirts of his coat bulging under the grip of his hands. When he rode out of town the burlap bag was still dangling from the handle-

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bars of his bicycle.

"Babette kin wait," the errant swain chuckled as he pedalled his bike toward the drome of the Ninth. "The more you neglect dames, the nuttier they git about you. Haw-w-w-w!"

A lot of things happened after Phineas Pinkham evacuated Bar-le-Duc. For one thing, *Herr Hauptmann* von Heinz dropped a bunch of bombs outside town and they landed on an ammo dump. The explosion shook a Frog captain and a Yankee colonel into sobriety, and sent them legging for their car. The dough at the wheel of the boiler was wide awake, too, when they piled in.

"Drive out of here, Sergeant!" the Yankee brass hat barked. "Don't use the lights until we're clear of that Heinie."

"Yessir," responded the dough breathlessly, setting the car into motion.

But once the machine was outside of Bar-le-Duc where the roads were shrouded with plenty of night, the colonel let out another yip.

"Turn the lights on! If a truck ever meets us—we—"

"Yessir! I'll— Say the glimmers won't work! I turned 'em on an'— Jump, sir! Somethin's comin' an'—"

WHA-A-A-A-A-AM!

Some minutes later, the colonel helped his French pal off the lower limb of a tree. Their chauffeur was ankle deep in mud—but he was in head first. When the two brass hats finally pulled him out, the sergeant wiped mud from his pan, looked at the crumpled hood of the U. S. buggy, then blinked.

"Hey," he hollered, "somebody *swiped* our headlights! They was there when—"

"Somebody'll sweat for this!" squawked the Yankee colonel. "It's sabotage! It's criminal assault! I'll—"

As a matter of fact, Phineas Pinkham was sweating when he got through pumping the bike back to the drome of the Ninth Pursuit Squadron. Before he turned in that night he went over to where the squadron car was housed and removed one of the headlights. Then, on his way to his hut, he met Sergeant Casey. The boss mechanic wanted to know what Lieutenant Pinkham had been stealing now.

"Turnips!" Phineas sniffed—and kept on going.

Casey scratched his head, then shook it. "Turnips in July, huh? He's a liar. Turnips don't git ripe 'til—that guy's up to somethin' ag'in."

"Hello Ananias," Bump Gillis greeted his hutmate when the pilot from Iowa walked in. "What was it your great uncle did in the War of 1812? Ha! Ha! Oscar sure took you to the cleaners! He was tellin' us about the time you hid under an egg crate when a cyclone come. Boy, we always knew you was nutty but—!"

"Oscar Frump will not be with us long," Phineas glowered at Gillis. "You bums wait! Liar am I, huh? A fine bunch of pals you are—sidin' with that guy. Well, a Pinkham never forgets!"

STORIES have a habit of covering a lot of territory. The Paris incident involving one Frog brass hat—Francois LeBouche—even became barracks gos-

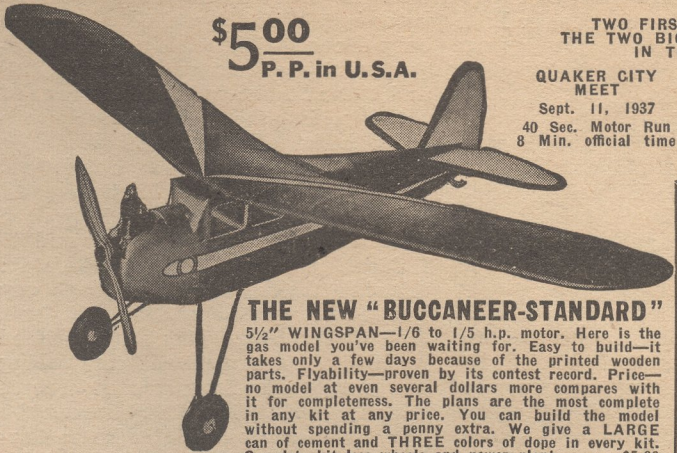
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sip. Everybody felt sure that the Frenchman would cut himself a juicy morsel of throat if he ever caught up with the flyer who had stolen his Juliette and banged him on the prop boss. Stories grow in flight, too, so that it was now being said that LeBouche had gotten in a couple of uppercuts himself before the *coup de grace* laid him flat on his angel bones.

"If I wasn't so sure you was here on the drome when it happened," Captain Howell said to Phineas the day after the Pinkham sortie into Bar-le-Duc, "I would swear it wuz you. Yeah, and I'd hate to be that culprit when the Frog catches up with him—if ever."

Lieutenant Oscar Frump nodded his head solemnly. "Them Frogs always settle things with knives. An' kin they spar with them throat slicers! Boy, if I was that Yank flyer, I'd desert right now an' hop a boat back home."

"You always was a coward," Phineas told him loftily. "I bet it *wuz* you, as when you got here you had a barked schnozzle an' a blackened glimmer. Also, you been soundin' off about bein' in Paree just before you come up here. Yes, I would give a million francs to be able to pin it on you!"

"It is too bad you haven't got brains enough," Oscar retorted. Then he turned to the others and began: "Did I ever tell you guys about the time—?"

Just then, Major Garrity barged into the group and let out a yowl. "Get goin', you armchair aviators! There are four Krauts over Lerouville and they're trying to knock hell out of our balloon line. On the *alerte*, huh? Why you all look like Rip Van Winkles waitin' for the alarm clock to go off. Hop into those crates!"

Flight Leader Howell, Lieutenant Gillis, Oscar Frump, and Phineas dashed away and leaped into their Spads. In jig time they lifted them off French real estate and headed for the lines. They met the Boche sky quartet over Commercy, and Howell knocked off the bass singer before the brawl had actual-

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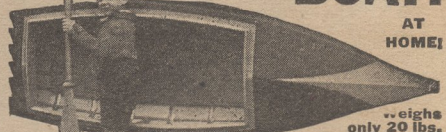
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ly gotten under way. A Fokker that had a tenor pitch nearly rubbed out Lieutenant Frump. But Bump Gillis kicked him off the newcomer's neck, and then only a duo was singing for Kaiser Bill. A Fokker singing baritone got Vickers gravel in its throat and almost choked to death before its jockey set it down none too gently near a Yankee supporting trench. Phineas, whose mind was on owls, got a burst through his tail assembly and had to land outside of Bar-le-Duc five minutes later.

"Haw-w-w-w!" he guffawed. "I was goin' to stop off anyway. This was a big help." He taxied the Spad close to a wooded area and got out of the pit. And before he left the place he draped the topside of the sky chariot with limbs and dry brush. The empennage was not in such bad shape, he mused, so it ought to be good for at least one flight before it fell apart. There were just a couple of loose wires that he figured he could easily repair.

Noticing that the sun was sinking fast, the Boonetown pilot thought of von Heinz and sat down to ruminate.

"That owl I am havin' stuffed was a setup," Phineas said aloud, grinning. "And now all I got to do is show von Heinz that I'm not under a R.I.P. slab and make him keep visitin' us after supper. Then there's Oscar—" The Yank plunged his right mauler into his pocket, felt of a small oval-shaped bit of heavy paper. A gleeful shiver zoomed up his backbone. He thought of a track meet that had taken place in 1915 between Boonetown High and Waterloo Academy when Oscar Frump, who had been a Waterloo man, had beaten him by a step. Oscar still had the award that was proof of that bit of prowess, and he was no doubt keeping it handy as a trump card in his current game of ribbing Phineas Pinkham.

"I'm a liar, huh?" Phineas chuckled. "I'll prove it to them bums. Now if I can only find the place where old jilopies are dumped in Bar-le-Duc . . . and if the Frog has the owl stuffed on time . . . an' if LeBouche keeps his mad up—why then everythin' should turn out hunky dory. The Pinkhams wuz always most dangerous when their backs wuz up against a wall! At the Alamo when the Mexicans was closin' in a Pinkham—er—well, I guess I will start for town."

The wandering Yank made himself as inconspicuous as possible when he reached Bar-le-Duc. He sneaked into the taxidermist's place and found that his owl was stuffed.

"Ah, m'sieu," chortled the old Frog, "thees ees ze mister-piece, non? *Vingt-cinq francs*, pleez."

Phineas snorted. "Twenty-five francs, huh? Well, here you are Jesse James—an' I hope the next lion you try to stuff ain't dead. Boys, it even looks like von Heinz, don't it?" he added, beginning to admire the man's work.

With darkness already in town, Phineas cautiously toured Bar-le-Duc for an auto graveyard. On the outskirts he finally found the wreck of a Frog Renault that had failed to duck a stray shell in 1915. After a struggle, Phineas

found what he wanted—a handful of wires.

Then he went back to Bar-le-Duc to lurk in the doorway adjoining an *estaminet*. While he waited, a car with only one headlight pulled up and Major Garrity got out of it. Bump Gillis and Oscar Frump tumbled out next and both went into the Frog bar-room, while the Old Man of the Ninth headed in a different direction. Phineas, a wide grin on his face, simply bided his time.

Ten minutes later, an M.P. walked past the squadron boiler and said to Phineas, who was working over it: "Havin' trouble, sir? If ya want any help, I know them cans from A to—"

"Thanks, soldier," the self-appointed mechanic interrupted without looking up. "Carry on, as I was weaned on these things myself. *Merci* just the same."

Half an hour later Major Rufus Garrity returned to the car and got in. He looked at his watch, then growled. Just as he was ready to burst into the *estaminet* and drag Gillis and Frump out, the two lieutenants appeared. Bump got into the driver's seat and stepped on the starter. Nothing happened. He kept bearing down, but the motor did not perk. Oscar Frump got out and lifted the hood.

"Hurry up and get started!" yelled the Major. "What in the devil's wrong?"

"He-e-e-ey!" Bump yelled. "The battery's gone!"

"The battery?" yelled the C. O. "First somebody steals a headlight, then—By-y-y cr-r-r-ripes, if this ain't a lousy *guerre*!"

Over on the other side of the street, Phineas Pinkham was convulsed. He could have told them where the battery was. But instead he slipped around the corner and became swallowed up in the darkness.

LIEUTENANT PINKHAM reached the drome ahead of the apoplectic Garrity and his two underlings. He accomplished the feat via shank's mare, ambulance, and truck. Knowing of no better way to pour out his spleen, the Old Man hollered for Pinkham when he heard that the squadron's pain-in-the-neck had survived the recent fight with the Boche. But none of the orderlies could find the Boonetown wonder, and so the C. O. almost had a stroke.

It was Bump Gillis who first heard the sound of hammering on the far side of the drome.

Then Sergeant Casey pointed. "Look, guys—er—sirs. In that tall tree over there. I seen that crackp—the orfiser, rather—go over there an' climb up it. An' lookit the thing that he's got stickin' up!"

"I can't make it out," Bump grunted.

"Yeah," said the Equipment Officer just as the Old Man joined the group. "Incidentally, he says for me to rub Spad No. 6437 off the books, as it wouldn't know its own mother."

Every member of the Ninth was under the tree when Phineas dropped to the ground from a low limb.

"What're you up to, Lame Brain?" the Major howled. "Where you been since that sky scrap?"

"In the A. M.," Phineas replied, calm-

ly eluding the question, "you will see what is up there in the tree. Haw-w-w-w! Wait 'til von Heinz comes over! Say, how did *you* git back from—er—I saw you come in a little while ago in a—"

"Look here, Pinkham!" Garrity erupted. "There were two brass hats who got wrecked outside of Bar-le-Duc because somebody had stolen their headlights. What's more, one was lifted off our squadron car, And now somebody's stolen the battery."

"Haw-w-w-w-w-w!" guffawed the incurable humorist. "It's lucky they left you four wheels, huh? You can't trust nobody in this *guerre*, can ya? Say, Oscar, you crooked snake in the grass, why didn't you tell 'em how I used to beat all of your Waterloo Academy sprinters when I was goin' to Boonetown High, huh? I set a record for—"

"Why, you human gas attack," Oscar Frump exploded, "listen to him! This is another time I will show him up. Lookit this watch! Look on the back."

The others gathered around, read:

Oscar Frump—100-Yard Champion
Waterloo vs. Boonetown
1915

"I don't believe it," yipped Phineas. "Lemme look at it."

"Okay, Big Mouth," crowed Frump. "Ha! Ha! Take a look!"

Now it happened that the buzzards of the Ninth and their fuming C. O. were standing near an old well when Phineas reached for Oscar's time piece. And it also happened that sleight-of-hand was in the back of the Boonetown Bam's brain—though they didn't know it.

Anyhow, Phineas fumbled frantically after he got the watch in his grasp. Then he let out a holler and made a dive for the edge of the well. Too late! From far down in the ground there came the faint sound of a splash.

"Ohh-h-h-h-h!" he groaned. "I dropped it. That's too bad, Oscar. I am simply overcome with remorse. Ohh-h-h-h-h!"

"You fathead," Lieutenant Frump bellowed, "you done it on purpose. You'll pay for that, Phineas Pinkham. Fifty bucks!"

"Maybe I could hire a diver from the U. S. Navy cheaper," suggested the professor of legerdemain. "But gimme time. And now I'll say adoo, as I need some sleep."

"I've been thinkin', Pinkham," Major Garrity rumbled. "Somethin' tells me—"

"I wouldn't believe it," Phineas interrupted him. "Haw-w-w! And bong sour!" Thereupon he hurried to his hut, shut the door, and removed the watch from his pocket. He'd only dropped a pebble in the well.

Then, after hiding the watch in a safe place, he shook his fist in the direction of Germany, volubly insulted von Heinz, The Owl of the Ozone, and finally retired to his bunk.

WHEN the sun rose high the next morning, the personnel of the squadron got a good look at the Pinkham tree-

top handiwork. Tied to a long pole protruding upward from the very apex of the Frog timber was a stuffed owl. Atilt on its head was the visored skypiece of a Kraut airman, and small brass buttons on a make-shift gray coat gleamed in the sunlight. A big sign had been affixed to the pole immediately beneath the bird. The printing, which had been dashed off for the benefit of a certain German pilot, read:

VON HEINZ—STOP! LOOK! LISTEN! HERE IS YOUR BRUDDER! LET THIS BE A LESSON TO YOU! LEUT. PINKHAM WHO AIN'T DEAD YEDT! HAW!

Oscar Frump eyed Phineas. "He ain't safe to be with," he clipped. "He needs an observer worse than a D. H. Of all the cock-eyed—"

"Oh yeah?" chirped Phineas. "That's goin' to bring von Heinz over here bent on knocking me off. And meantime I have lernt a swell way of huntin' owls."

Major Rufus Garrity groaned and retired with brass hats from the Wing who sarcastically inquired why Yankee pilots could not down von Heinz, especially as he came right over to where they slept and practically knocked on their doors with his prop boss. Anyhow, something had to be done about it or there would be a shakeup at the Ninth not to mention a couple of other squadrons. Von Heinz was costing the U. S. taxpayers too much legal tender.

"Yeah, just try and nail down that Dracula," Garrity yelled. He rounded out his opinion of Wing, the Ninth, and von Heinz with a well-selected line of swear words.

The day dragged on. Scheduled sorties over Kraut holdings were carried on by the Ninth, but the pilots managed only to hold their own against the Hohenzollern aerial circus. Finally, night fell over the land. And then Herr Hauptmann von Heinz emerged from his nest and blinked.

"Ach, sooch einen nacht!" he grunted. "Ofer I vill go by der Yangkee Staffel und drob idt zome eggs. Eggs from der Owl, ja!"

He wrapped his squat carcass in flying leather and waddled across the field to a hangar where Dutch grease monkeys were getting his Albatros slicked up for business. The Owl loaded himself into the pit, tested the controls, then waved his short arm. "Sehr gut!" he growled. "Kontakt!"

But in less than a half hour Herr von Heinz's night was spoiled for him. For his owl-like peepers got a gander at the Pinkham handiwork just as he swept down on the Ninth. Burned up worse than a bride's first mess of bacon, von Heinz even forgot to drop his explosive eggs.

"Himmel! Was ist das? Das Pingham ist nie deadt? Donner und Blitzen!" The blood in his veins sizzled and he again swung back toward the Ninth. "Mein Brudder, hein? Der owl das ist, hein? Ach, I blow idt der Amerikaners oudt from der map yedt! Ja!"

Meanwhile, Yankee machine gunners had had time to get set. They peppered von Heinz as he came over, sent slugs

through the floorboards of his Alb, and singed his tail feathers. The Owl dropped then his bombs in a hurry, wasting them right in the middle of the Ninth's tarmac. He headed back to Germany then, madder than a March hare with hives.

"Budt I coom back!" he raged. "Gott in Himmel, I coom back!"

Crouched near the power truck of the Ninth, Phineas almost seemed to have heard his arch enemy's invective. Nodding his head, the Boonetown exponent of skulduggery in all its forms guffawed. "Haw-w-w-w! He'll be back the bum, an' I'll be waitin'. Tomorrer night, I bet. Well, they can push a Pinkham so far. He-e-ey, Casey!"

The half-clad flight sergeant skidded back on his heels. "Yeah," he gulped. "What d'ya want, you—er—sir?"

"I heard you lost your gallopin' dominoes," Phineas told him. "Anyhow, I found 'em."

"Yeah? Wh-where? Boys, they was lucky. Since I lost 'em, I been very unfortunate."

"I should think they wuz lucky, Sarge," Lieutenant Pinkham drawled. "They throw sevens every time. They're loaded. Now if I was to tell Goomer about them—I heard he lost forty bucks to you—he'd—"

"Them dice was honest," Casey snapped. "I—"

"I ain't accusin' the dice, Sarge," Phineas corrected him. "It's you that's croo—listen, Casey, I won't say nothin' about it if you'll be at B Flight's hangar tomorrer at ten in the P. M. Have a motorcycle where I can get it. Compreenny?"

"Nossir! Them dice—it's a frameup! I—"

"But will Goomer believe it?" argued Phineas.

"Oh, awright. I'll be there. What can I do—an orfiser accusin' me."

"Adoo, Casey," chortled Phineas. Then he went into his hut with a jaunty swagger and despite the confusion out on the field he quickly went to sleep.

ALMOST twenty-four hours more having gone into the knapsack of Father Time, let us look in on three places along the Western Front where things were happening simultaneously:

Over beyond Bar-le-Duc Phineas Pinkham, Ace Extraordinary, and Sergeant Mike Casey were working on a Spad. The Flight Sergeant was complaining to his superior officer about the possibility of his getting worse than Blois if the Old Man ever found out that the Spad had not been wrecked.

"They claim I'm a liar," Phineas retorted. "So should I disappoint 'em? Get that battery anchored in place, Sarge, an' fix the wires right. That one on front don't work bright enough. It's no brighter than you, Casey. Snap into it!"

"Oh, awright. But it's your funeral, Pink—er—sir."

"The only funeral I expect is goin' to be for an owl," Phineas declared. "No Pinkham cashes in when there's enemies afoot."

Over on a Jerry drome Herr Hauptmann von Heinz was ready to hop up into the scraposphere again, and his

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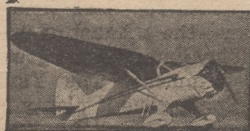
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owlsh pan boded plenty of ill for anything made in America. "*Der Nacht ist!*" he hooted as he contemplated the darkness. "*Und soon das Pingham will be kaput! Vun uf Mein Freunds he kills, ja? Und fills mit stuffinks, hein? Der insult das ist! Himmel!*"

Eleven miles from Bar-le-Duc, two Allied Intelligence officers were riding along a sunken Frog road in a Renault. One was a Yank and the other a Frenchman. The Frog kept grumbling about his faithless spouse.

"Ah, Juliette!" he sighed. "*Le temps deux you donnez moi, oui. Ah, chéri, I br'ak eet vous Jolie neck. Ze snak' dans le grass I fin' an'—*"

"Oh, pipe down, Francois," Colonel Webby said wearily. "I'm getting sick an' tired of hearing about that dame. Wonder how far we are from that Yankee squadron? I've got corns on my empennage from riding all day. I wish I was back in the infantry. Chaumont thinks there might be a spy around Bar-le-Duc, but why I don't know. Von Heinz spots the dumps himself. That Kraut can look right through a lump of coal after sundown, if you ask me. Driver! Try the road once in awhile, will you? You can plow pastures after I get out of this boiler."

Now we will return to Phineas Pinkham. The pilot from Boonetown, Iowa, bade Sergeant Casey goodnight, told him to ask Garrity how his liver was, and concluded airily: "*Merçi, Sarge. Here's your loaded dice—an' let that be a lesson to ya!*"

Casey swore to himself as he kicked the engine of the mechanical bug over. But Phineas read his mind and said: "So are you, Casey—only worse." Then he sat down beside the Spad and watched the sergeant disappear toward Bar-le-Duc. The music of the idly-turning Hisso caressed the Pinkham eardrums as Phineas prepared his patience for watchful waiting. Time only would tell—and he hoped time wasn't a liar.

ELEVEN O'CLOCK struck in a far away church steeple. Midnight sounded off an hour later. The witching hour, thought the lone Yank, wondering at the same time which of two crates would be washed out before the clock struck one. Soon he caught the purr of a Boche sky buggy's motor. He got to his feet and leaned against the Spad, looking up into the dark firmament. There it was—the exhaust of The Owl's Albatros! Tiny flame jets as green as von Heinz's glimmers! The Yank jumped into the Spad, gave it plenty of pep juice, and rolled across the Frog field at a lively pace.

Herr Hauptmann von Heinz, sighting the familiar outlines of the French hamlet sprawled below him, laughed nastily. "*Ach, in ein, drei minoots Ich—*"

The Owl's squarish noggin abruptly spun on his rounded shoulders. "*Ach! Was ist los?*" he growled. Into the Mercedes steel-throated roar had come an alien sound. His green eyes swept the skies and finally spotted the Spad that was coming up through the murk.

Baring his teeth, von Heinz let the proboscis of the Alb drop. "*Gott sie dank!*" he gloated. "Rightd by in front

uf der Spandaus idt goes yedt!"

Then without warning a blinding beam of light sliced the ozone and pierced The Owl's eyes. The *Herr Hauptmann* let out a scared yell, pawed at his blinded peepers. Back-sticking, he got out of the path of light that was as deadly as Prussic acid to his vision. "*Das Pingham!*" he choked out, blinking rapidly. "*Der drick—idt ist nie gut!* In der back uf der neck I now gedt it der bummer!"

Phineas Pinkham's big white buck teeth flashed like a piano keyboard as he let The Owl get on his tail. Then he snapped a little lever down. From the tail of the Spad twin beams of light shot out and figuratively bit into the Albatros, the Spandaus of which had just started to open up for business.

"Take that, you mouse destroyer," Pinkham yipped. "Haw-w-w-w-w! This is the only way to hunt owls. Blind the bums—an' then conk 'em for the count. Boys, what a guerre!"

Herr Hauptmann von Heinz was in a mess. He tried to swing out of the path of those lights that had already made his glimmers as opaque as the dusty windows of a haunted house. Fear squeezed gobs of sweat out of his torso. Blinking his eyes rapidly, The Owl flew from memory only. But every time he got his windows defrosted, a beam of light clouded them up again. "*Gott in Himmel! Noddinks budt lightds und mehr lights! Der Spad ist mit lightdts covered, ja! Donnervetter, das Pingham der Defil ist!*"

Rat-a-tat-tat-tat!

Vickers slugs from the Spad were beginning to find the Alb's vital spots. The Owl feeling his crate throw a fit, instinctively clawed for altitude. Still light beams kept stabbing at him, and he yelled bloody murder every time they smacked against his goggles.

"Haw-w-w-w-w-w!" Phineas yipped as he slowly mowed down the Von. "Why didn't them Allied inventors think of putting headlights on Spads like they do on autos? It takes a Pinkham to show the way every time. Take that, you bum! Haw-w-w-w-w! All you need now is a tin cup with some pencils, you sausage glutton! Boys, look at him squirm when those headlamps kiss him! Just like the owl I knocked off back on the drome."

Phineas then got on The Owl's tail and gave him a terrific battering of lead. The Alb went into a spin, snapped out of it, then tried to get back upstairs. The gyrations reminded the Yank of a lame duck attempting to walk up a long chute.

Finally, the Kraut buggy gave up and fell off on one wing for von Heinz, in pawing at his glimmers, had forgot he had a stick. He only remembered it when he was five hundred feet from Yankee supporting trenches. "*Gott!*" he screeched as he wrestled with the Alb.

Behind him came the ruthless Yank, his front light flooding the Kraut ship's superstructure. Then the ground came up and hit The Owl a lusty wallop on the coco—and all his lights went out.

With the help of his headlamp, Phineas landed his Spad a hundred yards away from where The Owl had marked an X in the mud and barbed wire. He

reached the wreck of von Heinz's sky buggy just as a crowd of doughs bent their united efforts to lifting a wing off The Owl. Von Heinz looked as if fifty-seven varieties of calamities had hit him all at the same time. His head was flopped over on one shoulder, and his eyelids were big enough to make a pair of spats.

"Ya sure knocked 'im off this time, huh, Lootenant?" said a dough.

"Yeah, haw-w-w-w-w! An' I will not take any chances this time," Phineas cracked with emphasis. "I am tyin' that bird to my Spad."

"An airplane with headlights, huh?" gulped an infantry officer. "Why didn't they think of that before? Well! Well!"

Von Heinz began to stir just as a couple of doughs lifted him onto the lower wing of the Pinkham Spad. "G-go away, *Dumkopfs!*" he gutturalled as a light flashed over him. "*Raus mit! I—I see der sun still und—Gott! Was ist, hein? Where am I vunce?*"

"You ain't *Unter der Linens*," Phineas informed his captive. "Don't look now, *Herr Owl*, but Lieutenant Pinkham is standing here. Well, once back in Sunday School in Boonetown I read in the Good Book about letting us have light, haw-w-w-w! You are on the way to a taxidermist, von Heinz, haw-w-w-w! Make way there, you bums, as Lieutenant Pinkham is on his way home. Contact!"

"*Himmel! Ach!*" The Owl fought his bonds like any feathered creature of his species would. But they were as tight as a Scotchman filled with two quarts of cognac.

BACK on the drome of the Ninth, Sergeant Casey was trying to get out of a jam. Major Garrity had him on the grill. He was pretty well done when the E. O. suddenly came running into the farmhouse, waved his arms, and yelled something anent a Spad with a headlight.

"A headlight? A head—?" the C. O. roared, then stopped. "I get it! It's Pinkham, all right! An' you'll go to the klink, too, Casey. You were helpin' that crackp—that liar. The Spad was washed up, huh? I'll—"

Colonel Webby and the Frog Brass hat, who were present looked at each other and opened their mouths wide. Then they stirred their dogs and went out to see for themselves.

"H'lo, bums!" Phineas hailed all and sundry as he got out of the Spad. "Cut away the ballast on my ship, will ya please? It's von Heinz in the flesh, even if it is all bruised! Handle him with care now, as I want him stuffed. Haw-w-w-w-w! Awright, I took the headlights off them cars. I stole the battery. Somebody had to do somethin'—an' as usual it had to be a Pinkham that done it. Go ahead! Try to bust me an' see what President Wilson an' General Pershin' have to say about it. Why—er—h'lo, Colonel. An' you too, Frenchy. Ain't seen you since the night that—er—"

Colonel Webby scratched his head. "Don't remember *ever* meeting you before, Pinkham. I—"

"It is The Owl!" yipped Major Gar-

city. "Boy, will we get decorated!"

Phineas slumped down on the steps and sniffed. "That's the way around here. One minute they're killin' a bum, an' the next they're kissin' him. It was them headlights that knocked him off. Ya see, the first owl I got couldn't look a flashlight in the eye. So I says to myself, 'Pinkham, ol' man, von Heinz is part owl—therefore auto lamps oughta frost his winders, too.'"

"Himmel!" Von Heinz groaned as they dragged him off his perch and into the farmhouse. "*Kamerad! Ich ben der brizeron uf var und I demandt dot das Pingham leafs me be. Shtuff me he ist t'inkin' und—Ha-a-alp! Kamerad!*"

"Did I fool him!" Phineas grinned. Then he looked at Oscar Frump. "Why, hello, Oscar," the Boonetown Merlin thrust at his townsman. "I got somethin' to tell ya. That watch o' yours wasn't lost. I had it all the time, haw-w-w-w! It's a nice watch, an' you bums ought to see the picture in it. It's of a dame. Look, it says '*Mon soldat cheri, Frumpy, Je t'aime!*' '*Juliette*' she signs it—an' if you think I'm a liar, why—"

Oscar made a frantic grab for the Watch. But LeBouche, the Frog Brass hat, outgrabbed him, opened the case, took one look, then emitted a blood-curdling yell. "So! I haf fin' *vous oui!*" he shouted at Oscar. "Snak' in ze grass, oui! I slit heem ze t'roat from ear to ear. Lieutenant Frump, eh? *Sacre!*"

Oscar Frump started running; for the realization of what had occurred had eaten deep into his think tank. He sped across the tarmac, breaking his own hundred-yard mark set in that track

meet between Waterloo Academy and Boonetown High in 1915. Not far behind him sprinted Francois LeBouche waving a hunting knife. And Oscar, as he ran with his tongue hanging out, kept asking himself how Phineas had got hold of that picture of the French dame.

"Look it," Phineas was saying back near the Frog farmhouse. "Here's the watch, engraved an' all. Look at the picture an' the writin' on it. He's the guilty man. Well, he got a medal for runnin'! Ah-h-h-h-h! I think I will get some sleep. Ho hum!"

THE next night at mess, Oscar Frump, the tip of an ear carved off, one eye with a huge mouse beneath it, and his nose patched with adhesive tape, listened to Phineas sound off without opening his trap.

"Yessir," blatted the scion of the Pinkhams. "Back in the Revolution I had a great great grandfather who caught eight redcoats single-handed. He shot the buttons off their pants with a pistol an' they didn't dare run any more because it was in Philadelphia and there was a lot of dames—uh—er—you remember hearin' about that, don't you Oscar?"

"Y-yeah," answered Oscar. "Heh! Heh!" he laughed weakly.

From outside came a dismal call. Wh-hoo-o-o-o-o-o-o-o!

"Yeah, von Heinz is here, Owly," Phineas trilled in response. "But he can't come out to play tonight—because right now he don't care a hoot about nothin'. Haw-w-w-w-w!"

The Boeing Sub-Stratosphere Ship

(Continued from page 47)

Indicate all control surfaces with a thinly drawn India ink line. Rule these lines carefully, using a straight-edged guide and a regular ruling pen if possible. India ink is also used for the Boeing trade mark on the rudder.

Since the landing gear is retracted in our model, a wire stand, as shown in the small photo, will add to the appear-

ance of the ship.

The stand used for our original Boeing 307 was made from an ordinary wire coat-hangar. To make a similar one, bend the wire into a triangle and turn up one end, then insert it into the bottom of the fuselage. The best place is about the center of the wing. The wire may or may not be cemented.

Try the "Trenton Terror"

(Continued from page 42)

Brown Jr. motors use the original skids. For Mighty Midgets, Syncro Ace, Ohlsson, Baby Cyclone and similar motors, the mount must measure $2\frac{1}{4}$ " wide, $4\frac{1}{2}$ " long and $1\frac{1}{4}$ " high. Use $\frac{3}{8}$ " hard-wood sheet, with plywood as the base, to construct a mount as shown in Plate 4. Drill a $\frac{1}{8}$ " hole through the plywood, $1\frac{1}{8}$ " from the front, to take the bolt. This bolt also passes through an extra piece of plywood $\frac{1}{4}$ " by 1" by 2" which acts as a washer and is used to protect the panel. A lock washer is put on the bolt and the nut is tightened, and the motor is then secure.

Any 1/5 or 1/6 h.p. motor may be used

in this plane. The 1/5 h.p. motors must be offset $1/16$ " to the right. The motor is held tightly in place by hard balsa offset wedges $1\frac{1}{2}$ " high by $4\frac{1}{2}$ " long, and which taper from $\frac{1}{8}$ " to $1/16$ ", as shown in Plate 1. These wedges give the necessary $1/16$ " side thrust.

WING AND TAIL

A TEMPLATE of the wing rib (Plate 2) is the first step in making the wing. The ribs are cut from $1/16$ " hard balsa sheet. Twenty-four ribs are required for the entire wing.

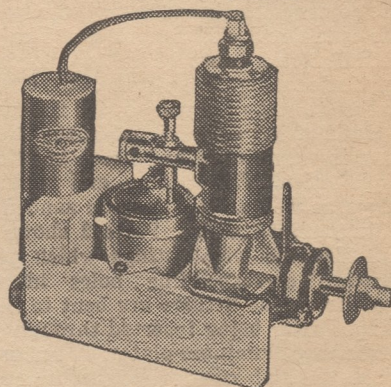
Be sure you make a right and left wing panel. Hard balsa strips $\frac{1}{4}$ " sq.



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are used for the wing spars. The leading edge is shaped from $\frac{1}{2}$ " by $\frac{3}{4}$ " balsa stripping. The wing tips are made from $\frac{1}{4}$ " sheet and are sanded to streamlined shape.

The dihedral angle, 6" on each tip, is put in when joining the left and right wing panels to the center section. The hard wood dihedral blocks are cemented to the side of the main spars as shown in Plate 3. Further strengthen the joints with thread wrapped around the spars and dihedral blocks. The dihedral blocks must be cut to fit your particular wing. Use plenty of 3/16" flat rubber to strap the wing to the fuselage.

Built of $\frac{1}{4}$ " sq. hard balsa, the stabilizer is very simple and needs but little explanation. The leading and trailing edges as well as the tips are sanded to a streamlined shape. Plate 3 shows in full size the wire fittings which pass through corresponding holes in the stabilizer. The fittings are bent to hook shapes after being inserted through the protecting aluminum plates. The fittings make the stab removable. Rubber loops are passed under the fuselage and onto

the hooks to hold the stabilizer rigidly in place.

The rudder which is adjustable, is made of $\frac{1}{4}$ " square hard balsa. The leading and trailing edges are streamlined. The swivel post keeps the rudder rigid and at a 90 degree angle to the stabilizer. It is also the pivot on which the rudder turns, as is clearly shown on Plate 4. The wire guide, on which the aluminum fitting slides to give proper turn, is sunk into the leading edge of the stab and cemented. The aluminum fitting on the leading edge of the rudder is a device by which the rudder is held rigid after correct settings have been found.

FINAL INSTRUCTIONS

COVER the entire model with bamboo paper and apply three coats of clear dope. The trim or panel effect is made with red tissue as shown in the picture.

Balance the model until it is slightly nose heavy, when it will be ready for test glides. If your *Trenton Terror* glides nicely and without left or right turn, put one scant eye-dropperful of

fuel in the tank. Rev your motor at about one-fourth throttle and let 'er rip.

If the model climbs smoothly with a slight turn, it's okay to "turn her loose." Use judgment, of course, and don't let her get away from you. Limited fuel or an automatic timer on the ship will help in this respect. The adjustable rudder can be used to correct too much tendency to turn, and shifting the battery box along the balsa track will give you more weight toward the nose or tail.

BILL OF MATERIALS

QUITE reasonable is the list of required material for the *Trenton Terror*. Beside the odds-and-ends that most modelers always have on hand, you only need the following:

Eighteen pieces hard balsa strips $\frac{1}{4}$ " sq. by 60", one piece sheet balsa $\frac{1}{4}$ " by 3" by 36", one piece sheet balsa $\frac{1}{8}$ " by 3" by 36", three pieces sheet balsa $\frac{1}{16}$ " by 3" by 36", and two pieces balsa strips $\frac{1}{2}$ " by $\frac{3}{4}$ " by 36".

That's all for the balsa. In addition, you need one pint of clear dope, $\frac{1}{2}$ pint glue, one five-foot length of $\frac{1}{8}$ " dia. steel music wire, five sheets red Jap tissue, four sheets bamboo paper, and a small sheet of hard aluminum for fitting.

And so endeth the list. If you have any trouble either in building or flying the *Trenton Terror*, don't hesitate to write for help. Address me in care of FLYING ACES Magazine, 67 West 44th St., New York, N.Y. Tailwinds!

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Happy Landings

(Continued from page 27)

no actual governing body to control or order field exercises or mass maneuvers.

But now the G.H.Q. Air Force not only administers the routine organization, but they also fly plenty to do it. They are not old Army shell-backs with their feet on desks. They get into the air and take part in the very "shows" that they themselves have devised for the combat units. And what the G.H.Q. Air Force says, goes!

WE recently found another important item buried in the mass of official hum-drum. This was a statement by the Hon. Harry H. Woodring, Secretary of War, in reply to a query by Charles F. Horner, President of the National Aeronautic Association. Mr. Horner asked how his organization could help the War Department in accomplishing its aviation program. And here's part of the Secretary of War's reply:

The Army Air Corps is faced annually with the problem of procuring and training several hundred Flying Cadets at the Air Corps Training Center, Randolph Field, Texas. It is becoming increasingly difficult to obtain the necessary quota of Cadet applicants. I think this is due in no small degree to our lack of adequate facilities for a widespread publicity campaign to acquaint college graduates with what the Army Air Corps has to offer. Here is an opportunity for the college graduate to obtain one year's flying instruction at

the finest flying training school in the world, plus the added inducement of one to five years active duty as a Reserve officer, with pay and allowances in grade. The Flying Cadet is paid \$75.00 a month and is provided with food, clothing, and shelter while undergoing training.

So there you are again—another very important item buried amid a lot of deep stuff about detailed estimates,

budgets, recommendations, and that sort of thing. In other words, the Army Air Corps is having a hard time getting candidates—at least candidates who have the required education. Which means that that matter of college training is the initial hurdle you've got to cross. And so, fans, we say—

You'd better stay at school. Yes, you'd better stay at school—if you want to get set to fly for Uncle Sam.

Build the Jones S-125

(Continued from page 32)

thick. The $\frac{1}{8}$ " by $\frac{3}{16}$ " leading edge is pre-shaped to prevent the framework from warping.

Pin the trailing edge down first and cement all the ribs in place. Now add the leading edge, and set the spar in the notches. The sheet balsa wing tip (Plate 3) completes the framework.

The elevator (Plate 3) is made in one piece. Follow the plans carefully, and see Plate 4 for the rudder. Medium sheet balsa, $\frac{3}{32}$ " thick, is used. A small block of balsa is carved to the shape of the body, and is installed after the elevator has been cemented in place.

The landing gear legs are carved and hollowed out as shown on Plate 3. Cement small eyelets into the hardwood wheels to serve as bearings. The top of each leg is notched to fit the second rib. The pants are shown on Plate 1.

Cover the top and bottom of the body with silver tissue. All the balsa parts, such as the cowl, landing gear and the fuselage sides, should be painted with silver dope. Then cover the elevator and rudder, and cement them in place with the small balsa block between them.

Next glue the wings to the sides of the body, each tip being raised $\frac{1}{2}$ "—measuring from the top of the wing

root. The open space between the body and the first rib is filled in with $\frac{1}{32}$ " thick sheet balsa. When the wings are attached firmly, cement the landing gear in place and cover the wings.

Use six strands of $\frac{1}{8}$ " flat rubber for motive power. The first trials should be attempted only in high grass, to prevent any possible damage. Adjust the model by warping the rudder slightly to the right for a wide circle. And so—here's luck with your Jones S-125!

BILL OF MATERIALS

Twelve strips balsa $\frac{1}{16}$ " by $\frac{3}{32}$ " by 18", for body stringers; three sheets balsa $\frac{1}{16}$ " by 2" by 36", for body sides, formers and ribs.

One length balsa $\frac{1}{8}$ " by $\frac{3}{16}$ " by 2", for leading edges; one length balsa $\frac{3}{16}$ " by $\frac{5}{16}$ " by 2", for trailing edges; one piece balsa $\frac{1}{32}$ " by 3" by 6", for wing fillet and cowl.

One piece balsa $\frac{3}{4}$ " by $1\frac{1}{2}$ " by 7", for prop; two blocks balsa 3" by 3" by 1", for the nose; one piece balsa $\frac{3}{4}$ " by $1\frac{1}{2}$ " by $2\frac{1}{2}$ ", for the nose plug.

Four pieces balsa 3" by 3" by $\frac{1}{2}$ ", for landing gear. And of course you'll need silver tissue, cement, dope, wire, wheels, pins and rubber.

Sky Fighters of the North

(Continued from page 7)

Swedish service.

Special conditions similar to those noted in the British Fleet Air Arm are enforced by regulations regarding the Naval Cooperation units intended for work with the Swedish Navy. During a part of the year, which is usually divided into one summer and one winter period, Naval Cooperation units of the Second Air Corps are placed under the supreme command of the Admiral commanding the Coastal Fleet for direct Naval Cooperation work, and these units are usually based on ships such as the *Gotland*, Sweden's famed Aircraft-Carrier-Cruiser, or the *Dristigheten*, an aircraft tender.

This Aircraft-Carrier-Cruiser idea is Sweden's own—and most of the larger powers have been watching the work of this unusual ship for some time. You see, many Naval experts believe that this type of ship will eventually out-mode the modern aircraft carrier.

The *Gotland*, which was laid down in 1930, is a distinct new type with a full load displacement of 5,260 tons. In most respects it looks like an ordinary light cruiser, but the aft section is devoted to deck space for a number of folding-wing seaplanes and a suitable hoisting gear for lifting returning planes from the water to the deck. About twelve two-seat Hawker Ospreys are carried under normal conditions, and there are two high-speed catapults and a derrick. As for armament, the vessel carries six 6-inch guns, four 14-pounder anti-aircraft batteries, four machine guns, and six 21-inch torpedoes.

The *Gotland*, with her speed of 27 knots, has shown herself to be a particularly useful type of warship. Two planes can be catapulted at one time, and they can get eight machines into the air in five minutes. All in all, considering her comparatively low cost, she is probably the most efficient

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craft of her tonnage in the world.

The *Dristigheten*, on the other hand, is an old battleship converted into an aircraft tender. It has a displacement of 3,600 tons. And judging by her photographs, she appears able to accommodate about four seaplanes at a time. She has a speed of 16 knots.

Up to the present time, all the Swedish Air Force officers seem to have been selected from the Army or Navy. Such officers are called upon to serve for a term of five years. Other ranks enlist directly into the Air Force. Now, however, anyone may apply for service in the Air Force.

Most training is carried out on British De Havilland Tiger Moths, and each pupil spends one year at the school and gets about 170 hours of training. Most fighter work is carried out with Bristol Bulldogs and with a few Swedish Jaktfalk fighters which are being built in a railway car factory at Linköping. Light bombing is carried out with Hawker Harts fitted with Bristol Pegasus motors. Army Cooperation work is done with Fokker CV-D and CV-E ships fitted with Bristol Jupiter or Mercury engines.

The Naval Cooperation squadrons are provided with Hawker Osprey or Heinkel H-5 seaplanes powered with Bristol plants. For transport and ambulance work they use the Junkers W-33 with the Junkers L-5 motor, or the Junkers W-34 with the Bristol Mercury. A new heavy bombing group is now being fitted with the new Junkers Ju-86, which uses Bristol Pegasus motors. This plane has a top speed of 208 m.p.h. with more than three tons of bombs.

Very wisely for an air force of this size they have carefully selected the best flying equipment available which can be manufactured under license in Sweden. From all accounts by those who have personally inspected the Swedish Air Force, their training is particularly good and their pilots among the finest in the world.

At Vasteras, where all training begins, the pupil arrives in May, and fighting and bombing training is carried on until September. They are then divided into special training squadrons which in truth are like independent air forces. Bombing and air firing is carried on over Lake Vattern. At the top of a small hill nearby is a radio station with very modern equipment using short wave between 60 and 150 meters.

MUCH night flying is carried out by the bomber squadrons, with huge floodlights used to illuminate the areas. During the winter, however, they have to face rigorous weather conditions. On ordinary soft snow the seaplanes can be landed

comfortably with ordinary floats, but a mixture of ice and snow demands that small skid devices be fitted to the bottom of the floats.

Conditions between seasons provide the greatest problems on the lakes and harbors—for while the flyers usually check landing areas three times a day, they are only certain that Spring has arrived when one or two planes break through, or that Fall has come when unexpected ice wipes off an undercarriage.

Thus far, the Swedish Air Force hasn't gone in for torpedo work. But we've learned that they are developing a new type of aerial torpedo which may be safely handled from a height of 150 feet.

Red Cross work? Well, the Hagernas Corps of this Northland country takes care of that. It's a special air ambulance system; and already it's proved of great value, for urgent surgical and medical cases have been flown in from remote parts of the nation to receive treatment in the urban centers. Such work is common during the hard winter months when snow makes many roads virtually impassable. Junkers W-34 ships are used in this service.

Yes, with such a well-rounded organization, the Swedes have certainly "got something" in that trim little air force of theirs. It's a sky scraping outfit worthy of praise in any man's international line-up, and with its personnel thoroughly trained in airmanship and military tactics, the Swedish skymen rate with the best of 'em.

Answers

TO QUESTIONS ON PAGE 22

- 1—The new Lockheed 14, better known as the "Sky Zephyr," can be converted into a bomber in about four hours.
- 2—The Abrams "Explorer" is a pusher-monoplane designed for aerial photography and sky mapping (See our Modern Planes Album).
- 3—The Douglas TBD-1 is a new torpedo bomber designed for Navy carrier work.
- 4—Captain Papana's Bellanca monoplane racer uses two 250 h.p. Menascos and one 420 h.p. Ranger.
- 5—The French ace, Lieutenant Rene Dorme, was affectionately known as "Papa Dorme."
- 6—The British 95 h.p. Pobjoy "Niagra" engine is used in the Gwinn Aircar.
- 7—The Porterfield "Zephyr" is an open cockpit monoplane using the 37 h.p. Continental engine. The Porterfield 35 is a closed-cabin monoplane powered with the 70 h.p. LeBlond.
- 8—The Vought V-150 was designed for single-seat fighting work.
- 9—P.Z.L. are the initials of the Panstwowe Zaklady Lotnicze—that is, the Polish National Aero Factory at Warsaw.
- 10—A horizontally-opposed engine is one that has its backs of cylinders set opposite, or at 180-degree angles, like the Continental.



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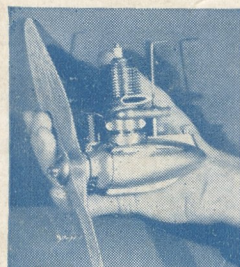
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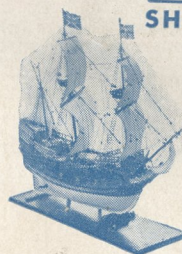


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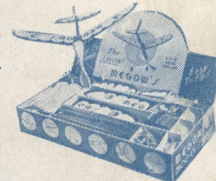
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